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Racial Disparities in Cancer Care | Access to Care for Transgender Veterans | Hepatitis C Among US Veterans | Battling Tobacco Use at Home | [illegible] | How Might the Provision of Culturally Competent Services Be Enhanced for American Indian and Alaska Native Veterans? | Improving Trends in Gender Disparities | Suicidality Among Hispanic and African American Veterans Following Surgery

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COVER: Lisa Turner, 47, holds her daughter Lucy Kramer, 14, during a candlelight vigil after the United States Supreme Court ruled in the *Dobbs v. Women's Health Organization* abortion case, overturning the landmark *Roe v. Wade* abortion decision, outside the United States Supreme Court in Washington DC, June 26, 2022.
Cover concept and selection by Aleisha Kropf. Photo by REUTERS/Evelyn Hockstein. Printed with permission.

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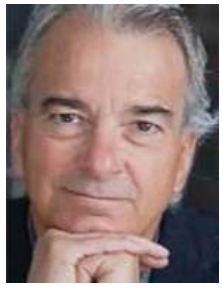
Reproductive Rights and Fascist Threat



The movement of history is toward more reproductive rights for persons to decide whether to become pregnant or to terminate a pregnancy. This movement contributes to the buildup of a fair society in which becoming pregnant is not a liability and does not jeopardize an individual's autonomy and independence. Indeed, reproductive rights accompany the strengthening of democracies. Consider Latin America. After years of conservative governments and military dictatorships, abortion was legalized in Argentina in 2020 and in Colombia in 2022. The case of Chile is of particular interest. In 1971, General Augusto Pinochet, with the help of the CIA, attacked the government palace in Santiago de Chile to overthrow the legally elected government of Salvador Allende. Under Pinochet's dictature, abortion became criminalized under any circumstances. Recently, after the election of a progressive government, Chile's new Constituent Assembly voted to include reproductive rights, including "a voluntary interruption of pregnancy," in the draft constitution (https://reut.rs/3QBGRmB).

Unfortunately, the United States provides an example of movement in the opposite direction: reproductive rights and democracy are currently targeted simultaneously. The Supreme Court has released a reactionary opinion holding that there is no federal constitutional right to abortion in the United States, opening the door for states, and potentially the federal government under a new administration, to prohibit abortion. At the same time, the public hearings of the congressional Select Committee to Investigate the January 6th Attack on the United States Capitol vividly show that it is now for the United States to reckon with its own Pinochets-to-be who send violent, White supremacist squads against the Capitol to keep the elected Joseph Biden from being president (https://january6th.house.gov). The hearings describe the carefully organized coup we denounced last year (https://am.ajph.link/FascistThreat).

As shown in this issue, *AJPH* has documented the prevalence, trends, and lifetime probability of undergoing an abortion (p. 1284 and 1243); the consequences denying an abortion (p. 1305) and of criminalizing it (p. 1313); the impact of reduced access to abortion on travel distance (p. 1297), finance (https://bit.ly/3o1sQRW), poverty (p. 1290), and maternal mortality (https://bit.ly/3nWVqE6); and the role of telemedicine (p. 1282 and https://bit.ly/3o0gd9U). Altogether refusing a person the right to decide whether they want to, can be, or can afford to be a parent has deleterious public health consequences. Persons who are disadvantaged financially or in any other way will be the most affected, not being able to afford traveling and medical expenses to get the services they need in free states.

In the short term, perspectives are gloomy. The immediate consequences of the overruling of *Roe v. Wade* will be that tens of thousands of persons will be turned away from receiving abortion services in their own state (p. 1280). After upcoming elections, the situation could further degenerate into Congress forbidding abortion. Justice Thomas has candidly described how the strategy applied to *Roe v. Wade* could be extended to other individual rights.

Still, if one takes a wider perspective in time, the context sheds doubt about the long-term consequences of an abortion-restricting legal rule. Six justices in 2022, against the will of a majority of Americans (https://on.wsj.com/3zZEXpY) declare that seven justices in 1971 were incompetent in widening reproductive rights. This is absurd. The opinion written by Justice Alito will remain as a model of cynicism in which all rights, including the alleged fetus's rights, are considered except those of women (https://bit.ly/3bsR70j). Popular frustration against the opinion will grow because about 25% of women in reproductive ages undergo an abortion during their lifetime (p. 1284). Action is already building up (p. 1278).

The decision to restrict the right to abortion, making access to the procedure even more unequitable than now, is certainly going to be a tragic episode, for the time it lasts, in a longer path toward equality and democracy that will reestablish and expand reproductive rights. The immediate legal and political reality, however, is that reproductive rights have to be protected state by state. Broad coalitions built on common grounds, if any, are needed to prevent unwanted pregnancies using contraception, to protect parents through family and child development policies and Medicaid expansion, and, when possible, to avoid total bans on abortion and the health disasters associated with illegal procedures. Altogether, these policies may reduce health inequities and decrease children living in poverty, until the right to abortion and contraception is inserted in the US Constitution. AJPH

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9 Years Ago

International Public Health Impact of Unsafe Abortion

The World Health Organization has identified unsafe abortion as a serious public health problem since 1967 and affirms in its most recent technical guidance the scale of this public health impact. World Health Organization evidence shows that when faced with an unplanned pregnancy and irrespective of legal conditions, women all over the world are highly likely to have an induced abortion. . . . The maternal mortality ratio per 100 000 live births owing to unsafe abortion is generally higher in countries with major restrictions and lower in countries where abortion is available without restriction as to reason or under broad conditions. Thus, the public health impact of unsafe abortion is directly linked to its legal status. . . . Reliable public health evidence and the application of human rights guarantees provides a compelling rationale for challenging abortion bans and other restrictions.

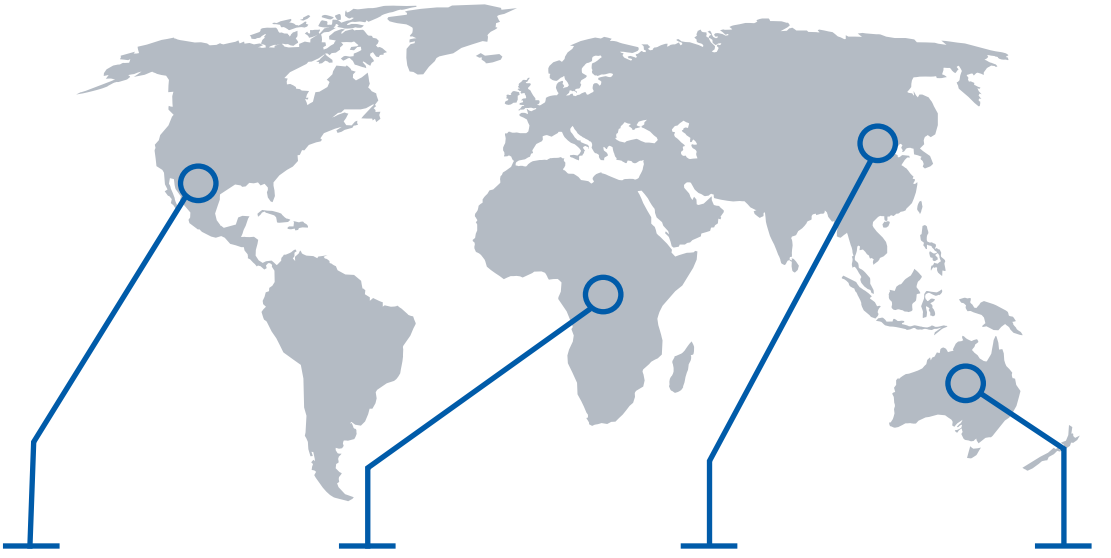
From AJPH, *April 2013, pp. 586–587, passim*

9 Years Ago

Decriminalization of Abortion in Mexico City

In April 2007, the Mexico City, Mexico, legislature passed landmark legislation decriminalizing elective abortion in the first 12 weeks of pregnancy. The law included a provision that abortion services be available to women in Mexico City . . . Ministry of Health . . . facilities in the city, free of charge for Mexico City residents. . . . Shortly after being passed, the law was challenged in the Mexican Supreme Court by groups opposed to the legislation, but in August 2008, the Supreme Court voted to uphold the law. . . . Although Mexico City's abortion legislation is an important first step to improve women's reproductive health and rights in Mexico, the continued restrictive abortion legislation in the states of Mexico and the conservative backlash will likely result in the persistence of unsafe abortions in Mexico's states and the criminalization of women who seek abortions.

From AJPH, *April 2013, pp. 590–592, passim*



Barriers to Accessing Abortions in Mexico

Mexico

Abortion access and barriers vary by state in Mexico. Veldhuis et al. conducted 14 semistructured interviews of people accompanying women seeking abortions to identify the most frequent barriers to accessing abortions in 2 Mexican states with restricted access (Baja California and Chiapas) and in Mexico City, where abortion is legal up to 12 weeks of gestational age. The authors identified 4 important barrier categories: (1) lack of information, persistence of stigma, influence of the legal framework, and flaws in abortion care; (2) poor quality of services provided and verbal abuse, conscientious objection, and complaints from health care providers; (3) intimidation, physical blocking of access, and antichoice groups' misinformation strategies; and (4) privileged access for women with economic, logistic, and social resources. This study highlights the current inequality in access to abortion in Mexico.

Citation. Veldhuis S, Sánchez-Ramírez G, Darney BG. "The system is still precarious." Barriers in access to medical abortion: the experience of accompanying persons in three regions of Mexico [in Spanish]. *Cad Saude Publica*. 2022;38(4):ES124221. https://doi.org/10.1590/0102-311XES124221

Prevalent Intimate Partner Violence Linked to Pregnancy Termination in Sub-Saharan African Countries

Sub-Saharan Africa

Arthur-Holmes et al. used data from the Demographic and Health Surveys of 25 countries in sub-Saharan Africa to estimate the association between intimate partner violence and pregnancy termination. The prevalence of intimate partner violence and pregnancy termination were 40.8% and 16.5%, respectively. Compared to women who had never suffered intimate partner violence, women who suffered intimate partner violence had higher odds of pregnancy termination (adjusted odds ratio = 1.56; 95% confidence interval = 1.51, 1.61). This association was consistent for all countries except Sierra Leone and Namibia. The high prevalence of intimate partner violence found in this study underscores the need for policies that protect women in sub-Saharan Africa.

Citation. Arthur-Holmes F, Aboagye RG, Dadzie LK, et al. Intimate partner violence and pregnancy termination among women in sub-Saharan Africa. *J Interpers Violence*. 2022; Epub ahead of print. https://doi.org/10.1177/08862605221098405

Chinese Women Requiring Mental Health Interventions After Abortion

Beijing, China

Zhang et al. surveyed 253 women seeking a first-trimester induced abortion in a tertiary hospital in Beijing, China, between April and October 2021. The prevalence of high perceived stress and depressive symptoms was 25.3% and 22.5%, respectively. High stress was associated with low resilience (adjusted odds ratio [AOR] = 16.84; 95% confidence interval [CI] = 5.18, 54.79), no use of contraceptives (AOR = 3.27; CI = 1.39, 6.29), low social support (AOR = 2.95; CI = 1.39, 6.29), intimate relationship dissatisfaction (AOR = 2.44; CI = 1.15, 5.16), and pro-life attitudes (AOR = 1.04; CI = 1.18, 3.53). Depression was associated with high perceived stress (AOR = 19.00; CI = 7.67, 47.09) and higher education (AOR = 12.28; CI = 1.24, 121.20). Mental health does influence the decision to undergo an abortion in China.

Citation. Zhang Q, Wang N, Hu Y, Creedy DK. Prevalence of stress and depression and associated factors among women seeking a first-trimester induced abortion in China: a cross-sectional study. *Reprod Health*. 2022;19(1):64. https://doi.org/10.1186/s12978-022-01366-1

Climate Warming and Seasonal Mortality

Australia

Hanigan et al. applied a simple, novel metric to measure the annual ratio between summer and winter deaths in Australia over a 51-year period to assess whether the balance of seasonal mortality has changed concurrently with climate warming. The authors restricted analysis to participants 55 years and older and stratified them by location (state), sex, age group, and cause of death. The summer to winter mortality ratios increased significantly across all groups, with an overall rate of 3.82% per decade (95% confidence interval = 3.65%, 4.00%). The ratio of summer to winter mortality increased from 0.73 in 1969 to 0.83 in 2018. This study documents the long-term impact of climate change on patterns of human mortality. The findings are relevant to adaptation and resource allocation planning, and the study design can be transferred to other geographic regions and outcome types.

Citation. Hanigan IC, Dear KBG, Woodward A. Increased ratio of summer to winter deaths due to climate warming in Australia, 1968–2018. *Aust N Z J Public Health*. 2021;45(5):504–505. https://doi.org/10.1111/1753-6405.13107

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The Old Foe Syphilis Strikes Again: Social Responses and Collective Mobilization

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See also Kosenko and Polianski, p. 1318.

Syphilis is an ancient sexually transmitted spirochetal infection that causes a wide variety of clinical outcomes, including severe disability and death.[1] At various times over the course of human history, syphilis has become so common in selected countries that it attracts great public attention. In this issue of *AJPH*, Kosenko and Polianski (p. 1318) review the use of unique communication tools to attract attention to syphilis in the first half of the 20th century in the USSR and the United States. They describe the use of stage plays called "Living Newspapers," which the Federal Theater Project organized during the Great Depression in the United States.

The eponymous *Spirochete* Living Newspaper was launched in 1938 as part of a broader project to enhance public engagement in syphilis control. During this period, the United States was in the throes of a syphilis epidemic that affected approximately 1 of every 10 Americans.[2] A total of 63 600 Living Newspaper performances were organized on approximately 153 stages. For many people, this was likely the first time that they had seen the word "syphilis" on a printed page and the first time that they had ever been to a live theater performance. The *Spirochete* Living Newspaper had two major components: one focused on biological aspects of syphilis (e.g., transmission, treatment, origins) and the other on social implications (e.g., the effect of syphilis on marriage).

The Seattle, Washington, *Spirochete* Living Newspaper organizers provided syphilis testing in the theater entryway, providing a concrete way to link the arts to public health programs. The Living Newspaper also drew on a whole-of-society approach that brought together artists, journalists, medical communities, and civil society groups. One local version of the Living Newspaper in Washington was sponsored by the Ladies Auxiliary of the King County Medical Society, which reserved a large block of tickets for their members.[3] These multisectoral partnerships subsidized the price of tickets or made them free in many cities, making the performance available to all walks of life. This synergized with the large-scale antisyphilis campaign orchestrated by US surgeon general Thomas Parran to mobilize communities against syphilis.[2] The campaigns encouraged people to talk about syphilis and stop the shame associated with having syphilis and being tested for it. At the same time, the 1930s campaign to confront syphilis was certainly compromised by the lack of available, affordable, and effective treatment. The subsequent use of penicillin to cure people with syphilis starting in 1941 and the mass production of a pure form for clinical use was critical to the success of public health interventions.[4]

The Living Newspaper approach to widespread syphilis awareness resembles other public strategies in which syphilis control was heavily prioritized and collectivized. The original Living Newspaper was a product of the Soviet Republic and was transplanted to US soil under the direction of Hallie Flanagan. Her initial impressions of the Soviet Union directly informed her subsequent Vassar Experimental Theater and the later US government–funded Federal Theater Program. In addition, the virtual elimination of syphilis in China was a centerpiece of the early years of Mao Zedong's leadership.[5] Similar to those of the Soviet Union and the United States, Chinese propaganda and public education were scaled up and disseminated broadly throughout the population. Syphilis was blamed on foreign interests ("the running dogs of capitalism"), and extensive syphilis screening and treatment were mandatory and patriotic. The push toward syphilis control was also explicitly a class struggle. Red-light brothel districts were dismantled and female sex workers were given penicillin.[6]

Although Kosenko et al. describe unique communication strategies in a time before television and the Internet, there are several interesting parallels between the 1930s Living Newspapers and modern syphilis control efforts. First, Living Newspapers were perhaps the first campaign to suggest that knowing about syphilis was not only an obligation of high-risk individuals but also the responsibility of the entire community. Although the extent to which this entirely destigmatized syphilis testing is not well understood, this likely decreased barriers to syphilis testing among a large number of people considered at low risk. Collective community responses to counter syphilis and other sexually transmitted infections have been developed in the past three years, including crowdsourcing open calls[7] and participatory designathons.[8] Greater attention to collective mobilization to support syphilis control at the community level is needed.

Second, the 1930s democratization of syphilis knowledge through low-cost or free theater performances suggests how designing for marginalized groups can help reach them over time. Third, the social justice mission of the original Living Newspapers is echoed in research and programs focused on health equity related to syphilis. The problem of syphilis is deeply embedded in intersectional power differences that require attention to social justice. Finally, syphilis has not disappeared; there has been a worldwide explosion of new cases, including a dramatic increase in congenital syphilis cases.[9,10]

Despite China's remarkable virtual elimination of syphilis in the 1960s, the country could not sustain its success.[9] In the United States, there were 2148 (57 cases per 100 000 live births) congenital syphilis cases in 2021.[10] And syphilis prevalence has increased in many other countries.[11] The resurgence of syphilis has not gone unnoticed, and many communities have marshaled 21st-century communications tools in public campaigns to increase testing and treatment. Online platforms have been used to promote syphilis self-testing approaches in which kits are mailed to individuals, who can then test themselves and interpret their results. Digital crowdsourcing strategies have been used to develop public health interventions focused on increasing syphilis test uptake.[7] This suggests the importance of public engagement to promote understanding of syphilis within communities and spur testing. AJPH

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CONTRIBUTORS

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#MeToo in South Korea: Public Health Meets a Global Movement

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See also Kim et al., p. 1337.

In 2006, Tarana Burke coined the hashtag #MeToo to foster solidarity among women who had experienced gender-based violence. Eleven years later, in 2017, #MeToo went viral in response to sexual assault allegations against director Harvey Weinstein.[1] Across the world, individuals shared their stories of experiencing gender-based violence and harassment; as of December 2019, the hashtag had more than 24 million impressions.[1] Sexual violence is not regularly framed as a social determinant of health, even though the literature linking sexual violence to mental health outcomes such as depression, anxiety, and eating disorders is abundant.[2] The momentum resulting from #MeToo prompted a larger question: could a global social movement potentially play a role in improving mental health outcomes for victims of gender-based violence?

Kim et al. (p. 1337) provide one of the first contributions on this subject by analyzing the potential effect of #MeToo on mental health among South Korean women. Using a cohort from the Korean Longitudinal Survey of Women, the authors used data from 2012 to 2019 via a difference-in-differences technique to model depressive outcomes before and after the emergence of #MeToo. South Korea has one of the most advanced economies worldwide but also has a lower gender-equality rating than what would be expected.[3] The wage gap in South Korea is the highest among Organization for Economic Co-operation and Development nations, with women earning 67.5% of wages earned by their male counterparts.[3] South Korea, alongside multiple nations worldwide, was not spared from the political pressure that resulted from #MeToo. As allegations of sexual misconduct emerged, legislators resigned because of public outrage.[4] The disruption also resulted in legislative changes. In 2018, the South Korean government increased both maximum sentence time and the statute of limitations for sexual harassment and sex crimes involving abuse of power.[4] However, some of the discourse surrounding #MeToo in South Korea has received pushback and spurred support for men's rights groups.[5]

#MeToo AS A FAVORABLE HEALTH EXPOSURE

The authors' findings suggest that the #MeToo movement had a beneficial effect on depressive symptoms among female survivors of gender-based violence. In this study, #MeToo is operationalized as a society-level macroenvironment. The diversity of the study's sample population, which consisted of women aged 19 to 50 years from varying socioeconomic backgrounds and household sizes, strengthens the validity of the results. To our knowledge, these findings are the first of their kind; before this study, the longitudinal effect of #MeToo on mental health had not been assessed. While models do not definitively establish causality, the temporal effect captured by the results raises questions as to whether social movements can improve mental health outcomes, and, if so, what mechanism drives this causal pathway.

One of the key findings of this study is the consistency of #MeToo's effect on depressive symptoms across socioeconomic status. Worldwide, economic class is a key determinant of gender-based violence.[6] Multiple human rights organizations have documented cases of lower-class women being exploited by employers and subjected to gender-based harassment and violence.[7] Many laws that aim to protect individuals from such conduct do not reach either those who depend on their employer for immigration sponsorship or those who have entered the country through undocumented circumstances. As per the socioeconomic gradient of health and empirical evidence,[6] women in lower economic strata have the least access to medical resources; in the event of sexual violence, immediate medical attention and long-term care might not be possible. Furthermore, lower-income individuals who experience gender-based violence bear an increased risk of depression because of lower social support.[6] The authors' results concerning how #MeToo resonated across economic class confirm the widespread prevalence of

gender-based harassment. The findings also speak to the power of a movement that appeals to a broad population, transcending socioeconomic strata.

SUGGESTED MECHANISMS

Kim et al. propose multiple mechanisms through which #MeToo could have affected depressive symptoms. One of them is #MeToo's role in destigmatizing gender-based violence. Social stigma remains a key driver in normalizing sexual violence, potentially lowering reporting rates; it has also been shown to worsen mental health disorders that result from gender-based violence.[8] Encouraging discourse and acknowledging the issue's prevalence could have an impact on both the isolation and lack of support survivors typically experience. As the authors mention, #MeToo in South Korea gained traction after an interview in which a female prosecutor publicly revealed the sexual harassment she had experienced, an event the authors characterized as "unprecedented." Such an event could disrupt a stigmatizing environment, which enforces self-isolation and self-blame.

Kim et al. also suggest that social support fostered by sharing narratives publicly could positively affect mental health. This is substantiated by the Christakis and Fowler framework, which highlights the significance of social ties with respect to health.[9] Analyses modeling happiness and obesity have indicated how social networks can facilitate spread of noncommunicable outcomes.[9] In this case, survivors of gender-based violence share a common exposure. This could, in turn, result in the formation of social clusters and the "spread" of lowered depressive symptoms. The formation of online social ties and support groups could assist with obtaining resources and long-term healing. This phenomenon has previously been observed in multiple health outcomes, including opioid use disorder.[10] Information seeking is also considered a coping mechanism against high stressors. If survivors sought to mediate depressive symptoms by using the Internet for resources, the increased mainstream media coverage from #MeToo would present optimal conditions for information seeking.

Kim et al. also raise questions on the effect of larger, more dynamic environments on global health. A whirlwind event in a single locality could reach the Internet, initiate mobilization, and have no geographical limits. In the case of #MeToo, the hashtag was translated into more than 20 languages and transcended nations and cultures.[1] Gender-based violence was reframed as a global health issue by academics,[11] and public health agencies faced more pressure to acknowledge gender-based harassment as a health determinant. If stigmatized social issues received increased attention globally, the resulting discourse—and effects on mental health—could be beyond an imaginable scale.

There are multiple ways to move forward. The authors recommend additional legislation to address gender-based violence, which would indirectly benefit mental health outcomes. This holds modern relevance: COVID-19 lockdowns were marked by increased rates in gender-based violence.[12] But as supported by the authors' results, macroenvironments operate as drivers with respect to mental health. Actively working toward destigmatizing social issues, shifting the dominant narrative, and providing widespread support could be not just helpful with respect to human rights but also instrumental in shifting global health outcomes at large. AJPH

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Reducing the Iatrogenesis of Police Overdose Response: Time Is of the Essence

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See also White et al., p. 1326.

In their article in this issue, White et al. (p. 1326) use a novel data source to provide insight into the police response to 911 calls for opioid overdose. They analyzed the body-worn camera footage of 168 police overdose responses over a 15-month period in Tempe, Arizona, with notable results: after a mean response time of 5:01 minutes, police arrived in advance of medical personnel 73.7% of the time, administered naloxone in 74.1% of the cases, and performed cardiopulmonary resuscitation on 33.5% of the victims. None expressed false beliefs about accidental fatal fentanyl exposure.[1] Officers arrested six overdose survivors and two bystanders for felony warrants (3.6% and 1.2% of cases, respectively), but declined to arrest eight victims who had warrants for less-serious charges. There was a 94.6% survival rate associated with these incidents, although it is impossible to tell how many people would have died were it not for a police response.

THE PROMISE AND PERILS OF POLICE OVERDOSE RESPONSE

In a nation with fatal opioid overdose rates that have shattered all historical records, these data suggest a distinct role for police in opioid overdose reversal. Seconds count, not only to reduce mortality but also to minimize the sequalae of overdose, which can include hypoxic or anoxic brain injuries. While police often respond faster than medical personnel in rural settings with few resources spread over a large area,[2] the study by White et al. shows they also often respond faster in a well-funded urban environment with a population of more than 191 000 residents. Officers responded quickly, acted decisively, and properly administered naloxone (although they frequently administered a second dose too soon, which can unnecessarily intensify withdrawal). The results suggest that in Tempe police have saved people from overdose death and that police departments are positioned to do so elsewhere.

The study is not an unqualified endorsement, however. We do not know from the data how many people never called 911 for fear of arrest on a warrant or for new charges, or because they distrust police, all of which people who use drugs report to be considerable barriers.[3] Arizona's Good Samaritan Law protects callers and victims from arrest for a range of offenses, but not for warrants, or for probation or parole violations. Among the other disruptions caused by arrest and incarceration (such as delays in accessing care and treatment), they can send people with opioid use disorder into a painful state of withdrawal, unpredictably alter their tolerance for opioids, and significantly increase their risk of fatal overdose upon release,[4] an ironic consequence of calling 911 to save a person's life.

As with other outcomes in policing and health, the iatrogenic effects of a police overdose reversal stand to be much more acute for minorities and the economically disadvantaged, as both demographics are more likely to have the warrants and violations that yield arrest because of the systemic disparities in our criminal justice system.[5] A police overdose response coupled with opportunistic enforcement will further exacerbate these problems, and 37% of the overdose victims in the Tempe study were Black or Latinx.

This suggests that we should use caution in prioritizing the police for increased naloxone distribution if there are more effective alternatives. In that vein, evidence calls for an expansion of community naloxone programs for laypeople, especially ones that serve those most likely to be present at an overdose. They are positioned to provide the fastest possible administration of naloxone, further increasing the odds of a successful overdose reversal without lasting effects. Models show that community distribution of naloxone is most effective at saving both lives and money, followed by distribution to first responders,[6] while lessening disparate collateral consequences. If the goal is to have naloxone present

at 80% of witnessed overdoses, another recent model found Arizona to be the only state among the 12 studied with adequate supplies of the medication on hand.[7] A firm focus on mortality reduction therefore suggests community naloxone distribution at the right focal points should be a top priority, with police programs as a secondary complement. In the meantime, one of the critical things that states can do is promptly enact strong Good Samaritan Laws for overdose victims and 911 callers. Doing so would unambiguously instruct police to emphasize saving lives over arrest by codifying it in statute. The law in Arizona is stronger than some, but it falls short of those in at least seven other states that prohibit arrest in the widest range of cases, including for probation and parole violations.[8]

THE POTENTIAL OF PROACTIVE INNOVATION AND REFORM

Until such laws are enacted, nothing prevents police departments from proactively turning guidance into formal policy. A majority of officers surveyed in multiple states report substantial or near-complete discretion in making misdemeanor arrests during encounters with people who use drugs,[9] Tempe police leaders de-emphasize arrests during overdose response in their training, and officers in the study sample declined to arrest more than half of the overdose victims found to have active warrants. Although police should not be expected to ignore felony warrants for violent crimes, the use of discretion in warrant enforcement is not uncommon in municipal agencies.[5] Formal policies that prohibit arrests for misdemeanor warrants or a failure to appear in court would establish clear norms and expectations. Such de facto policies in advance of de jure changes to the law would not be entirely unheard of: as a lifesaving measure, law enforcement officials in Burlington, Vermont, and Philadelphia, Pennsylvania, adopted a categorical policy of not arresting people for the misdemeanor possession of the unprescribed addiction medication buprenorphine in 2018,[10] three years before Vermont and Rhode Island formally struck the relevant statutes from their penal law.

As police pursue naloxone programs, their leaders should carefully consider the powers and challenges of the police role. Of all the public actors who could effectively respond to an opioid overdose at present, they are among the best situated, but also the only ones with the power of arrest. In the context of an acute health emergency, it is a power that seems unnecessary and misplaced. If any other system were just as widespread and well-funded, it could replicate a police response with none of the iatrogenesis unique to policing. But data from Illinois I am preparing for publication show that 69.2% of the 224 police officers surveyed agreed that "carrying naloxone to reverse opioid overdoses is a police officer's duty," a sentiment echoed by previous research into officer attitudes and beliefs in Tempe.[11] If it is a duty the police intend to honor, police departments need to reconcile the inherent tension between their lifesaving and law enforcement roles. To truly maximize the potential of first-responder naloxone programs, officers need to gain the trust of 911 callers and encourage bystanders to seek help without hesitation or fear.

As public servants in a society that has reflexively criminalized nearly all aspects of substance misuse and addiction, police appear to have backed into the role of overdose response by virtue of proximity rather than design. If police executives are ready to truly abandon our failed war on drugs, then they should use a public health lens to formulate a police response to opioid overdose that places harm reduction over arrest with fidelity and persistence. Given the nation's staggering overdose death toll, it is relatively low-hanging fruit at a moment when we have no time to spare. AJPH

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Whose Concerns? It's Time to Adjust the Lens of Research on Police-Involved Overdose Response

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See also White et al., p. 1326.

In their article "Leveraging Body-Worn Camera Footage to Better Understand Opioid Overdoses and the Impact of Police-Administered Naloxone," White et al. (p. 1326) creatively use body-worn camera footage—a previously unused data source—to support the following findings of previous research: (1) police can administer naloxone during an overdose, (2) combativeness toward first responders by overdose survivors is rare, (3) drug exposure is not a risk to police officers, and (4) arrests do occur at the scene of overdose emergencies as the result of police presence.[1,2]

Although we recognize this article's contribution to the growing literature on law enforcement involvement in overdose response, we would caution policymakers about using the findings of this study to bolster (or worse, solely rely on) the role of police in overdose response. The fact that police-administered naloxone is feasible and necessary does not mean that police response to overdose should be framed as a "potentially effective" response to opioid overdose. This is because police involvement in overdose response introduces new risks of harm, and the risks are potentially greater among Black and Indigenous people who may witness or experience an overdose.

NEW RISKS OF HARM

In keeping with the findings of other studies, White et al. demonstrate that police officers are able to administer naloxone to reverse opioid overdose and save lives; they therefore conclude that "the concerns over police-administered naloxone are overstated" (p. 1326). This is true only if the concerns of police are considered.

Research has consistently demonstrated that a concern about police involvement is the most significant barrier to people who use drugs (PWUD) seeking help during an overdose—often rendering a call to the emergency telephone number 911 an act of last resort.[3] These concerns are not misplaced. A recent study of more than 2800 US patrol officers found that officers who had responded to at least one overdose in the previous six months were just as likely to report making an arrest at the scene as they were to report administering naloxone during the study period.[4] That any person who overdoses or calls 911 for help with an overdose might be subject to arrest is cause for serious concern.

Arrest, harassment, or abuse at the scene of an overdose is a portion of the risks PWUD face when seeking help: drug-induced homicide charges following an overdose event are also reason to avoid calling 911.[5] Drug-induced homicide laws generally allow prosecutors to charge someone with homicide or murder for supplying a drug that is allegedly implicated in an overdose death. Police investigations of fatal overdoses as homicides are also becoming the norm. Importantly, drug-induced homicide arrests are not generally performed at the scene of the overdose but upon receipt of a finalized toxicology report furnished by a medical examiner, which can take many months to produce. When reporting arrests following overdose events, researchers must consider the length of time covered in their follow-up search to avoid excluding drug-induced homicide arrests from the findings.

White et al. document that arrest—of both overdose victims and other bystanders—does indeed occur. Thus, their conclusion that concerns about police-administered naloxone are "overstated" is dismissive of the most problematic and disruptive concern examined in the study. The concerns of overdose bystanders who summon help during overdose emergencies,

often PWUD, warrant privileged consideration. Research on police involvement in overdose response must address the widely documented concerns for police involvement and preference for nonpolice overdose response.

PWUD are responsible for the vast majority of overdose reversals. Even in cases when police beat emergency medical services to the scene, the person who called 911 is already on the scene. So why not focus policy efforts on ensuring that PWUD and friends and family members of PWUD have access to naloxone? Recent research suggests that all 50 US states distribute naloxone at quantities well below that needed to ensure sufficient naloxone saturation.[6] Resources currently dedicated to scaling up police involvement in overdose response (especially state and federal resources dedicated to police-assisted recovery programs and police-involved postoverdose outreach) would be better spent ensuring that PWUD are sufficiently empowered to access and administer naloxone themselves.

DISPROPORTIONATE RISKS

Black and Indigenous people are disproportionately affected by overdose.[7] They are also disproportionately affected by police violence and more likely to die at the hands of law enforcement than are their White counterparts.[8] Black and Indigenous PWUD are at greater risk of excessive use of force by police, with one study finding that, compared with the general population, the risk of being injured by police was 40% higher among people with alcohol use disorder and 80% higher among people with another kind of substance use disorder.[9]

Although there are some legal protections afforded to persons who call 911, they often fall short of offering protection from arrest. For example, 911 Good Samaritan laws (also called 911 drug immunity laws) are state laws designed to increase the likelihood of calling 911 to ensure rapid access to naloxone during an overdose emergency. These laws provide limited immunity from arrest, charges, or prosecutions for possession of paraphernalia or controlled substances for the individual who calls 911 or is experiencing an overdose. The disproportionate risk of violence at the hands of police is a powerful deterrent to inviting law enforcement interaction (specifically by calling 911)—one that cannot be resolved by the limited protections provided by most 911 Good Samaritan laws.[10] Furthermore, drug-induced homicide investigations not only directly undermine the protective mechanisms of 911 Good Samaritan laws[5] but are also disproportionately used against non-White persons—and almost exclusively in response to the preventable overdose deaths of White persons.[11]

Disproportionate policing, police violence, and incarceration of Black and Indigenous persons affect these groups' access to overdose prevention interventions, broadly, and to naloxone, specifically, especially in cases when the nearest available naloxone rests in the hands of police. Black and Indigenous people have the highest fatal overdose rates and are least served by resource allocations that further support police involvement in overdose response. Until methodologically sound and Black and Indigenous PWUD–informed research indicates otherwise, policymakers and resource allocation decision-makers should consider any life-saving gains via police-involved overdose response to be disproportionately unavailable and inaccessible to Black and Indigenous people.

CONCLUSIONS

The acceptability, availability, and willingness among PWUD, particularly those who are Black and Indigenous people—as well as cis-women, trans people, and nonbinary people of all races—to utilize overdose prevention interventions delivered via public health–public safety partnerships warrant research. One effective way to achieve this is to engage in community-driven research with PWUD that places PWUD who are Black or Indigenous in meaningful and influential roles on research teams.

Policy and public health decision-makers should consider that promoting the role of police in overdose response consumes a considerable proportion of resources and may not necessarily indicate a best practice or policy. Any resource allocation to police-involved overdose response without ensuring naloxone saturation among PWUD and their social networks will not yield the full protective effects of naloxone distribution and will not bend the curve of overdose death in this country. AJPH

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Abortion Care Is Health Care: A Public Health of Consequence, September 2022

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See also Abortion, pp. 1273–1317.

In this issue of *AJPH*, we present reprints of five key articles on abortion care trends and related outcomes highlighting how the recent Supreme Court decision to overturn *Roe v. Wade* will erode access to an essential health care service, roll back progress in ensuring reproductive justice for all, and likely have significant and harmful impacts on population health in the United States for generations to come. This Public Health of Consequence provides updates on two of these publications—one on abortion care trends and one on the prosecution of pregnant women in light of the Supreme Court's recent decision.

ABORTION CARE TRENDS: 2008–2014

In 2017, Jones and Jerman reported a 25% overall reduction in abortions between 2008 and 2014 (see p. 1284 of this issue).[1] Specifically, among adolescents aged 15 to 17 years, there was a 56% reduction in the abortion rate, and among young adults aged 18 to 19 years, a 41% reduction. By race and ethnicity, declines among Black and African American women (32%) and Hispanic/Latina women (36%) were highest compared with other racial and ethnic groups. For women with one prior birth, abortions decreased by 31%, whereas women with two or more births saw a 24% decrease. Finally, although poor women saw a 26% decrease, women living at or above 200% of the poverty level saw a 36% decrease in abortions.

Despite the fact that a majority of Americans support abortion care rights, conservative state legislators, in power as a result of blatant voting restrictions and gerrymandering, were quick to claim victory for decreases in abortion as a product of the increasing number of restrictions enacted during this time period (https://bit.ly/3xz6Dzj). In fact, between 2011 and 2015, conservative state legislators enacted 288 restrictions on women seeking abortion care (e.g., 24-hour waiting periods, mandatory counseling, bans on abortions after the first trimester, and banning medication abortion) as well as on abortion care providers (most commonly referred to as "targeted regulation of abortion providers," or TRAP laws, that mandated a number of unnecessary and onerous burdens on providers; https://bit.ly/3NYKZLM). Unsurprisingly, the 10 states that passed 60% of these 288 laws were in the South and Midwest.

But a look at the broader context within which these declines occurred reveals multiple factors driving the reduction in abortion rates between 2008 and 2014. First, this time period follows the Great Recession of 2007–2009, when a housing crisis and an employment surge collided in the United States. Although these economic shocks impacted the entire country, they created greater economic hardship and uncertainty for people already living in poverty and for people of color. Thus, it is possible that declines in overall fertility were related to the recession, particularly fertility among adolescents,[2] women already living in poverty, and women who already had children.[3] Second, use of long-acting reversible contraception increased from 6% in 2008 to 12% in 2012.[4] Third, women residing in Medicaid expansion states had greater access to contraception as part of their insurance coverage than did women in nonexpansion states. The combination of these latter two factors also played a role in reducing overall rates of unwanted pregnancies and abortions during this period. Finally, despite the implementation of abortion care restrictions, there was no concomitant increase in the birth rate, signaling that women recognized that having a child or more children during an economic crisis was untenable and chose to delay childbearing.

ABORTION TRENDS: 2017–2020

Fast forward, and newly released findings from the Guttmacher Institute show that the downward trajectory in abortion care reversed in 2017. Between 2017 and 2020, there was an 8% overall increase in abortions (https://bit.ly/3Ok8gYk) among women aged 15 to 44 years. However, these increases were not consistent across states. For example, in some states with increasing abortion restrictions that saw decrease in abortion rates (e.g., Missouri), their neighboring states (e.g., Illinois) saw significant increases. Next, in Medicaid expansion states, coverage for abortion care allowed women living in poverty to access timely abortion care compared with those living in non-expansion states, which offers another explanation for the increasing rates of abortion care.

Again, as we saw in the period between 2008 and 2014, changes in more recent abortion care policies and restrictions occurred against the backdrop of a period of great social, political, and economic tumult exacerbated by the COVID-19 pandemic. Growing income inequality as the proportion of people working in part-time and gig positions grew and wages stagnated, which was further fueled by job loss and layoffs as the COVID-19 pandemic wore on. Adding to this burden, increasing costs of rent and housing, as well as increases in the cost of basic goods, further entrenched women and families in poverty. This period also saw growing and necessary social unrest and response to indiscriminate and ongoing police brutality against Black people, Indigenous people, and People of Color and a rising tide of anti-Asian hate crimes and violence. So, it is hardly surprising that more women chose to delay childbearing during a time when their lives and ability to take care of children was unpredictable.

JANE CROW AND THE RIGHTS OF PREGNANT WOMEN

In 2013, Lynn Paltrow, founder and executive director of the National Advocates for Pregnant Women, wrote an alarming and yet prescient piece describing the increase in criminal prosecution of pregnant women. Specifically, Paltrow described several cases illustrating how state prosecutors employed murder and manslaughter laws to arrest and prosecute pregnant women who had abortions, miscarried, had a stillbirth, or were unable to ensure a viable birth (see p. 1313 of this issue).[5] Paltrow also describes the abject and inhumane conditions under which women arrested or in jail while pregnant are forced to give birth.

Today, Paltrow's predictions may become a reality. Per the National Conference of State Legislatures, 38 states have conferred rights and protections to fetuses by granting them personhood (https://bit.ly/3zNswO5). In 29 of these 38 states, fetal homicide laws apply as early as conception, fertilization, or postfertilization, and exemptions for abortion are noted in only about one third of these states. With their ruling in *Dobbs v. Jackson Women's Health Organization*, the Supreme Court ruled that the US Constitution does not confer a right to abortion and exemptions for abortion-related care will no longer hold, and, in any state where personhood begins at fertilization, women are at risk for criminal prosecution for murder or manslaughter. States such as Oklahoma and Texas, where six-week abortion bans are in place, have taken this even further by allowing civil suits against not only providers of abortion care services but also any individual assisting a woman seeking abortion care. Indeed, as portended by Paltrow, the right of pregnant people to liberty and privacy and their basic human rights are rapidly being stripped away across a large swath of America. In its place, a culture of fear, of stigmatization, and of endangering the lives of women and their families is taking hold that will undoubtedly impact those who are already socially and economically vulnerable.

THE TWO AMERICAS OF REPRODUCTIVE JUSTICE

With the overturning of *Roe v. Wade*, it is expected that up to 15 states will fully prohibit abortions and another 10 will ban abortions between the first trimester and up to viability (23 weeks of gestation). But it is critical to note that these prohibitions reflect the actions of conservative legislatures and governors. Such hardball political tactics often affect even politically moderate communities represented by extremely conservative legislatures that do not reflect the needs or wants of those communities. And these political and legal hurdles will curtail not just access to abortion care but also access to comprehensive sexual and reproductive care as clinicians either opt out of practicing in these restrictive settings or provide substandard care for fear of prosecution.

Ever since the leak of the draft decision in *Dobbs v. Jackson Women's Health*,

a number of state legislators and governors have reaffirmed their commitment to supporting abortion care rights and reproductive justice. As of this writing, a number of states are stepping up to enhance and, in some cases, enshrine constitutional protection for abortion care. States such as California and New Jersey are seeking to become sanctuaries for women seeking abortion care, whereas others, such as Connecticut, are enacting laws to protect women and providers from civil lawsuits brought by out-of-state residents. A number of these state legislatures are also seeking to enshrine reproductive rights via amendments to their state constitutions. Finally, expansion of access to comprehensive sexual and reproductive health care by expanding insurance coverage for these services is being proposed in several states.

In this moment, as we bear witness to nearly 50 years of abortion care rights vanishing, the public health community must advocate for the restoration of policies that support abortion care as a component of comprehensive sexual and reproductive health care. Even as forces shape and reshape abortion care rights and the broader landscape of reproductive rights across the United States, people will continue to seek access to abortion care, whether it is legal or not. So, rather than despair at what we have lost, this is a call to action. The public health community must support anyone who seeks an abortion as well as individuals who provide them with guidance and assistance, fight to safeguard and normalize the right to abortion care in those states where it is still legal, and support organizations that provide medical and legal assistance to people seeking abortion care. How we stand up now will serve as a measure of how we protect reproductive justice and the health of our population in the United States. AJPH

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Could Health Plan Co-Opetition Boost Action on Social Determinants?

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Co-opetition in the business world refers to a situation in which competing private firms find it mutually beneficial to cooperate under specific conditions in an effort to jointly finance certain activities for a common purpose that benefits each firm.[1] In our view, encouraging health insurers to apply this business approach to community health, where it is generally unfamiliar, may be a key to tackling social determinants of health (SDOH).

It is well understood that social services, quality housing, food, and other services are important SDOH. These upstream factors are typically addressed by various community-based organizations (CBOs), including nonprofit social service organizations and local government agencies, whose effectiveness in improving health hinges on how well CBOs and health insurers coordinate referrals, services, funding, and data. Effective coordination requires a smoothly functioning and adequately financed health and social service ecosystem infrastructure built on local trust among CBOs and between CBOs and clients, as well as managerial competence to track referrals and outcomes. Infrastructure encompasses both information exchanges (e.g., Unite Us, Healthify, findhelp, CIE San Diego)[2] and network curators (e.g., community health clinics, Area Agencies on Aging) facilitating contracting and outcome reporting.

Less well understood is the reality that both social services and the ecosystem's infrastructure have properties resembling public goods. This means that an investor's competitors and multiple downstream stakeholders can benefit from services and infrastructure without contributing to their cost and cannot easily be prevented from benefiting from others' investments.[3] This "free rider" problem discourages investors and helps explain the relative lack of investment in SDOH services and infrastructure in comparison with health care delivery systems; organizations are reluctant to invest if their competitors also benefit.

Underinvestment in social services and underinvestment in effective infrastructure are related. Insufficient infrastructure means that the search, contracting, and outcome data management costs of SDOH service delivery for CBOs and health insurers alike are higher than necessary. Therefore, less than ideal social services are delivered, and many social service needs go unmet. Meanwhile, because most infrastructure costs are fixed and unit costs fall with referral service volume, insufficient service flow raises the unit cost of infrastructure, and the high-cost cycle reinforces itself.

Public funding might seem to be the solution. That could make sense to the extent that there are broad public benefits in tackling SDOH. However, public investment would also generate free rider private returns for each health plan using the infrastructure. With the usual constraints on public funds, the potential public and private value is unlikely to be achieved.

Two types of private "solutions" have arisen. One is for large health insurers to fund the technology referral platform part of the infrastructure on their own and restrict use of it to their enrollees. Kaiser Permanente's contract with Unite Us is perhaps the most ambitious example. But it is very costly for CBOs to use different client referral systems for different insurers. In addition, the value of the platform itself is a function of the breadth of the CBOs connected with it, which is maximized only with a community-wide approach. Finally, Kaiser, Unite Us, other insurers, and technology vendors are all learning that effective infrastructure is technology combined with trust, the kind of client trust that CBOs and their network curators have and that does not transfer easily to large health plans or new technology vendors.[4]

The other emerging "solution" is private equity financing the technology platforms' development and spread, with the hope of becoming local or statewide monopolies and then capturing the value from timely social service delivery through connection and referral transaction fees. This approach is gaining momentum but risks ignoring the key local trust dimension of infrastructure. It has also led to quicker referrals without funding to pay for longer social service waiting lists

(for housing in particular) because the art of braiding and blending separate programs' funds is not yet capable of closing important service gaps. Moreover, insurers do not like paying unregulated monopoly prices for ecosystem referral services and will soon find ways to compete with technology vendors that attempt to capture value in this way. This will lead to duplicative infrastructure costs and redundant capacities.

We argue instead that a collaborative private approach to financing infrastructure—and health-related social services themselves—is better suited to the investment challenge. Specifically, we suggest that health insurers and their partners be open to a strategy of "co-opetition" (i.e., competitors sharing costs in certain product areas, such as jointly funding expensive new production processes, but continuing to compete for downstream business).[1] Co-opetition has a strong track record in many industries and seems well suited to financing socially beneficial upstream infrastructure in health care.

WHY CO-OPETITION COULD BE A VALUABLE APPROACH

In several industries, formal collaboration and joint investment agreements allow competitors to share the cost of segments of the supply chain or fund common-pool services that benefit all competitors and their customers. The joint investments of co-opetition are like public goods to the investors. A simple and familiar example is "Restaurant Week," where many local restaurants jointly advertise a week of special meals for a fixed price, anticipating more customers for every restaurant.

Other more complex examples abound. For instance, competing pharmaceutical firms pursued biomarker discovery and disease model development that expanded the market for all firms.[5] Multiple technology companies funded the Linux open-source operating system to expand their customer usage.[6] Meanwhile, collaboration in semiconductor manufacturing helped lower costs and defects.[7] In these and other cases, competing firms realized both that no single firm had a decisive comparative advantage in upstream (supply chain) knowledge and that it would be costly and time consuming—and riskier—for each to attempt to acquire the requisite knowledge and capacity alone. Co-opetition in these cases can be cheaper and profitable for all; it is now so common that the Federal Trade Commission has issued antitrust guidance to encourage such supply chain cooperation while preserving robust competition downstream.[8]

There are also examples of co-opetition in health care. For instance, Premier Inc., a hospital group purchasing organization[9] with 3600 participating hospitals, enables competing hospitals to acquire and manage supplies at lower cost than if they purchased supplies independently. Premier also offers data analytics to its members to help improve quality and cut costs.

Given that co-opetition better addresses the public good nature of the ecosystem infrastructure and social service flows, use of co-opetition techniques to finance part or even all of the SDOH infrastructure in communities could be the next frontier for health plans. The limitations and uncertainties of other forms of financing that ignore public good dimensions underscore the importance of piloting co-opetition. This could be particularly valuable in common circumstances such as when no single health plan has sufficient local information or trust to create an effective and broad CBO network and data sharing system and when public or private financing is insufficient to generate achievable benefits for all stakeholders. As we find in other instances of co-opetition, this financing approach would produce direct private value for all investors and additional joint benefits to them and their enrollees through the shared infrastructure. This stronger, jointly financed infrastructure would also assist broader financing of SDOH services themselves by lowering their net cost.

HOW CO-OPETITION COULD FINANCE INFRASTRUCTURE

The first step toward co-opetition and collaborative financing of health and social service ecosystem infrastructure is to acknowledge that cooperation is better for each insurer as well as its competitors. The net effect of a fully developed infrastructure would be reducing each plan's search, transaction, and contracting costs for social services while retaining competition for enrollees. As in other examples of co-opetition, and unlike other forms of private finance, joint funding of infrastructure permits all plans and their customers in a community to benefit.

Two recent examples in health and social care illustrate how some health insurers are solving the operational questions of co-opetition and allocating prices or investment obligations among the collaborating competitors.

CommonSpirit Health

CommonSpirit Health launched a collaborative and community-focused effort on SDOH in 2016.[10] The current

version, Connected Community Networks, is designed to address the social, economic, and environmental determinants of health.[11] It recently brought together 11 partners, including several health plans, to create a "community bank" to fund a network coordinating services in several communities. Interestingly, the main costs for financing the system were split evenly rather than, for example, using a formula based on each plan's proportion of total enrollment or enrollees with social needs.[12] Significantly, the health system turned to trusted local conveners to facilitate the plans' joint venture, establish governance procedures, and link with local CBOs.

Collaborative Approach to Public Goods Investments

Another approach to facilitating co-opetition is the CAPGI (Collaborative Approach to Public Goods Investments) model, which is currently being used to finance different SDOH projects in Cleveland, Ohio; Albany, New York; and Waco, Texas.[13] In each case, a local organization takes on the key role of trusted broker, convenes the group process to decide on a specific intervention, and then entertains confidential bids from health insurers and other stakeholders (including local hospitals, law enforcement groups, and philanthropies) based on their assessments of the net value of the SDOH project to them individually. The trusted broker then determines whether the aggregate bids meet or exceed the cost of the joint project. If so, the broker assigns prices to the stakeholders that never exceed their proffered bid, and if the bids exceed the cost prices will be less than each stakeholder bid. This financing mechanism then has the potential to be sustainable because the discount off the bid is similar to a built-in return on investment.

Both of the examples described reflect the public good nature of SDOH activities and how co-opetition among health plans can produce comprehensive investments in health and social ecosystem infrastructure. The single biggest step is recognizing that sometimes collaboration is a more effective strategy than simple competition.

POLICY ACTIONS THAT WOULD HELP

A co-opetition model could help achieve a high-functioning health and social service ecosystem at lower public and total expense. Government policymakers thus have an interest in fostering co-opetition funding among health plans. They could help in several ways, as described in the sections to follow.

Make Health Plans More Aware of Guidance

Many health plans and other stakeholders hesitate to collaborate out of concern that they will violate antitrust rules. But the Federal Trade Commission has developed guidance on appropriate pathways. The federal government needs to make sure health plans are aware of that guidance while working with state attorneys general to help protect the public interest.

Adjust Payment Policies and Guidance

Insurers need a clear federal green light for co-opetition investment in terms of both infrastructure and health-related social needs. The Centers for Medicare & Medicaid Services (CMS) can help by giving Medicare Advantage and Medicaid managed care organizations more precise guidance[14] and allowing all plans (and state Medicaid agencies), including fee-for-service Medicare, greater flexibility to include spending on health-improving social services and ecosystem infrastructure in medical loss ratio and annual rate calculations. The point is that the costs of SDOH service provision, as with the benefits, should be shared among private insurers and public programs. In addition, nonprofit hospitals could be encouraged to serve as funding partners by making it clear that social network infrastructure counts as community benefit dollars.

Support Network Leads and Infrastructure

Given the public benefits of cross-sector collaboration, the government should be an active partner in some co-opetition pilots. An initiative established by the federal Administration on Community Living has funded the creation of network leads in 12 communities to foster collaboration.[15] This effort could be enlarged. Meanwhile, bipartisan legislation introduced in Congress[16] would help fund public–private infrastructure partnerships between states and the private sector to establish referral platforms; this could include supporting co-opetition pilots.

Use Medicaid Waivers and Pilots

CMS has already been using Medicaid Section 1115 waivers (e.g., in North Carolina)[17] and other policy tools to permit greater social need spending by Medicaid managed care plans and states.[18] Broader CMS guidance and Center for

Medicare and Medicaid Innovation pilots could boost health plan and state government investment in infrastructure. States can also use Medicaid contracts. For instance, California has used the presence of major public Medicaid plans in several counties as leverage to encourage private plans to invest in such infrastructure services as training for navigators and other services.[19]

Widen the Scope of Funded Activities

The Health Resources and Services Administration (HRSA) supports the efforts of Federally Qualified Health Centers to undertake a limited leadership and coordinating role in the community. HRSA and CMS could propose statutory language on network lead functions for these centers and finance pilot programs to test their coordinating potential.

CONCLUSION

Consensus is growing that better coordination between health and social care organizations would benefit people, communities, and organizations alike. An ecosystem infrastructure built on trust and communication competence is essential for that coordination to be efficient. Individual plans taking the funding lead and private equity financing have demonstrated potential but also have limitations. It is time for health plans and policymakers to learn from other industries and to explore co-opetition arrangements as a tool to finance this infrastructure. AJPH

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Screening for Individuals at Risk for Hereditary Breast and Ovarian Cancer: A Statewide Initiative, Georgia, 2012–2020

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Georgia implemented a statewide family history screening program for hereditary breast and ovarian cancer. From November 2012 through December 2020, 29 090 individuals were screened, 16 679 of whom (57.3%) self-identified as a racial/ethnic minority. Of the 4% (1172/29 090) of individuals who screened as high risk, more than half underwent genetic consultation (793/1172; 67.7%) and testing (416/589; 70.6%). Compared with White women, Black and Hispanic women had higher uptake rates of genetic consultation. Public health settings serving racial minorities are well suited to address disparities in genetic service access. (*Am J Public Health*. 2022;112(9):1249–1252. https://doi.org/10.2105/AJPH.2022.306932)

Brief family history-based screening, endorsed by national guidelines (e.g., United States Preventive Services Task Force) and public health organizations (e.g., Centers for Disease Control and Prevention [CDC] Tier 1), is a frontline public health approach used to identify individuals at risk for hereditary breast and ovarian cancer (HBOC) syndrome. Georgia has been a trailblazer in this field since 2012, implementing a statewide program of HBOC family history-based screening in public health districts serving ethnically diverse and medically underserved areas.[1,2] The Georgia Center for Oncology Research and Education (Georgia CORE)/Georgia Department of Public Health (GDPH) Breast Cancer Genomics Program was funded by the CDC from 2011 to 2014 to "develop or enhance activities related to promotion of breast cancer genomics."[1(p3343)] Since 2014, the screening program has continued with funding from the GDPH.

INTERVENTION AND IMPLEMENTATION

The Women's Health section of the GDPH operates the family history screening program through public health clinics across the state. All public health clinics (n = 187) received training to conduct family history screening using B-RST version 2.0.[3] However, not all clinics implemented the program because of limitations in staffing and differences in priorities. From January 1, 2012, to December 31, 2020, 81 of 187 public health clinics in Georgia implemented the screening program. The program has reached women in 75 of 159 counties (47%) in Georgia, and 69 of these 75 counties are considered medically underserved areas.[4,5]

Women with scheduled visits at a participating public health clinic completed the family history screening as part of the intake assessment. For positive high-risk screening results, nursing staff informed the client of the genetic consultation no-cost service through referral to the Georgia CORE advanced practice nurse in genetics (APNG). Women who screened negative-low or moderate risk were referred to the APNG only at their request or nursing staff recommendation based on family history. Clients were counseled in person or by phone for risk assessment and determination of testing eligibility. If found eligible for testing, the APNG coordinated saliva or blood collection. Test results were provided directly to the client and public health providers.

If a client was found to have a clinically significant mutation in *BRCA1* or *BRCA2* or another deleterious mutation, referrals were made to a local breast specialist for discussion of options regarding management options: surveillance, chemoprevention, or risk reduction surgery. After May 2020, the program shifted to a telehealth format with remote genetic services in response to pandemic restrictions.

PLACE, TIME, AND PERSONS

Women aged 18 years and older who visited a public health clinic for women's health services (e.g., breast cancer screening, family planning, perinatal and sexually transmitted disease services) between November 2012 and December 2020 were eligible to participate. Most women were living at or below 200% of the US Department of Health and Human Services federal poverty level. According to the definitions used by the State Office of Rural Health, there are 149 counties in Georgia deemed medically underserved areas, meaning areas that have a shortage of primary care services.[4,5] Because people who live in these 149 counties make up 71.3% of Georgia's population, most of our target population is considered medically underserved.[4,5]

PURPOSE

Little empirical work has been conducted outside high-resourced specialty clinics to increase uptake of cancer genetic services.[6] This is especially critical for those least likely to have access to cancer prevention, including racial/ethnic minorities, those who live in rural settings, and those who have low education and income.[7]

A growing number of studies show that Black women are at greater risk than White women of developing aggressive breast cancers (often linked to genetic mutations) at a younger age and dying.[8,9] However, Black women are significantly less likely to be referred for cancer genetic services—and to seek them—than White women.[10,11] Recent evidence suggests that family history–based screening programs implemented in public health settings are effective when partnered with programs already serving vulnerable populations.[6] Therefore, we evaluated the uptake of family history screening, consultation, and testing among underserved women throughout the state and examined racial differences in the use of these genetic services.

EVALUATION AND ADVERSE EFFECTS

To describe the extent to which the program was successful in expanding the reach of genetic services, we measured three outcome variables: uptake of family history screening, genetic consultation, and genetic testing.

Family History Screening Uptake

From November 2012 through December 2020, 29 090 women completed the family history screening tool, with 26 938 women providing their race/ethnicity (Table 1). Among these women, 61.9% self-identified as a racial/ethnic minority (n = 16 679).

Genetic Consultation Uptake

In total, 1579 clients were referred to Georgia CORE for genetic counseling based on their positive B-RST screen results (n = 1460) or on the clinical judgment of providers based on family history (n = 119). Of these 1579 individuals, 1172 provided their racial/ethnic identity, 793 of whom (67.7%) underwent genetic consultation.

Genetic Testing Uptake

Uptake of genetic testing among high-risk individuals was high. Of the 793 clients who received genetic counseling, 589 (74.3%) were appropriate for genetic testing based on National Comprehensive Cancer Network guidelines, and 416 of these 589 women (70.6%) completed testing. In total, 32 women (7.7%) who completed testing were identified as carrying a deleterious mutation associated with HBOC syndrome.

Racial Differences in Genetic Services Uptake

Black women and Hispanic women had statistically significant higher uptake rates of genetic consultation than White women ($P < .05$ after Bonferroni multiple comparison correction; Table 1).

Impact of COVID on Genetic Services Uptake

Since May 2020, the program has transitioned to a telehealth model in response to pandemic restrictions. Compared with the period November 2012 through May 2020, we observed an increase in the uptake of genetic consultation (from 753/1132 [66.5%] to 40/40 [100%]) and genetic testing (from 380/551 [69.0%] to 35/38 [92.1%]) in the period May to December 2020.

TABLE 1— Uptake of Family Cancer History Screening, Genetic Consultation, and Genetic Testing: Georgia, November 2012–December 2020

Study Population	Uptake of Family History Screening: No. Screened	Uptake of Genetic Consultation			Uptake of Genetic Testing		
		No. Eligible	No. Completed (%)	*P*[a]	No. Eligible	No. Completed (%)	*P*[a]
Total	29 090[b]	1 172	793 (67.7)		589	416 (70.6)	
White (Ref)	9 640	656	414 (63.1)		320	221 (69.1)	
Black	11 770	350	259 (74.0)	< .001	174	122 (70.1)	.91
Hispanic	4 473	155	113 (72.9)	.028	87	70 (80.5)	.037
Other[c]	436	11	7 (63.6)	.8	8	3 (42.9)	.12

Note. Family history screening uptake = the number of individuals who completed genetic risk screening divided by the total number of women in Georgia living at or below 200% of the federal poverty level); genetic consultation uptake = the number of individuals who completed genetic consultation divided by the number of individuals identified to be at high genetic risk for hereditary breast and ovarian cancer; genetic testing uptake = the number of individuals who completed genetic testing divided by those who were recommended to undergo testing.

[a]*P* values are for pairwise comparisons between races. White clients acted as the reference group for the analysis.
[b]Of the 29 090 women that completed family history screening, 26 938 (92.6%) provided their self-identified race.
[c]Other = American Indian/Native American, Asian, Native Hawaiian/Pacific Islander, and others.

SUSTAINABILITY

Georgia's statewide screening program increased the utilization of genetic services in racial/ethnic minority and medically underserved communities. It is notable that the transition to a telehealth service model because of the COVID-19 pandemic increased uptake of genetic consultation. The shift to telehealth made the program more accessible to those living in medically underserved areas and addressed logistical barriers associated with in-clinic visits (e.g., transportation, work schedules, and finding child care). Implementation of a telehealth or hybrid model may increase program scalability and sustainability. Despite its potential, the reach of this screening program remains low. A very conservative estimate based on the US Census Small Area Health Insurance Estimates survey shows that uptake of family history screening could be as low as 2.5% of all age-eligible women across the state. The program has one APNG for all referrals. Thoughtful consideration of sustainable approaches to expanding screening is needed.

PUBLIC HEALTH SIGNIFICANCE

Improving access to cancer genetic services in racial/ethnic minority groups and medically underserved areas is an increasingly important undertaking, as evidenced by numerous regional and state initiatives. Our program presents an effective and sustainable outreach approach to promote the population-level reach of cancer genetic services, increasing the likelihood of fair distribution of advances in genomic technology. Increasing the number and diversity of people who have access to cancer genetic services requires adaptation of risk communications for those with limited health literacy. The study findings will inform a systematic evaluation with public health services across Georgia to provide insights on organizational capacity, barriers and facilitators to program implementation, and strategies to promote sustainable expansion of genetic services across the state.

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Because this was originally a funding opportunity award from the CDC that addressed education, surveillance, and policy, no institutional review board approval was deemed necessary. All patients who completed a family history screening tool agreed to participate via an online waiver, and an informed consent was completed for each patient who had genetic testing.

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A Social Media–Based Public Health Campaign Encouraging COVID-19 Vaccination Across the United States

Isabella de Vere Hunt, MD, Tamara Dunn, MD, Megan Mahoney, MD, Michael Chen, BA, Vanessa Nava, BS, and Eleni Linos, MD, DrPH

Tailored public health messaging encouraging COVID-19 vaccination may help increase vaccination rates and decrease the burden of COVID-19. We conducted a three-part COVID-19 vaccine uptake public health campaign disseminated on Facebook between April and June 2021. Our first campaign focused on reaching Black and Latinx communities; our second campaign focused on addressing vaccine access and scheduling in Latinx communities; and our third campaign focused on religious communities. Overall, we reached 25 million individuals with 171 million views across the United States. (*Am J Public Health*. 2022;112(9):1253–1256. https://doi.org/10.2105/AJPH.2022.306934)

Our goal was to promote COVID-19 vaccination across the United States with a focus on reaching minoritized groups, a priority engendered by a striking disparity in vaccination rates for racial minorities in March 2021, when the vaccination rate among White people was more than 2.5 times that for Latinx and twice that for Black people.[1] We also sought to address the infodemic that evolved alongside the COVID-19 pandemic by disseminating high-quality health information on social media platforms.[2,3]

INTERVENTION AND IMPLEMENTATION

We developed video and still-image advertisements encouraging COVID-19 vaccination, designed specifically for our target audiences, which were disseminated on Facebook as part of a three-part public health campaign. On the Facebook advertising platform, we selected "reach" as our primary campaign objective throughout. This attempts to maximize the number of Facebook users seeing the ads over the course of the campaign.

Our first campaign focused on Black and Latinx communities nationally through short (30–60 seconds) videos from eight racially diverse physicians conveying their own messages that the COVID-19 vaccine is safe and effective. Our second campaign focused on addressing vaccine access and scheduling in Latinx communities in California, linking our ads to a vaccine scheduling telephone helpline in Spanish and English. Our third campaign focused on promoting vaccination in religious communities nationally through videos from 14 religious leaders from five different faith traditions (Christianity, Hinduism, Islam, Judaism, and Mormonism). See Figure 1 for examples of how an ad appeared on the Facebook platform. All ad content is available to view at https://pcrt.stanford.edu/projects. Facebook provided advertising credit for ad dissemination.

PLACE, TIME, AND PERSONS

Video and still-image messages were disseminated to Facebook users throughout the United States from April to June 2021. In our first campaign, which focused on reaching Black and Latinx communities, ads were geotargeted to zip codes in the United States that had among the highest COVID-19 death rates and also had greater than 50% Black or Latinx population, to reach those who had already been worst affected by the pandemic and for whom low vaccine uptake rates were liable to further drive health care inequalities.

In the second campaign, which focused on addressing vaccine access and scheduling in Latinx communities in California, we geotargeted the whole of California with content in both English and Spanish. Spanish content

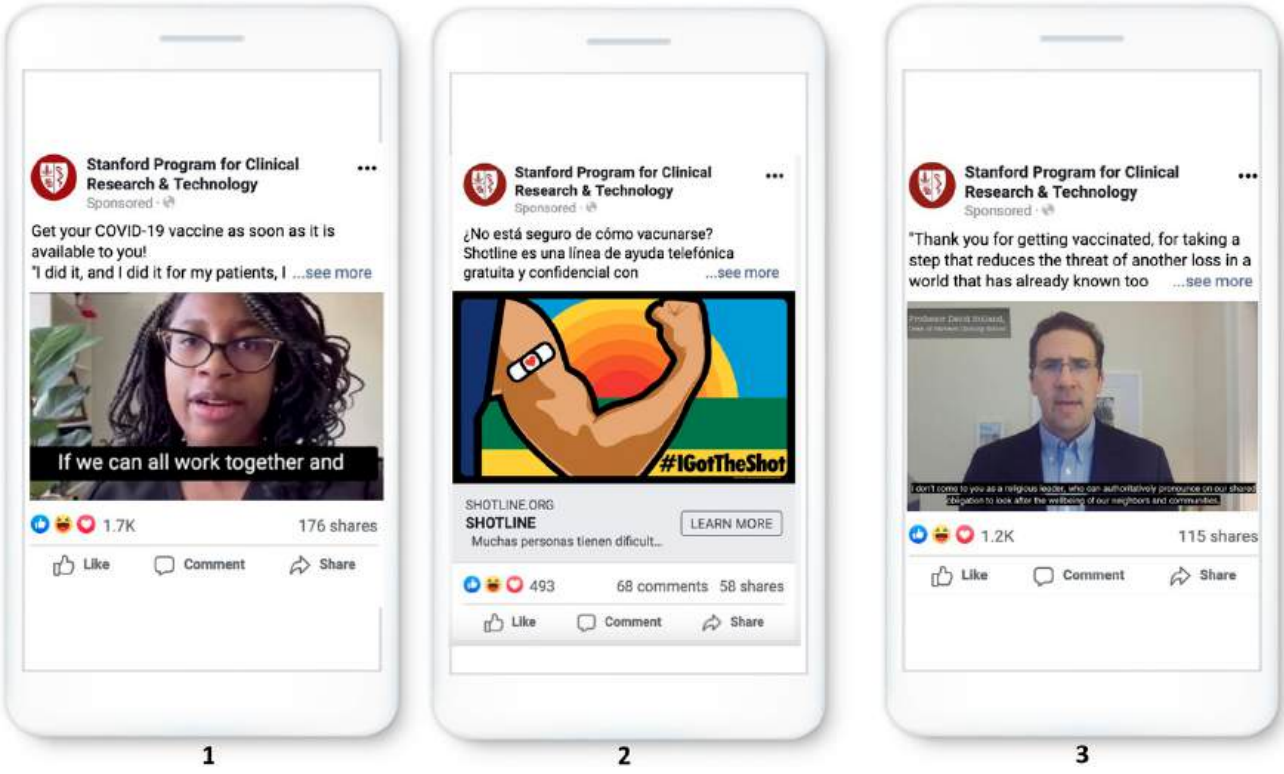

FIGURE 1— Example From Each Campaign of How an Ad Appeared on the Facebook Platform: United States, April–June 2021

was specifically targeted to Spanish-language speakers. Messages were translated by coauthor V. N., who identifies as Mexican American and is a bilingual Spanish and English speaker. We put additional ad spend behind all zip codes in California with Healthy Place Index percentile less than 50%.

In our third campaign, focused on religious communities nationally from five different faith traditions, interest-based targeting on the Facebook ad platform allowed us to reach Facebook users with messages from their respective faith communities.

PURPOSE

Tailored public health messaging encouraging COVID-19 vaccination targeted to specific communities may help increase vaccination rates and decrease the burden of COVID-19. Despite widespread suffering from COVID-19, survey results throughout 2020 indicated that the proportion of the US population willing to be vaccinated was less than 70%, with Black communities having notably low vaccine intention rates.[4] For both Black and Latinx Americans, survey results indicate that confidence in vaccine safety and effectiveness are the number-one predictors of intentions to receive vaccination, highlighting the importance of these messages.[5]

Survey data also suggest that Black Americans are twice as likely to trust a messenger of their own racial group compared with a White counterpart,[5] and we ensured a racially diverse group of health care professionals was featured in our campaign. Yet, vaccine mistrust is not the only barrier, with issues around vaccine access also arising.[6]

Furthermore, high rates of vaccine hesitancy among certain religious groups highlighted the need for focused messaging for religious communities.[7] In a cross-sectional survey, high religious commitment was associated with less overall trust in science.[8] Lack of trust in science has been shown to be negatively associated with intention to get vaccinated,[9] highlighting the need for tailored messaging for certain religious groups for whom conventional public health spokespeople such as medical professionals might lack credibility, but whose trusted religious leaders are potential liaisons for public health messaging.

TABLE 1— Reach and Engagement Outcome Metrics for Ads on Facebook Platform: United States, April–June 2021

Metric	Campaign 1[a]	Campaign 2[b]	Campaign 3[c]	Total
Reach (unique no. of people who viewed an ad)	9 851 842	10 107 831	10 469 982	25 223 949
Impressions (total no. of times an ad was viewed)	54 362 221	69 714 648	47 379 479	171 456 348
Average frequency (average no. of times each person saw an ad)	5.5	6.9	4.5	6.8
Post reactions	10 054	7272	11 477	28 803
Post shares	1 161	638	1 003	2 802
Video plays[d]				
At 25%	1 753 241	32 293[e]	990 197	2 775 731
At 50%	669 856	12 709[e]	328 138	1 010 703
At 75%	404 592	8 927[e]	182 981	596 500
At 100%	266 066	6 953[e]	125 195	398 214
Investment, US $	247 300	267 440	178 438	693 176
Cost per 1000 people reached, US $	25.10	26.46	17.04	27.48

[a]Top performing piece of content (classified by reach) in campaign: https://youtu.be/meZKlPtTMZY.
[b]Top performing piece of content (classified by reach) in campaign: https://pcrt.stanford.edu/access-campaign (artwork by Rich Black).
[c]Top performing piece of content (classified by reach) in campaign: https://youtu.be/8Rqm64HZuOM.
[d]Video plays at X% refers to the number of times the video was played to at least X% of its length.
[e]Note this campaign only contained one video; the rest of the content was in still-image form.

EVALUATION AND ADVERSE EFFECTS

From April 9 to 30, 2021, video ads from our first campaign centered on physicians appeared on Facebook newsfeeds 54 million times, reaching 9.9 million individuals an average of 5.5 times each. From May 10 to 31, 2021, video and still-image ads from our second campaign focused on vaccine access content in Spanish and English appeared on Facebook newsfeeds 70 million times, reaching more than 10 million individuals an average of 6.9 times each. We also tracked 60 416 unique link clicks (24 371 from Spanish content and 37 552 from English content) from our ads to the scheduling helpline with which the campaign was linked. From May 26 to June 15, 2021, video ads from our third campaign centered on religious leaders appeared on Facebook newsfeeds more than 47 million times, reaching 10.5 million individuals an average of 4.5 times each.

Overall, across the three campaigns, our ads appeared on newsfeeds 171 million times, reaching 25 million individuals an average of 6.8 times each. In total, the ads received 28 803 reactions and 2802 shares (Table 1). All metrics were recorded directly by the first author from the Facebook ad manager platform. To our knowledge, the intervention had no adverse consequences. Comments were disabled on all video ads to limit negative sentiment comments toward the individual doctors and faith leaders participating in the campaign and to prevent inadvertent dissemination of vaccine misinformation alongside named individuals.

SUSTAINABILITY

We demonstrate the feasibility of a widespread, rapid, social media–based, tailored public health campaign, the principles of which are applicable across widespread public health domains. Based on learnings from our US-based campaign, we advised the nongovernmental organization Prolepsis Institute on the implementation of a social media–based campaign to promote COVID-19 vaccination throughout Greece, which ran from October 10 to December 31, 2021 (https://www.prolepsis.gr/en/programs/campaign-to-promote-vaccination-against-covid-19). We have demonstrated that Facebook ads can produce considerable engagement and visibility. Long-term sustainability of this model beyond the context of COVID-19 vaccine promotion

depends upon ongoing collaboration and financial investment from social media platforms to support dissemination of accurate public health information online.

PUBLIC HEALTH SIGNIFICANCE

Vaccination has proven to play a critical role in reducing widespread societal harms associated with the COVID-19 pandemic.[10] This public health campaign enabled us to reach more than 25 million individuals with 171 million views across the United States with messages promoting COVID-19 vaccination. Furthermore, in the face of the widespread dissemination of misinformation on social media and evidence that false news can influence social well-being,[11] including vaccination intent,[12] it is crucial that we work to improve the quality of health information available on social media platforms and utilize established marketing techniques to disseminate high-quality health information. This work is underpinned by unprecedented collaboration among doctors, public health scientists, religious leaders, and technology companies toward the common goal of ending the COVID-19 pandemic. We are now focusing efforts on strategies to measure the impact of social media–based public health messaging on health-related behaviors, including vaccination rates. AJPH

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CONTRIBUTORS

E. Linos conceptualized the overall public health campaign and established the collaboration with Facebook Health Partnerships. E. Linos, T. Dunn, M. Mahoney, and I. de Vere Hunt planned campaign implementation, including identification of key target populations. I. de Vere Hunt and E. Linos led collection of campaign material. T. Dunn, M. Mahoney, and V. Nava contributed content to the campaign. I. de Vere Hunt ran the campaigns from the Facebook ad manager platform. I. de Vere Hunt and V. Nava led comment moderation for the campaign. M. Chen performed population analyses to enable geotargeting of zip codes to regions with the highest COVID-19 death rates. I. de Vere Hunt drafted this report, with all coauthors contributing to critical revisions. E. Linos is the guarantor and corresponding author who is responsible for overall content.

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CONFLICTS OF INTEREST

The authors report no conflicts of interest.

HUMAN PARTICIPANT PROTECTION

We did not collect any identifying or individual data, and the campaign evaluation was approved as exempt by the Stanford University institutional review board (protocol 61669).

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Interest in and Uptake of Postabortion Long-Acting Reversible Contraception After Counseling at a Free-Standing Abortion Care Ambulatory Surgery Center, Atlanta, Georgia, 2017–2018

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We sought to determine the impact of brief previsit counseling on long-acting reversible contraception (LARC) interest and uptake immediately after abortion. We conducted a randomized controlled trial at a free-standing abortion care ambulatory surgery center in metro-Atlanta, Georgia (2017–2018). Among 1270 women, a brief previsit counseling intervention increased interest in LARC by 4.5 percentage points, and interest in LARC after the intervention increased uptake by 9.6 percentage points. Providing brief previsit counseling significantly increased postabortion LARC uptake. (*Am J Public Health*. 2022; 112(9):1257–1260. https://doi.org/10.2105/AJPH.2022.306940)

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Repeat unintended pregnancy and abortion remain large public health challenges, and increasing use of highly effective contraceptives, including long-acting reversible contraceptive (LARC) methods, among women presenting for abortion care is a priority.

INTERVENTION AND IMPLEMENTATION

We conducted a randomized controlled trial to determine if adding a brief counseling intervention about LARC with referral for financial counseling to standard-of-care counseling during the preabortion procedure phone call would increase interest in and uptake of LARC.

As part of standard of care, women also receive in-clinic contraceptive counseling during their procedure visit. We hypothesized that the effect of our brief phone intervention would augment the effect of standard, in-clinic contraceptive counseling on LARC interest and uptake.

Study investigators developed a script providing educational information on LARC and its possible costs. Women were randomized to receive the information as part of the previsit call. The script was pilot tested for clarity and acceptability by clinic phone counselors, staff, and patients and revised based on feedback. The script (Figure A, available as a supplement to the online version of this article at https://ajph.org) was brief, requiring less than three minutes to deliver. Study investigators provided two in-service training sessions for clinic counseling staff who delivered the intervention over the phone using the preprinted scripts.

Women calling the clinic from September 2017 to January 2018 were randomized to receive the augmented script with LARC information versus standard of care. The randomization allocation was by day of the previsit call with the randomization scheme in blocks of four and six determined before study initiation. The randomized controlled trial was powered at 80% to detect a twofold increase in LARC uptake from a baseline estimate based

on clinic records of 8% to 16%. Any woman, including English and Spanish speakers, calling to schedule an appointment was eligible for the study.

Baseline participant characteristics are described by study arm in Table 1. Using marginal logistic regression analysis, whereby coefficients can be interpreted as the percent changes associated with unit changes in the independent variables,[1] we estimated the effect of the intervention on interest in LARC after intervention and after in-clinic counseling, shown in Table 2. We then estimated the effect of the intervention and interest measures on LARC uptake, shown in Table 2.

PLACE, TIME, AND PERSONS

This study was conducted at a free-standing ambulatory surgery center in the metropolitan Atlanta, Georgia, area that provides approximately 4800 abortions (defined as deliberate termination of pregnancy) annually for less-than-22-weeks' gestation for individuals of any age within Georgia and out-of-state. The clinic serves patients regardless of insurance status. In accordance with Georgia law, the clinic provides "A Woman's Right to Know" counseling at least 24 hours before receiving an abortion.[2] During this call, the standard of care is to briefly discuss the abortion procedure and its estimated costs, which depend on insurance status, income, and availability of subsidies, then to schedule the abortion appointment. Subsidized methods were available sporadically (from an anonymous foundation or through the Bayer Arch Foundation) during the study. There were no systematic differences in access to subsidized methods by arm.

TABLE 1— Participant Characteristics and Outcomes by Study Arm: Atlanta, GA, 2017–2018

	Intervention (n = 566), Mean ±SD or No. (%)	Control (n = 704), Mean ±SD or No. (%)
Study Participant Characteristics		
Age, y	26.7 ±6.1	27.5 ±6.1
Live out of state (GA)		
Yes	60 (11)	105 (15)
No	502 (89)	586 (85)
Marital status (married)		
Yes	52 (12)	84 (15)
No	398 (88)	489 (85)
Education		
< high school	68 (12)	70 (10)
High school/GED	222 (40)	259 (38)
Associate's degree	60 (11)	62 (9)
Some college, no degree	128 (23)	154 (23)
Bachelor's degree	61 (11)	94 (14)
Master's degree/doctorate	20 (4)	40 (6)
Race		
White	99 (20)	132 (21)
Black/African American	342 (70)	424 (69)
Asian	18 (4)	28 (5)
Other	33 (7)	33 (5)
Hispanic/Latina		
Yes	48 (9)	43 (7)
No	475 (91)	601 (93)
Insurance status		
Insured	132 (24)	158 (23)
Uninsured	425 (76)	523 (77)
Appointment costs	817.4 ±698.2	796.1 ±778.6
Gestational age	10.5 ±5.0	10.3 ±4.5
Gravida[a]	3.3 ±2.2	3.5 ±2.2
Parity	1.2 ±1.2	1.3 ±1.3
Previous cesarean delivery	0.2 ±0.6	0.3 ±0.7
Previous vaginal birth	1.0 ±1.2	1.1 ±1.3
Previous spontaneous abortion	0.3 ±0.6	0.3 ±0.6
Previous therapeutic abortion	0.8 ±1.1	0.9 ±1.2
Previous ectopic pregnancy	0.02 ±0.2	0.02 ±0.2
Outcomes		
Interest in LARC at clinic intake: yes	87 (15.4)	76 (10.8)
Interest in LARC after in-clinic nurse counseling: Yes	143 (25.3)	123 (17.5)
LARC uptake: yes	28 (5.0)	31 (4.4)

Note. GED = general educational development; LARC = long-acting reversible contraception. The sample size was n = 1270.

[a]Including current pregnancy.

TABLE 2— Difference in Interest and Uptake of Long-Acting Reversible Contraception After the Counseling Intervention: Atlanta, GA, 2017–2018

	Interest in LARC at Clinic Intake.[a] % (*P*)	Interest in LARC After In-Clinic Nurse Counseling,[b] % (*P*)	Uptake of LARC, % (*P*)
Intervention	4.5 (.016)	7.7 (.001)	−0.48 (.68)
Interest in LARC at clinic intake[a]	. . .	. . .	9.6 (.022)
Interest in LARC after in-clinic nurse counseling[b]	. . .	. . .	10.1 (< .001)

Note. LARC = long-acting reversible contraception. The sample size was n = 1270.

[a]Pure intervention effect.
[b]Combined effect of brief phone counseling and in-clinic nurse counseling.

Upon arrival, patients are routinely asked to report their interest in contraceptive methods on their intake form. Then women typically undergo an ultrasound and laboratory testing, followed by a visit with a health counselor during which they receive counseling related to abortion and contraceptive options including condoms, oral contraceptive pills, injectables, rings, patches, and LARC options (copper and hormonal intrauterine devices and contraceptive implants). Counselors provide family planning counseling, tailored to the individual, which includes discussions about contraceptive options, their benefits and risks, and overall effectiveness. The control and intervention groups received the same in-clinic contraceptive counseling. Women with ectopic pregnancies are referred out for care. Before abortion, medical history and birth control options are reviewed with a nurse. Patient interest in contraceptive options is then noted in patients' medical chart.

PURPOSE

An estimated half of all pregnancies in the United States are unintended,[3,4] and roughly 40% of these end in abortion.[4–6] In addition, about half of all abortions occur in women who have previously had an abortion.[4–6] During a 2008 survey of women undergoing an abortion, 51% reported using a contraceptive method the month they became pregnant.[7] Many of these contraceptive failures occur because about 55% of contracepting women aged 15 to 44 years in the United States use less-efficacious, shorter-acting, user-dependent methods[8,9] such as condoms, which have typical-use failure rates of 18% within the first year of use.[9]

LARC methods are user-independent with typical-use failure rates of less than 1% within the first year of use.[9] However, despite their efficacy and safety, LARCs remain underutilized in the abortion setting.

EVALUATION AND ADVERSE EFFECTS

A total of 1890 women called to schedule an appointment; 819 were randomized to the intervention arm and 1071 to the control arm (Figure B, available as a supplement to the online version of this article at https://ajph.org). Overall, 67% of women presented for abortion care. This proportion did not differ by study arm. The final sample consisted of 566 participants in the intervention arm and 704 in the control arm. No meaningful or statistically significant differences in participant demographic characteristics existed by treatment arm (Table 1), and no adjustment of intervention effects was required. Interest in LARC at clinic intake was significantly higher in the intervention arm versus standard of care: 15.4% versus 10.8% ($P = .015$), as was interest after in-clinic nurse counseling, 25.3% versus 17.5% ($P < .001$).

Table 2 shows the marginal effects of the brief phone counseling intervention on LARC interest. The intervention increased LARC interest by 4.5% ($P = .016$) at clinic intake and by 7.7% ($P = .001$) after additional in-clinic nurse counseling.

Table 2 also shows the effect of the intervention, mediated by LARC interest, on LARC uptake. Interest in LARC at clinic intake increased LARC uptake by 9.6% ($P = .022$), while interest in LARC after in-clinic counseling increased LARC uptake by 10.1% ($P < .001$). The intervention had no independent effect on uptake in this mediation analysis.

We observed no adverse effects from the intervention.

SUSTAINABILITY

We observed increased interest in LARC among participants receiving the intervention compared with those who did not, and this interest translated into

increased LARC uptake. The intervention was extremely short (~3 minutes) and efficient. It required little additional training or time for counselors and was inexpensive to implement. We plan to undertake a cost-effectiveness analysis of the trial.

PUBLIC HEALTH SIGNIFICANCE

We found that a brief previsit counseling intervention increased interest in LARC by 4.5%, and when combined with in-clinic counseling, the intervention increased interest by 7.7% indicating a synergistic relationship between receiving repeat counseling messages. Repeat counseling messages were shown to increase method uptake in a recent systematic review.[10] Interest acted as a complete mediator of uptake, which translated to a 10.1% increase in LARC uptake in the intervention group. Brief counseling has the potential to decrease repeat abortion and unintended pregnancy and to improve the health and well-being of women and families.

Importantly, overall uptake of LARC methods was still low, especially as compared with interest. Many people may face cost barriers, may be interested but not ready to initiate a LARC, or may not want to make decisions about future pregnancy prevention at the time of an abortion. Some women may prefer to receive contraceptives from a regular provider for continuity of care. It is possible that our intervention also helped increase LARC uptake outside of our facility. AJPH

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CONTRIBUTORS

K. M. Wall contributed to conceptualization, methodology, validation, analysis, investigation, writing the original draft, and funding acquisition. V. Phillips contributed to conceptualization, methodology, validation, analysis, data curation, writing (review and editing), and funding acquisition. A. Xue and E. Anderson contributed to validation, analysis, data curation, and writing (review and editing). S. Cordes contributed to methodology, investigation, writing (review and editing), supervision, and project administration. H. Riley and M. S. Dickey contributed to investigation, writing (review and editing), and project administration. L. Haddad contributed to conceptualization, methodology, validation, investigation, resources, writing (review and editing), supervision, project administration, and funding acquisition.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest.

HUMAN PARTICIPANT PROTECTION

This study protocol was approved by the Emory institutional review board (protocol 00094882).

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Improving Water Quality in the Short Beach Neighborhood of Branford, Connecticut, 2019—A Citizen Science Project

Sarah Esenther, MPH, Katie Schlick, BA, Christopher Jossart, MPH, Ningjing Wang, MPH, Robert Dubrow, MD, PhD, and Michael Pascucilla, MPH

We initiated a collaboration between local government, academia, and citizen scientists to investigate high frequencies of elevated *Escherichia coli* bacteria levels in the coastal Short Beach neighborhood of Branford, Connecticut. Citizen scientist involvement enabled collection of short-duration postprecipitation outfall flow water samples (mean *E. coli* level = 4930 most probable number per 100 mL) and yielded insights into scientific collaboration with local residents. A records review and sanitary questionnaire identified aging properties with septic systems (3.3%) and holding tanks (0.6%) as potential sources of the *E. coli* contamination. (*Am J Public Health*. 2022;112(9):1261–1264. https://doi.org/10.2105/AJPH.2022.306943)

Long Island Sound has suffered elevated levels of fecal bacteria for decades.[1] Although fecal contamination from stormwater outfalls is a recognized public health risk,[2] the short duration of stormwater outfall flows following rain events poses obstacles to identification and monitoring of these sources. Partnerships between health departments and local citizen scientists may enhance such outfall sampling.

INTERVENTION AND IMPLEMENTATION

The coastal Short Beach neighborhood of Branford, Connecticut, and its popular beach have experienced high frequencies of elevated *Escherichia coli* bacteria levels compared with nearby waters,[3] possibly from sanitary sewage system breaches into stormwater.[4,5] To better understand the influence of compromised stormwaters on local water quality in Long Island Sound, a team of students and faculty collaborated with the local health department with the aims of mapping local sewage disposal systems to assess possible sources of contamination and using local resident capability and expertise by implementing a citizen science water-sampling program.

Sewage Disposal Records

A 2017 report identified leaking holding and septic tanks as a likely source of water contamination.[5] Similar to other communities, the town of Branford did not maintain sewage disposal records until after most Short Beach homes were constructed, so the sewage system type of 383 coastal properties was unknown. To assess these properties, the student team reviewed records of permits, construction documents, sewage hookup requests, and ownership transferals maintained by Branford's Engineering Department. The team investigated the properties without records through a questionnaire asking residents about their sewage disposal method and year of connection. Questionnaire accuracy was verified by comparing answers with neighboring homes and informally interviewing long-term residents.

Volunteer Water Sampling

All eight stormwater outfalls in Short Beach that flow directly into Long Island Sound were sampled (Figure 1). In partnership with the Civic Association of Short Beach, the health department and students assembled a team of eight citizen science volunteers, primarily retirees, from association meeting

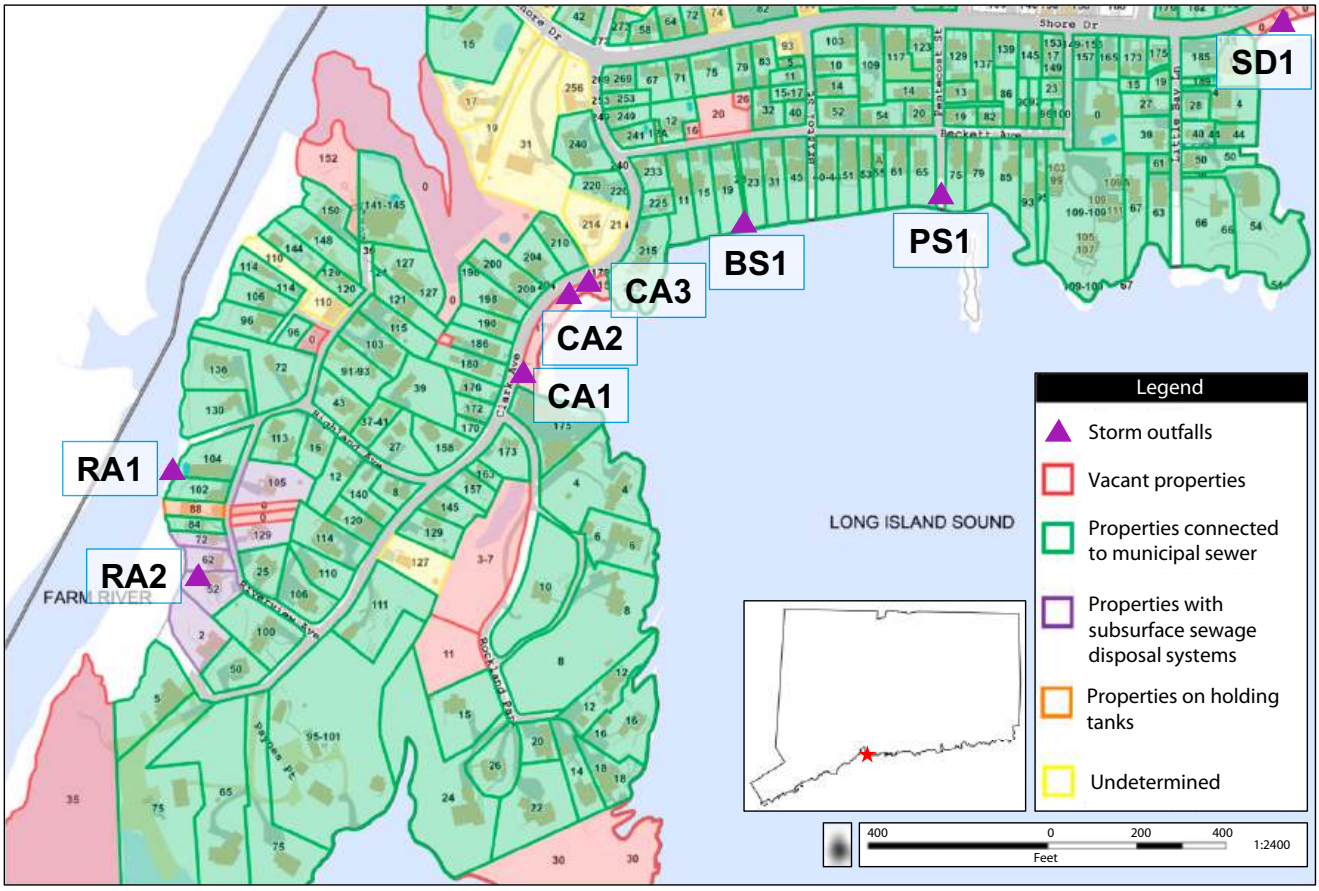

FIGURE 1— Map of Short Beach Neighborhood: Branford, CT, 2019

Note. Volunteers checked eight outfalls (RA1, RA2, CA1, CA2, CA3, BS1, PS1, SD1) that discharge into the Long Island Sound for flow following rain events. The majority of properties in Short Beach are connected to the municipal sewer, with a cluster of subsurface sewage disposal systems near outfalls RA1 and RA2.

attendees and their contacts. The volunteers were trained and supplied a written protocol for sample collection, labeling, and delivery of water samples to the state public health laboratory, then tasked with collecting samples from any outfalls that flowed intermittently after every rain event. Volunteers coordinated assignment of collection dates and sampling locations among themselves. The health department supplied sampling bottles and paperwork to the citizen scientists.

The Connecticut State Public Health Laboratory processed samples to determine *E. coli* levels. Samples were tested using the SM 9223B Enzyme Substrate Test (IDEXX Laboratories, Westbrook, ME) to determine the most probable number (MPN) per 100 milliliters.[6]

PLACE, TIME, AND PERSONS

The Short Beach neighborhood is located at the southern end of the Farm River Watershed in New Haven County. This study was conducted in spring, summer, and fall 2019 in collaboration with local residents and four university students.

PURPOSE

To inform efforts to improve long-impaired neighborhood recreational and shell-fishing water quality,[7] this study aimed to (1) identify possible sewage disposal system sources of beach water *E. coli* contamination; (2) quantify and identify outfall sources of this contamination; and (3) foster engaged relationships between academia, local government, and neighborhood residents.

EVALUATION AND ADVERSE EFFECTS

The records review revealed potential contamination from septic or holding tanks, and the water sampling, conducted by citizen scientists and students, documented *E. coli* contamination of outfall flows.

Sewage Disposal Records

Of the 383 properties with unknown sewage system type, the type of 314 (82.0%) was determined from records and 24 (6.3%) by questionnaire; the type of 45 (11.7%) remained unknown from lack of records or survey response. Of the 338 properties with known type, 325 were connected to public sewage (96.2%), 11 had septic tanks (3.3%), and 2 had holding tanks (0.6%). Thus, the study identified several aging coastal properties that lack public sewage access, posing a possibly elevated risk of water contamination from failing septic systems or holding tanks. Most houses along public sewer lines are attached to the public sewer system with gasketed PVC (polyvinyl chloride) and are considered unlikely to be dilapidated enough for substantial sewage leakage.[8]

Volunteer Water Sampling

Students and health department members attended Civic Association meetings to give project updates, answer questions, and garner input. Meeting attendees recommended policies for improving local water quality based on their experiences in the neighborhood (e.g., observing dog walkers discard dog feces into stormwater outfall grates, which the health department subsequently investigated).

The volunteers and students collected 24 *E. coli* water samples from outfalls on six different dates. The *E. coli* levels ranged from 270 to 24 196 MPN per 100 milliliters (mean = 4930 MPN/100 mL; SD = 5147 MPN/100 mL; Table 1).

Strong engagement from community members and the scientific integrity of the volunteer samplers increased research capacity. As some outfalls flowed for only 15 minutes following a rain event, many samples would have been unattainable without citizen scientists. Residents expressed concerns at Civic Association meetings, including whether they may be forced into costly public sewer connections if failing septic systems were found at fault and lack of public access to past reports and data. Full transparency with citizen science collaborators requires acknowledgment of power differences and potential conflicts of interest. Openly recognizing the legitimacy of resident concerns and the value that cooperation brings to the health department is key to maintaining balance between collaborators. The health department is committed to ongoing discussion, data sharing through its Web site,[9] and sensitivity regarding its regulatory power to force public sewer connections, preferring to work alongside the community to achieve a mutually beneficial and mutually understood outcome.[10]

SUSTAINABILITY

Strong engagement of citizen scientists and students permitted minimal sampling involvement by health department staff, and the data obtained provided unique insight into the state of water contamination in the neighborhood. Although the initiative ended owing to the COVID-19 pandemic, with increased citizen science involvement, the health department–citizen scientist collaboration has the potential to be sustainable beyond student participation, with discussion of reinstatement ongoing.

Lessons learned by the local health department on working with citizen scientists during this project will facilitate future intervention design. Communication is essential with all volunteers: to maintain open communication and trust, volunteers need to feel that the value of their contributions is recognized.[10,11] To that end, the citizen scientists were honored at a local awards event. Engagement of dedicated

TABLE 1— *Escherichia coli* Results From the 8 Outfalls Sampled on 6 Dates: Branford, CT, 2019

	Escherichia coli (MPN/100 mL), Outfall Identification							
Date	BS1	CA1	CA2	CA3	PS1	RA1	RA2	SD1
July 12, 2019	NA	NA	NA	NA	NA	2 300	NA	650
July 17, 2019	NA	270	NA	NA	NA	NA	NA	NA
July 18, 2019	7 900	3 400	24 000	7 600	7 600	2 000	NA	290
July 23, 2019	8 200	2 400	3 300	24 196	9 800	2 300	4 900	8 700
July 24, 2019	NA	1 300	810	NA	NA	NA	NA	NA
August 8, 2019	1 200	3 100	8 700	NA	6 500	1 200	NA	2 300
Outfall average	5 767	2 094	9 203	15 898	7 967	1 950	4 900	2 985

Note. MPN = most probable number; NA = nonflow.

community members from the outset of research design, establishment of all parties' expectations and a conflict-of-interest policy, and health department willingness to adapt in light of community knowledge and concerns are crucial to the vitality and sustainability of a relationship with the community.[11] Discussion of citizen science program duration and funding commitment at the outset may also increase initiative longevity.

PUBLIC HEALTH SIGNIFICANCE

Although neither the US Environmental Protection Agency nor the Connecticut Department of Public Health provide threshold guidelines for *E. coli* levels from stormwater outfalls, all samples exceeded the Connecticut Department of Public Health's 235 MPN per 100 milliliters *E. coli* threshold for recreational waters.[12] This suggests that the outfalls could be a critical pathway for transfer of fecal matter and associated pathogens to recreational bathing waters.

This project provided the students with an opportunity to experience real-world public health practice, and their involvement enabled the records review and established the framework for the sampling campaign. Without citizen scientists, the breadth and frequency of sampling would not have been possible. Furthermore, citizen scientists identified an outfall, RA2, not in the original sampling plan. Citizen science can increase data capture in water sampling as well as in other public health programs relying on highly time-sensitive collections. AJPH

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CONTRIBUTORS

S. Esenther recruited and liaised with the citizen scientist volunteers and wrote the first draft of the article. S. Esenther, K. Schlick, C. Jossart, and N. Wang performed water quality analyses and assisted in records review and report writing. S. Esenther, K. Schlick, and N. Wang sampled outfalls. S. Esenther, R. Dubrow, and M. Pascucilla reviewed multiple drafts of the article C. Jossart delivered samples to the laboratory. R. Dubrow partnered with the East Shore District Health Department and supervised the students. R. Dubrow and M. Pascucilla conceptualized the study. M. Pascucilla arranged sample testing at the state laboratory and records review access and provided the resources of the East Shore District Health Department for sampling.

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M. Pascucilla presented a preliminary version of this project at the American Public Health Association's October 24–28, 2020 Virtual Annual Meeting and Expo.

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CONFLICTS OF INTEREST

The authors have no potential or actual conflicts of interest to declare.

HUMAN PARTICIPANT PROTECTION

No protocol approval was necessary because no human participants were involved in this study.

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A Community-Based Youth Diversion Program as an Alternative to Incarceration, Illinois, 2017–2019

Catherine Isabelle Gigante, MD, Kevin Rak, MA, Alison Kaplan, MPH, MSW, Leslie Helmcamp, MPAff, Cassandra Otoo, MSW, and Karen M. Sheehan, MD, MPH

The US justice system unfairly targets youths of color; systemic reform plus interventions to keep youths out of the justice system are needed. The Juvenile Justice Collaborative provided care coordination and wraparound services to adolescents in a diversion program from 2017 to 2019 in Cook County, Illinois. Youths showed increased strengths and decreased needs by program's end. Youths who successfully completed the program showed reduced recidivism compared with nonprogram youths. Community-based alternatives to incarceration may decrease life disruption, promote positive health and social outcomes, and reduce further justice involvement. (*Am J Public Health*. 2022;112(9):1265–1268. https://doi.org/10.2105/AJPH.2022.306946)

Cook County, Illinois, youths are at substantial risk for involvement with the justice system: in 2015, the arrest rate was 37.9 per 1000 youths; the detention admission rate was 6.7 per 1000 youths. Statewide, Black youths account for 18% of the population but 59% of juvenile arrests and detentions.[1] These differences do not reflect a predilection for criminal activity. Rather, they are the result of "the criminalization of Blackness and poverty, as reflected in the failed war on drugs, draconian sentencing laws, centralized power of prosecutors, a school-to-prison pipeline, and gutting of health and social systems."[2(pS5)] Comprehensive reform is needed to address these factors, and Wennerstrom et al. also call for primary incarceration prevention, including diversion and community-based mental health services.[3]

INTERVENTION AND IMPLEMENTATION

The Juvenile Justice Collaborative (JJC), formed in 2017, aimed to minimize further involvement of youths in the justice system and reduce racial disparities by facilitating access to services that meet adolescents' developmental needs. Youths of color living in Chicago neighborhoods most affected by systemic racism received priority for referrals. JJC partners included a pediatric hospital, a centralized intake and referral home, and 10 community-based service providers.

Care coordinators conducted a home visit to complete consents and assessments to evaluate each youth's and their family's needs. Care coordinators, in collaboration with families, developed a family care plan to set goals related to the youth's interests and needs that were identified through the Child and Adolescent Needs and Strengths assessment. Youths were referred to the appropriate community-based service provider or providers based on their desired goals, such as seeking adult or peer support through mentoring or engaging in recreational or workforce skills training. The top three services provided were mentoring (48%), mental health and substance use services (36%), and employment services (9%). Care coordination lasted an average of 95 days.

PLACE, TIME, AND PERSONS

We describe the JJC model and its outcomes from its first phase of implementation, 2017 through 2019. The JJC accepted referrals of eligible youths, aged 12 to 18 years, who were arrested for a felony or a violent misdemeanor in overpoliced communities of color.

The Cook County State's Attorney's Office identified youths for diversion services and sent the cases to Juvenile Probation, which screened cases for JJC eligibility. If youths chose not to participate, they continued under informal supervision; referral to community services was at Juvenile Probation's discretion.

The JJC received 556 referrals. Most participants were male (73%) and people of color (84% non-Hispanic Black and 15% Hispanic/Latino). Therefore, exploring differences based on gender and race and ethnicity was not warranted. The mean age was 15.36 years (SD = 1.41); the median age was 16.00 years. The most common charges were drug possession or dealing and battery. Most (376; 68%) completed an intake. Among the 180 who did not, 54% did not attend an intervention program, 28% had their justice system referral withdrawn, and 17% attended with ineligible offenses or new charges (Table 1).

TABLE 1— Participant Characteristics: Cook County, IL, 2017–2019

Characteristic	No. (%), Median, or Mean ±SD
Year referred	
2017	96 (17)
2018	209 (38)
2019	251 (45)
Gender	
Female	149 (27)
Male	407 (73)
Race/ethnicity	
Non-Hispanic Black	466 (84)
Hispanic/Latino	82 (15)
Non-Hispanic other	8 (1)
Age, y	
Median	16
Mean	15.36 (1.41)
Charges	
Possession/dealing drugs	134 (24)
Battery	129 (23)
Theft	47 (9)
Robbery	37 (7)
Possession of a stolen vehicle	26 (5)
Burglary	23 (4)
Assault	18 (3)
Weapons charges	9 (2)
Other	30 (5)
Multiple charges	51 (9)
Blank/missing	52 (9)
Intake completion	
Completed intake	376 (68)
Did not complete intake	180 (32)
Failed to show for intake	98 (54)[a]
Referral withdrawn by juvenile justice system	51 (28)[a]
Ineligible to participate because of ineligible offenses or new charges	31 (17)[a]

Note. Population total was n = 556.

[a]Percentages are given as a share of the group who did not complete an intake.

PURPOSE

Racial disparities in justice system involvement negatively affect the health of youths of color. Youths of color face increased surveillance in their communities, harsher discipline in schools, and a greater risk of a parent being incarcerated, leading to numerous adverse health outcomes, even without direct justice system involvement.[4] Punitive measures such as detention hinder positive development. Justice-involved youths have higher rates of psychiatric disorders than the general population[5] as well as lower use of well-child visits.[6] Therefore, a diversion program that prioritizes youths of color for referrals, while taking a strengths-based approach, is one strategy to align the justice system response with developmentally appropriate services for youths.[7]

EVALUATION AND ADVERSE EFFECTS

Among the 376 youths who completed an intake, most (64%) successfully completed the program: 21% of youths were dismissed as unsuccessful, 12% were discharged as unserviceable (e.g., moving away, transferring to another program), 1% were ineligible to continue, and 2% were neutrally discharged with a new charge before being connected to services.

The Child and Adolescent Needs and Strengths assessment tool has 77 questions across several domains: childhood

trauma, traumatic stress, risk behaviors, behavioral and emotional needs, life domain needs, caregiver needs, and strengths.[8] Paired pre–post assessments demonstrated that needs decreased from an average of 2.90 to 1.42, whereas strengths increased from 4.81 to 5.38, suggesting that youths who complete the program have increased strengths and reduced needs (paired means *t* tests; $P < .001$).

Recidivism, defined as any rereferral to court within one year of discharge, was also assessed. The care coordination agency and Juvenile Probation shared data directly; results were de-identified before being shared with us. Analysis was completed only for 2017 and 2018 because the one-year window was incomplete for many youths in 2019. Matches were found in the Juvenile Probation arrest database for 96% of youths. Although 18% of youths who successfully completed the program were rereferred to court, 55% of youths who were connected to services but not successful and 44% of youths who were referred but never connected to services were rereferred to court. Overall, 33% of JJC youths were rereferred to court. By comparison, 32% of youths were rearrested following diversion program involvement after their first arrest in 2016.[9] Youths who successfully completed the program had a significantly lower recidivism rate (χ^2; $P < .05$), whereas the overall JJC recidivism rate did not significantly differ from the comparison group ($P = .77$; Table 2). The comparison group is imperfect because it included youths with lower-level offenses with a reduced propensity for recidivism. The quasiexperimental nature of the program means a true control group did not exist.

TABLE 2— Rereferral to Court Rates by Discharge Category: Cook County, IL; 2017 and 2018 Cohorts

Discharge Category	Not Rereferred to Court, No. (%)	Rereferred to Court, No. (%)
Successful	117 (81.8)	26 (18.2)
Connected to services but not successful	19 (45.2)	23 (54.8)
Not connected to services	61 (56.0)	48 (44.0)
Total	197 (67.0)	97 (33.0)

Note. Population total was n = 197.

SUSTAINABILITY

Developing a long-term funding strategy remains challenging. Although services are provided to justice-involved youths, the justice system did not fund services. Shifting justice system funding for detention to alternative community-based services would be more cost effective and address systemic inequities associated with access to care for youths of color. JJC services cost an average of $4600 for 90 days of programming compared with nearly $47 000 for detention.[10] Furthermore, community-based alternatives result in lower recidivism, yielding long-term savings from reduced future reliance on detention and incarceration.[11] Promising strategies in other states allow Medicaid billing for trauma and other prevention services without a mental health or substance use diagnosis.[12]

PUBLIC HEALTH SIGNIFICANCE

The disproportionate targeting of youths of color by the justice system, leading to negative health outcomes, makes reducing their justice system involvement a public health issue. Findings from phase 1 of this diversion program are promising. Youths had increased strengths and decreased needs by the program's end. Moreover, youths who successfully completed the program had a significantly lower recidivism rate. The care coordination model may also be scaled and evaluated with other populations, such as young adults aged 18 to 24 years.

The punitive nature of the carceral system exacerbates trauma and disrupts healthy adolescent development. However, providing youths with tailored services allows them to maintain connections and social support in communities while addressing basic needs and causes for their justice involvement. In turn, these may decrease life disruption, promote positive health and social outcomes, and reduce further youth justice involvement while we work to eliminate the racial and structural disparities in the current criminal justice system, which disproportionately affects people of color. AJPH

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CONTRIBUTORS

C. I. Gigante led the literature review and initial article drafting. K. Rak performed the data analysis and led the revision process. A. Kaplan contributed to the literature review. A. Kaplan, L. Helmcamp, C. Otoo, and K. M. Sheehan contributed to the revision process. L. Helmcamp drafted the "Sustainability" section. C. Otoo drafted the program description. K. M. Sheehan provided overall article guidance.

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CONFLICTS OF INTEREST

The authors have no potential or actual conflicts of interest to disclose.

HUMAN PARTICIPANT PROTECTION

This project was deemed exempt by Ann & Robert H. Lurie Children's Hospital of Chicago's institutional review board. The authors provided technical support to the care coordination organization but did not have direct participant contact, nor did they have access to identifiable participant information.

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Human Papillomavirus Vaccinations During the COVID-19 Pandemic in Middle Schools in the Rio Grande Valley of Texas

Ana M. Rodriguez, MD, MPH, Thuy Quynh N. Do, PhD, MPH, Maria L. Jibaja-Weiss, EdD, Lu Chen, MS, Kathleen M. Schmeler, MD, Jane R. Montealegre, PhD, and Yong-Fang Kuo, PhD

This quasi-experimental study (a community-based, physician-led human papillomavirus [HPV] education campaign and school-based vaccination program) followed 6481 students at eight Pharr–San Juan–Alamo Independent School District (Rio Grande Valley, Texas) middle schools between August 2016 and March 2021. We describe the successes and challenges experienced during the COVID-19 pandemic. HPV vaccine initiation and completion rates increased 1.29-fold and 1.47-fold, respectively, between June 2019 and March 2021. Between March 2020 and March 2021, 268 HPV vaccine doses were provided through 24 school-based interventions. Our program continued successes seen in increasing HPV vaccination rates and reducing possible HPV-associated cancers. (*Am J Public Health*. 2022;112(9): 1269–1272. https://doi.org/10.2105/AJPH.2022.306970)

Human papillomavirus (HPV) vaccinations have proven to be a valuable, cost-effective public health intervention for reducing HPV-associated cancers.[1] The ongoing global COVID-19 pandemic has affected health service delivery, causing dramatic drops in annual well visits, cancer screenings, and immunizations (e.g., a 19.3% decrease in HPV vaccinations).[2–4] With population-wide lockdowns implemented to reduce outbreaks (closing schools, businesses, and clinics and halting mass gatherings), these disruptions have caused indirect health effects and threatened progress in HPV vaccinations, thus possibly increasing preventable HPV-related diseases and cancers. The objectives of the intervention described here were to increase HPV vaccination rates among medically underserved, economically disadvantaged students in a rural middle school district (Rio Grande Valley [RGV], TX) and assess COVID-19 pandemic adaptations to a community-based education and school-based HPV vaccination program.

The intervention combined community-based HPV education with school-based vaccinations in the Pharr–San Juan–Alamo Independent School District (PSJA ISD).[5] The educational component, involving physician-led educational events in Cameron, Hidalgo, and Starr counties (located in a 15-mile radius encompassing that of the original intervention, which took place in the Rio Grande City Independent School District [RGC ISD])), started in August 2016, and the PSJA ISD school-based vaccination program began in June 2019.[5]

INTERVENTION AND IMPLEMENTATION

From June 2019 to March 2021, a quasi-experimental design was used to implement the school-based vaccination component in the PSJA ISD (starting with the schools with the largest enrollments and in the closest proximity to the RGC ISD: August 2019 for phase 1 [three middle schools], August 2020 for phase 2 [three middle schools], and February 2021 for phase 3 [two middle schools]).[5] HPV vaccine series were initiated and completed during the school year at back-to-school events, progress report nights, and preview events.[5] Catch-up vaccinations were scheduled through nearby clinics and in subsequent events for missed doses.

The intervention addressed factors affecting HPV vaccine uptake (e.g., social norms, health provider recommendations, risk perceptions, accessibility, costs).[5] Physicians addressed the audience, targeted the middle schoolers in the recommended age group (11–12 years), and bundled HPV with recommended vaccines (e.g., flu; meningococcal; meningitis B; tetanus, diphtheria, and pertussis; and hepatitis A vaccines). Parents were required to be present at the administration of the first dose.[5]

The goals were to increase HPV vaccine initiation rates (the percentages of eligible students who received at least one dose) and up-to-date completion rates (the percentages of eligible students younger than 15 years who completed two doses and the percentages who completed three doses among those who initiated vaccination at 15 years or above or had immunocompromising conditions) to meet the 2016 National Immunization Survey—Teen HPV vaccination rates (initiation: 49.3%; completion: 32.9%). HPV vaccine initiation was defined as receipt of the first dose of the HPV vaccine series. HPV vaccine completion was defined as an interval of at least 6 months apart from initiation to the next dose.[6]

Student vaccination data were refreshed quarterly. Baseline HPV vaccination rates and demographic information were collected for the study cohort during June 2019 to March 2021. HPV vaccination data were collected from the vaccine vendor and school immunization records and reconciled with Immtrac2 (the Texas Immunization Registry). The registry is secure and confidential and safely consolidates and stores immunization records from multiple sources in a single centralized system. Summary statistics were computed for each school. We used the χ^2 test and analyses of variance to compare school differences between intervention groups (phase 1, phase 2, and phase 3) for categorical and continuous variables, respectively. HPV initiation and completion rates were computed from the start of the school-based vaccination intervention (June 2019) to March 2021 and stratified by middle school and sex. SAS version 9.4 (SAS Institute Inc, Cary, NC) was used in conducting all analyses. Statistical significance was set at an α of .05 (two-sided).

PLACE, TIME, AND PERSONS

Eight PSJA ISD middle schools participated from June 2019 to March 2021. Using previously identified barriers from another RGV study,[5,7] we strengthened our strategies, continued to target female and male middle schoolers (11–12 years of age), and extended the study area for school-based vaccinations from the RGC ISD to the PSJA ISD. Before COVID-19, school-based vaccination events were held in nurses' offices, conference rooms, nearby clinics, and community events. The COVID-19 pandemic hit in the middle of the first year of implementation. After school closures, we held outside events with social distancing, limited in-person activities and increased online activities, and sought to increase stakeholder engagement through teleconferences, navigational services, and mobile van vaccinations.

PURPOSE

Texas ranks 47th of the 50 states and the District of Columbia in terms of HPV up-to-date vaccination rates.[8] Texas continues to have a 10% lower uptake of HPV initiation than the rest of the United States, with HPV vaccine coverage among girls 13 to 17 years old decreasing in 2016.[9] Because rural communities often have higher incidence and mortality rates of HPV-associated cancers and lower HPV vaccination rates,[10] offering the HPV vaccine at no cost is important in the RGV, a rural, medically underserved area (with four counties bordering Mexico: Cameron, Hidalgo, Starr, and Willacy). Residents of this area are more likely to be Hispanic, medically underserved, less educated, less literate in terms of health knowledge, and economically disadvantaged than residents of other areas of Texas.[11] Women residing in the RGV have a 30% higher incidence of and mortality from HPV-associated cervical cancer.[12]

EVALUATION AND ADVERSE EFFECTS

Our community-based education and school-based vaccination intervention has helped strengthen adolescent health in the RGV.[5] Despite COVID-19 conditions, HPV vaccine initiation and completion rates in the PSJA ISD increased 1.29-fold and 1.47-fold, respectively, between June 2019 and March 2021 (Figures 1 and 2; Table A, available as a supplement to the online version of this article at https://www.ajph.org).

Notwithstanding the program's successes, we faced numerous challenges. Extensive recovery efforts were made to minimize the potential long-term consequences despite school and clinic closures and limited gatherings. Adjustments were made to safely interact with the community (telephone calls and virtual meetings through Zoom to educate the community and continuing vaccination efforts through mobile clinics). Between March 2020 and March 2021,

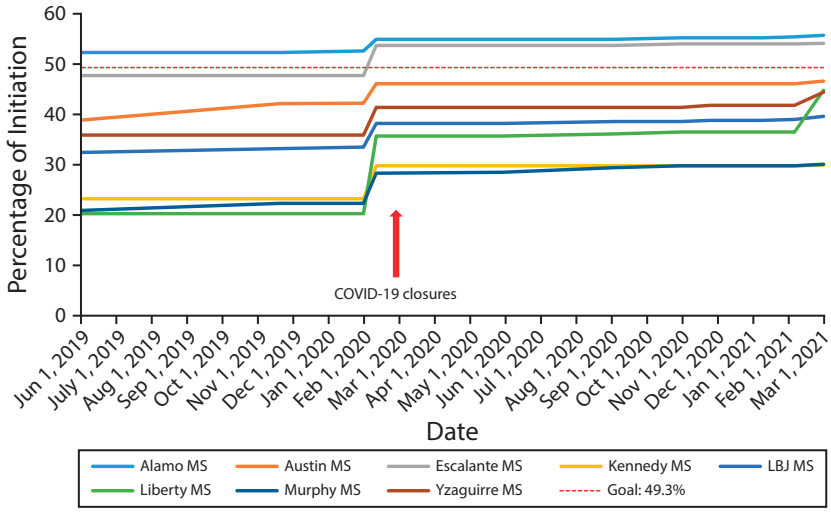

FIGURE 1— Human Papillomavirus Vaccine Initiation Rates for Pharr–San Juan–Alamo Middle Schools: Rio Grande Valley, TX, 2019–2021

Note. LBJ = Lyndon B. Johnson; MS = middle school.

268 HPV vaccine doses were provided through 24 school-based interventions. The study identified those who missed their vaccinations and reestablished community demand through HPV "catch-up" campaigns. Our results suggest that middle schools are a feasible, effective setting for increasing HPV uptake.

SUSTAINABILITY

Sustainability is of paramount importance in this area with higher cervical cancer incidence and mortality rates, lower HPV vaccination rates, and a high proportion of low-income and largely uninsured, rural minority residents. With the appropriate resources and partnerships, schools can carry out vaccine-related activities ranging from educating students, parents, and communities to developing policies supporting vaccination, providing vaccines, and serving as sites where partners administer vaccines. We have improved organizational capacity (communications) by developing a curriculum and

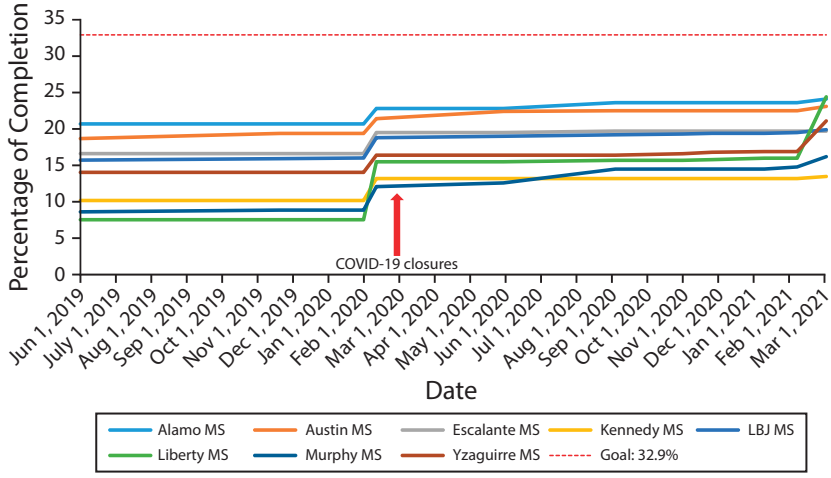

FIGURE 2— Human Papillomavirus Vaccine Completion Rates for Pharr–San Juan–Alamo Middle Schools: Rio Grande Valley, TX, 2019–2021

Note. LBJ = Lyndon B. Johnson; MS = middle school.

"train-the-trainer" training sessions for individuals interested in continuing our education efforts. Health care providers have been trained to bundle and provide strong recommendations for the HPV vaccine. Our community-based education and school-based vaccination program has been successful in building community demand. We have received requests to extend the program to additional RGV school districts.

PUBLIC HEALTH SIGNIFICANCE

As noted, the COVID-19 pandemic has affected health care delivery, with dramatic drops in annual well visits, cancer screenings, and HPV vaccinations. Our results show that schools continue to serve as feasible, effective settings for increasing HPV vaccine uptake. Our program increases access to the HPV vaccine; reaches a large, diverse population regardless of individual access to health care; and removes known barriers. Our COVID-19 adaptations have allowed for a safe environment for middle schoolers to get vaccinated. HPV vaccine uptake can be sustained if the vaccine is bundled with other required vaccines and parents, local providers, school board members, and school staff are educated about its importance. AJPH

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CONTRIBUTORS

A. M. Rodriguez contributed to conceptualization, project administration, analyses and methodology, and the writing and editing of the article. T. Q. N. Do contributed to conceptualization, analyses and methodology, and the writing and editing of the article. M. L. Jibaja-Weiss contributed to the writing and editing of the article. L. Chen contributed to analyses and to writing and reviewing the article. K. M. Schmeler contributed to the writing and editing of the article. J. R. Montealegre contributed to review of data and the writing and editing of the article. Y. -F. Kuo contributed to analyses and methodology and the writing and editing of the article.

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The authors have no conflicts of interest to disclose.

HUMAN PARTICIPANT PROTECTION

Approval was obtained from the University of Texas Medical Branch's institutional review board and the Pharr–San Juan–Alamo Independent School District school board. Informed consent was required for middle schoolers to be vaccinated.

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Over the Precipice Into a Post-*Roe* World—A Look at Abortion Rights and Access in the United States

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See also Foster et al., p. 1290, Gerdts et al., p. 1297, and Upadhyay et al., p. 1305.

On June 24, 2022, the Supreme Court of the United States (SCOTUS) released its ruling in *Dobbs v. Jackson Women's Health Organization*, summarily overturning *Roe v. Wade* and *Planned Parenthood v. Casey*.

ONE SMALL STORY (A PROLOGUE)

I am sandwiched between my mother—who lived her prime reproductive years without the federal protection of the right to access legal abortion—and my daughter, who is now without that same federal protection. My now-deceased mother was once a young, newly married Black Cuban immigrant working in New York City's garment district sweatshops in the 1940s and 1950s. She became pregnant and experienced debilitating nausea and vomiting and, at that time, simply could not afford to miss work. She got an abortion—illegally—risking her physical health with an unprotected and unsafe procedure because her economic health and the well-being of her family depended on it.

I begin this editorial with that short personal reflection, one that hit me hard on June 24, not because I am unique, but precisely because I am not. My anecdote, that N of 1, is merely a narrative illustration of the compelling evidence and hard data compiled by three original articles reprinted in this special issue and the respective accompanying new commentaries that I have the pleasure of introducing.

A SAMPLING OF THE ABUNDANT EVIDENCE

In their 2018 publication, Foster et al. (p. 1290) go beyond examining abortions sought for economic reasons (as was the case for my mom) to the less well-examined but vitally important question of the socioeconomic consequences faced by women who are unable to obtain a sought-after abortion. The Advancing New Standards in Reproductive Health (ANSIRH) Turnaway Study[1,2] enrolled nearly 1000 women across 30 US abortion clinics between 2008 and 2010 and followed them for 5 years. In the 2018 article reprinted in this issue (p. 1290), the authors found that at both 6 months and 4 years after the abortion was obtained or denied, women who gave birth after being denied an abortion were more likely to live in poverty and more likely to receive public assistance than were women who obtained an abortion. In an accompanying commentary for this issue, Foster updates these findings and describes corroborating evidence of adverse economic consequences experienced by women who were turned away, as well as by their children.

In a 2014 article (Upadhyay et al., p. 1305), collaborators from ANSIRH and the Guttmacher Institute combined expertise and shared their data from the Turnaway Study and the Abortion Provider Census (APC),[3] respectively, to look at factors that influence delays in seeking abortion. Specifically, Upadhyay et al. compared women who had pregnancies just under the clinic's gestational age limit for abortion (and who received the abortion they sought) with women who had pregnancies just over the clinic's gestational age limit (and who were therefore denied the abortion they sought). The authors found that there was no significant difference between the two groups in reasons for delay in seeking an abortion. The most common reasons were cost of travel and the procedure and not recognizing they were pregnant. By using Turnaway Study and APC data, the authors were able to estimate that annually more than 4000 women in the United States would be forced to carry a pregnancy to term because they presented to an abortion provider after the gestational age limit. In her accompanying commentary in this issue, Upadhyay points out that in the years

since the original 2014 publication, a slate of restrictive state laws has lowered gestational age limits and led to clinic closures. Upadhyay also cites a SCOTUS amicus brief that estimated 100 000 women would be unable to reach an abortion provider in the first year after *Roe v. Wade* was overturned.[4]

One of the articles reprinted in this issue (Gerdts et al., p. 1297) unpacks some of the outcomes observed after the 2013 introduction of one specific restrictive state law—Texas House Bill 2 (HB2). This was one of many "targeted regulation of abortion providers," or TRAP, laws that have been passed at an increasing pace since 2010.[5] Gerdts et al. identified that the number of clinics providing abortions in Texas fell by 54% after HB2 was introduced. The authors surveyed women who obtained an abortion in five Texas cities between May and August 2014 and compared the experiences of women whose nearest abortion clinic had closed after HB2 with those of women whose nearest clinic had remained open. The authors found a fourfold increase in the average distance traveled to obtain an abortion among women whose nearest clinic had closed compared with the travel distance among women whose nearest clinic remained open. Women whose nearest clinic had closed also experienced other burdens, such as increased out-of-pocket costs and difficulties accessing medication abortions. In the accompanying commentary, Gerdts et al. highlight the additional restrictions imposed by Texas since the original publication, as well as the robust on-the-ground response of abortion providers and advocacy groups who have been attempting to mitigate the harms of those restrictions.

The US abortion access landscape is changing at breakneck speed. A large number of states are now rushing to eliminate legal access to abortion, and the Guttmacher Institute predicts that 26 states will ultimately do so.[6] This rush to eliminate access is happening even as the need for this essential health care service increases. Recent data from the APC show an 8% increase in abortions (and a 7% increase in the abortion rate) between 2017 and 2020—the first increase in US abortions in 30 years.[7] The reprinted articles from the US-based studies and the invited commentaries in this special issue constitute a compelling body of evidence on just how much is at stake for individuals and families.

We can also look to recent global data from the Guttmacher Institute and World Health Organization study of abortion incidence—evidence that is similarly compelling—to foreshadow population outcomes. Globally, abortion rates in countries where abortion is highly restricted are no different from those found in countries where abortion is broadly legal.[8] This pattern speaks to how motivated many women are to avoid carrying unwanted pregnancies to term, and it suggests that many living in restrictive states in the United States will continue to seek out abortions despite the logistical hurdles and legal risks. Poor and low-income women make up the majority of US abortion patients, so it is these individuals who are likely to bear those risks disproportionately. Similarly, Black women have higher rates of abortion than their White counterparts and also are more likely to live in communities that are under close governmental and societal scrutiny, suggesting that the criminalization of abortion could exacerbate already-stark racial inequities in criminal prosecution and punishment. Research also suggests that maternal mortality rates will see an alarming rise as a result of abortion bans,[9] with Black women again bearing the brunt and already shameful racial inequities becoming even wider. These are only a few of the many equity concerns that the SCOTUS decision raises.

EPILOGUE

In the *Dobbs* SCOTUS decision, Justice Thomas unequivocally signals that stripping of the right to legal abortion is likely just the beginning, not the end. I opened this editorial with a vignette about my mom. I close by sharing a few thoughts about my now-adult children—again, not because their stories are unique, but precisely because they are not. My children were born into a different socioeconomic stratum than my mom and have infinitely more educational and employment opportunities than she ever did. Yet, as the multiethnic grandchildren of Black Cuban immigrants on one side and a Mexican immigrant on the other side, I know from the evidence (and lived family experiences) that, as people of color, they are nevertheless at risk for experiencing one or more of the biological legacies that spring forth from past and current social constructs of racism in the United States. Should Justice Thomas achieve his goal, my bi/queer son may soon lose federal protections regarding who he can legally have sex with or marry. My daughter has already lost federally protected access to legal abortion. So, I conclude this editorial with a quote from a book that frames the past as it illuminates a way forward for sexual and reproductive health, rights, and justice. In a primer on reproductive justice,

Ross and Solinger write, "Reproductive oppressions are not about genital anatomy. Reproductive oppressions stem from a determination to exercise power over vulnerable persons."[10(p6)] The authors also describe how

> women of color have been targeted in distinctive, brutal ways across US history. The reproductive justice framework derives its vital depth from drawing attention to the persistence of this history. . . . In this case, past abuses of women's reproductive bodies live on in contemporary harms and coercions, stimulating reproductive justice activists to define the arena of reproductive dignity and safety in terms of human rights.[10(p11)]

The evidence highlighted in the reprints and commentaries I introduced here, the public health mission of the *Journal*, and the human rights imperative articulated by reproductive justice leaders converge into a powerful clarion call for our nation to fully understand our oppressive past so we can successfully fight for a liberated future. AJPH

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New Abortion Bans Will Increase Existing Health and Economic Disparities

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See also Abortion, pp. 1273–1317.

Four years ago, the *Journal* published our findings on the socioeconomic consequences of receiving versus being denied a wanted abortion in the United States based on the Turnaway Study. The article focused on the economic outcomes of almost 1000 women who presented for care on either side of the gestational limit of 30 abortion facilities across the country. Since publication, we looked to verify the findings based on self-reported data using data from credit agencies. Archived records of overdue and outstanding debt, available credit, and public records of evictions and foreclosures for these same women were published in the *American Economic Journal: Economic Policy* in 2022. What these credit agency data show is that the women who received and those who were denied an abortion were economically similar for years before they became pregnant and that the negative consequences of being denied an abortion persisted for years after. It is not just the pregnant person who experiences increased hardships. Data from the interviews with women have also revealed that the economic hardships redound to children—those born from the unwanted pregnancy as well as older children. These four articles—self-reported data published in the *Journal*, credit data published in an economics journal,[1] and children's outcomes in pediatrics journals[2,3]—demonstrate that being denied a wanted abortion is associated with a large increase in financial hardship.

CONSEQUENCES OF THE END OF *ROE*

These findings of the association between carrying an unwanted pregnancy to term and poverty are about to become even more relevant. With the recent Supreme Court decision in *Dobbs v. Jackson Women's Health Organization*, which overturned *Roe v. Wade*, the 1973 decision that asserted a federal right to abortion, states may now impose new restrictions on abortion. About half of the US states are anticipated to institute nearly entire abortion bans.[4] In these states, people who are unable to get an abortion because the procedure is banned and their children will experience these economic hardships we have documented. What is not known is who will carry unwanted pregnancies to term and who will find a way to circumvent their state's laws and get an abortion anyway.

With new restrictions, the economic story is about to become more complicated. Those with the most resources—money, a car, childcare, and ability to take time off from work—may travel hundreds of miles to find legal services in another state. Others, with a different set of required resources—Internet access, knowledge of sites such as PlanCpills, a credit card, and an address—will order medication abortion pills online. But those without resources and information will be at greatest risk for the worst health and economic outcomes—attempting less safe methods of inducing an abortion and carrying an unwanted pregnancy to term. The evidence that not being able to get an abortion leads to greater poverty and a worsening of physical health outcomes[5] means that we are about to see a deepening of existing inequalities. Poverty and poor health make it more likely that one will be denied an abortion. Being denied an abortion leads to yet greater poverty and health risks.

ROLE OF PUBLIC HEALTH RESEARCHERS GOING FORWARD

In the coming years, it is critical that the public health community act to mitigate the harms of further restrictions to health care. We will need to know who is most at risk for attempting dangerous methods of inducing abortion and who forgoes treatment of spontaneous and induced abortion complications for fear of legal repercussions. Identifying successful harm reduction strategies will be key as we gather the

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data to support public health evidence-based reproductive health policies.

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Collapse of the Abortion Care Infrastructure: There Aren't Enough Hands to Fill the Gaps

Caitlin Gerdts, PhD, MHS, Anna Rupani, JD, MSW, Kamyon Conner, MSW, and Sachiko Ragosta, BA

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See also Abortion, pp. 1273–1317.

The past decade has seen a steady and dramatic increase in legislative attacks on abortion access in the United States,[1] often under the perilous guise of "protecting women's health."[2] A robust body of evidence has, however, demonstrated that access to abortion is vital to the health and well-being of pregnant people and their families[3–6] and that restrictions on abortion access threaten public health.[7]

In the years since *AJPH* published the article "The Impact of Clinic Closures on Women Obtaining Abortion Services After Implementation of a Restrictive Law in Texas" by Gerdts et al. (p. 1297)—which documents the compounding burdens of abortion clinic closures after a restrictive 2013 law—Texas has continued to serve as an extreme case study; the state suspended abortion services as "nonessential" at the onset of the COVID-19 pandemic[8] and passed a law banning all abortions beyond the detection of embryonic cardiac activity in 2021, which a newly constituted Supreme Court let stand. In Texas, facing the collapse of routine health care provision, abortion activists have doubled down on the essential work they have been doing for years—providing information, travel arrangements, funding, and compassion for people who cannot access abortion in Texas. The need is unprecedented—close to 1400 Texans per month now travel out of state for abortion.[9] The scale of support that will be needed to surmount post–*Roe v. Wade* barriers is beyond what these networks can sustain. Abortion funds in every state will be called on to provide exponentially greater amounts of funding and practical support, establish relationships with more clinics, and adapt to new systems for verification and reimbursement. Clinics where abortions are provided, which are already under the strain of exponentially increased patient volume, will be required to develop new processes to work with clients and funds around the country. Ad hoc systems that, despite their imperfections, will serve many are no substitute for a functioning health care system.

With the repeal of *Roe v. Wade*, people in more than half of the country will be forced to make decisions regarding traveling for care, navigating self-care options, or not receiving care at all.[10] Traveling across state lines to access abortion is not a new phenomenon,[11] and it often involves taking time off from work or school, securing lodging, and arranging childcare—burdens that are compounded for minors, those who experience economic insecurity, undocumented individuals, people with non-English language preference, and those who are disabled, among others. For those who can access medication by mail or other means,[12] self-managed medication abortion may be an option if they mistrust the medical system or if they prefer the privacy of an at-home abortion. But, although self-managed medication abortion is safe and effective,[13] its attendant legal risk will inevitably fall disproportionately on members of already overpoliced and oversurveilled communities.[14] For far too many people, the financial, logistical, and legal barriers to abortion will mean they simply cannot access abortion care at all—further exacerbating structural inequities and imperiling the health, lives, and reproductive well-being of millions of Americans.[15–18] A health care system in which people cannot obtain essential health care within the borders of their state of residence is a health care system in collapse.

The findings of Gerdts et al. (p. 1297) are, perhaps, more relevant today than ever as evidence of the consequences of restrictive abortion policies on people seeking abortion and as foreshadowing of the catastrophic nationwide public health implications of the repeal of *Roe v. Wade*. It is shameful, devastating, and utterly unsustainable that networks of activists must now re-create systems that have ceased to exist, working

around the clock to ensure that routine, essential reproductive health care remains accessible, at least to some, and collectively pressing their hands against the ever expanding cracks in the proverbial dam of our health care system, as the water rushes through. AJPH

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Barriers Push People into Seeking Abortion Care Later in Pregnancy

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See also Abortion, pp. 1273–1317.

In 2013, we published one of the first articles from the Turnaway Study, in which we estimated that 4000 pregnant people were denied an abortion each year because they presented for care beyond the facility's gestational limit (see p. 1305 of this issue). We found the most common reasons for being delayed in seeking an abortion were having to raise money for travel and procedure costs and not recognizing the pregnancy earlier.

BARRIERS EXPECTED TO INCREASE

On June 24, 2022, the US Supreme Court officially reversed the 1973 *Roe v. Wade* ruling, declaring that the constitutional right to abortion no longer exists. This decision allows states to ban abortion at any point in pregnancy or altogether. In April 2013, when our Turnaway article was published, seven states banned abortion at 22 weeks, and one state banned abortion at 20 weeks.

This year, up to half of states could ban abortion altogether (Figure 1), and about 100 000 people will be essentially "turned away" from receiving care in their own states,[1] leaving them to seek this essential health care service in other states. It is projected that only one fourth of people needing abortion care will be able to travel out of state. For the rest, travel and procedure costs and other logistical barriers will be insurmountable—particularly for people with disabilities, adolescents, incarcerated people, immigrants, those with young children, and those living on low incomes.

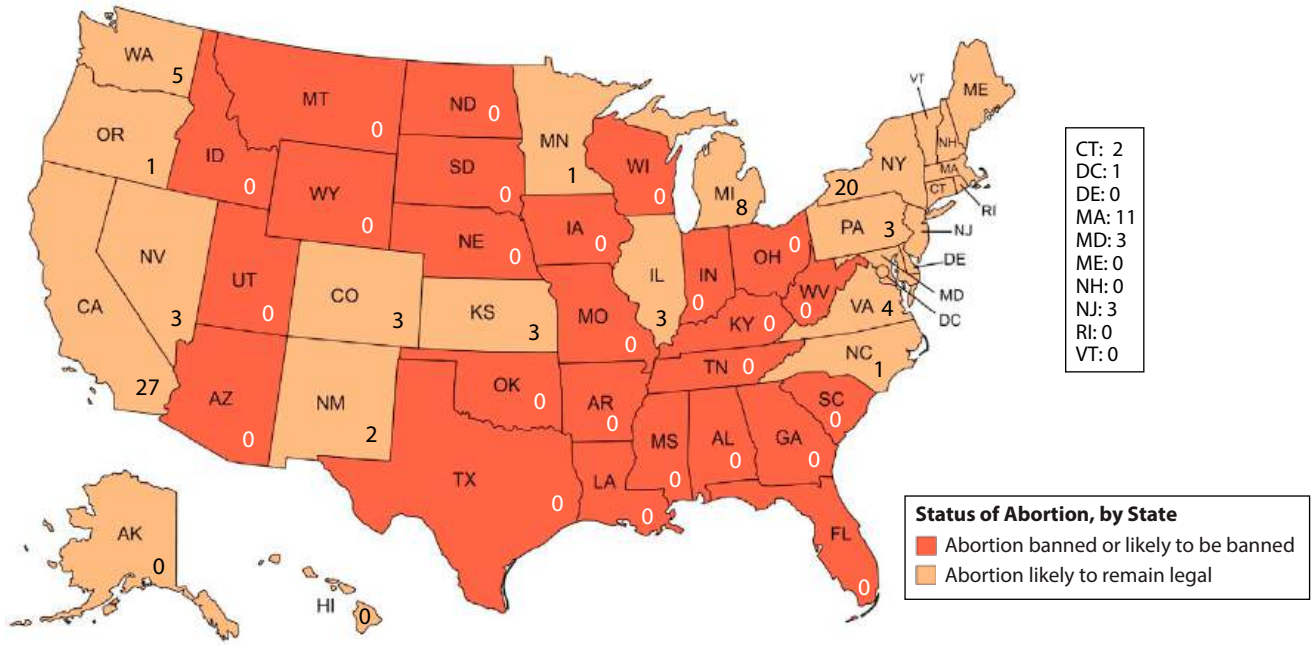

FIGURE 1— Abortion Status and Number of Abortion-Providing Facilities That Offer Abortion Care After 20 Weeks of Pregnancy

LEGAL, DISTANCE, AND COST BARRIERS ARE OFTEN INSURMOUNTABLE

By increasing the hurdles to getting an abortion, people are pushed into seeking abortion care later in pregnancy (p. 1297).[2] In our recent prospective study, pregnant people considering abortion living 50 miles or more from the closest abortion facility were significantly more likely to still be pregnant and either resigned to continuing the pregnancy or still seeking an abortion 4 weeks later.[3]

Raising the funds to pay for an abortion can lead to further delays and create a cycle of increasing cost and delay. One Turnaway participant explained why she could not go to another clinic after being denied an abortion at first: "It was probably travel costs, procedure costs, not knowing who I would have to come with me on the 4-day adventure. I was at the point that there was no guarantee wherever I went."[1]

The number of facilities that offer later abortion care has been declining. Although the total number of facilities increased over 2017 to 2021, the regions with fewer facilities experienced even more clinic loss.[4] Before the Supreme Court decision, the United States had 790 publicly advertising abortion facilities, and only 17% (137) offered care after 20 weeks of pregnancy.[5] As states continue to ban abortion, we expect that only 104 facilities nationwide will offer abortion care after 20 weeks of pregnancy, with the vast majority in the Northeast and West (Figure 1).

SELF-MANAGED ABORTION IS FRAUGHT WITH LEGAL RISK

Some pregnant people who want an abortion but cannot travel will attempt to self-manage their abortions. In 2013, abortion medications mifepristone and misoprostol were not as easily available. Today, we have virtual abortion facilities that offer abortion care through telehealth and mail in the 21 states where it is legal.[4] We also have online sites, such as Aid Access, that will mail abortion medications to patients even in states that ban abortion or delivery of medication by mail.[6] However, these medications are most effective when used in the first 11 weeks of pregnancy. The medications ship from abroad and can take up to two weeks to arrive, delaying care. This approach also subjects pregnant people, particularly people of color whose behavior is more often monitored, to risk of criminalization. Given how safe abortion pills are, people *can* use them on their own. But people have a right to the care and comfort that comes from having a provider support them, regardless of their state of residence. AJPH

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Telemedicine Provision of Medication Abortion

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See also Abortion, pp. 1273–1317.

The first documented use of telemedicine in US abortion care was in Iowa in 2008, where it was used to extend the reach of the small number of physicians willing to provide medication abortion there.[1] Because of regulations imposed by the US Food and Drug Administration (FDA), patients still needed to come into a medical office to receive the mifepristone, used together with misoprostol. However, telemedicine connecting a physician in one health center to a patient in another allowed patients to go to a facility closer to their home, or perhaps to a location with an earlier appointment.

In the first 16 months of the service, 33% of medication abortions at a Planned Parenthood affiliate in Iowa were provided using telemedicine.[1] This proportion increased over time, and data from the affiliate spanning seven years after the service was introduced demonstrated that 46% of medication abortions were provided using telemedicine.[2]

Research on this model of providing telemedicine found it to be safe and effective, with a high level of satisfaction among patients.[1,2] In our previous article,[3] we found that in the two years after the model was introduced, there was a small but significant decline in second-trimester abortion. We also observed a small decline in the distance traveled for abortion care and found that people living farther from a facility providing aspiration services were more likely to obtain an abortion after telemedicine was introduced. Overall, our findings suggested that telemedicine improved access to medication abortion and to early abortion generally.

Since our article was published, there has been a rapid expansion of the use of telemedicine in all aspects of medicine, including for abortion care. Telemedicine is now used to provide state-mandated preabortion counseling and preoperative care before second-trimester dilation and evacuation.[4]

Telemedicine is also used to assess patients for eligibility for medication abortion without routine ultrasound or other testing, with the mifepristone and misoprostol mailed to patients. This model of care was critical to maintaining access to safe abortion care during the COVID-19 pandemic, and research found it to be safe and effective.[5,6] On the basis of this evidence, the FDA changed its policy regarding mifepristone and permanently lifted the in-person dispensing requirement for the drug.

Now that the Supreme Court has overturned *Roe v. Wade*, access to facility-based abortion care is likely to disappear in about half of US states, and telemedicine will undoubtedly play an increasingly important role. In states where abortion remains legal, telemedicine provision of medication abortion will help to provide care to patients directly in their homes, making more in-clinic appointments available for patients who may be traveling for care from other states. In states where abortion is restricted or banned, telemedicine provision of abortion care is likely to be banned as well; indeed, it is already banned in 19 states.[7] Unless there are new federal or state protections enacted, clinicians licensed in the United States will be unable to legally provide medication abortion across state lines to patients living in states with bans. However, online telemedicine platforms such as Aid Access, which operates outside of the US regulatory framework, will provide a critical service to those who may be unable to travel to another state for care.

Back in 2008, the idea of using telemedicine for abortion care was revolutionary. Although the model we studied in Iowa was simple, it was a first step toward documenting how technology could be used to improve access to safe, early abortion care. Fast-forward 14 years, and it is hard to imagine medical practice without the use of telemedicine. And for abortion, the expansion of new service delivery models based on telemedicine could mean the difference between obtaining care or not as access to facility-based care becomes increasingly constrained in much of the United States. AJPH

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Population Group Abortion Rates and Lifetime Incidence of Abortion: United States, 2008–2014

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Objectives. To assess the prevalence of abortion among population groups and changes in rates between 2008 and 2014.

Methods. We used secondary data from the Abortion Patient Survey, the American Community Survey, and the National Survey of Family Growth to estimate abortion rates. We used information from the Abortion Patient Survey to estimate the lifetime incidence of abortion.

Results. Between 2008 and 2014, the abortion rate declined 25%, from 19.4 to 14.6 per 1000 women aged 15 to 44 years. The abortion rate for adolescents aged 15 to 19 years declined 46%, the largest of any group. Abortion rates declined for all racial and ethnic groups but were larger for non-White women than for non-Hispanic White women. Although the abortion rate decreased 26% for women with incomes less than 100% of the federal poverty level, this population had the highest abortion rate of all the groups examined: 36.6. If the 2014 age-specific abortion rates prevail, 24% of women aged 15 to 44 years in that year will have an abortion by age 45 years.

Conclusions. The decline in abortion was not uniform across all population groups. (*Am J Public Health.* 2017;107:1904–1909. doi:10.2105/AJPH.2017.304042)

See also Foster, p. 1860.

Abortion is a common medical procedure and an important component of public health.[1,2] In 2014, 926 190 abortions were performed in the United States; the abortion rate was 14.6 abortions per 1000 women aged 15 to 44 years, meaning that in that year 1.5% of women of reproductive age had an abortion.[3] In 2008, it was estimated that 30% of women aged 15 to 44 years would have an abortion by age 45 years if the prevailing rate continued,[4] and this figure is often used to demonstrate the commonality of abortion.[2,5] However, the abortion rate has declined substantially since that time—14% between 2011 and 2014 alone[3]—and it is likely that the estimate of the lifetime incidence of abortion has also declined.

In addition to fewer women having abortions, the characteristics of the women who obtained them has changed. In 2014, 49% of abortion patients had family incomes below 100% of the federal poverty level, a significant increase from 42% in 2008.[6] Adolescents accounted for a significantly smaller share of abortion patients: 12% in 2014 compared with 18% in 2008. Low-income and younger women have traditionally been at increased risk for unintended pregnancy and, in turn, abortion. Changes in the prevalence of abortion for these and other groups, as measured by the abortion rate, could inform strategies to reduce disparities in access to family planning services and other types of reproductive health care.

We combined information on abortion rates and the characteristics of women who have abortions to determine if declines in abortion were experienced by all populations of women. Specifically, we estimated abortion rates in 2014 according to age, income, race and ethnicity, and other characteristics, and we also examined changes in population rates since 2008, the last year these measures were generated. Finally, we provide an updated estimate of the lifetime incidence of abortion.

METHODS

We used secondary data from multiple sources to construct 2 measures: population group abortion rates, for comparisons between 2008 and 2014, and the lifetime incidence of abortion for 2014. We relied on 3 data sets to calculate these estimates: the Guttmacher Institute's 2014 Abortion Patient Survey (APS), the American Community Survey (ACS), and the National Survey of Family Growth (NSFG). We used Stata 14.2 (StataCorp, College Station, TX) to analyze these data. The US federal government makes ACS and NSFG publicly available. The APS is currently available only to the study team and provides information about a hard-to-reach population; thus, we have summarized the data collection, and we provide more detailed information in Appendix A (available as a supplement to the online version of this article at http://www.ajph.org).

The 2014 APS provides information on the characteristics of US women obtaining abortions (including both medical and surgical) in that year. This was the Guttmacher Institute's fifth national survey of abortion patients. As in past surveys, patients at facilities that reported fewer than 30 abortions in 2011 were excluded because of the high likelihood that these facilities would perform few or no abortions during the survey period. Their exclusion can cause little bias

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because these facilities accounted for less than 1% of all reported procedures in 2014.[3] The 2014 APS used the same methodology as previous surveys with 1 exception: it did not include patients obtaining abortions at hospital facilities. We excluded these facilities because of past recruitment and logistical challenges. In 2014, hospitals with caseloads of 30 or more abortions accounted for 4% of all abortions.[3]

The 2014 APS survey design randomly sampled 113 US nonhospital facilities selected from a database of all clinics and physician's offices where abortions were known to be performed in 2011,[7] with updates for new facilities known to have started providing abortion services between 2011 and 2014. We stratified the database by provider type (clinics and private physicians' offices) and caseload (30–399; 400–1999; 2000–4999; and 5000 or more abortions) and then listed them by census region and state within each stratum to ensure that the sample was geographically representative. Every nth facility was sampled. Facilities were asked to administer the questionnaire to all women who obtained an abortion during the fielding period, which ranged from 2 to 12 weeks. If a facility declined to participate or did not obtain usable questionnaires from at least half of the target population, it was replaced by the next facility in its stratum, which was usually in the same state or in a neighboring state in the same region. Between April 2014 and June 2015, 87 facilities participated in the study.

The survey collected information directly from abortion patients, using a 4-page, paper-and-pencil, self-administered questionnaire available in English and Spanish. Envelopes were provided so that staff could not see patients' responses.

Participating facilities reported performing 11 024 abortions during the sampling period; usable data were collected from 8380 women, for a response rate of 76%. We constructed weights to correct for any bias produced by patient nonresponse and deviation from the original sampling plan. We used survey items on age, union status, race and ethnicity, foreign-born status, education, number of previous births, and poverty.

Information on the characteristics of all women aged 15 to 44 years comes from 2 surveys: the ACS and the NSFG. The ACS is a monthly government survey of more than 2 million households conducted by the US Census Bureau, and the sample is selected to represent the civilian noninstitutional population.[8] We used the 2014, 1-year supplemental file of the ACS to estimate distributions of age group, race and ethnicity, education (among women aged 20 years and older), foreign-born status, and poverty for US women aged 15 to 44 years. We used the 2013 to 2015 NSFG to estimate union status and number of previous births because this information was not available in the ACS. The NSFG, which is overseen by the National Center for Health Statistics, collected data on pregnancy, childbearing, and related measures from a nationally representative sample of 5699 US women aged 15 to 44 years between July 2013 and July 2015.[9]

We applied weights to the APS, ACS, and NSFG data to generate frequency distributions. We applied these patient and population characteristics to the total number of abortions and total number of US women aged 15 to 44 years. Estimates of the total number of abortions in 2014 come from the Guttmacher Institute, which conducts a periodic census of all known abortion providers.[3] Population figures for the total number of women aged 15 to 44 years come from the US Census Bureau July 1, 2014, estimates.[10]

We calculated population group abortion rates by dividing the number of abortions in a specific group by the number of women in that group in the US population; we then multiplied this figure by 1000. We rounded population figures for both abortion patients and all women to the nearest tenth.

Our analysis focused on changes in abortion rates by demographic characteristic for the period between 2008 and 2014, because 2008 was the next most recent APS. Abortion rates for 2008 were published,[4] but we adjusted them to be comparable with the 2014 analysis. The previous study relied on the 2008 Current Population Survey to estimate population characteristics. However, the ACS is now considered more accurate than the Current Population Survey, so we reestimated population characteristics used to construct the 2008 abortion rates using the 2008 ACS. Additionally, on the basis of the 2010 Census, the Census Bureau retrospectively adjusted population totals for the years 2006 through 2010; thus, we relied on the updated 2008 count of women aged 15 to 44 years. Finally, the 2008 APS included hospital abortion patients, and the 2014 survey did not. To make the data comparable, we excluded the 402 patients in the 2008 APS (4.2% of the sample) obtaining abortions at hospitals.

As a sensitivity analysis, we compared the demographic profiles of hospital and nonhospital patients in 2008 to determine whether their exclusion appeared to bias the sample (Table A, available as a supplement to the online version of this article at http://www.ajph.org). The 2 groups differed significantly on 2 of the 8 characteristics we examined. Relative to patients obtaining abortions at clinics and physicians' offices, a larger proportion of hospital patients were aged 25 to 29 years (28.2% compared with 24.2%). They were also less educated: 22.7% had not graduated from high school compared with 11.9% of nonhospital abortion patients. Despite these differences, the nonhospital sample was very similar to the full sample on these 2 characteristics, and it is unlikely that the exclusion of the hospital patients biased the sample.

To estimate the lifetime incidence of abortion, or the proportion of women of reproductive age who will have an abortion by age 45 years, we adopted the methodology developed by Forrest.[11] We used data from the 2014 APS to determine the proportion of women who were obtaining first abortions in each of the following age groups: younger than 15, 15 to 17, 18 to 19, 20 to 24, 25 to 29, 30 to 34, 35 to 39, and 40 years and older. Because first abortion rates for the youngest abortion patients are traditionally lower than are those for older adolescents, we estimated age-specific abortion rates separately for adolescents younger than 15 years.

Although standard demographic analyses restrict the population denominator to women aged 15 to 44 years, this component of the analysis estimates abortion rates for adolescents younger than 15 years, using those aged 14 years as the denominator. (We did not calculate an overall abortion rate for those younger than 15 years because this group is so small.) We applied these proportions to the age-specific abortion rates to obtain age-specific first abortion rates.

We obtained the cumulative first abortion rate, or proportion of women estimated to have had an abortion by the time they reach the end of a specified age range, by multiplying each age-specific first abortion rate by the number of years in that age group (e.g., the 15–17 years age group had a multiplier of 3) and summing all age groups up to that age group.

RESULTS

Between 2008 and 2014 the national abortion rate declined 25%, from 19.4 to 14.6 abortions per 1000 women aged 15 to 44 years (Table 1). Abortion rates decreased among all groups of women examined in the analysis. However, the degree of change within and among groups varied considerably.

When examined by age group, women aged 20 to 24 years accounted for the largest share of abortions and also had the highest abortion rate: 28.0 per 1000. The second highest abortion rate was among those aged 25 to 29 years: 22.8 per 1000. The drop in abortion rates between 2008 and 2014 was particularly marked for individuals aged 15 to 19 years, declining 56% among those aged 15 to 17 years and 41% among women aged 17 to 19 years.

When examined by union status, never married women accounted for the largest proportion of abortions in 2014 (45.9%) and had an abortion rate of 16.9 per 1000. Women cohabiting with but not married to their partners had the highest abortion rate: 31.0 per 1000. Between 2008 and 2014, declines in abortion were most pronounced for cohabitating women (39%) and lowest for married women (21%), although the latter group had a low abortion rate in both periods.

White women accounted for the largest share of abortions among the 4 racial and ethnic groups examined (38.7%), although they had the lowest abortion rate: 10.0 per 1000. Black women were overrepresented among abortion patients and had the highest abortion rate: 27.1 per 1000. The decline in the abortion rate among non-Hispanic Black women (32%) was greater than that for that non-Hispanic White women (14%); declines were also substantial for Hispanic women (36%) and non-Hispanic women who

TABLE 1—Number of US Abortions and Population Characteristics of Women Aged 15–44 Years in 2014 and Estimated Abortion Rates and Percentage Change in Estimated Rates Between 2008 and 2014: United States

Characteristic	Abortions in 2014		All Women in 2014, No. (%)	No. Abortions per 1000 Women		
	No.	% (95% CI)		2008[a]	2014	% Change
Total	926 190		63 397 514	19.4	14.6	−25
Age group, y						
< 15	2 220	0.2 (0.2, 0.4)	NA	NA	NA	NA
15–19	108 360	11.7 (10.9, 13.0)	10 333 790 (16.3)	19.4	10.5	−46
15–17	31 610	3.4 (3.0, 3.9)	6 086 160 (9.6)	11.8	5.2	−56
18–19	76 360	8.2 (7.5, 9.0)	4 247 630 (6.7)	30.3	18.0	−41
20–24	310 980	33.6 (32.3, 34.9)	11 094 560 (17.5)	39.9	28.0	−30
25–29	245 260	26.5 (25.4, 27.5)	10 777 580 (17.0)	28.8	22.8	−21
30–34	147 450	15.9 (14.9, 16.9)	10 714 180 (16.9)	17.2	13.8	−20
35–39	84 060	9.1 (8.2, 10.0)	10 016 810 (15.8)	9.5	8.4	−11
≥ 40[b]	28 300	3.1 (2.7, 3.5)	10 460 590 (16.5)	3.2	2.7	−16
Union status						
Married	132 540	14.3 (13.2, 15.5)	24 167 130 (38.1)	7.0	5.5	−21
Cohabiting, not married	287 120	31.0 (29.8, 32.3)	9 256 040 (14.6)	50.9	31.0	−39
Never married, not cohabiting	425 210	45.9 (44.2, 47.7)	25 175 150 (39.7)	23.1	16.9	−27
Previously married, not cohabiting	81 500	8.8 (7.9, 9.7)	4 803 000 (7.6)	23.4	17.0	−28
Race/ethnicity						
Non-Hispanic White	358 810	38.7 (34.6, 43.0)	36 009 790 (56.8)	11.6	10.0	−14
Non-Hispanic Black	255 630	27.6 (23.6, 32.1)	9 446 230 (14.9)	39.8	27.1	−32
Non-Hispanic other	81 960	8.8 (7.7, 10.1)	5 033 760 (7.9)	26.6	16.3	−39
Hispanic	229 790	24.8 (20.8, 29.3)	12 679 500 (20.0)	28.4	18.1	−36
Foreign-born						
No	776 800	83.9 (81.5, 86.1)	52 493 140 (82.8)	19.7	14.8	−25
Yes	149 390	16.1 (13.9, 18.5)	10 904 370 (17.2)	19.0	13.7	−28
Hispanic and foreign-born	73 910	8.0 (6.4, 9.8)	5 078 140 (8.0)	16.5	14.6	−12
Education[c]						
< high school	71 700	8.8 (7.6, 10.1)	5 041 050 (9.5)	21.2	14.2	−33
High school graduate or GED	227 920	27.9 (26.4, 29.6)	11 408 700 (21.5)	23.6	20.0	−15
Some college or associate degree	337 930	41.4 (39.8, 43.1)	19 209 070 (36.2)	21.5	17.6	−18
≥ college graduate	178 550	21.9 (20.0, 23.9)	17 351 840 (32.7)	13.4	10.3	−23
Previous births						
0	376 770	40.7 (38.1, 43.2)	29 086 780 (45.9)	17.3	13.0	−25
1	242 750	26.2 (25.0, 27.5)	11 031 170 (17.4)	32.0	22.0	−31
≥ 2	306 660	33.1 (31.1, 35.2)	23 273 230 (36.7)	17.3	13.2	−24
Family income as % of federal poverty level						
< 100	457 070	49.4 (46.6, 52.1)	12 489 310 (19.7)	49.5	36.6	−26
100–199	237 730	25.7 (24.5, 26.8)	12 463 960 (19.7)	28.0	19.1	−32
≥ 200	231 360	25.0 (22.6, 27.4)	38 482 290 (60.7)	9.4	6.0	−36

Note. CI = confidence interval; GED = general equivalency diploma; NA = not available.

[a]On the basis of previously published abortion rates (Jones and Kavanaugh[4]) and adjusted to account for updated population figures and to exclude nonhospital abortions.

[b]Denominator is women aged 40–44 years.

[c]Among women aged 20 years and older.

identified with a race other than Black or White (39%).

The majority of abortions in 2014 (83.9%) were obtained by women born in the United States. Foreign-born women had an abortion rate that was slightly lower than that of US-born women, 13.7 and 14.8 per 1000, respectively, and rates for both groups declined approximately the same amount. The abortion rate for foreign-born Hispanic women, 14.6 per 1000, was lower than was the abortion rate for all Hispanic women, 18.1 per 1000.

In 2014, 1 in 5 abortion patients (aged 20 years and older) had a college degree, and this group had the lowest abortion rate, 10.3 per 1000, compared with 14.2 to 20.0 per 1000 for the other education groups. Declines in abortion were steepest for women aged 20 years and older who had not graduated from high school (33%).

The majority of abortion patients in 2014 had previously given birth. Women with only 1 previous birth had a higher abortion rate, 22.0 per 1000, than did both women with more than 1 previous birth, 13.2 per 1000, and nulliparous women, 13.0 per 1000. The decline in abortion among women with 1 child (31%) was slightly higher than was that for women with no (25%) or 2 or more children (24%).

Women with family incomes less than 100% the federal poverty level accounted for almost half of all abortion patients in 2014, and this group had the highest abortion rate of all groups we examined; 36.6 per 1000. As income levels increased, the abortion rate decreased; women in the highest income group had an abortion rate less than half the national rate: 6.0 per 1000. Although abortion declined for all income groups between 2008 and 2014, poor women experienced the smallest decline (26%), and the declines grew greater with income.

We used age-specific first abortion rates to estimate the lifetime incidence of abortion (Table 2). In 2014, almost all abortion patients younger than 15 years were obtaining a first abortion (96.1%) and, the first abortion rate was the same as their age-specific abortion rate: 1.1 per 1000 (Figure A, available as a supplement to the online version of this article at http://www.ajph.org). The overwhelming majority of adolescents aged 15 to 17 years were also obtaining their first abortion (93.1%), resulting in a first abortion rate that was only slightly lower than was their age-specific abortion rate (4.8 compared with 5.2 [per 1000]). We obtained the cumulative first abortion rate for those aged 15 to 17 years by multiplying their first abortion rate by 3 (to account for the 3 years in the age group) and adding this to the first abortion rate for adolescents younger than 15 years.

Women aged 40 years and older had a cumulative first abortion rate of 236.7 per 1000, meaning that an estimated 23.7% of women aged 15 to 44 years in 2014 will have an abortion by age 45 years if the 2014 abortion rates continue throughout their reproductive lives. Correspondingly, an estimated 4.6% of women will have had an abortion by age 20 years and 19% by aged 30 years.

TABLE 2—Abortion Rate, Percentage of First Abortions, First Abortion Rate, and Cumulative First Abortion Rate of Women Aged 15–44 Years, All by Age: United States, 2014

Age at Outcome, Years	No. Abortions per 1000 Women	% Obtaining First Abortion (95% CI)	No. First Abortions per 1000 Women	Cumulative First Abortion Rate
< 15[a]	1.1	96.1 (77.5, 99.4)	1.1	1.1
15–17	5.2	93.1 (89.8, 95.5)	4.8	15.6
18–19	18.0	84.7 (81.8, 87.2)	15.2	46.0
20–24	28.0	61.9 (59.2, 64.5)	17.4	132.8
25–29	22.8	47.0 (44.3, 49.6)	10.7	186.2
30–34	13.8	41.2 (38.3, 44.2)	5.7	214.6
35–39	8.4	39.9 (35.4, 44.7)	3.4	231.3
≥ 40[b]	2.7	39.9 (32.9, 47.3)	1.1	236.7
Total	14.6	55.0 (53.2, 56.9)	8.0	236.7

Note: CI = confidence interval.

[a]Denominator is women aged 14 years.

[b]Denominator is women aged 40–44 years.

DISCUSSION

The US abortion rate fell 25% between 2008 and 2014, but this decline was not uniform across all population groups.

The decline in the abortion rate was largest, 46%, for young women aged 15 to 19 years. This parallels the 23% drop in the adolescent birth rate over the same period.[12,13] Recent research suggests that most of the decline in adolescent fertility between 2007 and 2012 was a result of changes in contraceptive use, including increased reliance on long-acting reversible contraception (LARC) such as the IUD (intrauterine device) and implants.[14]

Changes in contraceptive use were likely an important factor behind the steep drop in abortion among adult women, as well.[15] Reliance on LARC among all contraceptive users increased 130% between 2007 and 2009 and continued into 2011, although at a slower pace.[16] Between 2011 and 2014, LARC use increased 48% among clients at federally funded family planning clinics,[17] and this pattern may apply to all women of reproductive age. A recent study found that, for the first time in 2 decades, typical use failure rates for condoms improved.[18] This may also have contributed to the decline in abortion because it is the second most common reversible contraceptive method.[19]

For the first time in 2 decades, the abortion rate declined among women with incomes less than 100% the federal poverty level.[20] Still, the abortion rate for this group was the highest of all the groups examined, and the decrease in abortion was less pronounced than was that for higher income women. Between 2008 and 2014, the number of state abortion restrictions increased,[21] and research suggests that some of these restrictions made abortion more difficult for women to access in at least some states.[3,22–24] We might expect these types of laws to

have the greatest impact on low-income women, resulting in even more of a decline in abortion for this group relative to others. That this was not the case may be because of several factors. The most recent research available suggests that in 2009 through 2012 reliance on LARC was as common for women with family incomes less than 100% the federal poverty level as for higher income women.[16] However, if LARC or other highly effective contraceptive methods became less accessible to low-income women in recent years, this could have led to differential declines in unintended pregnancy and abortion.

Another factor potentially contributing to the trends in abortion by income is health reform. Although federal Medicaid can be used to pay for abortion only under very limited circumstances, 15 states use their own funds to pay for abortions for women with coverage.[6] All but 2 of these 15 states expanded Medicaid eligibility under the Affordable Care Act. Previous research using the 2014 APS found that Medicaid coverage increased among abortion patients in states where Medicaid covers abortion, and the proportion using Medicaid to pay for the procedure also increased significantly: from 44% in 2008 to 52% in 2014.[6] It is possible that more poor women in states where Medicaid pays for abortion acquired coverage and were able to use it to pay for their procedures. This, in turn, could have increased access to abortion for economically disadvantaged women in these states.

We found that White women had the lowest abortion rate of all the racial and ethnic groups examined, although the decline in abortion was greater for women of color. It is possible that increased reliance on LARC and more consistent use of condoms were more pronounced for non-White women. For example, previous research found that the increase in LARC use was significantly higher among Latina (but not Black) women than among Whites.[16] Alternately, the decline could reflect reduced access to care. For example, a disproportionate share of women of color may have lived in states where abortion restrictions successfully reduced access to care,[3,22,23] or they may have been disproportionately affected by restrictions in those and other states. If this was the case, the larger decline in abortion would actually be an indicator of racial and ethnic disparities. More research is needed to better understand the dynamics behind these declines.

The proportion of women expected to have an abortion by age 45 years declined from 30% in 2008 to 24% in 2014. This pattern parallels, but was less pronounced than, the decline in the abortion rate during that same period. That nearly 1 in 4 women is anticipated to have an abortion during her reproductive years demonstrates that it is not an uncommon experience.

Limitations

Our study has several limitations. The APS data contain some amount of measurement error. For example, imputation was used to assign values on key demographic measures when they were not provided by respondents. Social desirability may have affected responses to survey items about family income, previous abortion, and other measures. Owing, in part, to the fact that patients of similar racial and ethnic backgrounds tend to be concentrated within facilities, estimates for this characteristic were more imprecise and had larger confidence intervals. Thus, the abortion numbers and rates we calculated should be considered estimates and not precise measures.

The information from patients did not include women who obtained abortions in a hospital setting. Our analysis of the 2008 APS suggests that their exclusion did not bias the findings, but it is possible that we would have detected differences between these 2 populations in 2014 had we been able to make the same comparisons. Our estimate of the lifetime incidence of abortion is on the basis of patients' reports of previous terminations. Underreporting of abortions is common in nationally representative surveys.[25,26] Because the study questionnaire was filled out by women obtaining abortions, we expect that underreporting was less common. Still, if some women obtaining abortions failed to report previous abortions, this would mean that the estimate of the lifetime incidence of abortion is artificially high.

Conclusions

Disparities in abortion rates correspond with disparities in unintended pregnancy.[15] Not only do women of color and those with family incomes less than 100% of the federal poverty level have higher rates of abortion than do White women and those with higher incomes, but they also have higher rates of unintended birth. Equitable access to wide-range family planning and contraceptive services would better allow women in underserved populations to avoid unintended pregnancy, but these efforts alone will not eliminate these disparities. Efforts should also be devoted to making sure that women who want abortions are able to have them without having to overcome financial and logistical barriers.

Laws and policies that make abortion more difficult to access have a disproportionate impact on groups overrepresented among abortion patients, particularly those who are poor or low income. Future research and interventions focused on abortion and unintended pregnancy should seek to understand the underlying causes of disparities in these outcomes, because this information could inform a comprehensive set of policies and programs that benefit all women. AJPH

CONTRIBUTORS

R. K. Jones was the lead analyst and drafted the article. J. Jerman oversaw data collection and contributed to the writing and editing of the article.

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HUMAN PARTICIPANT PROTECTION

The Abortion Patient Survey questionnaire and survey procedures were approved by the Guttmacher Institute's federally registered institutional review board; no approval was needed for our analyses because we relied on secondary data.

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Socioeconomic Outcomes of Women Who Receive and Women Who Are Denied Wanted Abortions in the United States

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Objectives. To determine the socioeconomic consequences of receipt versus denial of abortion.

Methods. Women who presented for abortion just before or after the gestational age limit of 30 abortion facilities across the United States between 2008 and 2010 were recruited and followed for 5 years via semiannual telephone interviews. Using mixed effects models, we evaluated socioeconomic outcomes for 813 women by receipt or denial of abortion care.

Results. In analyses that adjusted for the few baseline differences, women denied abortions who gave birth had higher odds of poverty 6 months after denial (adjusted odds ratio [AOR] = 3.77; $P < .001$) than did women who received abortions; women denied abortions were also more likely to be in poverty for 4 years after denial of abortion. Six months after denial of abortion, women were less likely to be employed full time (AOR = 0.37; $P = .001$) and were more likely to receive public assistance (AOR = 6.26; $P < .001$) than were women who obtained abortions, differences that remained significant for 4 years.

Conclusions. Women denied an abortion were more likely than were women who received an abortion to experience economic hardship and insecurity lasting years. Laws that restrict access to abortion may result in worsened economic outcomes for women. (*Am J Public Health.* 2018;108:407–413. doi:10.2105/AJPH.2017.304247)

Since 2011, hundreds of state-level restrictions on abortion have been implemented in the United States. Little is known about the socioeconomic consequences for women and families if women are not able to obtain a wanted abortion. When women are asked why they want to end a pregnancy, the most common reasons are financial—in particular, not having enough money to raise a child or support another child.[1–3] Yet no research has evaluated the economic consequences for US women of being unable to terminate an unwanted pregnancy and carrying the pregnancy to term.

The lack of evidence about the socioeconomic consequences of barriers to abortion services is largely the result of methodological challenges related to study design and the identification of appropriate comparison groups.[4–6] Given that preexisting economic difficulties contribute to a woman's decision to terminate a pregnancy, studies that compare socioeconomic outcomes of women who receive abortion services to women who do not choose to terminate a pregnancy may not identify the effects of abortion, but instead may reflect the characteristics that lead women either to seek abortions or carry a pregnancy to term, such as poverty, lack of education, and younger age.[7,8]

We aimed to examine the effects of receiving versus being denied a wanted abortion on women's socioeconomic well-being by following a group of women who all sought abortions, some of whom were denied services. Facility and state-imposed gestational age limits restrict abortion for women whose pregnancies are past the limit. Women who request services immediately before a facility's gestational limit are potentially similar to women who seek services immediately after the limit, but women in the former group receive the abortion whereas the latter do not. Gestational limit thresholds provide a quasi-experiment that can reveal the consequences of denial of abortion services on household structure, employment, income, use of public assistance, and poverty in the 5 years after seeking abortion.

METHODS

We used data from the Turnaway Study, a 5-year, longitudinal study of women who presented for abortion care at 1 of 30 facilities throughout the United States between 2008 and 2010. Gestational limits at the study facilities ranged from the end of the first trimester to the end of the second. Each facility had the latest gestation age limit of any provider within 150 miles.[9] Study participants were pregnant women with no known fetal anomalies or demise who spoke English or Spanish and were aged 15 years or older. Participants were enrolled into 3 study groups

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in a 2-to-1-to-1 ratio on the basis of ultrasound dating of gestational age relative to each facility's limit: (1) near limits presented for abortion up to 2 weeks under the facility's gestational age limit and obtained wanted abortions, (2) turnaways presented for abortion up to 3 weeks over a facility's limit and were denied abortions, and (3) first trimesters received abortions at gestations up to 14 weeks. The unequal study groups reflect fewer women meeting the criteria for the turnaway group.

Study participants completed a baseline telephone interview 1 week after either receiving or being denied an abortion and follow-up interviews by phone every 6 months for 5 years. Other studies from the Turnaway Study have examined the effect of abortion received and denied on outcomes including mental health,[10] emotions,[11] physical health,[12] violence,[13] and achievement of 1-year plans.[14] To our knowledge, this is the first to examine socioeconomic outcomes.

Outcome Measures

Household structure variables included household size and whether the woman was living with adult family members, with a male partner, or without either a male partner or adult family members. Three employment outcomes were assessed: full-time employment, part-time employment, and not employed. We evaluated 3 outcomes related to past-month receipt of public assistance from Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Temporary Assistance for Needy Families (TANF), and Supplemental Nutritional Assistance Program (SNAP), also known as food stamps. We assessed access to health insurance as a binary indicator for having either private or public health insurance.

Outcomes related to financial security included personal monthly income from employment, child support, and government assistance; household monthly income of all adults living with the respondent who share expenses; poverty, a binary indicator for household income at or below 100% of that specific year's US Census Bureau federal poverty level (FPL) based on household composition and income[15]; and subjective poverty, a dichotomous indicator that the woman reported that she did not always have enough money to meet basic living needs such as food, housing, and transportation in the month before the interview.

Analysis

The quasi-experiment established by abortion facility gestational limits allowed a comparison of socioeconomic outcomes between those who received an abortion and those who were denied. As some women in the turnaway group had an abortion or miscarriage subsequent to being turned away, the turnaway group was divided into birth and no birth for analysis purposes. Comparing the near-limit abortion group to the turnaway–birth group is the primary comparison for this analysis—a comparison that identifies the effect of receiving an abortion versus carrying an unwanted pregnancy to term. We compared turnaway–no births to near limits; if turnaway–no births are more similar to the turnaway–births, this would suggest that characteristics associated with presenting late to an abortion facility predict subsequent socioeconomic outcomes. If turnaway–no births are more similar to the near-limit abortion group, this would suggest that carrying an unwanted pregnancy to term is the cause of changes in subsequent socioeconomic outcomes. The comparison of the first-trimester group to the near-limit group assesses whether women who present for an abortion earlier in pregnancy, at a gestation when the majority of abortions occur nationally, have a different socioeconomic trajectory than do women who present later.

Because the gestational limits of facilities vary such that a woman could obtain an abortion at the same gestation at one site that she would be denied at another, and because within sites, women who received versus were denied were only a few weeks different in gestation, we expected the near-limit and turnaway groups to be similar at the baseline interview (1 week after seeking abortion). We empirically assessed this by comparing baseline characteristics between near limits and turnaway–births and turnaway–no births with linear and logistic mixed effects models to account for clustering of individuals by facility.

Longitudinal analyses used multivariate mixed effects linear and logistic regression models with random intercepts for both recruitment facility and individual. In the models, we measured time in months since the mean expected date of delivery, 4.4 months after recruitment, because we expected socioeconomic trajectories to diverge after the birth of a child. Models included a main effect of study group, continuous time in months, and an interaction between study group and months (interpreted as the difference between study groups in rate of change in the outcome). In all longitudinal models, we adjusted for baseline age, parity, and the baseline value of the dependent variable. Ability to report household income was associated with household structure—women living with adult relatives, such as parents, were less likely to know their household income. Therefore, we also controlled for household type at baseline (living with a partner or spouse, with adult family members, or other) to remove systematic bias in household income reporting models in which household structure was not an outcome. In graphs, we presented predicted values derived from our adjusted models by time since seeking abortion from 6 months to 5 years. For baseline values, we plotted predicted values at baseline, with control for age, parity, and household structure. We assessed differences in predicted probabilities of outcomes at 6-month intervals by using postestimation margins commands.

To examine the effect of denial of abortion, regardless of whether the woman received an abortion elsewhere, we present supplementary intent-to-treat (ITT) analyses comparing near limits women to all turnaway women. In this supplementary analysis, we used instrumental variables analyses to estimate the effects of giving birth associated with being denied an abortion, comparing the near-limits women to all turnaway women and accounting for the fraction of turnaway women who either miscarried or obtained an abortion at another facility (Appendix A, available as a supplement to the online version of this article at http://www.ajph.org, provides detailed methods description and the results of ITT and treatment-on-treated [TOT] analyses). All analyses were conducted in Stata version 14.0 (StataCorp LP, College Station, TX).

RESULTS

Among eligible women approached for study participation, 37.5% (n = 1132) consented to take part in the 5-year study. Among those who consented, 85% (n = 956) completed the baseline interview. Participation did not differ between near-limit and turnaway–birth groups. Ninety-two percent of participants who completed the baseline interview were retained at the 6-month follow-up interview and an average of 95% were retained at each subsequent 6-month interview. Of women interviewed at baseline, 58% were retained at the 5-year follow-up, with no differential loss to follow-up between study groups through 5 years.

A total of 452 women were recruited into the near-limit abortion group, 231 women to the turnaway group, and 273 women to the first-trimester group. We removed 76 participants from 1 facility with a gestational limit of 10 weeks from the analysis because more than 90% of turnaways from that facility in the study ultimately received abortions elsewhere. We excluded an additional 2 participants in the near-limit abortion group and 1 in the first-trimester group from analyses because they later reported that they had not had the abortion. Among women in the turnaway group, 5 experienced a miscarriage or stillbirth and 44 received an abortion at a different facility subsequent to being turned away; these women constitute the turnaway–no birth group. Sixty-four of the remaining women completed only the first interview and did not provide follow-up data, bringing the total for this analysis to 813. The final counts by study group include 382 women in the near-limit abortion group, 146 in the turnaway–birth group (including 15 who placed their child for adoption), 45 in the turnaway–no birth group, and 240 in the first trimester group.

Women seeking abortion reported economic hardships at the time of abortion seeking—half (51%) were living below 100% of the federal poverty level; 3 quarters (76%) reported not having enough money to cover housing, transportation, and food. Most (63%) already had children. Recruitment of participants above and below the gestational limit at each clinic resulted in similar turnaway–birth and near-limit abortion groups. There were no differences by study group in race, education, or marital status at baseline (Table 1). However, there were age, parity, family structure, and income reporting differences between the turnaway–birth and near-limit groups. Compared with women in the near-limits group, those in the turnaway–birth group were more likely to be aged younger than 20 years (30% vs 16%; $P = .001$), less likely to have children (54% vs 67%; $P = .007$), more likely to be unemployed (60% vs 45%; $P = .002$), more likely to be living with other adult family members (49% vs 36%; $P = .024$), and less likely to report household income at baseline (60% vs 73%; $P = .004$). The association between turnaway–births and missing data on income was largely eliminated by adjustment for household composition, age, and parity (adjusted $P = .205$). Reporting of household income improved over time—85% reported their household income at 5 years with no difference by study group. First-trimester participants had higher household incomes and were less likely to be living in poverty than were women in the near-limit or turnaway groups. Turnaway–no birth participants were more similar to near-limit women than to turnaway–births, including a similar, lower gestational age, which may have permitted them to find abortion services elsewhere.

Changes in Household Structure

Household size and composition differed by study group over time (Table 2). Turnaway–births had more people (B = 1.00; 95% confidence interval [CI] = 0.78, 1.22) in their household than near limits at the 6-month interview, which occurred an average of 1.6 months after the expected date of delivery. The difference in household size slowly narrowed over 5 years as women ceased living with adult family members. Turnaway–birth and near-limit women had similar odds of living with a male partner throughout the 5-year follow-up. By 5 years, women in the turnaway–birth group were more likely than were those in the near-limit group to be raising children alone without adult family members or a male partner (47% vs 39%; $P = .040$).

Changes in Employment

Over 5 years, women in the near-limit group gradually increased full-time employment—from 40% working full time at 6 months to more than 50% at 5 years. At 6 months, only 30% of women in the turnaway–birth group were working full time, significantly lower than those in the near-limit group (adjusted odds ratio [AOR] = 0.37; 95% CI = 0.20, 0.68; Table 2). Women in the turnaway–birth group increased full-time employment relative to those in the near-limit group over time so that by 4 years, there was no statistically significant difference between groups. Participants in the turnaway–birth group had more than 3 times the odds of not working at 6 months compared with those in the near-limit group (AOR = 3.06; 95% CI = 1.78, 5.25), a difference that was no longer statistically significant by 3 years.

Public Assistance and Health Insurance

Turnaway–births had 6-times-higher odds of receiving TANF (AOR = 6.26; 95% CI = 2.63, 14.88) at 6 months, when slightly more than 15% of turnaway–births but less than 8% of near limits were receiving TANF (Table 2). Receipt of TANF decreased over time for both groups; by 5 years, the difference between near limits and turnaway–births was no longer statistically significant. At 6 months, one third (33%) of near limits and 44% of turnaway–births received food assistance (SNAP), a significantly higher odds of receipt among turnaway–births (AOR = 2.54; 95% CI = 1.45, 4.44) that remained statistically significant across the 5 years. At 6 months, 8% of near limits and 50% of turnaway–births were receiving WIC benefits, an AOR of 48 (95% CI = 21, 109). The difference remained significant over 2 years despite substantial decreases in turnaway–birth WIC receipt over the time period. Turnaway–births were more likely than near-limit women to have health insurance at 6 months (AOR = 2.54; 95% CI = 1.48, 4.36) but did not retain this advantage after 1 year.

Changes in Income and Poverty

Personal income was lower among turnaway–births compared with near limits at 6 months (–$175; 95% CI = $–342, $–8) but differed little from near limits for the rest of the study period (Table 2). There were no

TABLE 1—Characteristics of Study Participants Who Completed More Than 1 Interview, by Study Group: United States, 2008–2016

Characteristics	Near-Limit Abortion (n = 382), Mean ±SD or %	First-Trimester Abortion (n = 240), Mean ±SD or %	Turnaway–Birth (n = 146), Mean ±SD or %	Turnaway–No Birth (n = 45), Mean ±SD or %	Total (n = 813), Mean ±SD or %
Gestational age, weeks	19.9 ±4.1	7.8 ±2.4	23.4 ±3.4	19.3 ±4.0	16.9 ±7.0
Age, y					
15–19	16	15	30*	20	18
20–24	40	28	34*	42	35
25–51	44	57	36*	38	46
Race/ethnicity					
White	32	40*	25	38	33
Black	32	32	35	31	33
Hispanic/Latina	21	20	27	16	21
Other	15	8*	14	16	13
Nulliparous	33	36	46*	40	37
Highest level of education					
< high school	18	16	23	18	18
High school or GED	34	30	36	24	33
Associates, some college, or technical school	41	43	35	49	41
College	7	11	6	9	8
Marital status					
Single, never married	80	76	84	78	79
Married	8	11	10	4	9
Separated, divorced, widowed	12	13	6	18	12
Employment					
Full time	34	42	22	29	34
Part time	21	23	18	20	21
Not employed	45	35*	60*	51	45
Household structure					
Living with adult family members	36	24*	49*	40	35
Living with spouse or partner	25	32	22	20	26
Living without male partner or family	38	44	29*	40	38
No. of people in the household	3.7 ±1.8	3.3 ±1.6*	3.9 ±1.9	3.6 ±1.6	3.6 ±1.7
Income and poverty					
Personal monthly income, $	891 ±861	1337 ±1281*	743 ±973	935 ±821	996 ±1040
Household monthly income, $ (n = 586)	1758 ±1461	2502 ±2384*	1700 ±1649	2166 ±2517	2007 ±1915
Not reporting household income	27	23	40*	36	28
Not enough money to make ends meet	78	70	83	73	76
Below FPL	57	40*	56	52	51
Receives TANF assistance	12	5*	12	11	10
Receives WIC assistance	14	13	18	11	14
Receives food stamps	31	26	34	40	31
Health insurance	69	69	75	67	70

Note. FPL = federal poverty level[15]; GED = general equivalency diploma; TANF = Temporary Assistance for Needy Families; WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

*$P < .05$ compared with near-limit abortion group; differences assessed by using mixed effects linear or logistic regression to account for clustering of observations by recruitment facility.

differences in household income between turnaway–births and near limits at 6 months or over time, but, because of increases in household size, turnaway–births were more likely to live in poverty. Turnaway–births' average household income was at 110% of the FPL compared with 144% among near limits at 6 months with 61% of turnaway–births and 45% of near limits below the FPL. At 6 months, turnaway–births had almost 4-times-higher odds of being below the FPL (AOR = 3.77; 95% CI = 1.96, 7.25), a difference

TABLE 2—Effect of Receiving or Being Denied a Wanted Abortion on Public Assistance, Health Insurance, and Household Structure Over 5 Years, With Control for Baseline Study Group Differences: United States, 2008–2016

Characteristic	Near Limit (Ref)	First Trimester	Turnaway–Birth	Turnaway–No Birth	Months	First Trimester × Month	Turnaway–Birth × Month	Turnaway–No Birth × Month
Public assistance and health insurance, AOR (95% CI)								
Receipt of WIC,[a]	1	1.23 (0.53, 2.85)	47.86 (21.04, 108.91)	2.16 (0.48, 9.83)	1.04 (0.99, 1.09)	0.97 (0.90, 1.05)	0.89 (0.83, 0.95)	0.90 (0.77, 1.05)
Receipt of TANF	1	0.56 (0.23, 1.37)	6.26 (2.63, 14.88)	0.03 (0.00, 0.48)	0.98 (0.97, 0.99)	1.01 (0.995, 1.04)	0.99 (0.97, 1.01)	1.06 (1.001, 1.13)
Receipt of food stamps	1	0.77 (0.46, 1.26)	2.54 (1.45, 4.44)	0.92 (0.34, 2.46)	1.01 (1.002, 1.01)	1.00 (0.99, 1.01)	1.00 (0.99, 1.01)	0.99 (0.97, 1.01)
Health insurance	1	0.87 (0.56, 1.36)	2.54 (1.48, 4.36)	1.55 (0.64, 3.73)	1.02 (1.01, 1.03)	1.01 (0.995, 1.02)	0.97 (0.96, 0.99)	1.01 (0.98, 1.03)
Household structure								
Resides with family, AOR (95% CI)	1	0.69 (0.39, 1.23)	1.96 (1.01, 3.82)	0.74 (0.24, 2.28)	0.98 (0.97, 0.99)	1.01 (0.999, 1.02)	0.97 (0.96, 0.98)	0.99 (0.96, 1.01)
Resides with a male partner, AOR (95% CI)	1	0.88 (0.48, 1.62)	1.05 (0.51, 2.16)	1.50 (0.47, 4.82)	1.02 (1.01, 1.03)	1.01 (0.99, 1.02)	1.00 (0.99, 1.02)	1.05 (1.02, 1.07)
Resides without adult family or male partner, AOR (95% CI)	1	1.45 (0.84, 2.49)	0.55 (0.29, 1.06)	1.26 (0.45, 3.49)	1.00 (0.99, 1.01)	0.98 (0.97, 0.995)	1.02 (1.01, 1.04)	0.96 (0.94, 0.98)
No. of people in the household, B (95%CI)	0	−0.11 (−0.29, 0.08)	1.00 (0.78, 1.22)	−0.34 (−0.70, 0.02)	0.001 (−0.001, 0.004)	0.00 (−0.003, 0.01)	−0.01 (−0.02, −0.01)	0.01 (−0.003, 0.02)
Employment, AOR (95% CI)								
Full time	1	1.01 (0.62, 1.66)	0.37 (0.20, 0.68)	0.98 (0.38, 2.51)	1.02 (1.01, 1.03)	0.99 (0.98, 1.001)	1.01 (0.997, 1.02)	1.02 (1.001, 1.04)
Part time	1	1.27 (0.84, 1.92)	0.71 (0.43, 1.17)	1.87 (0.85, 4.07)	0.99 (0.98, 0.996)	1.01 (0.996, 1.02)	1.02 (1.01, 1.03)	0.98 (0.96, 1.003)
Not working	1	0.78 (0.49, 1.25)	3.06 (1.78, 5.25)	0.51 (0.20, 1.33)	0.99 (0.99, 0.998)	1.00 (0.99, 1.01)	0.98 (0.97, 0.99)	0.98 (0.96, 1.01)
Income and poverty								
Personal income, B (95% CI)	0	104.51 (−38.11, 247.14)	−175.08 (−342.03, −8.12)	−54.22 (−325.16, 216.73)	9.88 (7.13, 12.63)	−2.18 (−6.62, 2.27)	2.44 (−2.88, 7.75)	6.79 (−2.08, 15.67)
Household income,[b] B (95% CI)	0	148.81 (−131.28, 428.90)	−91.63 (−435.17, 251.91)	−240.05 (−795.96, 315.86)	16.08 (10.65, 21.51)	0.73 (−7.93, 9.40)	−3.19 (−13.83, 7.45)	19.1 (1.35, 36.86)
Below the FPL,[b] AOR (95% CI)	1	0.85 (0.50, 1.45)	3.77 (1.96, 7.25)	1.10 (0.38, 3.20)	1.00 (0.99, 1.01)	1.01 (0.997, 1.03)	0.99 (0.97, 1.01)	0.99 (0.96, 1.02)
Percentage of FPL,[b] B (95%CI)	0	0.13 (−0.05, 0.32)	−0.34 (−0.57, −0.12)	−0.05 (−0.41, 0.31)	0.00 (0.0001, 0.01)	0.00 (−0.01, 0.002)	0.00 (−0.005, 0.01)	0.01 (−0.001, 0.02)
Subjective poverty, AOR (95% CI)	1	0.71 (0.46, 1.12)	1.54 (0.88, 2.68)	2.27 (0.91, 5.64)	0.98 (0.97, 0.99)	1.01 (0.998, 1.03)	1.01 (0.99, 1.03)	0.97 (0.94, 0.999)

Note. AOR = adjusted odds ratio; CI = confidence interval; FPL = federal poverty level[15]; TANF = Temporary Assistance for Needy Families; WIC = Special Supplemental Nutrition Program for Women, Infants, and Children. n = 813 women, 6373 observations except WIC (n = 812 women and 2273 observations) and household income and poverty measures (n = 762 women and 4980 observations). All models were adjusted for baseline age, parity, household structure, and the baseline value of the dependent variable. Study group coefficients and AORs indicate the difference 4.4 months after receipt or denial of abortion services. For consistency with the 6-mo increments of our interviews and of the predicted values, we report these as occurring at 6 months in the text of the article. Months refers to the change over time for near limits. Study Group × Month shows how change for that group differs from that of near limits. Estimates presented are AORs for binary outcomes and Bs for continuous outcomes.

[a]Model for receipt of assistance from the WIC program is limited to the first 2 years of the study because of rapidly declining participation over time.

[b]Baseline value is FPL coded as a 3-part categorical variable (below 100% FPL, at or above 100% FPL, missing FPL).

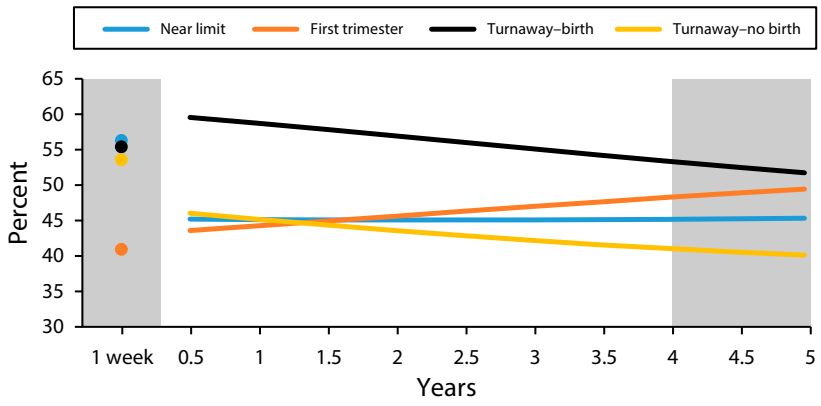
that persisted through 4 years (Figure 1). Throughout the period between 1 and 5 years after seeking an abortion, turnaway–birth women were more likely than near limits to report subjective poverty—not having enough money to cover basic living expenses (Appendix B, available as a supplement to the online version of this article at http://www.ajph.org).

Intent-to-Treat Analyses

Both ITT and TOT effect estimates showed similar results as the primary analyses (Appendix A). In ITT analyses, we combined the turnaway–birth and turnaway–no birth groups into 1 turnaway group and compared them to near limits; we excluded first trimesters (Appendix A, Table A, available as a supplement to the online version of this article at http://www.ajph.org). The ITT estimates assessed the effect of turning a woman away from a requested abortion, regardless of whether she subsequently carried the pregnancy to term. The TOT estimates described the effect of carrying a pregnancy to term for those women who did so as a result of being denied an abortion. Both ITT and TOT estimates indicated that economic hardship is associated with denial of abortion services. As expected, given that more than three quarters of turnaway women carried their pregnancies to term, ITT and TOT effect estimates were similar. For all outcomes, the difference between near limits and turnaway–births was similar or greater than that between near limits and all turnaways (Appendix A, Tables B and C, available as a supplement to the online version of this article at http://www.ajph.org). Appendix A, Figure A (available as a supplement to the online version of this article at http://www.ajph.org) shows trends in selected ITT and TOT outcomes by receipt versus denial of abortion services in the United States.

DISCUSSION

Many women seeking abortion face economic hardship; half live below the FPL and three quarters struggle to pay for food, housing, and transportation. Denial of



Note. Model adjusted for baseline age, parity, household structure, and the baseline value of household poverty. One-week values are given for reference. Remaining outcomes can be found in Appendix B, available as a supplement to the online version of this article at http://www.ajph.org. Unshaded areas represent time periods in which the turnaway–birth group are significantly different ($P < .05$, based on a postestimation test) from the near-limit abortion group.

FIGURE 1—Trends in Household Poverty for 5 Years After Receipt or Denial of Abortion: United States, 2008–2016

abortion services exacerbates this hardship. We found large and statistically significant differences in the socioeconomic trajectories of women who were denied wanted abortions compared with women who received abortions—with women denied abortions facing more economic hardships—even after we accounted for baseline differences. Differences over time in employment, poverty, and receipt of public assistance suggest that public assistance programs served an important role in mitigating the loss of full-time employment for women denied an abortion. However, public assistance was not sufficient to support the increase in household size resulting from a new baby, and did not keep households of women denied an abortion from living in poverty. Differences in economic outcomes gradually converged over the 5 years. At the time of seeking an abortion, more than a quarter of all women in the study were living in a household as the only adult with children, and this increased significantly for women who were denied an abortion, indicating that the burden of raising a child often falls to women alone rather than to couples or an extended family.

Strengths and Limitations

This study had several notable strengths that distinguish it from past research and address the major evidence gap regarding the economic consequences of policies regulating access to abortion. By studying women who wanted an abortion and comparing women who arrived just before the gestational age limit to women who arrived just after, we removed the major confounding factors related to whether a pregnancy was unwanted. This design enabled us to isolate the effects of receiving a wanted abortion, separate from need or desire to receive an abortion. Our results are robust to several different analytic approaches, confirming that the economic hardship comes not from being denied an abortion itself but from carrying the unwanted pregnancy to term.

Second, our models controlled for baseline values of each outcome variable. Ideally, this baseline value would have been measured before women learned whether they could obtain an abortion. However, our baseline values were measured 1 week after receipt or denial of abortion. To the extent that women had already reacted to impending parenthood by enrolling in public assistance programs, stopping full-time work, or reporting income inadequacy in the week after being denied an abortion, controlling for these baseline values will underestimate the impact of being denied an abortion.

This study had several limitations. A substantial fraction of women did not know their total household income, particularly at baseline. This missingness was highly associated with household composition—women who lived with adult family members (often parents) were less likely to know their total household income than women who were the sole adult in the household. To account for this, we controlled for household structure at first interview, which had no missingness, resulting in unbiased estimates, assuming that income values were missing at random conditional on household structure.[16] The participation rate in this study was 37.5%, within the range of other large-scale prospective studies with 5 years of follow-up.[17] Participation was not associated with our main comparison of interest (receipt vs denial of abortion). For ease of interpretation, we have used linear models of trends to summarize patterns that are probably not perfectly linear.

Finally, despite our quasi-experimental design, there were differences in economic well-being at baseline between study groups; we controlled for these differences in our models. Consistent with the literature showing that young age and nulliparity are associated with delay in recognition of pregnancy,[18–20] we found differences in age and parity by study group. The finding that turnaway–births were less likely to be employed at baseline is consistent with reports of lower past-month personal income among this group at baseline, likely ruling out the possibility that women had stopped working within the week once they learned they were going to carry a pregnancy to term. We controlled for differences in employment at baseline, yet we still found marked differences in trajectories of poverty and public assistance over time between women who received abortions and those who did not. Child support was too low to measure as an independent outcome but was included in household income.

Public Health Implications

Given the dynamic and intergenerational relationship between poverty and health, our finding of the close link between obtaining abortion care and subsequent poverty is important for providers and policymakers. The majority of women in the study were living in poverty at baseline, and carrying the unwanted pregnancy to term led to almost

a 4-fold increase in the odds that a woman's household income was below the FPL. Restrictions on abortion that prevent women from obtaining wanted abortions may result in reductions in full-time employment, increased incidence of poverty, more women raising children alone, and greater reliance on public assistance. The net result may have serious adverse economic consequences for women and children. Laws that impose a gestational limit for abortion or otherwise restrict access to abortion will result in worsened economic outcomes for women. AJPH

CONTRIBUTORS

D. Greene Foster contributed to study concept, design, funding, and supervision. D. Greene Foster, M. A. Biggs, L. Ralph, and S. Roberts drafted the article. D. Greene Foster, L. Ralph, S. Roberts, and M. M. Glymour performed statistical analysis. All authors performed analysis or interpretation of data and critical revision of the article for important intellectual content.

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HUMAN PARTICIPANT PROTECTION

The Turnaway Study was approved by the University of California, San Francisco, Committee on Human Research.

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Impact of Clinic Closures on Women Obtaining Abortion Services After Implementation of a Restrictive Law in Texas

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Objectives. To evaluate the additional burdens experienced by Texas abortion patients whose nearest in-state clinic was one of more than half of facilities providing abortion that had closed after the introduction of House Bill 2 in 2013.

Methods. In mid-2014, we surveyed Texas-resident women seeking abortions in 10 Texas facilities (n = 398), including both Planned Parenthood–affiliated clinics and independent providers that performed more than 1500 abortions in 2013 and provided procedures up to a gestational age of at least 14 weeks from last menstrual period. We compared indicators of burden for women whose nearest clinic in 2013 closed and those whose nearest clinic remained open.

Results. For women whose nearest clinic closed (38%), the mean one-way distance traveled was 85 miles, compared with 22 miles for women whose nearest clinic remained open ($P \leq .001$). After adjustment, more women whose nearest clinic closed traveled more than 50 miles (44% vs 10%), had out-of-pocket expenses greater than $100 (32% vs 20%), had a frustrated demand for medication abortion (37% vs 22%), and reported that it was somewhat or very hard to get to the clinic (36% vs 18%; $P < .05$).

Conclusions. Clinic closures after House Bill 2 resulted in significant burdens for women able to obtain care. (*Am J Public Health.* 2016;106:857–864. doi:10.2105/AJPH.2016.303134)

Since 2010, US states have enacted nearly 300 abortion restrictions, with 51 new restrictions passed in the first half of 2015 alone.[1] Of note is the increase in laws that make it more difficult to provide abortion services by imposing expensive or logistically difficult requirements on facilities and clinicians, which are often referred to as Targeted Regulation of Abortion Provider (TRAP) laws. In the summer of 2013, Texas passed House Bill 2 (HB2), a TRAP law that restricted abortion services in 4 ways: (1) physicians performing abortions must have admitting privileges at a hospital within 30 miles of the facility, (2) medication abortion must be administered according to the mifepristone label approved by the Food and Drug Administration (with some dosage exceptions), (3) most abortions at or after 20 weeks "postfertilization" are banned, and (4) all abortions must be performed in facilities meeting the requirements of an ambulatory surgical center (ASC).[2] The first 3 provisions of HB2 were enforced by November 1, 2013; the ASC requirement is currently enjoined pending a US Supreme Court decision, as is the admitting privileges requirement as it applies to 2 Texas facilities.

Eight of the 41 Texas facilities providing abortion care in April 2013 closed or stopped providing abortion services after the introduction of the HB2 bill.[3] Eleven more facilities closed or stopped providing abortions when HB2 was enforced, primarily because physicians experienced barriers to obtaining hospital admitting privileges.[3] Although some clinics were able to reopen once physicians successfully obtained admitting privileges, still others closed, resulting in 19 licensed facilities providing abortions in Texas by July 2014—a 54% reduction in the number of facilities since April 2013.[4]

Recent studies have reported the effects of state-level abortion restrictions on abortion rates, out-of-state travel for abortion, and the consequences for women of being denied a wanted abortion because of clinic gestational age limits, but less is known about the burdens that women experience as a result of clinic closures.[5–9] Evaluating the impact of a substantially reduced number of abortion clinics in Texas on hardships experienced by women who are in need of abortion services is essential to determining the constitutionality of HB2, as the legal thresholds for abortion restrictions center upon the magnitude and nature of these burdens on women.[10] However, such an evaluation presents a number of methodological challenges. Documenting the experiences of women who were unable to obtain a wanted abortion because of insurmountable hardship is difficult, primarily because those are the very women who were unable to reach an abortion clinic where they might be enrolled in a study.[11,12] Indeed, the 13% decline in abortions performed in Texas during the first

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6 months after HB2 went into effect gives an indication of the law's impact.[3]

In addition, HB2 affected women who were able to obtain an abortion. These women include those who were directly affected by the closure of the clinic they would have used, as well as women whose nearest or preferred clinic did not close, but who nevertheless were burdened by the law through discontinued offering of medication abortion, longer wait times for appointment availability, or higher costs of the procedure at one of the remaining facilities.

In this study, we assess the impact of HB2 on women who obtained an abortion after the law was implemented. With survey data collected from a sample of women who obtained an abortion in Texas in 2014, we compared the experiences of women whose nearest clinic closed with those of women whose nearest clinic remained open. Through this comparison, we sought to assess the additional burdens experienced by women whose nearest clinic closed.

METHODS

Between May and August 2014, we surveyed women seeking abortion services in Austin, Dallas, Fort Worth, Houston, and San Antonio. At the time of data collection, the only open abortion clinics were located in 5 metropolitan statistical areas: Austin, Dallas/Fort Worth, El Paso, Houston, and San Antonio. We purposively sampled 10 abortion facilities to include both Planned Parenthood–affiliated clinics and independent providers that performed more than 1500 abortions in 2013 and provided procedures up to a gestational age of at least 14 weeks from last menstrual period.[3] At the time of data collection, the open clinic in El Paso did not meet these inclusion criteria. Between January and April 2014, these study sites provided 63% of procedures performed in all Texas abortion facilities open at the beginning of the data collection period. The 4 metropolitan statistical areas in which we recruited accounted for 95% of the total population for all 5 metropolitan statistical areas with open clinics.

A project coordinator recruited participants at each site for 3 to 6 days, depending on clinic schedule and volume. In 9 of the 10 facilities, every woman in the clinic waiting room was invited to participate in the survey. At 1 facility, clinic staff invited women to participate following their initial consult and interested women were directed to the project coordinator. Women were eligible to participate if they were seeking an abortion at one of the facilities in our study, were aged 18 years or older, spoke English or Spanish, and had completed their pre-abortion ultrasound consultation. Eligible participants could complete the survey at consultation, procedure, or follow-up visits. Participants reviewed and signed a consent form, and received instructions on how to use an iPad before completing the self-administered survey. The survey items were adapted from a previous study with Texas abortion clients and used a health care access framework to assess women's experiences obtaining abortion care. In addition to questions on sociodemographic characteristics, reproductive history, and current pregnancy, the survey focused on several dimensions of access to abortion care, including accessibility (distance to clinics), availability (wait times for services, type of procedures offered), and affordability (out-of-pocket costs).[13,14] For the purpose of determining distance traveled, we obtained zip code of residence. The survey was pretested and professionally translated into Spanish. After completing the 15-minute survey, participants received a $20 gift card.

Measures

For our analyses, we distinguished between participants whose nearest in-state abortion facility closed following the introduction of HB2 and those whose nearest facility remained open. For all clinics providing abortion care in the state, open or closed status had been previously documented through interviews conducted with clinic staff, reports in the press, and mystery-client calls to abortion facilities.[3] We used 2 benchmark dates to assess the change in open facilities providing abortion services before and after HB2: April 2013, before the Texas legislature's debate of HB2, and July 2014, the midpoint of study data collection. We used the clinics' physical addresses and the participants' zip codes of residence to determine the distance to each participant's nearest open in-state clinic in April 2013 and distance to nearest open in-state clinic in July 2014; we also calculated the distance to the clinic where the participant was interviewed while seeking abortion care. Distance was estimated as the number of road miles from women's zip codes of residence to each clinic using Traveltime3, a Stata program that accesses the Google Maps Distance Matrix Application Programming Interface to calculate number of miles by road between 2 geographic points (StataCorp LP, College Station, TX).[15]

We calculated mean and median values for each of the 3 distance measures for the whole sample, as well as for women whose nearest clinic in 2013 remained open, and for women whose nearest clinic had closed, by July 2014. We also calculated the percentile distribution of distance traveled to the clinic where women were interviewed for the nearest-clinic-open and nearest-clinic-closed groups. We performed *t* tests to assess differences between these groups.

We also examined the geographical distribution of the increase in distance to the nearest clinic in 2014 because this was unlikely to be evenly distributed across the state. For all Texas zip codes, we computed the change in the distance to the nearest in-state clinic between April 2013 and July 2014, which we categorized as less than 1 mile, 1 to 24 miles, 25 to 49 miles, 50 to 99 miles, and 100 miles or more. We also plotted the zip code centroid for each survey participant whose nearest clinic closed between April 2013 and July 2014, as well as the location of the open and closed clinics.

In addition to distance traveled, we identified 4 burdens on access to abortion care that a woman might have experienced: (1) high out-of-pocket costs, (2) an overnight stay, (3) a delay in getting an abortion appointment, and (4) not obtaining her preferred type of abortion. For the first indicator, we aggregated self-reported out-of-pocket costs associated with getting to the clinic but not directly associated with the consultation or procedure visits (i.e., lost wages because of missing days of work, childcare or elder-care arrangements, transportation, and overnight costs).

Participants who spent more than $100 out of pocket were classified as having high out-of-pocket costs. Women who reported

TABLE 1—Sociodemographics of Texas-Resident Women Seeking Abortions in 10 Abortion Facilities: Texas, 2014

Variables	Total Population (n = 398), No. (%)	Women Whose Nearest Clinic in 2013 Was Open in 2014 (n = 247), No. (%)	Women Whose Nearest Clinic in 2013 Was Closed in 2014 (n = 151), No. (%)	*P*
Age, y (n = 397)				.41
18–24	177 (44.6)	108 (43.9)	69 (45.7)	
25–35	188 (47.4)	115 (46.7)	73 (48.3)	
> 35	32 (8.1)	23 (9.3)	9 (6.0)	
Race/ethnicity (n = 395)				.40
Black or African American	75 (19.0)	47 (19.3)	28 (18.5)	
White	118 (29.9)	79 (32.4)	39 (25.8)	
Latina or Hispanic	163 (41.3)	93 (38.1)	70 (46.4)	
Asian, Pacific Islander, American Indian/ Alaska Native, or other race	16 (4.1)	11 (4.5)	5 (3.3)	
≥ 2 races/ethnicities	23 (5.8)	14 (5.7)	9 (6.0)	
Education (n = 392)				.46
High school or less	127 (32.4)	74 (30.3)	53 (35.8)	
Some college	171 (43.6)	106 (43.4)	65 (43.9)	
College graduate or higher	94 (24.0)	64 (26.2)	30 (20.3)	
Current student (n = 396)	133 (33.6)	83 (33.7)	50 (33.1)	.94
Relationship status (n = 398)				.60
Single	137 (34.4)	84 (34.0)	53 (35.1)	
Relationship, not living together	104 (26.1)	70 (28.3)	34 (22.5)	
Living together	74 (18.6)	41 (16.6)	33 (21.9)	
Married	60 (15.1)	37 (15.0)	23 (15.2)	
Separated or divorced	23 (5.8)	15 (6.1)	8 (5.3)	
Primary language spoken at home (n = 392)				.79
English	319 (81.4)	197 (80.7)	122 (82.4)	
Spanish	19 (4.8)	14 (5.7)	5 (3.4)	
Both English and Spanish	50 (12.8)	31 (12.7)	19 (12.8)	
Another language	4 (1.0)	2 (0.8)	2 (1.4)	
200% FPG (n = 305)				.49
≤ 200%	175 (44.3)	114 (59.1)	61 (54.5)	
> 200%	130 (32.9)	79 (40.9)	51 (45.5)	
Parity (n = 362)				.17
0	153 (42.3)	105 (46.5)	48 (35.3)	
1	80 (22.1)	48 (21.2)	32 (23.5)	
2	73 (20.2)	37 (16.4)	36 (26.5)	
≥ 3	56 (15.5)	36 (15.9)	20 (14.7)	
Previous abortion (n = 380)	145 (38.2)	88 (37.1)	57 (39.9)	.28

Note. FPG = federal poverty guidelines. Includes women who reported their zip code and who lived in Texas at the time of the survey.

staying or planning to stay overnight because of the abortion were classified as having an overnight stay. Participants who answered "yes" to the question "I scheduled my appointment later than I would have liked" were classified as having a delayed appointment. Participants who reported a preference for medication abortion before seeking care but who received or expected to receive an aspiration abortion were classified as having frustrated demand for medication abortion, as we hypothesized that complying with the 4 required visits would likely impose less hardship if a clinic were within close proximity to a participant's home. Finally, women who traveled more than 50 miles (20 miles more than the national average of 30 miles[16]) from their homes to their abortion clinic were classified as having traveled a far distance.

We then constructed a summary measure of the total number of hardships a woman had experienced. A second summary indicator capturing the participant's own perception of burden came from the survey question: "Thinking about the time and travel related to your visit today, how easy or hard was it to come to the clinic for this visit?" The response categories were "very easy," "somewhat easy," "somewhat hard," and "very hard." The final indicator of hardship was the gestational age at the time of the clinic visit based on ultrasound (as reported by the participant).

TABLE 2—Distance Lived From Nearest Abortion Clinic and Distance Traveled to Abortion Clinic, in Miles, for Texas-Resident Women Seeking Abortions in 10 Abortion Facilities, Texas, 2014

Variable	Total Population (n = 398), Miles, Mean (SD)	Women Whose Nearest Clinic in 2013 Was Open in 2014 (n = 247), Miles, Mean (SD)	Women Whose Nearest Clinic in 2013 Was Closed in 2014 (n = 151), Miles, Mean (SD)	*P*
Distance from residence zip code to nearest clinic in 2013	15.0 (17.9)	13.7 (16.7)	17.1 (19.5)	.07
Distance from residence zip code to nearest clinic in 2014	35.0 (60.8)	13.7 (16.7)	69.9 (85.7)	< .001
Distance from residence zip code to facility where recruited				
Mean	46.2 (70.5)	22.3 (28.1)	85.1 (96.9)	< .001
Range	1–381	1–214	4–381	
Distance to facility by percentiles				
10th	4.6	3.4	11.5	. . .
25th	10.3	7.8	18.5	. . .
50th	19.6	15.4	34.6	. . .
75th	39.7	24.9	139.1	. . .
90th	143.4	42.1	256.3	. . .

Note. Ellipses indicate that calculations were not applicable for these values.

We hypothesized that women facing more obstacles to care would present later in pregnancy.

Experiences When Nearest Clinic Closed vs Remained Open

Before we compared measures of hardship between the nearest-clinic-open and nearest-clinic-closed groups, we compared women according to their social and demographic characteristics as the potential existed for systematic differences between participants whose nearest clinic closed and those whose nearest clinic remained open after HB2. The individual and household characteristics available in the survey included age, parity, race/ethnicity, language, educational attainment, poverty level, student status, relationship status, and whether the participant had had a previous abortion.

We examined the distributions in each group, and tested for differences by using Pearson χ^2 statistics and 2 sample tests of proportions. However, even when no statistical difference exists between groups in observable characteristics, there may be confounding. For example, poor women may have been more likely to have had difficulty getting to a clinic and also more likely to live in areas where clinics closed. Alternatively, among women living in areas where clinics closed, perhaps only those with higher incomes and education were able to obtain abortion services at a more distant clinic. To select an internally valid comparison group for women whose nearest clinic closed after HB2,[17,18] we employed an inverse-probability-weighted regression adjustment approach to balance observed covariates across the nearest-clinic-open and nearest-clinic-closed groups.[19]

We generated propensity scores to construct the regression weights; although the propensity score is often defined as the conditional probability of receiving a treatment or exposure, it also can be applied to other characteristics of a sample. In this case, we entered all of the available covariates including distance to the nearest clinic open in 2013 linearly into a probit model estimating the conditional probability that a woman's nearest clinic closed. As a check on the properties of the estimated propensity scores, we reviewed the overlap and density profiles of the propensity scores across the nearest-clinic-closed and nearest-clinic-open groups. We then performed the inverse probability-weighted regression adjustment of the mean outcomes across groups, and estimated the average treatment effect on the treated—the mean impact of the closing of clinics on those who were affected by the closure. This procedure enjoys the formal property of being "doubly robust" in the sense that the estimated effect remains asymptotically unbiased even if the propensity score model or the outcome model (but not both) is misspecified.[19–21]

We compared the nearest-clinic-open and nearest-clinic-closed groups with respect to the individual measures of hardship, as well the 3 summary measures, by using χ^2 and Wilcoxon rank sum tests as appropriate. We then estimated the average treatment effect on the treated for the individual and summary measures. All analyses were performed with Stata version 14.1 (StataCorp LP, College Station, TX); the map of distance traveled was created by using ArcGIS 10.3 (Esri, Redlands, CA).

RESULTS

Overall, 439 women completed the survey. We were unable to calculate a response rate for the facility where staff recruited participants (n = 57). At the other 9 sites, 624 women were invited; 64 were ineligible, primarily because of age or not yet having completed the ultrasound, and 170 declined to participate. The primary reasons for declining were lack of time or interest. At these 9 sites, 68% of eligible women participated (n = 382). We excluded women whose zip code was not provided or was unidentifiable (n = 39) and non–Texas residents (n = 2) from analysis, resulting in a final sample of 398. For 151 participants (38%), the nearest in-state

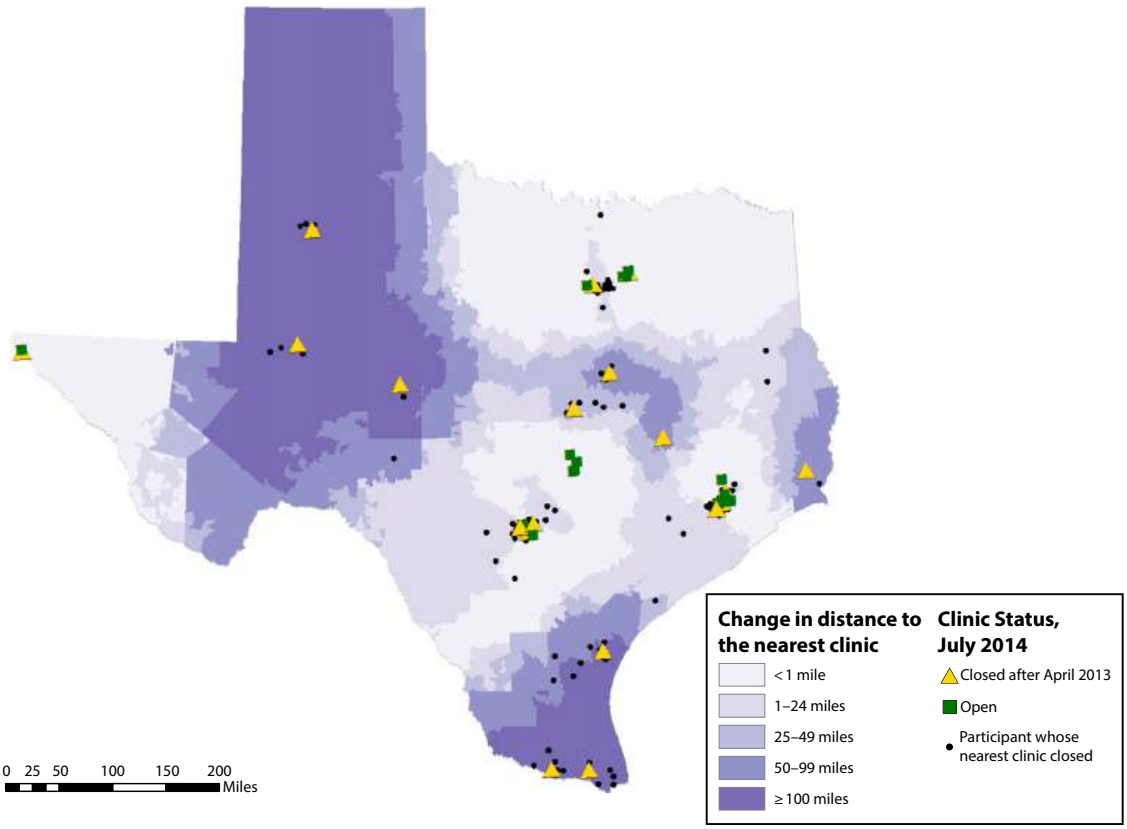

FIGURE 1—Change in Travel Distance to the Nearest Texas Clinic Offering Abortion, 2013–2014

abortion clinic to their zip code of residence that was open in 2013 had closed when they sought an abortion in 2014. The distribution of participants according to selected sociodemographic characteristics is shown in Table 1. There were no significant differences in the distributions of any of these variables between participants whose nearest clinic had closed and those whose nearest clinic remained open. Although more than 20% of respondents did not answer survey items regarding household income and size, the proportion missing did not differ between groups and was included in later modeling.

Clinic Closures and Distance to Clinics

In 2013, before HB2, the average distance to the nearest abortion provider among all participants was 15 miles, with no significant difference between women whose nearest clinic remained open and women whose nearest clinic eventually closed (Table 2). The average distance to the nearest abortion facility increased by 20 miles between April 2013 and July 2014, a change that was attributable entirely to an increase in distance (on average 53 miles) to the nearest clinic among participants whose nearest clinic closed after HB2. Among all participants, the mean one-way distance that women actually traveled to the clinic where they obtained an abortion was 46 miles (range = 1 to 381 miles). For women whose nearest clinic closed, the mean 1-way distance traveled was 85 miles (median = 35), compared with 22 miles (median = 15) for women whose nearest clinic did not close ($P \leq .001$). In the nearest-clinic-closed group, large differences in distance occurred above the median, as indicated by the 75th and 90th percentiles (139 and 256 miles, respectively).

Figure 1 shows how the increase in distance brought about by clinic closures was distributed throughout the state. Some respondents, especially those in South and West Texas, and the Panhandle, experienced a substantial increase in distance because of proximity to a clinic in 2013, but living much farther from an open clinic in 2014. Others experienced a smaller increase in distance because the nearest clinic that closed after HB2 was only marginally closer than the nearest open clinic in 2014. This was frequently the case for respondents living in the central, northern, and eastern parts of the state.

Hardships Experienced in Obtaining an Abortion

Before adjustment, the proportion of women having to travel more than 50 miles, stay overnight, and incur out-of-pocket expenses in excess of $100 were significantly greater in the nearest-clinic-closed group (Table 3). There was also a greater proportion experiencing frustrated demand for a medication abortion. There was no significant difference in the proportion of women who reported that they

TABLE 3—Measures of Hardship in Accessing Abortion Clinic Services Among Texas-Resident Women Seeking Abortions in 10 Abortion Facilities, Before and After Inverse-Probability-Weighted Regression Adjustment, Texas, 2014

	Before IPWRA			After IPWRA			
Variable	Women Whose Nearest Clinic in 2013 Was Open in 2014 (n = 247), %	Women Whose Nearest Clinic in 2013 Was Closed in 2014 (n = 151), %	*P*	Women Whose Nearest Clinic in 2013 Was Open in 2014 (n = 247), %	Women Whose Nearest Clinic in 2013 Was Closed in 2014 (n = 151), %	Average Treatment Effect on the Treated, % or Mean	*P*
Measures of hardship							
Traveled > 50 miles	8.1	44.4	< .001	9.6	43.8	32.6	< .001
Stayed overnight	3.2	15.9	< .001	5.1	16.0	8.3	.07
Out-of-pocket expenses > $100	20.2	29.8	.03	19.7	31.9	10.3	.04
Frustrated demand for medication abortion	22.3	33.1	.02	21.8	36.8	14.3	.003
Scheduled appointment later than preferred	45.7	44.4	.79	45.4	45.7	0.0	.94
Summary measures							
Hardship score			< .001				
0	35.6	23.2		. . .	. . .	. . .	. . .
1	43.3	30.5		. . .	. . .	. . .	. . .
2	17.0	23.8		. . .	. . .	. . .	. . .
3	4.1	13.3		. . .	. . .	. . .	. . .
4	0.0	5.3		. . .	. . .	. . .	. . .
5	0.0	4.0		. . .	. . .	. . .	. . .
Mean	0.9	1.6	< .001	0.90	1.67	0.72	< .001
Perceived difficulty accessing abortion care			< .001				
Very easy	45.5	32.0		. . .	. . .	. . .	. . .
Somewhat easy	38.5	30.7		. . .	. . .	. . .	. . .
Somewhat hard	11.5	28.0		. . .	. . .	. . .	. . .
Very hard	4.5	9.3		. . .	. . .	. . .	. . .
Somewhat or very hard	16.0	37.3	< .001	18.0	35.9	19.0	< .001
Gestation at ultrasound, wk			.08				
< 7	42.5	34.4		. . .	. . .	. . .	. . .
7–9	33.5	35.8		. . .	. . .	. . .	. . .
10–11	13.9	15.2		. . .	. . .	. . .	. . .
≥ 12	10.2	14.6		. . .	. . .	. . .	. . .
≥ 10	24.1	29.8	.20	26.4	30.2	1.1	.83

Note. IPWRA = inverse-probability-weighted regression adjustment. Ellipses indicate that calculations were not applicable for these values.

scheduled their appointment later than they preferred.

The distribution of the aggregate number of hardships each woman experienced differed between the 2 groups, with 24% of women in the nearest-clinic-closed group experiencing 3 or more hardships versus 4% in the nearest-clinic-open group. The mean number of hardships experienced also differed between the 2 groups. Similarly, the 2 groups differed in their perception of difficulty accessing abortion care, with 37% in the nearest-clinic-closed group and 16% in the nearest-clinic-open group stating that this was somewhat or very hard. Finally, in both

groups, the majority of participants were either less than 7 weeks pregnant or between 7 and 9 weeks at their ultrasound appointment. A larger proportion of women whose nearest clinic closed had gestations of 10 weeks or more compared with those whose nearest clinic remained open, but the difference was only marginally significant.

The inverse-probability-weighted regression-adjusted estimates of most of these parameters are similar to the estimates before correction. The only notable changes are the slightly smaller difference in the proportion staying overnight and the slightly larger estimate of the difference in the proportion experiencing frustrated demand for medication abortion. The trend toward a difference in gestational age between the 2 groups lost significance after adjustment.

DISCUSSION

Our findings demonstrate a substantial additional travel burden experienced by women seeking abortion who live in areas of Texas where clinics closed after HB2 compared with those living in areas where clinics remained open. For women in our study whose nearest abortion clinic closed after HB2, the average distance to the nearest abortion provider increased 4-fold, and for 44% of this group, the new distance exceeded 50 miles. The distance women traveled to obtain their abortion was also 4 times greater among women whose nearest clinic closed compared with the distance traveled by women whose nearest clinic remained open, and nearly 3 times the average distance (30 miles) traveled in a 2008 national survey of women seeking abortion.[16] In addition, both before and after inverse-probability-weighted regression adjustment, women whose nearest clinic closed had a higher probability of experiencing hardship, measured in multiple ways, than women whose nearest clinic remained open.

The only dimension of hardship in which there was no significant difference between the 2 groups was the gestational age at which women were able to receive abortion care. This is somewhat inconsistent with our previous research documenting a small but significant increase in the proportion of abortions performed after 12 weeks in the first 6 months after HB2 implementation.[3] The finding here may be because we are underpowered for this outcome; alternatively, it may be because increases in wait times to get an appointment affected women regardless of whether their nearest clinic closed. The information we have on wait times suggests that they increased at some clinics, and varied over time at individual clinics, sometimes in reaction to the suspension of services at neighboring clinics.[22]

These results provide a partial estimate of the burdens imposed on women by the clinic closures that followed the introduction and implementation of HB2, and extend previous research on the impact of TRAP laws, most of which has relied on projected or hypothetical analyses of the increases in distance that would result from anticipated, rather than actual, clinic closures.[3,23] The one previous study that estimated impact on travel distance and costs pertained to Texas's 2003 law requiring that procedures at or after 16 weeks' gestation be performed in an ASC or hospital.[5] In that analysis, the authors documented the postlaw increase in Texas residents traveling out of state for abortion procedures at or after 16 weeks' gestation, and calculated the increase in population-weighted average distance, for women of reproductive age, to the nearest provider of abortions at or after 16 weeks' gestation. In comparison, our analysis used individual-level data to calculate increases in distance to the nearest provider among women seeking abortions.

Limitations and Strengths

This study has several limitations, the most important of which is that it cannot provide a basis for estimating the number of women for whom the additional burdens imposed by HB2 were sufficiently great to prevent them from accessing an abortion that they would have sought in the absence of clinic closures and other restrictions. Other research has documented cases of Texas women who were prevented from obtaining desired abortions because of the closure of nearby clinics as a result of HB2.[4] In addition, recruitment sites were not selected at random, and our sample is not representative of women seeking abortion care in Texas after HB2. Moreover, our sample does not include Texas residents who may have traveled out of state for abortion care, sought abortions in Mexico, or successfully self-induced abortion after HB2 was enforced.[23,24] Finally, our specific hardship measures do not fully capture the burden experienced by some women. For example, women who could not afford an overnight stay may have opted to travel in the middle of the night to reach a facility and return home the same day.

A strength of this study is that we surveyed women obtaining abortion services more than 6 months after the enforcement of HB2, minimizing the possibility that our findings are solely attributable to the confusion of sudden or acute changes in services. Also, in our sample, the women whose nearest clinic closed were similar to those whose nearest clinic remained open, and the statistical procedures we employed to adjust for possible confounding achieved a remarkable balance in the observed characteristics of the 2 groups.

Public Health Implications

In a large state, closures of abortion clinics following the implementation of a TRAP law can impose a substantial burden on women seeking abortion care by making them travel farther, making them spend more time and money, and causing them to undergo a different kind of procedure from the one they prefer. These burdens are in addition to any increase in wait times or costs that may be spread evenly over all women seeking abortion care and those that result in making legal abortion an unattainable option for some women. AJPH

CONTRIBUTORS

C. Gerdts and L. Fuentes conceptualized the analysis. D. Grossman, J. E. Potter, K. White, and K. Hopkins designed the research study and oversaw data collection. S. E. Baum and L. Fuentes contributed to data collection. C. Gerdts, L. Fuentes, B. Keefe-Oates, K. White, C.W. Stolp, and J. Potter conducted data analysis. All authors contributed to writing and revisions of the article.

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HUMAN PARTICIPANT PROTECTION

This study was approved by the institutional review board at the University of Texas at Austin.

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Denial of Abortion Because of Provider Gestational Age Limits in the United States

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Objectives. We examined the factors influencing delay in seeking abortion and the outcomes for women denied abortion care because of gestational age limits at abortion facilities.

Methods. We compared women who presented for abortion care who were under the facilities' gestational age limits and received an abortion (n = 452) with those who were just over the gestational age limits and were denied an abortion (n = 231) at 30 US facilities. We described reasons for delay in seeking services. We examined the determinants of obtaining an abortion elsewhere after being denied one because of facility gestational age limits. We then estimated the national incidence of being denied an abortion because of facility gestational age limits.

Results. Adolescents and women who did not recognize their pregnancies early were most likely to delay seeking care. The most common reason for delay was having to raise money for travel and procedure costs. We estimated that each year more than 4000 US women are denied an abortion because of facility gestational limits and must carry unwanted pregnancies to term.

Conclusions. Many state laws restrict abortions based on gestational age, and new laws are lowering limits further. The incidence of being denied abortion will likely increase, disproportionately affecting young and poor women. (*Am J Public Health.* 2014;104:1687–1694. doi:10.2105/AJPH.2013.301378)

The majority of abortions in the United States are in the first trimester of pregnancy, but 8.5% (approximately 100 000) occur after 13 weeks' gestation.[1] Most women having second trimester abortions would have liked to have had the procedure earlier,[2] and women report a number of delaying factors, including cost and access barriers and late detection of pregnancy.[2–4] These delays can result in women being denied care because they present with pregnancies beyond an abortion provider's gestational age limit and are unable to obtain an abortion elsewhere. (An "abortion provider" is a facility where abortions are performed.[5]) Little is known about how frequently this occurs and what happens to women denied abortion care.

The 1973 Supreme Court *Roe v. Wade*[6] decision established the point of potential fetal viability as the threshold after which states could restrict women's access to abortion care as long as they allowed for exceptions to preserve the life and health of the pregnant woman. However, *Roe v. Wade* did not specify a gestational age for viability. Many states have established an upper gestational limit, most commonly after 24 weeks from a woman's last menstrual period, and some states have done so without the required exceptions.[7] At least 8 states have recently reduced or plan to reduce the upper gestational limit to 20 weeks, and 1 state to 18 weeks.[8] Individual abortion providers can set their limits at lower gestational ages, and do so based on the availability of trained physicians, clinician and staff comfort, and facility regulations. According to a national survey of abortion providers, 23% offer abortions after 20 weeks' gestation, and 11% do so at 24 weeks.[5] Because fewer providers offer abortion care after the first trimester, women must travel longer distances to obtain later abortions. Because later abortions are more complex procedures, often occurring over 2 or more days, they are also more costly; the average charge for an abortion at 10 weeks is $543 compared with $1562 for an abortion at 20 weeks.[5] Some women must also arrange for childcare, take time off work or other responsibilities, and incur transportation and hotel expenses; raising these funds results in additional delays.[9]

We sought to describe the characteristics associated with being turned away because of provider gestational age limit, and the efforts such women make to obtain a desired abortion. Additionally, we explored the factors associated with obtaining a desired abortion elsewhere. Finally, we estimated the incidence of women being denied an abortion in the United States because of provider gestational limits.

METHODS

We obtained the data for this study from 2 sources, the University of California, San Francisco (UCSF) Turnaway Study and the Guttmacher Institute's Abortion Provider Census. Both studies were approved by their institutional review boards.

The Turnaway Study is a 5-year longitudinal prospective study of women who receive an abortion and women who are denied an abortion because they present for care after the provider's gestational limit. The study was designed to assess a variety of outcomes of receiving an abortion compared with carrying an unwanted pregnancy to term. From 2008 to 2010, the Turnaway Study recruited women from 30 abortion providers across the United States. Only "last stop" providers were selected, defined as being more than 150 miles from a facility with a later gestational limit. They were located in 21 states distributed relatively evenly across the country. Women were recruited on a 1:2:1 ratio: women who presented up to 3 weeks over the provider's gestational limit and were turned away ("turnaways"), women who presented up to 2 weeks under the limit and received abortions ("near-limit abortion patients"), and women who presented in the first trimester

and received abortions ("first trimester patients").

Women were eligible for participation if they sought an abortion within the gestational limits for each of the study groups, spoke English or Spanish, and were aged 15 years or older. Further details on recruitment and methods can be found elsewhere.[10–12] After the baseline survey, study participants were contacted for a follow-up phone interview every 6 months for 5 years. Turnaway Study data for this analysis were from the baseline (1 week after recruitment) and 6-month interviews.

To reduce losses to follow-up, researchers collected detailed contact information and participants' preferred methods of communication and confidentiality protection preferences; they also called women after 2 months to confirm that the woman's primary and secondary contact information was still valid. When participants could not be reached, researchers called each day, for up to 5 days. If the participant still could not be reached, researchers sent up to 3 follow-up letters by mail or e-mail (according to stated contact preferences) and continued to call at the same frequency for a maximum of 10 sequential days. To mitigate respondent burden and to compensate them for their time, participants received a $50 gift card to a large retail store upon completion of each interview.

Facility data from the Guttmacher Provider Census were used to estimate the incidence of being denied an abortion nationally because of facility gestational age limit. These data have been used to create national estimates of a variety of abortion-related indicators.[5,13–16] In 2009, the Guttmacher Institute surveyed all US facilities known to have performed abortions. In May 2009, up to 3 rounds of questionnaires were mailed to all potential providers, and extensive phone follow-up was conducted. Of the 2344 facilities surveyed, 1024 responded to the mailed questionnaire, 501 responded during nonresponse follow-up, and health department data were used for 451 facilities. A total of 1793 facilities reported providing at least 1 abortion in 2008. All facilities were asked the number of abortions performed and the maximum gestation at which abortion services were offered, and about other aspects of abortion care. Further details can be found elsewhere.[5]

Measures

All measures were taken from the Turnaway Study. During the baseline Turnaway Study interview, participants were asked about sociodemographic characteristics, their reproductive histories, when they discovered they were pregnant, when they first considered an abortion, and any difficulties they experienced accessing care. Access to abortion was operationalized by the distance women traveled to get to the study recruitment facility and the number of other facilities they called or visited before presenting at the recruitment facility. Distance traveled by road was estimated using the STATA module (StataCorp, College Station, Texas) TRAVELTIME[17] which uses Google maps (Google, Mountain View, California) to geocode distance between participant and facility zip codes.

All participants were asked about the reasons for delay in seeking an abortion. First, they were asked an open-ended question, "Did anything slow you down and prevent you from getting to the [Recruiting site] earlier in your pregnancy?" A few months after data collection began, additional closed-ended items about specific reasons for delay were added to the instrument, including: not knowing you were pregnant, not knowing where to go to get the abortion, figuring out how to get to the provider, travel costs, costs of the procedure, insurance coverage, and trouble deciding whether an abortion was wanted. Participants could select all that applied. Responses from the open-ended question were coded by 2 of the authors and combined with the closed-ended item categories. We conceptualized insurance delays as distinct from procedure cost delays, in that the former included administrative and logistical problems, such as having to determine whether the procedure was covered among women with insurance or waiting for Medicaid-based coverage. Women who were not asked the closed-ended items and did not mention the issue in response to the open-ended question were coded as missing for that category. At baseline, and if they had not had an abortion at baseline, again at 6 months, turnaways were asked whether they considered obtaining an abortion elsewhere, whether they had obtained an abortion elsewhere, and what barriers they faced in accessing care.

Data Analysis

We conducted the analysis in 3 parts. First, we compared the sociodemographic characteristics and reproductive history and intentions of first trimester patients, near-limit abortion patients, and turnaways. Because almost one third of participants, nearly exclusively women living with their parents, did not know their household income, we also examined mother's education as a proxy for socioeconomic status. We used bivariate mixed-effects regression models that included random effects for facility, presenting P values that adjusted for the clustering of participants within providers. We used mixed-effects logistic regression to assess group difference in binary variables, mixed-effects multinomial logistic regression for categorical variables, and mixed-effects ordinal logistic regression for ordered categorical variables. For continuously coded characteristics, we used mixed-effects linear models to assess differences in means among the study groups. We also described the access-related barriers and compared these experiences by study group using mixed-effects regression models.

Second, we examined the factors associated with having an abortion after being denied one. We fit a multivariable mixed-effects logistic regression model to assess the characteristics associated with ultimately obtaining an abortion among turnaways. The model included sociodemographic variables and reproductive history and intentions. Because of clustering of gestational age by site, both site gestational limit and the individual's deviation from the site gestational limit were entered into the model. Statistical significance was set at $P < .05$ for all comparisons and adjusted odds ratios (AORs), and 95% confidence intervals are reported. All statistical analyses were performed using STATA 12 (Stata Corp, 2011).

Finally, we estimated the incidence of being denied an abortion because of provider gestational limit and projected the number of women affected nationally per year. We used data provided by 4 study providers (1 on the east coast, 2 in the midwest, and 1 on the west coast) that maintained records of all women denied care because of gestational limits to estimate the proportion of all clients

who presented beyond the facility's gestational limit. All 4 facilities performed at least 400 abortions, provided abortion care at the latest gestational age for at least 150 miles, and went to at least 13 weeks' gestation, characteristics that were similar to abortion facilities in the larger sample of last-stop abortion facilities.

We applied this estimated proportion to the total number of women seeking abortions at last stop facilities based on the Guttmacher Provider Census data. Last stop facilities were those that performed ≥ 400 abortions in 2008, provided abortion care at the latest gestational age for that state, but went to at least 13 weeks' gestation, and were more than 150 miles from a facility in a bordering state that had a later gestational limit.

RESULTS

Among the 3045 women who were approached, 39.4% were interested in being interviewed semiannually for 5 years, and agreed to speak with UCSF researchers by phone. The most common reason for refusal was the time commitment required for participation. Among these, 94.4% were eligible, gave informed consent to participate in the study, and were enrolled. After stratifying by study group, nonparticipants (among those consented) did not differ from participants on age or gestational age of the pregnancy at the time of enrollment. A total of 956 women completed the baseline interview: 273 in the first trimester group, 452 in the near-limit abortion group, and 231 in the turnaway group. Among the women enrolled, 92% were retained at 6 months, with no differential loss to follow-up among groups.

The sample was racially and ethnically diverse, with more than half (50.4%) being Latina or African American (Table 1). The majority were single and never married (78.8%), and most had previous children (59.2%).

Sociodemographic characteristics of first trimester patients differed substantially from near-limit abortion patients. Near-limit abortion patients were less likely to be aged 25 to 34 years, more likely to be multiracial or other race, less likely to have a college degree, less likely to be in the highest income category, and less likely to be employed. Near-limit abortion patients discovered their pregnancies at later gestational ages than first trimester patients, and near-limit abortion patients were less likely to report difficulty deciding about the abortion.

There were few sociodemographic differences between turnaways and near-limit abortion patients; turnaways were younger, less likely to be employed, and less likely to have children than were near-limit abortion patients. Most notably, turnaways discovered their pregnancies at later gestational ages than did near-limit abortion patients.

Reasons for Delay and Access Barriers

Among all causes of delay, turnaways were more likely than first trimester patients to report that each reason caused a delay except for difficulty deciding whether to have an abortion (Figure 1). Reasons for delay included travel and procedure costs (36.5% among first trimester patients and 58.3% among turnaways), not recognizing the pregnancy (37.8% among first trimester patients and 48.1% among turnaways), insurance problems (20.3% among first trimester patients and 37.2% among turnaways), not knowing where to find abortion care (19.9% among first trimester patients and 33.5% among turnaways), and not knowing how to get to a provider (12.8% among first trimester patients and 29.8% among turnaways; all P values $< .05$).

Between turnaways and near-limit abortion patients, there were no significant differences in reasons for delay. For women in both groups, the most common reason for delay was travel and procedure costs. Most responses to the open-ended questions did not specify which costs caused the delay: women commonly cited, "money," and "finances."

Near-limit abortion patients and turnaways reported a variety of additional life circumstances that did not fit the predeveloped categories of reasons, including (in no order) having to wait a while for an appointment, opposition from family or friends, being in jail, needing to obtain an ID or birth certificate, weather (ice storm, blizzard, or flooding), fear of protesters, difficulties getting time off work, and difficulties getting childcare. A few women cited problems with referrals; for example, 1 woman reported that she had to wait a week before she could get an appointment at another provider, and by then she had also surpassed the new provider's gestational limit.

Generally, near-limit abortion patients went to greater lengths than turnaways to obtain an abortion. Although because they were at later gestational ages, turnaways may have had fewer provider options (Table 2). Near-limit abortion patients traveled greater distances than first trimester patients (30.5% vs 13.6% traveling > 100 miles, $P < .001$), and called (49.4% vs 34.9%, $P < .001$) and visited (51.9% vs 32.2%, $P < .001$) more providers. Near-limit abortion patients also traveled greater distances than turnaways (30.5% vs 19.5%, $P < .001$) and were more likely to have visited other providers before presenting at the recruitment site (51.9% vs 34.5%, $P < .001$).

Factors Associated With Obtaining an Abortion After Being Denied One

Among the 231 turnaways, 48.5% said they did not consider having an abortion elsewhere after being denied one; however, among these women, over half (55%) said they still wished they could have had an abortion.

An additional 21.6% of turnaways said they considered having an abortion elsewhere, but never obtained one. Among this group, the most commonly reported reason for not obtaining an abortion after being denied one were procedure and travel costs (85.4%), followed by not being able to find a provider who would do the abortion so late, not knowing where to go, or a belief that no services were available for their gestational age (54.8% combined), and not knowing how to get there (51.1%). One woman cited the burden of the combination of factors:

> It was probably travel costs, procedure costs, not knowing who I would have to come with me on the four day adventure. I was at the point that there was no guarantee wherever I went.

Six months after recruitment into the study, 64 of the 231 turnaways (27.7%) had received an abortion, and 5 women (2.2%) had had a miscarriage or stillbirth. Among all turnaways, 15 (6.5%) placed their children for adoption (9.3% among those who gave birth).

TABLE 1—Sociodemographic Characteristics and Reproductive History of the Study Population by Study Group: United States, University of California, San Francisco Turnaway Study, 2008–2010

Characteristics	Total %	First Trimester Patients (F) (n = 273) %	*P* (F vs N)	Near-Limit Abortion Patients (N) (n = 452) %	Turnaways (T) (n = 231) %	*P* (N vs T)
Gestational age (mean d)	163.1	77.2	< .01	189.7	212.7	< .01
Sociodemographics						
Age, y						
15–17[a]	18.1	13.2	Ref	16.8	26.4	Ref
18–24	36.1	30.4	.94	39.4	36.4	.01
25–34	38.3	47.3	.03	36.3	31.6	.01
35–46	7.5	9.2	.19	7.5	5.6	.04
Race/ethnicity						
Non-Hispanic White	36.9	42.5	Ref	34.7	34.6	Ref
Non-Hispanic Black	29.4	29.3	.1	29.4	29.4	.67
Hispanic/Latina	21.0	20.5	.15	20.4	22.9	.37
Multiracial/other	12.7	7.7	< .01	15.5	13.0	.76
Highest grade completed						
≤ high school	19.6	15.8	.73	19.0	25.1	.09
High school diploma or GED	33.4	31.5	Ref	35.2	32.0	Ref
Some college, vocational training	39.3	41.4	.36	39.2	37.2	.82
College degree	7.7	11.4	.03	6.6	5.6	.84
Poverty status[b]						
< 100% FPT	33.6	29.7	Ref	35.8	33.8	Ref
100%-200% FPT	21.8	25.3	.1	21.5	18.2	.66
> 200% FPT	12.7	20.9	< .01	10.4	7.4	.37
Don't know household income	32.0	24.2	.62	32.3	40.7	.13
Employed						
Unemployed	46.9	37.4	Ref	46.7	58.4	Ref
Part or full time	53.1	62.6	.01	53.3	41.6	< .01
Maternal education						
< high school	15.1	20.5	.04	12.6	13.4	.9
High school	36.4	36.3	Ref	36.1	37.2	Ref
Some/grad tech, or college	18.0	13.9	.15	19.2	20.3	.91
≥ college grad	22.1	24.2	.67	21.9	19.9	.58
Don't know	8.5	5.1	.04	10.2	9.1	.63
Insurance status (n = 953)						
None	28.8	28.9	.31	29.6	26.8	.86
Medicaid	43.8	39.2	.12	43.7	49.4	.2
Private/other	27.5	31.9	Ref	26.7	23.8	Ref
Marital status						
Single, never married	78.8	75.1	Ref	79.2	82.3	Ref
Married	9.1	11	.18	8.0	9.1	.77
Separated, divorced, widowed	12.1	13.9	.61	12.8	8.7	.11
Reproductive history and intentions						
Previous children (n = 954)						
0	40.9	40.8	Ref	37.5	47.6	Ref
1	27.4	24.6	.13	30.4	24.7	.02
≥ 2	31.8	34.6	.93	32.2	27.7	.04

Continued

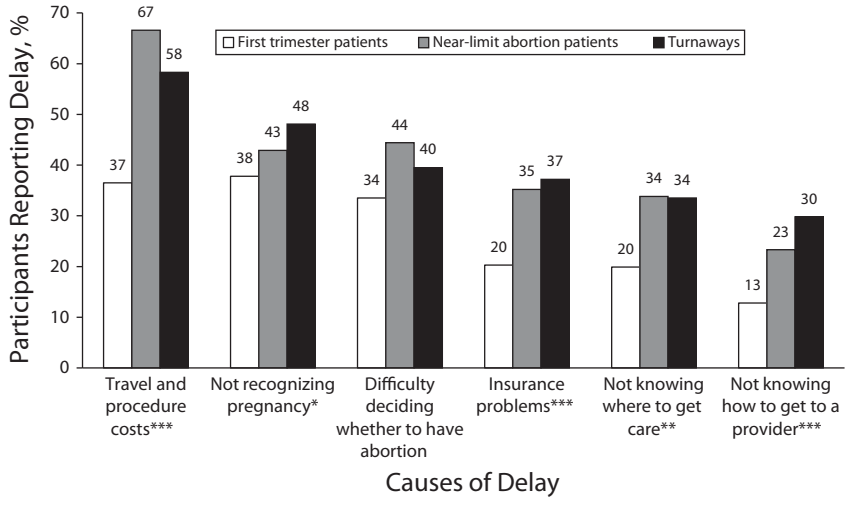
TABLE 1—*Continued*

Previous abortions (before index abortion) (n = 955)						
0	54.3	53.7	Ref	53.3	57.1	Ref
1	27.3	25.4	.5	29.0	26.4	.38
≥ 2	18.3	21.0	.39	17.7	16.5	.51
How difficult to make the decision						
Very or somewhat difficult	44.4	52.0	.01	41.2	41.6	.93
Very or somewhat easy, not easy or difficult	55.6	48.0		58.8	58.4	
Gestational age when discovered pregnancy (n = 954), wk						
≤ 10	65.9	99.3	Ref	57.6	42.6	Ref
11–20	24.9	0.7	< .01	32.8	38.3	.01
> 20	9.1	0.0	NA	9.5	19.1	< .01

Note. FPT = federal poverty threshold; GED = general equivalency diploma; NA = not applicable: *P* value could not be computed because of empty cell. The sample size was n = 956 unless indicated.
[a]This age category includes 1 woman aged 14 years who was recruited early in the study before the minimum enrollment age was changed to 15 years.
[b]The FPTs were defined by the US Census (2008–2010).

At the provider with the lowest established gestational age limit in the study (10 weeks), 20 of the 21 women turned away (95.2%) eventually obtained an abortion despite being more than 150 miles from another facility. When women from this 1 site were excluded, 21.5% of turnaways were able to obtain an abortion. Among turnaways who had an abortion, the majority (84.1%) found out about the providing facility from the original recruitment provider. An additional 7.9% reported learning about the providing facility from another health care provider, whereas another 7.9% reported learning about it from other sources such as the Internet and the National Abortion Federation hotline.

Results of the multivariable model predicting the likelihood of obtaining an abortion after being denied one demonstrated that women who were Latina (AOR = 0.12, 95% confidence interval [CI] = 0.03, 0.56), who reported it was very or somewhat difficult to make the decision to have an abortion (AOR = 0.19, 95% CI = 0.07, 0.49), and who were recruited at a facility with a later gestational limit (AOR = 0.68, 95% CI = 0.61, 0.77) were less likely to have an abortion after being denied one than were other women (Table 3).



*$P < .05$; **$P < .01$; ***$P < .001$; *P* values reflect differences between first trimester patients and turnaways.

FIGURE 1—Reported causes of delay, by study group: United States, University of California, San Francisco Turnaway Study, 2008–2010.

Incidence of Being Denied Abortion Because of Gestational Limits

The providers in our study had gestational limits from 10 to 26 weeks, with a mean limit of 20 weeks. Based on data from 4 of the study facilities with complete records on women turned away, we estimated that facilities turned away an average of 2.0% of clients seeking care because they presented for care after the provider's gestational limit.

Using the Guttmacher Provider Census, we estimated that there are 101 last stop providers across the United States. These providers have a total patient volume of about 263 917 per year. Applying the 2.0% turnaway rate, we estimated that in 2008 approximately 5278 women presented at providers but were denied an abortion in the United States because they were beyond the provider's gestational limits. Based on the proportion of turnaways (at providers with limits at 13 weeks or more) who were able to obtain an abortion elsewhere (21.5%), we estimated that 4143 women carried their unwanted pregnancies to term. These estimates did not include women who were denied care for other reasons such as medical ineligibility, not having funds to pay for the abortion, or not having permission from a parent (where parental consent was required).

TABLE 2—Access to Abortion by Study Group: United States, University of California, San Francisco Turnaway Study, 2008–2010

Access Indicator	Total %	First Trimester Patients (F; n = 273), %	*P* (F vs N)	Near-Limit Abortion Patients (N; n = 452), %	Turnaways (T; n = 231), %	*P* (N vs T)
Distance to provider (n = 956), miles						
≤ 50	59.2	71.4	< .001	51.1	60.6	< .001
50–100	17.8	15.0		18.4	19.9	
> 100	23.0	13.6		30.5	19.5	
No. of providers called (n = 947)						
No other providers	56.2	65.1		50.6	56.5	
≥ 1 other provider	43.8	34.9	< .01	49.4	43.5	.12
No. of providers visited (n = 947)						
No other providers	58.0	67.8		48.1	65.5	
≥ 1 other provider	42.0	32.2	< .01	51.9	34.5	< .01

Other women not included in our estimate were women who knew their gestational age, inquired about the facility's gestational limit by phone, and never presented for care.

DISCUSSION

Findings from this study suggest that in 2008 more than 4000 women carried unwanted pregnancies to term after they were denied an abortion because of provider gestational age limits. This study was initiated before the recent state abortion bans at 20 weeks' gestation. Almost 15% of US women live in the states with such new legislation; thus, many more will be denied abortions in the coming years. These bans present an undue burden because, as demonstrated in this study, many women do not realize they are pregnant until later in pregnancy and cannot travel to other states for abortion care. Children born from unintended pregnancies have multiple health consequences[18–21] compared with children born from intended pregnancies. Additionally, women who raise children born from unintended pregnancies have higher rates of economic[22] and educational[23] disadvantages.

In this study, one of the primary reasons for delay in seeking an abortion was time spent raising the funds to pay for the procedure and travel. Once a woman is beyond the first trimester, raising the funds to pay for the abortion can lead to further delays and create a cycle of increasing cost and delay. Currently, in 33 states and the District of Columbia, poor women have no access to Medicaid-funded abortions, except in cases of life endangerment, rape, or incest.[24] Public financing and insurance coverage for abortion would have made procedures possible for many of the turnaways, and ability to pay while in the first trimester could have prevented some women from needing later abortions. These findings were consistent with those of Henshaw et al.[25] who estimated that one fourth of women who would have had Medicaid-funded abortions instead gave birth when this funding was unavailable.

We found that first-trimester patients were more likely to report difficulty deciding whether to have an abortion than both near-term abortion patients and turnaways. This might be because first-trimester patients had fewer other delays. It was easier for them to find a provider, raise the money, etc., so their definition of "delay" was relatively lower.

Our findings demonstrate a need to strengthen existing financial support and referral systems to ensure that women can be served elsewhere if they cannot be treated where they originally present for care. Referrals could be made immediately at the facility that denied care or via a phone consultation service. A few organizations, such as the National Abortion Federation and the National Network of Abortion Funds, provide women with information about abortion providers nearest to them, including the latest gestation at which abortions are available, as well as financial assistance.[26,27] However, the financial support for these services is limited and privately donated, and many women are unaware of these resources or unable to access them.

Expanding the number of abortion facilities in underserved areas and enabling providers to raise their gestational limits would likely reduce out-of-pocket costs associated with travel, time off work, and childcare. Several factors influence how providers set their gestational limits. An informal survey conducted by one of the authors in 2007 among 74 second trimester abortion providers found that the most commonly reported factors in determining gestational limit were surgical skills and comfort (71%), state regulations (42%), and personal beliefs (37%).[28] Potential strategies for raising limits include investing in training clinicians to perform later procedures, ensuring these providers have ample institutional and emotional support,[29,30] and addressing the social stigma that they face.[31,32]

Study Limitations

This study had a few limitations. First, the Turnaway study was limited to fewer than 1000 women, and many women who were invited to participate declined. The percentage of women who did not want to participate varied widely by facility, with the 10 top-ranking facilities achieving 60% to 80% agreement and the bottom 5 facilities having less than 30% agreement. The low recruitment rate among some facilities was likely because of the long-term demands of study participation. To assess the extent of this limitation, we compared the outcomes of women who went to high recruiting facilities with those who went to low recruiting facilities and found very little difference.[10] We also compared the demographics of the women in our study to the demographics of women receiving abortions nationally, and found that they were very similar, with the exception that our participants were more likely to be in the second trimester. To the extent that those who refused to participate experienced different barriers to accessing care, this could have affected our findings. Second, we had high rates (16%–20%) of missing data on reasons for delay because early in data collection women were not asked the specific questions. However, data were not differentially missing between

TABLE 3—Unadjusted and Adjusted Odds of Obtaining an Abortion After Being Turned Away: United States, University of California, San Francisco Turnaway Study, 2008–2010

	Odds of Having an Abortion After Being Turned Away	
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Sociodemographic characteristics		
Age, y	1.02 (0.95, 1.08)	1.00 (0.91, 1.09)
Race/ethnicity		
Non-Hispanic White (Ref)	1.00	1.00
Non-Hispanic Black	0.43 (0.16, 1.15)	0.42 (0.14, 1.31)
Hispanic/Latina	0.18** (0.05, 0.62)	0.12** (0.03, 0.56)
Multiracial/other	0.36 (0.11, 1.21)	0.40 (0.10, 1.59)
Highest grade completed		
< high school	0.84 (0.27, 2.64)	0.98 (0.26, 3.68)
High school diploma or GED (Ref)	1.00	1.00
Some college, vocational training	1.52 (0.60, 3.83)	0.72 (0.22, 2.32)
College degree	4.65 (0.87, 24.91)	3.09 (0.49, 19.66)
Maternal education		
< high school	0.23* (0.06, 0.92)	0.28 (0.06, 1.31)
High school (Ref)	1.00	1.00
Some/grad tech, or college	0.63 (0.22, 1.87)	0.60 (0.18, 2.03)
≥ college grad	0.89 (0.31, 2.53)	0.66 (0.21, 2.14)
Missing	0.60 (0.13, 2.83)	0.56 (0.08, 3.85)
Insurance status		
None	1.06 (0.40, 2.83)	1.56 (0.48, 5.08)
Medicaid	0.61 (0.23, 1.63)	0.48 (0.14, 1.58)
Private/other (Ref)	1.00	1.00
Reproductive history		
How difficult to make the decision		
Very or somewhat difficult	0.28** (0.13, 0.64)	0.19*** (0.07, 0.49)
Very or somewhat easy, not easy or difficult (Ref)	1.00	1.00
Facility gestational age limit	0.74*** (0.68, 0.80)	0.68*** (0.61, 0.77)
Deviation from site gestational age	1.21 (0.85, 1.72)	0.99 (0.68, 1.43)
Previous children		
0 (Ref)	1.00	1.00
≥ 1	0.85 (0.39, 1.85)	1.83 (0.65, 5.13)
Previous abortions (before index abortion)		
0 (Ref)	1.00	1.00
≥ 1	1.49 (0.67, 3.29)	1.57 (0.60, 4.11)

Note. CI = confidence interval; GED = general equivalency diploma; OR = odds ratio. The sample size was n = 226.
*P < .05; **P < .01; ***P < .001.

turnaways and near-limit abortion patients, and it is unlikely that the missing data biased the estimates. Third, our estimate of more than 4000 denied abortions was subject to some amount of error. It was based on the proportion of women turned away at 4 abortion facilities. We assumed that these 4 facilities, which had complete data on women turned away because of gestational limits, were representative of all 101 last stop facilities. At the same time, we expect the estimate is a conservative one because it did not include, for example, women who could not raise the funds to cover the procedure, take time off work, or get parental permission. It also did not include women who did not present for abortion care because they called ahead and realized they were beyond the gestational limit. The total number of women who did not obtain a desired abortion is likely much greater than 4000.

Conclusions

Women seeking abortions are more economically disadvantaged than the larger population of women.[33] Women in need of second-trimester abortions are particularly vulnerable insofar as there are fewer providers that offer these services, and when they are available, procedures typically cost several hundred, or even thousands, more dollars than a first-trimester procedure. Laws that impose lower and lower gestational limits will exacerbate the burdens these women face, and almost certainly, result in more unintended births. ■

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Contributors

D. G. Foster was responsible for conceptualizing and designing the Turnaway Study. U. D. Upadhyay developed the analysis plan for this article, analyzed the data, and drafted the article. R. K. Jones was responsible for analyzing and interpreting data from the Guttmacher Institute's Abortion Provider Census. T. A. Weitz, R. K. Jones, R. E. Barar, and D. G. Foster interpreted the data, reviewed drafts of the article, and provided substantive comments on its content. R. E. Barar also provided management support for the Turnaway Study.

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Human Participant Protection

Study protocol and procedures for the Turnaway Study received institutional review board approval from the

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Roe v Wade and the New Jane Crow: Reproductive Rights in the Age of Mass Incarceration

All pregnant women, not just those who seek to end a pregnancy, have benefited from *Roe v Wade*. Today's system of mass incarceration makes it likely that if *Roe* is overturned women who have abortions will go to jail.

Efforts to establish separate legal "personhood" for fertilized eggs, embryos, and fetuses, however, are already being used as the basis for the arrests and detentions of and forced interventions on pregnant women, including those who seek to go to term.

Examination of these punitive actions makes clear that attacks on *Roe* threaten all pregnant women not only with the loss of their reproductive rights and physical liberty but also with the loss of their status as full constitutional persons. (*Am J Public Health*. 2013;103:17–21. doi:10.2105/AJPH.2012.301104)

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IN HER BOOK *THE NEW JIM Crow*, Michelle Alexander argues that the system of mass incarceration in the United States, fueled by the war on drugs, operates in a seemingly color-blind, race-neutral way to create a new Jim Crow system that forces African Americans, especially African American men, into a permanent underclass.[1] I believe that attacks on *Roe v Wade*[2] and efforts to treat fertilized eggs, embryos, and fetuses as separate legal persons will establish a system of law in which women who have abortions will go to jail. Furthermore, all pregnant women are at risk of being assigned to a second-class status that will not only deprive them of their reproductive rights and physical liberty through arrests, but also effectively strip them of their status as full constitutional persons.[3,4]

Here I address major changes in US law enforcement since *Roe v Wade* was decided in 1973 that make it likely that if *Roe* is overturned women who have abortions will be arrested and sentenced to incarceration. I discuss how efforts to undermine *Roe* and to establish separate legal personhood for fertilized eggs, embryos, and fetuses are already providing the basis for the arrests and detentions of and forced interventions on pregnant women. I conclude that these efforts, if unchecked, not only will result in massive deprivations of pregnant women's liberty, but also will create a basis for ensuring a permanent underclass for pregnant women or, for lack of a better term, a new Jane Crow.

In 1971, before *Roe v Wade* was decided, Shirley Wheeler was arrested and prosecuted for the crime of manslaughter after hospital staff in Florida discovered her illegal abortion and reported her to the police. After a two-day jury trial she was convicted of manslaughter, a crime that carried a possible penalty of 20 years' imprisonment. Although the conviction would later be overturned by the Florida Supreme Court,[5] the trial court sentenced Wheeler to two years' probation that required her to either marry the man she was living with or return to her home state to live with her parents.[6,7] Before *Roe*, other women were also arrested for having abortions.[8] It was far more common, however, for the abortion provider to be arrested and the woman suspected of having the illegal abortion to be subjected to grueling police interrogations designed to obtain evidence against that provider.[9]

Today's criminal justice system, however, is radically different from the one that existed when *Roe* was decided. In the 1970s, the United States had approximately 300 000 prisoners,[10] and relatively few women were prosecuted for any crime, including abortion.

Between 1970 and 2000, the US population rose by less than 40%, yet the number of people in prisons and jails rose by more than 500%.[10] The United States now has a prison–industrial complex that includes a for-profit prison industry that reaps enormous financial gain from building prisons, providing ongoing services to those prisons, and ensuring that those prisons remain filled.[11–13]

Currently, US prisons and jails hold more than 1.5 million people, and 4.8 million more are under some form of criminal justice supervision in the community, such as probation and parole.[14] In 1977, the number of women in prison was 11 212[15] and in 2009, it was 105 197[16]—an increase of 938%. Today, more than 200 000 women are behind bars, and more than one million women are on probation or parole.[17,18] The fact that a woman is also a mother caring for one or more children is no deterrent to incarceration. Two thirds of the incarcerated women in the United States have at least one minor child,[21] and approximately five percent of women are pregnant when they begin their incarceration.[19,20]

This new era of mass incarceration—which is largely accepted by the public, defended by an army of lobbyists, and justified by a war on drugs deeply rooted in America's history of slavery and racism[1,22]—makes it far more likely today than in 1973 that if *Roe* is overturned women will themselves be arrested and jailed.[23] It is also likely that women having or considering having abortions will be subject to far more government surveillance than in the past.

Federal and state law enforcement agencies are twice as big as they were in 1973, and their

investigative powers—including wiretapping—have been dramatically expanded.[24–26] Moreover, since 1973 drug testing has become a multibillion-dollar industry.[27] As a result of US Supreme Court decisions[28,29] and local policies, even middle school students who want to join the after-school scrapbooking club are being required in some schools to submit to urine drug testing.[30] Once a urine sample is in the possession of state authorities, it may just as easily be used to test for pregnancy.

In the post-*Roe* world, however, it is not only women who seek to end pregnancies who must fear the possibility of surveillance and arrest. Approximately one million women in the United States each year terminate their pregnancies, close to another million suffer miscarriages and stillbirths, and more than four million women continue their pregnancies to term.[31] Each and every one of these women benefits from the US Supreme Court's decision in *Roe v Wade*,[2] which not only protects a woman's right to terminate her pregnancy but also, as later US Supreme Court cases explained, has been "sensibly relied upon to counter" attempts to interfere with a woman's decision to become pregnant or to carry her pregnancy to term.[32] As a result, all pregnant women, not just those seeking to end a pregnancy, risk losing their reproductive rights and their liberty.

Indeed, pregnant women who have abortions, experience pregnancy losses, or fail to heed their doctor's recommendations, and even those who go to term and give birth to healthy children, are already being arrested and subjected to massive assaults on their physical liberty. A recent study that I coauthored with Jeanne Flavin found, between 1973 and 2005, 413 cases in the United States in which a woman's pregnancy was a necessary factor leading to attempted and actual deprivations of her liberty.[33] The evidence we obtained indicated that this was a substantial undercount, possibly by hundreds if not more, of the number of pregnant women subject to arrests or the equivalent during this period. In addition, we have documented more than 200 cases since 2005 in which pregnant women have been arrested. In almost all cases, the arrests and other actions taken would not have happened but for the fact that the woman was or had been pregnant at the time of the alleged violation of law.

Many states still have their pre-*Roe* abortion laws on the books, and virtually all have laws distinguishing between legal and illegal abortions.[34,35] Between 1973 and today, women in Idaho,[36] New York,[37–39] and South Carolina[40] who ended their pregnancies through abortion have been charged with violating state criminal abortion laws. Criminal abortion charges have also been filed against women in Florida,[41] Georgia,[42] and Tennessee,[43] who, in acts of desperation, shot themselves while pregnant. In an Illinois case, criminal abortion charges were filed against a woman who apparently attempted to remove a dead fetus from inside her after experiencing a pregnancy loss while at home.[44]

In light of the increasingly heated antichoice rhetoric routinely describing abortion as "murder," "killing,"[45] and "genocide,"[46] it should not be surprising to learn that prosecutors in Alaska,[47] Arizona,[48] California,[49–51] Florida,[41] Georgia,[52] Hawaii,[53] Indiana,[54] Illinois,[55] Kentucky,[56] Louisiana,[57,58] Massachusetts,[59,60] Mississippi,[61] New Jersey,[62] Nevada,[63] Oklahoma,[64] South Carolina,[65] Tennessee,[66] and Utah[67] have also used their existing murder, fetal murder, feticide, and manslaughter laws as a basis for arresting and prosecuting pregnant women who had abortions, who suffered miscarriages or stillbirths, or who were unable to guarantee that the children they gave birth to would survive.

Cases include a woman who used a knitting needle to end her own pregnancy,[56] a woman who delayed having cesarean surgery,[67] a woman who experienced an early miscarriage after receiving the medically prescribed contraceptive Depo Provera,[58] a woman who experienced a stillbirth while giving birth at home,[68] and women who suffered stillbirths and lost infants shortly after birth and were accused, without scientific evidence, of causing their pregnancy loss or newborn's death by taking an illegal drug.[47,65] In March of 2011, Bei Bei Shuai was charged in Indiana with murder and attempted feticide after becoming so depressed during her pregnancy that she attempted suicide and suffered the loss of her newborn.[69] Because murder is not treated as a bailable offense, Ms. Shuai was incarcerated in a county jail for more than a year before a court of appeals ordered her release. Thus far, Indiana courts have rejected attempts to have the charges dismissed; Ms. Shuai is now preparing for a murder trial.[54]

In a majority of the cases we documented, however, women went to term and gave birth to children who had no reported health problems.[33] These women, pregnant and alleged to have used an illegal drug or alcohol, were arrested for such crimes as child (fetal) endangerment and delivery of drugs to a minor through the umbilical cord. Women have been arrested while still pregnant, taken straight from the hospital in handcuffs, and sometimes shackled around the waist and at the ankles.[70] They have been arrested shortly after giving birth[71] and while still dressed only in hospital garb.[71–73] Pregnant women have been held in jails,[74] prisons,[75] and under house arrest.[76] At least one woman who was still pregnant at the time of arrest was shackled during much of her labor.[72]

State authorities have deprived pregnant women of their liberty not only through the criminal justice system, but also through civil commitment proceedings and actions taken pursuant to civil child welfare laws. Pregnant women have been held in locked psychiatric wards[77–80] and in treatment programs under 24-hour guard.[81] They have been forced to undergo intimate medical examinations[82] and blood transfusions over their religious objections.[83,84] Women have been forced to submit to cesarean surgery, and some have been physically restrained with leather wrist and ankle cuffs so that they could be subjected to medical procedures they opposed.[85]

Angela Carder was so debilitated at the time a court ordered her to undergo cesarean surgery that such restraints were unnecessary. Ms. Carder was 27 years old and 25 weeks pregnant when she became critically ill. She, her family, and her attending physicians all agreed on treatment designed to keep her alive for as long as possible. The hospital, however, called an emergency hearing to determine the rights of the fetus. Despite knowing that cesarean surgery could kill Ms. Carder, the

court ordered it, claiming that the fetus had independent legal rights. The fetus was born alive but died 2 hours later. Angela Carder died 2 days later, with the surgery listed as a contributing factor.[86]

The highest court of the District of Columbia later vacated the order as one that violated Ms. Carder's right to "accept or refuse medical treatment."[86(p1252)] Indeed, the vast majority of appellate court decisions in the United States have found that the arrests and interventions described here are contrary to law and public health policy.[53,87–105] Nevertheless, these arrests and interventions continue to occur, and virtually all of them rely on the claim that fertilized eggs, embryos, and fetuses should be treated as separate persons.[33] The decision in *Roe* explicitly rejected the argument that fetuses, at any stage of development, are to be treated as if they are separate constitutional persons under the law.[2] Despite this, passage of feticide laws[106] and antiabortion measures (including those that have declarations of separate rights for fertilized eggs, embryos, and fetuses)[107,108] and efforts to pass so-called personhood measures[109] are providing the legal theory not only to justify the arrests of pregnant women, but also to deprive them of their constitutional personhood.

The dissenting judge's view in the Carder case makes this painfully clear. This judge argued that the viable unborn child is a person with rights separate from the pregnant woman.[86(pp1254–1257) (Belson J, dissenting in part)] He then articulated a clear rationale for the inevitable injury that the recognition of such rights would do to women's legal status: he claimed that "the expectant mother," by undertaking to bear another human being and carrying an unborn child to viability places "herself in a special class of persons."[86(p1254)(Belson J, dissenting in part)] As exemplified in Carder's case and confirmed in the hundreds of others we documented in our study, when eggs, embryos, and fetuses are treated as separate persons, the state will have the authority to consign pregnant women to "a unique category of persons"[86(p1254)(Belson J, dissenting in part)] in which they may be deprived of virtually every right associated with constitutional personhood, including, as in Carder's case, the right to life.[86,110,111]

In the name of separate rights for eggs, embryos, and fetuses, pregnant women have been locked up (deprived of the right to liberty) and forced to undergo major surgery (the right to liberty, bodily integrity, and medical decision-making),[112] sometimes over their religious objections (the right to religious liberty).[82,113–116] Women have been denied medical care[70] and have been forced to give birth while shackled and subjected to grossly disproportionate penalties (the right to be free of cruel and unusual punishment).[65] They have had bail deliberately set at levels so high that they were forced to remain in jail (right not to pay excessive bail).[70,117]

These deprivations have taken place after court proceedings where women were represented by inadequate counsel or no counsel at all (right to counsel)[118–120] and where they had no meaningful opportunity to challenge the claims being made against them (the right to due process).[118–122] Pregnant women have been prevented from leaving the state (the right to travel).[123] Pregnant women have been secretly searched (the right to be free of unwarranted searches)[124,125] and had their confidential medical information disclosed (right to informational privacy).[94] Pregnant women have been coerced into having unwanted abortions,[126] and they have been penalized for giving birth,[127] for experiencing pregnancy losses, and for terminating or seeking to terminate a pregnancy (the right to reproductive privacy).[128]

Pregnant women have also been denied the right to equal protection under the law. They have been required to prioritize their pregnancies over everything else in their lives, including their jobs[128] and their responsibilities for the children they already have.[129] And although our study confirmed that arrests and detentions of and forced interventions on pregnant women are happening in every region of the country and affect women of all races, we also found that African American pregnant women are significantly more likely than White women to be arrested, reported by hospital staff, and subjected to felony charges.[33,130,131]

These cases thus reveal that both pregnant women who have abortions and those who do not are already being arrested and incarcerated. They also demonstrate that there is no gender-neutral way to add fertilized eggs, embryos, and fetuses to the Constitution without subtracting all pregnant women from the community of constitutional persons and creating a Jane Crow system of law that disproportionately punishes African American women.

In light of the pressing need to dismantle the US system of mass incarceration, we must oppose the recriminalization of abortion and passage of so-called personhood measures that would expand it. In my experience, the majority of people, whether they identify as pro-life or pro-choice, do not want to see pregnant women who have abortions (61% of whom are already mothers),[132–134] who experience pregnancy losses, or who go to term sent to jail or consigned to a second-class status.[135,136] It is my hope then that we will be able to work together not only to oppose attacks on *Roe* and to defend reproductive rights, but more fundamentally to support a true culture of life: one that values and fully protects the personhood of the women who bring forth that life. ■

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"My Death Was in a Kiss": Theatrical Propaganda Against Sexually Transmitted Infections in the Early Soviet Union and the United States in the 1920s–1930s

Oxana Kosenko, PhD, and Igor J. Polianski, PhD

See also Tucker and Cohen, p. 1231.

We analyze key historical anti–sexually transmitted infection (STI) theatrical performances in the Soviet Union and the United States that were staged to disseminate knowledge and awareness of STIs among the population. The phenomenon of theatrical hygiene propaganda emerged in the USSR after the October Uprising of 1917. The so-called sanitary plays, mock trials, revues, and Living Newspapers addressed important public health issues, one of which was STIs. The Soviet experience provided inspiration for the Federal Theater Project in the United States, which produced socially relevant performances during the Great Depression. The Living Newspaper *Spirochete*, staged in Chicago, Illinois, in 1938 at the beginning of the "war against syphilis," became one of the most often staged Living Newspapers in the United States. We compare discourses of the theatrical propaganda against STIs in the Soviet Union and the United States. We aim to explain the driving forces and motives behind the anti-STI movement in both countries and describe structural and performative differences in the anti-STI theatrical productions. (*Am J Public Health*. 2022;112(9):1318–1325. https://doi.org/10.2105/AJPH.2022.306933)

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At the beginning of the 20th century, the public attitude toward sexually transmitted infections (STIs) changed fundamentally in Europe and the United States. Understanding that STIs were both an individual's private problem and a social challenge and threat broke the silence on the issue.[1] A wide range of media—including various forms of print and mobile cinemas, exhibitions, lectures, and theatrical productions—was involved in educating the public about the so-called "secret" diseases. It was a transnational phenomenon.

In the USSR in the 1920s, hygiene education was a part of the program to create a new man, a physically and mentally superior human being able to build a new socialist state. As a result of the search for effective and unconventional forms of health education, the phenomenon of theatrical popularization of hygiene knowledge emerged. Such forms of theatrical performances as didactic plays, mock trials, revues, and Living Newspapers were staged in open-air theaters and clubhouses for workers and farmers. Living Newspapers appeared as a new, popular theatrical form that presented the factual content on current events to the audience in an entertaining way using music or acrobatics. In the 1920s, special theaters for sanitary culture were opened in Moscow and other cities of the country. They addressed major public health issues, one of which was STIs.

The Soviet experience did not remain a stand-alone phenomenon: it provided inspiration for the Federal Theater Project (FTP) in the United States. The FTP was founded in 1935 as a part of Franklin D. Roosevelt's New Deal, which was initiated as a response to the Great

Depression. The FTP was a measure to employ artists, directors, and other theater professionals who had lost their jobs because of the financial crisis. Some of the leading politicians and intellectuals who shaped the New Deal visited the Soviet Union in the 1920s and early 1930s. The "Great Socialist Experiment" was inspiring to them, so they looked for ideas that could be applied to solve domestic social and economic problems.

Among US visitors to the young Soviet Republic, which had gained recognition for its innovations in theater, was the FTP director Hallie Flanagan (1889–1969). Her interest in the Soviet Union emerged under the influence of Harvard theater professor George Pierce Baker (1866–1935). In 1923, Flanagan worked in his 47 Workshop dramatic studio, and in 1925, she was invited to teach drama at Vassar College. In her application for the prestigious Guggenheim grant to investigate trends in contemporary European theater, she included Russia on Baker's advice. After receiving the grant in 1926, Flanagan visited many European countries, but her stay in the young Soviet Republic made the most indelible impression on her. When she returned to the United States, she used Soviet avant-garde theatrical techniques in her founding of the Vassar Experimental Theater, and the productions there reflected experiences from her journey. In 1930, she again traveled to Soviet Russia, the "paradise for the arts," as she called it, with a group of Vassar students. During this trip she was much more interested in the content of the plays than in the theatrical innovations and techniques. Upon her return, she began to develop a new, socially significant repertoire for the Vassar theater. She sympathized with the Soviet Union and US Communists, although she was not a member of the US Communist Party.[2]

In 1935, Flanagan headed the newly founded FTP. Fascinated by Living Newspapers, she adapted this Soviet theater format to theaters in the United States, where it quickly gained popularity with the public. Throughout the country, the FTP consolidated regional theaters that produced locally relevant performances.[3] In 1936, Surgeon General Thomas Parran declared a "war on syphilis" to address this urgent social problem. In 1938, Flanagan staged the Living Newspaper *Spirochete* in Chicago, Illinois.

We analyze key anti-STI performances in the USSR and the United States and address the following questions: What were the specific discourses of the theatrical propaganda against STIs in the Soviet Union and the United States? What were the driving forces and motives behind the anti-STI movement? How were the theatrical productions received by the public and how popular were they? Were there any significant structural or performative differences between the countries' anti-STI theatrical propaganda?

EUGÈNE BRIEUX'S *DAMAGED GOODS* AS PRETEXT

Despite the silence on "secret illnesses," writers occasionally had the courage to speak on the subject. In particular, Henrik Ibsen's (1828–1906) play *Ghosts*, written in 1881 and first staged in 1882 in Chicago, had a remarkable resonance.[4] Ibsen stepped on the dangerous ground of criticism of the moral code by turning to such taboo issues as syphilis, incest, and euthanasia. The scandalous *Ghosts* was violently received and condemned. Two decades later, the subject of STIs no longer shocked society but instead was met with understanding.

Eugène Brieux's (1858–1932) play about syphilis *Damaged Goods* (*Les Avariés*), initially staged in 1901 in France, became one of the most discussed plays of its time. Unlike Ibsen, who did not dare to call the disease by name, Brieux talked openly about syphilis and its consequences. The play recounts the tragedy of Georges Dupont, a wealthy young notary from a noble family. Georges is engaged to his beautiful cousin Henriette. Before his wedding, he unexpectedly learns from his doctor that he was infected with syphilis. Georges cannot believe it, as his lifestyle was exemplary. When he was 26 years old, he had only two mistresses. The doctor tries to convince Georges to postpone his wedding for three to four years. Georges fears a scandal and insists that he cannot call off the big event. Despite the doctor's exhortations about the consequences of syphilis, he finds a quack who promises to cure him in a short time and marries six months later, fully confident that he has been cured. The happy couple have a daughter, who is diagnosed with syphilis at three months. Georges's outraged father-in-law goes to a doctor to get a diagnosis certificate as grounds for his daughter's divorce. However, the doctor manages to convince the frustrated father not to initiate the breakup of his daughter's family. The doctor considers the enlightening of the population as a means for preventing the disease.[5]

After *Damaged Goods* premiered at the Théâtre Antoine-Simone Berriau in Paris, France, in 1905, the play began a triumphal march through other major cities, such as Moscow (1905),[6] Hamburg, Germany (1912),[7] and New York, New York (1913).[8] Still, these

performances were isolated events that did not lead to the institutionalization of theatrical hygiene propaganda. The unprecedented popularity of Brieux's play inspired filmmakers to adapt it for the screen.[9]

SEXUAL REVOLUTION IN 1920S SOVIET UNION

Russia's perception of Brieux's play should be seen in the context of a sexual revolution that, after the October Uprising of 1917, was directed against the "backward sexual morality" and "false modesty" of the former ruling classes and aimed at separating sexuality from reproduction.[10] The ideals of free love, communal living in solidarity, and collective child rearing were propagated.[11] These ideals culminated in the so-called glass of water theory, according to which satisfying the sex drive was a need as natural as drinking a glass of water to quench thirst. It caused great concern among hygienists, who feared that rampant Bolshevik permissiveness in the sexual sphere would lead to a massive spread of STIs.[12] However, comparing the syphilis statistics of 1914 (70–80 registered cases per 10 000 inhabitants)[13] with those of 1922 (81 registered cases per 10 000 inhabitants) shows that the situation changed little.[14] Starting in the mid-1920s, however, a general decline in STIs became apparent, but the incidence of STIs remained very high up to the 1930s, which prompted hygiene educators to increase their efforts to combat the spread of STIs.

THEATRICAL PERFORMANCES

The theatrical genres most often used in Soviet Russia to educate the public about STIs were the sanitary trial and the play. The sanitary trial was a mock proceeding in which "hygienic delinquencies" (e.g., contracting syphilis, gonorrhea, or tuberculosis) were handled.[15] In these trials, the physician acting as a medical expert or witness took on a pedagogical role and explained in detail the infection routes, symptomatology, phases, and therapy of the disease to the audience. The *Trial of a Prostitute*, which tells the story of a Red Army soldier being infected by a prostitute, was performed 150 times in Moscow alone in 1921 and was resoundingly successful with the public.[16] In 1920, the Smolensk State Theater hosted the premiere of *Covered With Shame* (*Zakleymennye pozorom*), the Soviet adaptation of Brieux's play *Damaged Goods* by sanitary doctor Mikhail D. Utenkov (1893–1953).

Probably the most original dramaturgical interpretation of the basic anti-STI scheme was offered by *The Twilight of the City* (*Sumerki goroda*) by Alexandr Ventsel and Grigory Goler (Figure 1).[17] The play begins by showing the dark side of big city life and leads its viewers through Moscow's disorderly houses; viewers then are shown workers' clubs and "venereological dispensaries" (clinics that treated STIs) as places of

FIGURE 1— Scene in the Venereological Dispensary From *The Twilight of the City*, Staged by the Moscow Theater for Sanitary Culture in 1928

Source. Vl. Kachurin, "Sanitarno-prosvetitelny teatr" [Theater for Sanitary Education], *Gudok*, October 26, 1928, p. 4.

sanitary enlightenment and purification. Fedor is a simple peasant who loves the beautiful village girl Liza and dreams of family happiness with her on his farm. However, the civil war breaks up their wedding plans. Fedor goes to war, and Liza moves in with her older sister Sofiya in Moscow, the largest Russian metropolis, after the death of their parents. As soon as the war is over, Fedor returns home and goes to Moscow in search of his bride.

At the same time, three disreputable businessmen plan to open an illegal brothel. They involve Sofiya and want to seduce her younger, beautiful sister too. Sofiya manages to lure the unsuspecting Liza into a brothel. At first, the modest woman does not succumb to the temptation of criminals. Suddenly, however, there is a knock at the door. Fedor, Liza's beloved fiancé, is on her trail and asks to be let in. To avoid an embarrassing encounter, she agrees to leave with a client of the brothel. Sofiya seduces Fedor, desperate in his search, into drinking vodka and having sex. In the last scene, Fedor and Liza meet each other by chance in a venereological dispensary, where they go to receive treatment for syphilis. The next moment Sofiya, talking incoherently, is being carried out of the treatment room, having lost her mind as a result of neurosyphilis. Not embarrassed by their past and their illness, Fedor and Liza hope to be cured and start a new life together.

SYPHILIS IN 1930S UNITED STATES

In the United States, World War I creates an upsurge of public interest in STIs because of the need to conduct anti-STI campaigns among US soldiers. Pamphlets, lectures, exhibits, and educational films such as *Fit to Fight* (1918) explained how to avoid STIs and were aimed at shaping individual behavior.[18] After the war, a period of silence about STIs ensued.[19] Although measures were taken in the 1920s to combat STIs, the early 1930s were marked by even greater reticence and a decline in governmental support. The Great Depression contributed to an increase in the incidence of STIs, as it caused social instability in US society. Treatment costs were so high that only 20% of the population could afford a full treatment course from private physicians, and 80% of syphilis patients failed to complete the therapy.[20] Moreover, the poor quality and lack of public health clinics, inadequate treatment, and stigmatization of STIs in society, even among physicians themselves, worsened the situation. According to the most frequently cited statistics in the early 1930s, approximately 1 of every 10 US persons suffered from syphilis.[21]

In 1936, when Thomas Parran (1892–1968) was appointed US surgeon general, he resolved to bring the STI problem into the open. Unlike social hygienists, who had previously undertaken most of the antisyphilitic activities, Parran was a public health officer who approached the syphilis issue more bureaucratically. He calculated the costs of STIs to society and concluded that taxpayers, the state, and industry had suffered colossal losses as a result of spending on the institutional care of those disabled by syphilis, diminished productivity, and industrial incidents stemming from workers being infected with STIs.

Parran's program was based on the traditional public health concept of infectious disease control: isolation and finding cases of the disease, preventive measures, and therapy.[22] He clearly defined the main difficulty in fighting STIs:

> We might virtually stamp out this disease were we not hampered by the widespread belief that nice people don't talk about syphilis, that nice people don't have syphilis, and that nice people shouldn't do anything about those who do have syphilis.[23]

Parran initiated a program to combat syphilis that, in addition to opening free diagnostic centers and providing treatment, included premarriage and early pregnancy testing for syphilis and public education. Particularly vigorous efforts to combat syphilis were made in Chicago, where governmental agencies and community organizations were mobilized. The Midwest Bureau of the Federal Theater Project, located in Chicago, supported the antisyphilis movement with the Living Newspaper *Spirochete* (Figure 2), written by Arnold Sundgaard (1909–2006) with the help of medical consultants in 1938. *Spirochete*, supported by public health authorities, resonated with audiences and became one of the most often staged Living Newspapers in the United States.[24]

THE LIVING NEWSPAPER *SPIROCHETE*

The play begins with a prologue in which a happy, young couple—Frieda Schmidt and Peter Matzenauer—apply for a marriage license.[25] When a clerk asks them for their medical certificates and explains the purpose of the check for STIs, Peter is outraged: "Miss Schmidt and I have known each other all our lives. She's a decent girl and I'm not going to humiliate her by having anybody think otherwise."[25] The clerk explains that there is nothing disgusting about talking about syphilis and

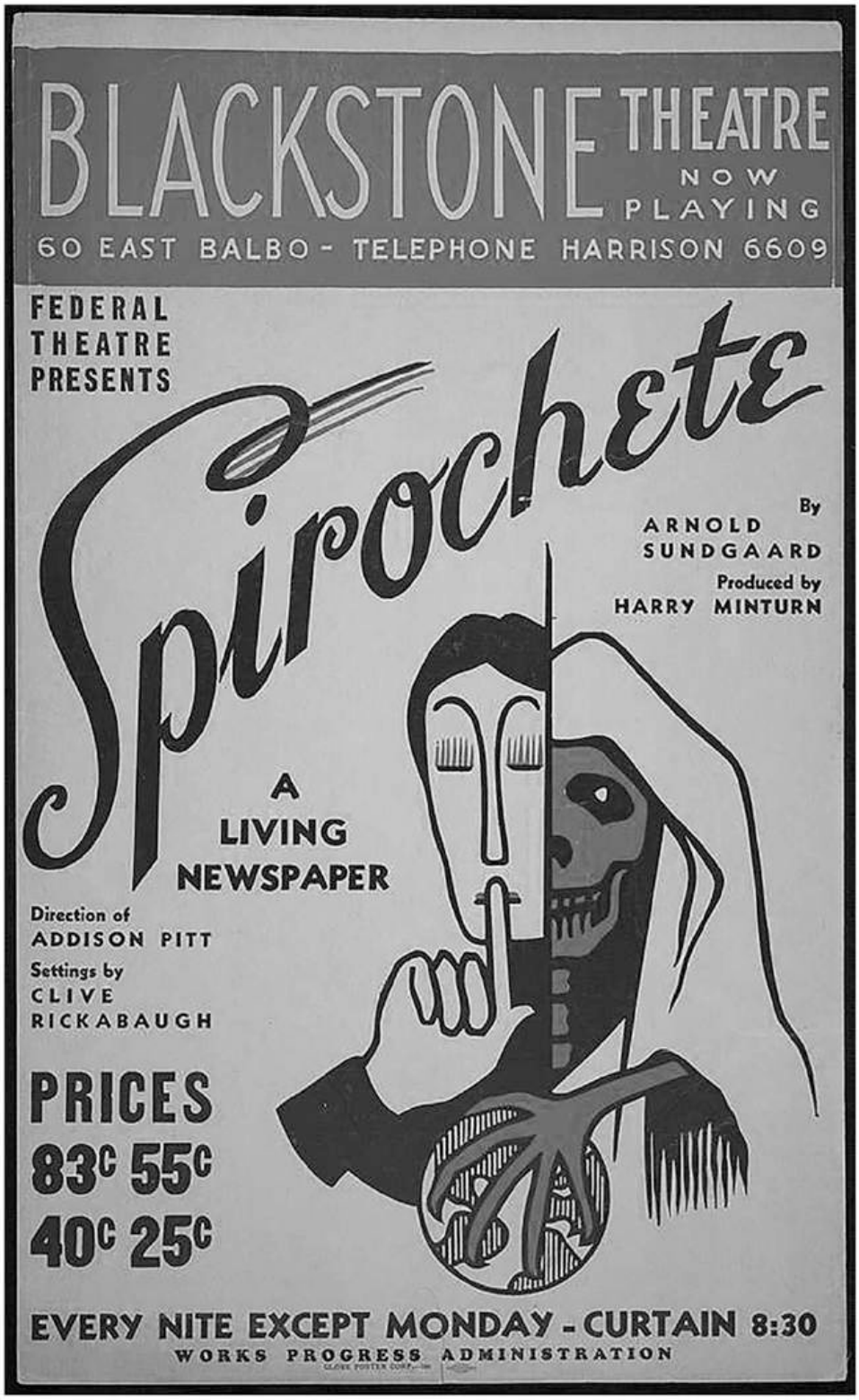

FIGURE 2— **Poster of *Spirochete*, 1938**

Source. Library of Congress, https://www.loc.gov/item/ihas.200217626.

that checking up on a disease is very important for young people getting married. The announcer provides the couple with an opportunity to learn about how syphilis began, spread, and continued to claim lives until an effective remedy was found.

The Living Newspaper follows two narratives, one of which addresses a history of the origin, spread, and treatment of syphilis. The second one deals with the "effect of syphilis on marriage." The first narrative opens with the Columbian theory of the origin of syphilis,[26] according to which Christopher Columbus's sailors contracted syphilis in Española Island and thus brought the disease to Europe in 1493, where it spread with the wars until it covered the whole world. The Living Newspaper then shows selected episodes from the history of studying syphilis over the centuries, beginning with Italian physician Girolamo Fracastoro, who gave the disease its name and suggested a therapy with mercury in 1530, and ending with Paul Ehrlich's discovery of Salvarsan in 1909.

These scenes are interspersed with stories of couples or families affected by syphilis at different times. The first of such episodes provides a reminiscence of Brieux's play *Damaged Goods*. Unlike in the French original, the main character, a rich young man, Jean Louis, does not even show up at his wedding because he has simply forgotten about it. Memory loss, which is a symptom of the progression of the disease, must instill a fear in the audience by showing the rapid process of bodily degeneration.

Another scene depicts a day in a life of a US working-class man. In 1936, John, a 36-year-old worker, is fired from an industrial plant, where he has worked 10 years, for not being able to work as efficiently as before. Concerned about his poor physical condition, he visits his doctor for an examination and finds out that he is infected with syphilis. Here the doctor's conversation with the plant director is in the spotlight. The doctor convinces him that it is in his own economic interests to organize syphilis testing for workers. "Industry must do its part. The people and the State must do theirs" are the doctor's final encouraging words.[26]

In its final episode, the Living Newspaper returns to the issue stated in its prologue, namely the necessity of premarital blood tests. The Saltiel Hygienic Marriage Law, which was passed in the Illinois state legislature in 1937, is presented as a milestone in the history of combating syphilis: "The time has come to stop whispering about it and begin talking about it . . . and talking out loud!"[26]

THE SHAMEFUL DISEASE

A common idea running through the Soviet anti-STI theater productions and *Spirochete* is that silencing the discussion on syphilis in society and stigmatizing it as a shameful disease must cease. The collective silence about the "secret diseases" was seen as the central obstacle in combating them. Breaking the silence on STIs was initiated by politicians, health officials, physicians, and hygiene propaganda activists. The powerful propagandistic potential of the arts was evident to the medical community, which was aware of the need to distribute knowledge on health issues to the public. Eliminating the taboo on discussing STIs could also help to strengthen the authority of physicians who treated STIs and contribute to the specialization of this branch of medicine. Therefore, it was important for educational plays and films to show the fatal consequences of treatment by quacks. With the introduction of Salvarsan and its improved version, Neosalvarsan, which became available in the late 1910s, propaganda was aimed not merely at preventing the disease, as it had been, but at timely treatment, because the drug was largely ineffective against syphilis in its later stages.[27] In addition, for the first time, conventional medicine was able to offer more than quacks could.

In the United States, the interests of physicians also correlated with the aspirations of social reform and social purity organizations—such as the American Social Hygiene Association and the American Society for Sanitary and Moral Prophylaxis—that were engaged in the struggle to reduce the number of STI cases.[28] Therefore, STIs were often used as a pretext to combat prostitution. In Soviet Russia, the creation of a "Soviet body" optimized according to aesthetic and medical–hygienic norms was one of the core parts of the Bolshevik socialist project. Thus, the idea of public hygiene literacy sprang from the political leadership of the country. In a situation in which religion was outlawed and the morality police abolished, there was no barrier to open discussion on health issues. The activities of Soviet physicians were to take place openly, "under the glass bell" of workers and peasants.[29] Because the interests of the collective had to take precedence over the interests of the individual patient, medical confidentiality became a relic. The new Soviet man had nothing to hide. The false sense of shame that had given rise to appeals for confidentiality appeared to be obsolete.

Both Soviet and US performances contrasted moralizing public opinion with progressive science and medicine.

In *Spirochete*, the opposition between public and medical discourses is particularly evident in the disagreements of the immunologist and syphilis researcher Elie Metchnikoff with the chairman of the Citizen's Moral Welfare League. "Syphilis is the penalty for sin! . . . You must think of people's morals," the chairman says. "Morals be damned! You think of their morals and I'll think of their illnesses," counters Metchnikoff.[30] In Soviet productions, the struggle between the old and the new embodied the confrontation between backward attitudes and scientific progress and provided a political message: it was a class struggle in which old beliefs and backwardness were the legacy of Tsarist Russia and Soviet doctors were guides to the socialist future.

In the *Trial of a Prostitute*, the defendant was blamed not for her sexual moral failure but for her avoidance of participating in the construction of a new social order and, moreover, for harming the labor republic. "Strong measures dictated by reason and love for the entire collective are needed to combat venereal diseases," concludes the chief prosecutor in his speech.[31] Social responsibility is an essential element of *Spirochete* as well. Portraying married women as innocent victims of syphilis, the Living Newspaper implies that "anyone could contract the disease, and that its destruction would require the community as a whole to be a part of the cure."[32]

All the efforts of hygienists were built around a compromise between the need to educate the masses and the fear of provoking the so-called unhealthy interest—to use the wording of the highest Soviet theater censorship authority.[33] On the one hand, the public interest in the problems of sexuality was almost obsessive.[34] On the other hand, those issues were dominated by silencing or stigma. This situation is vividly illustrated in Brieux's play *Damaged Goods*: the doctor objects to his visitor saying that the nature and the consequences of syphilis cannot be taught in school because "there are curiosities which it would be imprudent to arouse":

> A respectable man will take his son and daughter to one of these grand music halls, where they will hear things of the most loathsome description. . . . Pornography, as much as you please: science, never![35]

In other words, sanitary plays were to be perceived by the audience as useful medical and pedagogical information, not as entertainment that arouses erotic fantasies. However, playwrights knew that sexual matters were the most attractive to the public and tried to exploit this even under the guise of educational plays. Breaking the taboo on discussing STIs can also be explained by the fact that this issue, framed in a medical context, moved into the public discourse under the label "hygiene enlightenment." Thus, educational plays gave their directors an opportunity to go beyond the boundaries of what was permissible, although even on this the censors stood guard over public morals.

CONCLUSIONS

Hygiene propaganda was part of the educational efforts of the anti-STI movement in Europe and the United States in the 1920s and 1930s. Although Brieux's play *Damaged Goods* was staged in many world capitals and became a significant event of the century, the theatrical method of hygiene enlightenment became institutionalized only in the USSR, where a whole network of special theaters for sanitary culture was established. This can be explained by the fact that the distribution of hygiene knowledge was one of the priorities of the Bolshevik policy aimed at creating a "new man." In the United States, the initiative to launch antisyphilitic campaigns came from public health officials, supported by physicians, adepts of the social purity movement, and hygiene propaganda activists.

Thanks to Hallie Flanagan, the experience of Soviet Living Newspapers was transferred to US soil and woven into the local context. Both numerous Soviet anti-STI productions and the antisyphilis play *Spirochete*, commissioned by the FTP, followed the narrative of Brieux, who had interpreted STIs as a challenge to society as a whole, one that affects everyone and was not merely a stigma of certain social marginalized groups. However, educating the public about STIs was not only a response of medical circles and social reform organizations to the rising incidence of STIs—it coincided with the public need to negotiate discussion of taboo subjects. In that sense, educational plays provided the public with information about topics of concern in an accessible and entertaining way and thus contributed to breaking the collective silence and combating STIs. AJPH

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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Leveraging Body-Worn Camera Footage to Better Understand Opioid Overdoses and the Impact of Police-Administered Naloxone

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See also del Pozo, p. 1236, and Doe-Simpkins et al., p. 1239.

Objectives. To investigate what transpires at opioid overdoses where police administer naloxone and to identify the frequency with which concerns about police-administered naloxone are observed.

Methods. We reviewed body-worn camera (BWC) footage of all incidents where a Tempe, Arizona police officer administered naloxone or was present when the Tempe Fire Medical Rescue (TFMR) administered it, from February 3, 2020 to May 7, 2021 (n = 168). We devised a detailed coding instrument and employed univariate and bivariate analysis to examine the frequency of concerns regarding police-administered naloxone.

Results. Police arrived on scene before the TFMR in 73.7% of cases. In 88.6% of calls the individual was unconscious when police arrived, but 94.6% survived the overdose. The primary concerns about police-administered naloxone were rarely observed. There were no cases of improper naloxone administration or accidental opioid exposure to an officer. Aggression toward police from an overdose survivor rarely occurred (3.6%), and arrests of survivors (3.6%) and others on scene (1.2%) were infrequent.

Conclusions. BWC footage provides a unique window into opioid overdoses. In Tempe, the concerns over police-administered naloxone are overstated. If results are similar elsewhere, those concerns are barriers that must be removed. (*Am J Public Health*. 2022;112(9):1326–1332. https://doi.org/10.2105/AJPH.2022.306918)

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The opioid overdose crisis emerged 30 years ago, but the last 5 years have been especially deadly.[1] During the COVID-19 pandemic in 2020, the United States experienced more than 93 000 overdose deaths, nearly 70 000 of which involved opioids.[2] The number of overdose deaths increased again from May 2020 to April 2021 to more than 100 000, with synthetic opioids causing 64% of them.[3]

Many jurisdictions have publicly distributed naloxone as a response to the opioid overdose crisis. Naloxone reverses an overdose by binding to receptors in the brain, thereby reducing the chances of brain damage and restoring "normal breathing."[4(p1202)] Naloxone has been available for 25 years; by 2015, more than 27 000 lives had been saved with naloxone.[5]

The police often respond to opioid overdoses, given their availability, rapid response, and duty to protect life.[6] In 2014, the US Department of Justice[7] created the Law Enforcement Naloxone Toolkit to support the adoption of naloxone programs by police. Several studies show that police can safely administer naloxone.[8,9] However, by 2019, only 2500 of the nearly 18 000 US law enforcement agencies had deployed naloxone to their officers.[10]

Diffusion of police-administered naloxone has been slow, in part because of cost[11] and recent efforts to divert overdose calls away from police response.[12] Police have also expressed concerns about naloxone, including

negative attitudes about people who use drugs,[13,14] worries about increased civil or criminal liability and administering naloxone improperly,[15,16] fatigue from responding to overdoses,[9] and fears of accidental exposure to opioids and aggression from recovering individuals.[17,18]

Some public health and harm reduction experts and those who use drugs have noted that police involvement will criminalize overdoses through the arrest of survivors, and several studies support this concern.[19,20] One study showed that police response was associated with an increased rate of nonfatal overdoses.[21] These concerns are especially acute in states with no Good Samaritan Laws that provide immunity from arrest for overdose survivors and others on scene.[22] Drug-induced homicide laws raise similar concerns and can lead to reluctance to dial 911.[23] Prior research has not sufficiently investigated concerns over police-administered naloxone.

METHODS

We addressed these questions through an examination of body-worn camera (BWC) footage of 168 cases in which Tempe, Arizona police officers administered intranasal naloxone or witnessed Tempe Fire Medical Rescue (TFMR) personnel deliver the drug, from February 3, 2020 to May 7, 2021 (n = 168). BWC footage provides a unique window into what occurs during opioid overdoses. It also allows examination of the frequency with which concerns about police-administered naloxone are observed.

The Tempe Police Department (TPD) employs 350 sworn officers. Officers began carrying intranasal naloxone in January 2020 as part of a project that funded the purchase of naloxone for both police and community members.[24] Officers have carried BWCs since May 2016, and the department requires officers to record all potential drug overdoses.

The TPD granted us access to BWC footage through the department's data storage system. One of the authors (C. O.) is a crime analyst with the TPD and has permanent secure access. Two other authors (S. W., M. D. W.) became TPD volunteers, which also guaranteed access. TPD officers had a 100% activation rate for all cases during the study period. In 1 case, an officer muted the BWC audio, which prevented coding. The case has been excluded.

We devised a coding instrument to capture 157 variables describing characteristics of the overdose, naloxone administration, officer and citizen behavior, and outcomes. We based the instrument on a tool used to code BWC footage on a previous project evaluating de-escalation training. Two coders, with significant training and experience in coding BWC footage, independently coded all cases. We used Stata version 15.1 (StataCorp LLC, College Station, TX) to compare every variable coded in the 2 independent data sets. We found coding discrepancies in 10% of the approximately 26 000 variables coded across the 168 overdoses; we resolved the discrepancies prior to analysis. For some variables, the reported sample size was less than 168 because we were not able to capture information from the BWC.

The TPD routinely collects identifying information for everyone at an overdose call to run names through all available databases. This information-gathering process may lead to the identification of outstanding warrants. Because BWC footage only captures what transpires at the scene in the camera's view, we ran each case through the TPD records management system to determine whether anyone on scene was subsequently ticketed or arrested.

We used univariate and bivariate analyses to address our research questions. First, we examined what occurred when police administered naloxone (e.g., aspects of the scene, who was present, characteristics of naloxone administration, survival). Second, we tested the primary concerns regarding police-administered naloxone:

1. Was there any indication that officers hesitated to administer naloxone (officer did not immediately administer naloxone after checking for signs of overdose)?
2. Did any officers experience accidental exposure to opioids?
3. How often did officers improperly administer naloxone (officer did not follow training protocols)?
4. How often did overdose survivors show aggression toward officers after recovery (physically combative or resistant behavior requiring a force action by the officer)?
5. How frequently did officers express negative attitudes or treatment toward the overdose survivor?
6. How frequently were overdose survivors arrested?
7. How frequently were others on scene arrested?
8. Were any officers disciplined, sued, or criminally charged for administering naloxone? (Tempe Police Department Narcan program coordinator, written communication, March 23, 2022)

RESULTS

On the basis of BWC footage, we determined that in 97.6% of encounters, the officer became involved because of a

dispatched call for service (Table 1). On average, 2 other people were at the scene, including family members (24.6%), friends (44.9%), and bystanders (30.1%). We determined the relationships among people from BWC-recorded communication between the officer and those on scene. The person experiencing the overdose was alone in just 11.8% of the incidents. The average response time was 5:01 minutes, and the officer arrived on scene before the TFMR in 73.7% of incidents. In cases where the TPD arrived first, we were not able to consistently capture the TFMR arrival time. Police officers administered naloxone in 74.1% of encounters (the TFMR conducted the rest). Police administered multiple doses in 51.8% of cases. The mean time between first and second dose was 54 seconds. This is well short of the recommended wait time (3–4 minutes). Police performed CPR (cardiopulmonary resuscitation) in 33.5% of cases.

Table 2 shows that three quarters of overdose victims (76.6%) were men, and 74.4% were aged 18 to 39 years. Fifty-five percent were White, 21.0% were Black, and 16.2% were Latinx. Most individuals (88.6%) were not conscious when the police arrived on scene. Nearly all individuals experiencing an overdose survived (94.6%), and 84.4% were transported to a hospital. As shown in Table 3, there is little evidence to support the primary concerns about police-administered naloxone.

TABLE 1— Characteristics of Naloxone Administration Incidents: Tempe, AZ, February 3, 2020–May 7, 2021

Variable	No. (%)
How officer became aware of call for service	
Dispatched call for service	164 (97.6)
Other (e.g., citizen flag down)	4 (2.4)
Was person experiencing overdose alone?	
Yes	20 (11.8)
No	149 (88.0)
Family members on scene?	
Yes	41 (24.6)
No	126 (75.4)
Friends on scene?	
Yes	75 (44.9)
No	92 (55.1)
Bystanders or others on scene?	
Yes	50 (30.1)
No	116 (69.9)
Fire department on scene before TPD?	
Yes	44 (26.4)
No	123 (73.7)
No. of TPD naloxone administrations on scene[a]	
0	43 (25.9)
1	37 (22.3)
≥ 2	86 (51.8)
Officer performed CPR	
Yes	52 (33.5)
No	103 (66.5)

Note. CPR = cardiopulmonary resuscitation; TPD = Tempe Police Department.

[a]Mean number of administrations = 1.43 (SD = 1.14). When police administered 2 doses, the mean time between doses was 54 seconds.

Police Concerns

Among the 168 incidents, no officers improperly administered naloxone. No officers were accidentally exposed to opioids, and just 1 officer (0.6%) hesitated to use naloxone. No officers were subsequently disciplined, sued, or criminally charged because of a naloxone administration. In only 3.6% of cases did individuals experiencing an overdose become aggressive after being revived.

Public Health Concerns

Police arrested 3.6% of the individuals experiencing an overdose (all were arrested because of an outstanding felony warrant). In an additional 8 cases, the person experiencing the overdose had a warrant, but the police did not make an arrest (4.7%). The person experiencing the overdose was ticketed or cited in 3.0% of cases. Others on scene were rarely arrested (1.2%) or ticketed or cited (0%). Police rarely used negative treatment or expressed negative attitudes toward the person, by acting impersonally (cold or indifferent; 1.2% of cases), using condescending or patronizing language (2.0%), yelling (0%), or being reactive, angry, or abrasive (0.8%).

TABLE 2— Characteristics of Persons Experiencing Drug Overdose During Naloxone Administration Incidents: Tempe, AZ, February 3, 2020–May 7, 2021

Variable	No. (%)
Gender	
Male	128 (76.6)
Female	39 (23.4)
Age, y	
≤ 17	8 (4.8)
18–29	70 (41.7)
30–39	55 (32.7)
40–74	34 (20.2)
≥ 75	1 (0.6)
Race/ethnicity	
White	92 (55.1)
Black	35 (21.0)
Latinx	27 (16.2)
Other	13 (7.8)
Victim conscious upon PD arrival?	
Yes	19 (11.4)
No	148 (88.6)
Verbal confirmation of opioid use?	
Yes	109 (67.7)
No	52 (32.3)
Opioid type (reported by someone at scene)	
Fentanyl	25 (14.9)
Heroin	12 (7.1)
Percocet, OxyContin, oxycodone, Vicodin, M30s, "blue" pills	35 (20.8)
Other	14 (8.3)
Combination of drugs	24 (14.3)
Unclear, not specified	58 (34.5)
Did the individual survive?	
Yes	159 (94.6)
No	9 (5.4)
Was overdose victim transported to hospital?	
Yes—taken by FD	135 (84.4)
No—refused	19 (11.9)
No—released at the scene	6 (3.8)

Notes. FD = fire department; PD = police department.

DISCUSSION

BWC footage allows us to examine the frequency with which concerns regarding police-administered naloxone are observed. We found that in Tempe, Arizona, during the period of our study, these concerns were unfounded. No officer improperly administered naloxone, and in only 1 case, the officers hesitated to administer naloxone. No officers experienced an accidental exposure to opioids. Aggression toward police rarely occurred (3.6%), and police rarely acted impersonally (1.2%), used a condescending or patronizing tone (2.0%), yelled (0%), or displayed anger (0.8%). No officers experienced negative administrative, civil, or criminal consequences after delivering naloxone. Police arrested 6 survivors (3.6%) and 2 others on scene (1.2%).

There are context-specific explanations for these findings. In 2015, the Arizona State Legislature passed House Bill 2489, which permits police with proper training to administer naloxone.[25] The Arizona Governor's Office[26] and the Arizona Peace Officer Standards and Training Board[27] have promoted police-administered naloxone through funding, training, and access to naloxone. In 2018, the Arizona State Legislature passed the "911 Good Samaritan Law," which provides protections against arrest (outstanding warrants are not included) for the person who overdosed and the person calling for medical assistance.[28] The TPD's training highlights state law and de-emphasizes arrest in overdose calls.[29] In sum, training, legal mandates, and support in the police department and community provided the necessary ingredients for an effective police-administered naloxone program in Tempe. Police departments without these ingredients may not be well suited to carry naloxone.

Limitations

The current study suffers from several limitations. We studied 1 jurisdiction in the southwestern United States during a 15-month period. These results may not be generalizable to other jurisdictions, especially given the recent increase in overdoses among African

TABLE 3— Concerns About Naloxone Administration: Tempe, AZ, February 3, 2020–May 7, 2021

Variable	No. (%)
Police concerns	
Did the officer hesitate to administer naloxone?	
Yes	1 (0.6)
No	120 (71.9)
Unclear	46 (27.5)
Did the officer improperly administer naloxone?	
No	168 (100)
Was an officer accidently exposed to an opioid?	
No	168 (100)
Did the overdose victim behave aggressively?	
Yes	6 (3.6)
No	162 (96.4)
Was an officer disciplined, sued, or criminally charged?	
No	168 (100)
Public health concerns	
Was the overdose victim arrested?	
Yes	6 (3.6)
No[a]	162 (96.4)
Was the overdose victim ticketed or cited?	
Yes	5 (3.0)
No	159 (97.0)
Was anyone else on scene arrested?	
Yes	2 (1.2)
No	166 (98.8)
Was anyone else on scene ticketed or cited?	
No	168 (100)
Did officer act impersonally (cold or indifferent)?	
Yes	2 (1.2)
No	166 (98.8)
Did officer use condescending or patronizing tone?	
Yes	2 (2.0)
No	100 (98)
Did officer yell or raise voice at overdose survivor?	
No	168 (100)
Was officer reactive, angry, or abrasive?	
Yes	1 (0.8)
No	128 (99.2)

[a]In 8 cases, the person experiencing the overdose had a warrant, but the officer(s) on scene did not arrest (4.7%).

Americans.[20,30] The study also coincided with the COVID-19 pandemic, which may have influenced police response to opioid overdoses.

We relied on BWC footage as our primary data source. We are unable to comment on overdoses where there was no call to 911 and no police response, or no use of naloxone. BWC footage captures real-time audio and video at opioid overdoses scenes, but the cameras have limitations, such as problems with dim lighting and camera angle.[31] We were not able to document anything that occurred outside the capture area of the BWC (e.g., a records check, arrival time of the TFMR), or that occurred after the encounter ended.

We gained access to the BWC data as a TPD employee and TPD-approved volunteers. Access to such data is often restricted and can be difficult to obtain. Last, some of the coding from BWC footage is inherently subjective. We attempted to minimize this issue through rigorous training of our coders and a double-blind coding scheme with cell-by-cell data comparison for reliability.

Public Health Implications

Although more research is needed, the evidence we present here offers support for police-administered naloxone as a potentially effective response to opioid overdoses. The results also highlight important guidelines for police departments to follow. The effort should be grounded in harm reduction, de-emphasize arrest, and provide training that prepares officers to diagnose an opioid overdose, administer naloxone to avoid acute precipitated withdrawal (3–4 minutes between doses), and engage with survivors. It should be coupled with efforts to distribute naloxone to first responders, people who use drugs, and their family and friends (bystanders were present in 88% of overdoses examined here).[32] Local and state governments should pass Good Samaritan Laws that protect from arrest overdose survivors and those who contact emergency services.

Law enforcement, public health experts, and researchers should continue to investigate opioid overdoses and the concerns surrounding police-administered naloxone. Recent studies highlight the pervasiveness of these concerns, the lack of evidence to support the claims,[33] and the impact of a brief training on dispelling those "false beliefs."[17(p34)] If the evidence is as strong in other jurisdictions as it is in Tempe, those concerns are barriers that must be removed. AJPH

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CONTRIBUTORS

M. D. White, the project's principal investigator and primary writer, oversaw data collection and analyses (40%). S. Watts conducted the data analysis and contributed to writing (20%). C. Orosco led data collection and contributed to writing (20%). D. Perrone contributed to the article's conceptualization and writing (10%). A. Malm contributed to the article's conceptualization and writing (10%).

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

HUMAN PARTICIPANT PROTECTION

This study received approval through Arizona State University's institutional review board process (study ID: STUDY00011222).

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Trends in Pregnancy-Associated Homicide, United States, 2020

Maeve E. Wallace, PhD, MPH

Objectives. To estimate the national pregnancy-associated homicide rate in 2020 and to characterize patterns of victimization.

Methods. Using a retrospective analysis of the 2020 US national mortality file, I identified all homicides of women who were pregnant or within 1 year of the end of pregnancy. Descriptive statistics characterized these victims, and I calculated annual pregnancy-associated homicide rates (deaths per 100 000 live births) for comparisons with 2018 and 2019. I estimated the added risk conferred by pregnancy in 2020 by comparing the pregnancy-associated homicide rate to homicide in the nonpregnant, nonpostpartum population of females aged 10 to 44 years.

Results. There were 5.23 pregnancy-associated homicides per 100 000 live births in 2020, a notable increase from previous years. Rates were highest among adolescents and non-Hispanic Black women. Eighty percent of incidents involved firearms. The risk of homicide was 35% greater for pregnant and postpartum women than for their nonpregnant, nonpostpartum counterparts, who did not experience as large an increase from previous years.

Conclusions. Pregnancy-associated homicide substantially increased in 2020.

Public Health Implications. Policies to address domestic and community violence against women are urgently needed. (*Am J Public Health*. 2022;112(9):1333–1336. https://doi.org/10.2105/AJPH.2022.306937)

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Homicide remains a leading cause of death during pregnancy and the postpartum period in the United States.[1] Beginning in 2018, state-by-state implementation of the revised certificate of death is complete, enabling national estimates of pregnancy-associated homicide mortality (homicide during and up to 1 year postpartum). In 2018 and 2019, there were 3.62 pregnancy-associated homicides per 100 000 live births, a rate that was 16% higher than the rate among nonpregnant and nonpostpartum women of reproductive age.[1]

When data on perpetrators are available, research finds that most cases of pregnancy-associated homicide involve domestic violence.[2] Domestic violence in the context of the COVID-19 pandemic amounted to a "pandemic within a pandemic,"[3] with preliminary studies showing some jurisdictions experiencing more than 10% increases in reports of victimization[4] and 1 in 10 women reporting new or increased severity of abuse since the pandemic's onset.[5] Virus containment strategies (stay-at-home orders) meant many victims were isolated with their abusers and unable to safely access services while pandemic-induced economic hardships exacerbated circumstances that contribute to violence.[3] Such adversities likely affected people in the peripartum period, a population especially vulnerable to violence, as well. The purpose of this analysis was to estimate the national pregnancy-associated homicide rate in 2020 and to characterize patterns of victimization.

METHODS

This was a retrospective analysis of the 2020 mortality file released by the National Center for Health Statistics (NCHS), which includes all death records issued in the United States. These data were restricted to female-sex-assigned-at-birth decedents of reproductive age (10–44 years), and cases of pregnancy-associated homicide were those with a manner of death indicating homicide or an *International Classification of Diseases, 10th Revision* (*ICD-10*; Geneva,

Switzerland: World Health Organization; 1992) code for assault as underlying cause of death (X85–Y09), in addition to a pregnancy checkbox value indicating that the decedent was pregnant or within 1 year of the end of pregnancy at the time of her death. I obtained data on counts of live births by year (including by maternal age and race/ethnicity) from the NCHS natality files and used them to estimate annual pregnancy-associated homicide rates (deaths per 100 000 live births).

Cases of homicide among nonpregnant, nonpostpartum women of reproductive age were records with a pregnancy checkbox indicating that the decedent was not pregnant or within 1 year of the end of pregnancy. I computed homicide rates (deaths per 100 000 population) of the nonpregnant, nonpostpartum population of reproductive age by taking the count of females aged 10 to 44 years (data obtained from the US Census' American Community Survey) minus counts of live births in each year. I estimated all homicide rates for the total population and with stratification by age and race/ethnicity when sufficient case counts allowed.

In addition to race/ethnicity, age, and timing of death relative to pregnancy (during pregnancy or up to 1 year after), data available on relevant characteristics of each incident included whether it involved firearms (defined by *ICD-10* codes for underlying cause of death X93–X95) and place of injury. Descriptive statistics characterized pregnancy-associated homicide victims and incidents. A log Poisson regression model estimated the rate ratio and 95% confidence intervals comparing homicide rates between the pregnant–postpartum and nonpregnant–nonpostpartum populations. I conducted all analyses in SAS version 9.4 (SAS Institute, Cary, NC).

RESULTS

There were 189 pregnancy-associated homicides identifiable in the 2020 mortality file. The 2020 pregnancy-associated homicide rate was 5.23 deaths per 100 000 live births, up from 3.30 in 2018 (n = 125) and 3.95 in 2019 (n = 148), the 2 previous years of available data. The majority of victims (55.0%) were non-Hispanic Black and 30.1% were non-Hispanic White. Forty-five percent were aged 24 years or younger. Among all incidents, 81% involved firearms, 55% occurred in the home, and 54% of victims were pregnant at the time of their death whereas the remaining victims were up to 1 year postpartum. Patterning of pregnancy-associated homicide by age and race/ethnicity mirrored previous years, with adolescent and non-Hispanic Black women experiencing the highest rates (Figure 1).

In 2020, there were 3.87 homicides of nonpregnant, nonpostpartum women of reproductive age per 100 000 population. Risk of homicide victimization was 35% higher among pregnant and postpartum women compared with nonpregnant, nonpostpartum women of reproductive age (homicide rate ratio = 1.35; 95% confidence interval = 1.17, 1.57).

DISCUSSION

This national analysis of pregnancy-associated homicide revealed a substantially increased incidence in 2020 compared with previous years, with a rate 32.4% higher than in 2019. This finding parallels the 2020 trend in maternal mortality, published by the Centers for Disease Control and Prevention, which was 18.4% higher than in 2019.[6] Common social, structural, and policy factors may underlie both of these alarming trends, but specific reasons remain speculative.

Increases in firearm violence and homicide were observed in the general population during 2020,[7,8] which may be due at least in part to pandemic-related economic disruptions, including unemployment.[9] Like women in the peripartum period, nonpregnant, nonpostpartum women of reproductive age also experienced an increase in homicide during 2020, but to a lesser degree (3.87 deaths per 100 000 population in 2020 compared with 3.12 in 2018–2019).[1] The added risk of homicide conferred by pregnancy was pronounced and exacerbated during 2020 (35% compared with 16% in previously reported years[1]).

There are a number of potential explanations for these disturbing trends. The increase in severity of domestic violence observed during the first year of the COVID-19 pandemic likely contributed to the observed increase in pregnancy-associated homicide.[5] Other simultaneously occurring factors, such as a surge in firearm ownership,[8] may have played a role. The percentage of pregnancy-associated homicides involving firearms in 2020 was higher than in any previously reported year or jurisdiction.[1,10,11] Finally, to the extent that the ability to control pregnancy status may have implications for one's risk of homicide, passage and implementation of an unprecedented number of abortion restriction policies in recent years (both prior to and related to the 2020 COVID-19 pandemic) may also be contributing factors.[12]

The data analyzed in this study contain no information on the perpetrator, preventing the ability to isolate incidents that were the result of intimate partner violence. Other limitations include the inability to explore further stratification

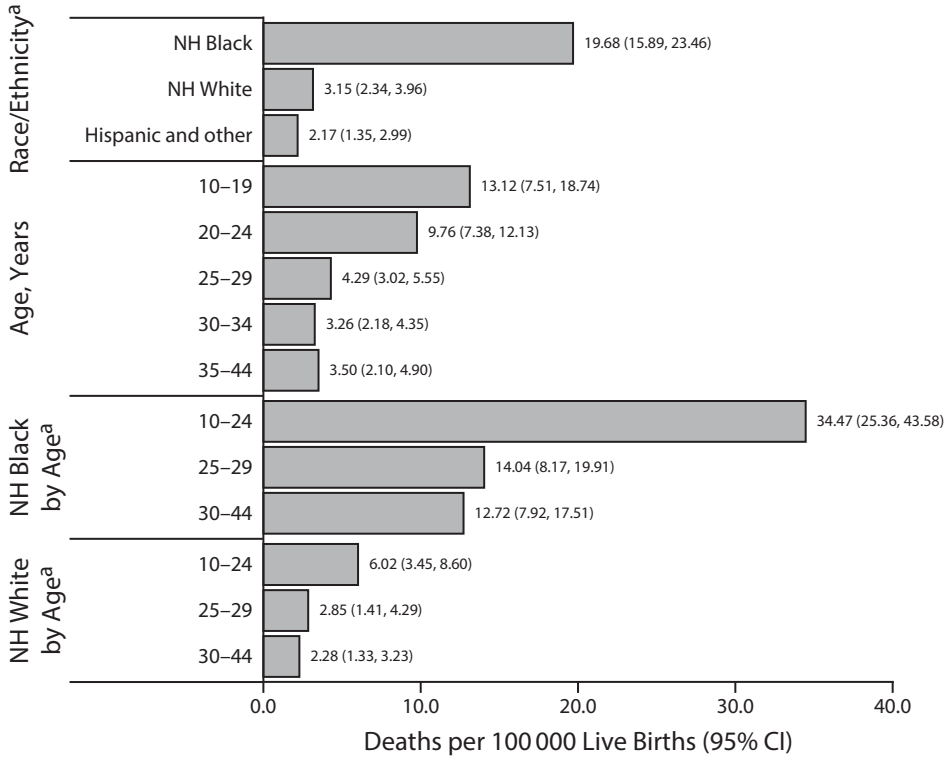

FIGURE 1— Pregnancy-Associated Homicide Rates Among Persons Aged 10–44 Years by Race/Ethnicity and Age: United States, 2020

Note. CI = confidence interval; NH = non-Hispanic.
[a]Data suppression rules prohibit further stratification by racial/ethnic identity and age.

by other race/ethnicities and social identities while maintaining both rate stability and data confidentiality. Finally, all pregnancy-associated homicide rates reported and compared in this analysis are likely underestimates of their true magnitude, given the known difficulties in case ascertainment based on data from death records alone.

PUBLIC HEALTH IMPLICATIONS

The public health implications of these findings are immense. Pregnancy-associated homicide lies at the intersection of multiple ongoing and overlapping public health crises—the COVID-19 pandemic, surging violence, expanding economic inequalities, reproductive oppression, and worsening trends in maternal health and inequities. Policy and programmatic intervention should focus on violence prevention at the highest level by ensuring equal access to health-promoting resources and opportunities for women and their families during times of crisis and beyond. AJPH

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CONFLICTS OF INTEREST

The author has no conflicts of interest to declare.

HUMAN PARTICIPANT PROTECTION

This is an analysis of de-identified, secondary data. As such, this study was ruled exempt by the Tulane University institutional review board.

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Social Movement and Mental Health of South Korean Women Sexual Violence Survivors, 2012–2019

Chungah Kim, PhD, Andrew Nielsen, MSc, Celine Teo, MSc, and Antony Chum, PhD

See also Dilip, p. 1233.

Objectives. To examine whether the #MeToo movement influenced depressive symptoms among women in South Korea with a history of experiencing sexual violence.

Methods. We used data from a nationally representative sample (n = 4429) of women 19 to 50 years of age who participated in the Korean Longitudinal Survey of Women and Families between 2012 and 2019. A difference-in-differences model was used to estimate within-person changes in depressive symptoms attributable to the #MeToo movement across women with and without a history of experiencing sexual violence. Depressive symptoms were measured with the Center for Epidemiologic Studies Depression Scale (CESD).

Results. After adjustment for potential confounders, the #MeToo movement led to a 1.64 decrease in CESD scores among women with a history of experiencing sexual violence relative to women without such a history.

Conclusions. Our findings suggest that the #MeToo movement in Korea led to reduced depressive symptoms among women with a history of experiencing sexual violence.

Public Health Implications. Despite the progress of the #MeToo movement, there are still judicial and institutional problems that can revictimize sexual violence survivors. Further policy changes will likely improve the mental health of survivors. (*Am J Public Health*. 2022;112(9):1337–1345. https://doi.org/10.2105/AJPH.2022.306945)

Sexual violence (SV), as defined by the World Health Organization, refers to nonconsensual sex acts, sexual harassment, or any acts directed against a person's sexuality using coercion, intimidation, or force.[1–3] It is a form of trauma that confers a general risk of psychopathology including depression, anxiety disorders, substance abuse or dependence, suicidality, and posttraumatic stress disorder.[4] Previous studies have shown that exposure to SV can directly produce psychological distress as a result of the event or its aftermath or worsen existing mental health disorders.[4] Exposure to SV can also produce distorted cognitions (e.g., overestimation of danger in everyday life), mood alterations, and behavior changes (e.g., substance use and social withdrawal).[5]

Further research shows that the mental health of SV survivors is shaped not just by the factors surrounding the assault but by other factors such as adverse childhood events, social support systems, and cultural norms. The social ecological framework[6,7] informs the identification of these factors, and the impact of SV on the survivor's mental health is influenced by individual-level factors (e.g., age, personal history, and health status), social-relational factors (e.g., family characteristics and employment status), community factors (e.g., regional culture and access to care), and societal factors (e.g., social norms).

The purpose of this study was to investigate whether changes produced by the #MeToo movement at the societal level (e.g., a growing awareness to reject the normalization of SV) have improved the mental health of SV survivors. Given recent #MeToo events that rapidly changed norms and attitudes regarding SV, the exogenous nature of these changes can help reduce self-selection bias and provide stronger evidence.

In 2017, after a string of high-profile sexual assaults in the United States emerging from the film industry, elite sports, and politics, the #MeToo movement responded to help create solidarity, justice, and support for women who experienced SV. Through the use of the hashtag, which was employed more than 19 million times within 12 months (during which 29% of the tweets were non-English tweets),[8] individuals from both Western and non-Western countries shared personal stories and described the broader culture of gender inequality and power imbalance that fostered normalization of SV (i.e., rape culture). Specifically, much of the discussion highlighted the nature of SV as a "hidden epidemic" wherein significant stigma and historically low rates of conviction have discouraged women from disclosing abuse.[9]

The hidden nature of SV is even more evident in societies such as South Korea (henceforth Korea), where women are persuaded by the judicial system to "forgive" or drop sexual assault charges[10] and the influence of social conservatism with its subservient view of women has perpetuated a culture of silence. The problem is compounded by rampant gender inequality, as shown by Korea's low ranking on the Global Gender Gap Index: 108th out of 153 countries in the index and 36th out of 38 among Organisation for Economic Co-operation and Development countries.[11] Women are underrepresented among judges (30%) and police (less than 4%),[11] and the judiciary system is characterized by "laxity" toward sexual crimes.[12]

Despite these challenges, the #MeToo movement gained traction in Korea in January 2018. It began with a high-profile case in which prosecutor Seo Ji-Hyun shared her personal experience with sexual harassment in an unprecedented interview on one of the country's largest media outlets.[12] The interview was widely seen as the catalyst that empowered other women to share their experiences with SV in Korea, and it also placed pressure on the media and judicial system to recognize SV as a structural problem.[13] In the following months, women came forward and shared their accounts of sexual harassment across many sectors of Korean society, including politics, film, academia, and religious institutions. At the start of the movement in 2018, Korea reported 62.2 sexual assault crimes per 100 000 people,[14] more than double the rate in 2008 (30.8 per 100 000). Korea has also reported a rapid increase in crimes known as *molka* (i.e., using spy cameras to capture voyeuristic images without consent), with an average of 6000 cases annually since 2014.[15]

As seen through the social ecological framework, the #MeToo movement in Korea can be understood as exogenous changes to the societal-level environment that may weaken the pervasive rape culture. Through the process of challenging "rape myths" (i.e., stereotypes and false beliefs that serve to excuse SV), survivors of SV may find it easier to share their experiences, access services, and report to authorities. Previous studies have consistently shown that rape culture has negative effects on the recovery of SV survivors.[6,16,17] For instance, one study revealed that survivors of intimate partner violence blamed themselves for their victimization because of the myth that spouses cannot commit rape.[18] Similarly, another study showed that SV survivors who accepted rape myths (e.g., if women don't fight back, it's not rape) were less likely to acknowledge their experience as a serious crime and thus less likely to seek support and services.[19]

Given that a 2018 Korea Institute for Health and Social Affairs survey showed that the #MeToo movement heightened the overall level of gender sensitivity in Korean society while weakening views of victim-blaming practices and rape myths,[20] depressive symptoms among SV survivors may have been affected by this broader cultural shift. We conducted a systematic search of studies assessing the effects of the #MeToo movement on mental health outcomes (see Figure A, available as a supplement to the online version of this article at http://www.ajph.org, for our search strategy and a flowchart of identified relevant studies) and identified a single study, one that examined how the #MeToo movement affected the mental health of a convenience sample of US college students.[21] The authors reported that the #MeToo movement may have affected the association between SV and health outcomes; however, the study was not based on analyses of nationally representative data, and further investigation was recommended to establish the impact of social movements (e.g., #MeToo) on the mental health of survivors.

Therefore, in this study we used data from a 2012 to 2019 nationally representative panel of Korean women to answer the following research question: Was the #MeToo movement associated with changes in depressive symptoms among women with a history of SV relative to women without a history of SV? We hypothesized that the effect of the #MeToo movement on depressive symptoms would be larger among women who had experienced SV (before the start of #MeToo in January 2018) than among women who had not experienced such violence.

METHODS

The Korean Longitudinal Survey of Women and Families, which involved a multistage stratified random sample, was designed to be representative of the distribution of households in Korea[22]; 9068 households and 9997 women were included at the survey baseline. In this study, we used data from waves 4 through 7, which were collected biannually from 2012 to 2019. The focus of the study was on women 19 to 50 years of age because a previous meta-analytic review showed that older women were less likely to disclose incidents of SV[23] and their inclusion may have led to misclassification of survivors.

Our final cohort (n = 4429) included individuals who participated in at least 1 of the premovement waves (waves 4–6; n = 6114) and also participated in wave 7 (postmovement period). After removal of participants lost to follow-up, 72.5% of the baseline cohort remained (see Table A, available as a supplement to the online version of this article at http://www.ajph.org, for a comparison of sample characteristics between the original and final cohorts). A flowchart showing selection into the final cohort is presented in Figure 1.

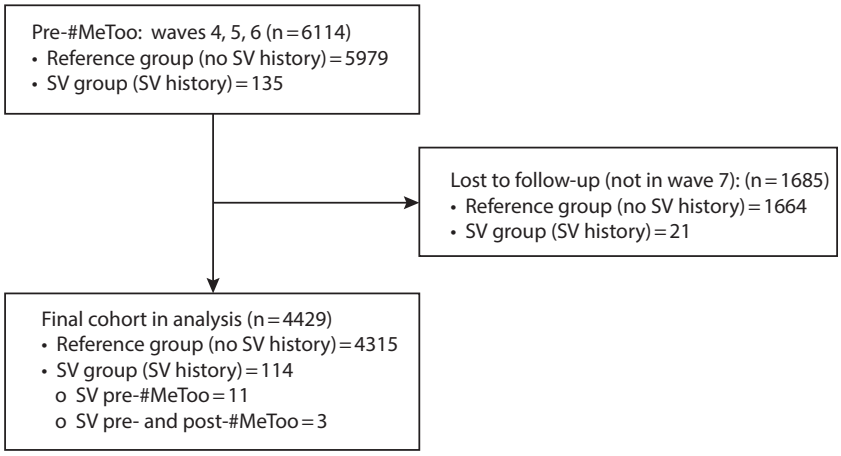

FIGURE 1— Selection of Participants Into the Final Cohort: South Korea, 2012–2019

Note. SV = sexual violence. The sample size was 4429.

Outcome

The 10-item Center for Epidemiologic Studies Depression Scale (CESD) was used to measure depressive symptoms. The CESD is a valid and reliable screening tool ($\kappa = 0.82$, $P < .001$, Cronbach $\alpha = 0.86$) for depressive symptoms (sensitivity: 91%; specificity: 92%; positive predictive value: 92%).[24] Each item was measured on a 4-point Likert scale (i.e., less than once during the previous week, 1–2 days, 3–4 days, 5 or more days). Items included "I felt depressed" and "I had crying spells"; additional information on the items is available in previous literature.[25] CESD scores can range from 0 to 30, with higher scores indicating greater severity of depressive symptoms.[22]

Independent Variables

We identified women with recent experiences of SV (i.e., in the past 12 months) occurring before the #MeToo movement. We classified the onset of the #MeToo movement in Korea as January 29, 2018, given that the Korean #MeToo movement gained national attention after the broadcast of prosecutor Seo's interview.

SV in the workplace was measured with the question "Have you been sexually harassed or assaulted at the workplace since the previous survey?" SV in other settings was measured with the question "Have you ever experienced any violence described below in the last year?" Respondents who selected either of the following 2 responses were considered: (1) "I have been sexually harassed or insulted with words or gestures" and (2) "I have experienced violence related to sexual crimes (e.g., indecent assault and sexual violence)." From these questions, a binary time-invariant variable was created to indicate women who experienced SV before the #MeToo movement (SV group) versus those who did not (reference group). Women who experienced SV before and after #MeToo were also included in the SV group. Women who experienced SV only after the onset of #MeToo (n = 18) were excluded because the #MeToo movement and post-#MeToo reports of SV both occurred during wave 7. As a result, we cannot isolate the effects of post-#MeToo SV from the effects of the movement.

A binary variable was used to identify the pre-#MeToo period (before January 29, 2018) and the post-#MeToo period (on or after January 29, 2018). This indicator represented an exogenous change through a social movement aimed at changing the environment to be more supportive of SV survivors.[16,26]

Covariates

Although our #MeToo independent variable addressed the societal-level factors associated with the movement, our selection of confounders was based on the social ecological framework.[6] At the individual level, we used within-person estimators (i.e., individual-level fixed effects) that accounted for both observed and unobserved time-invariant confounders (e.g., childhood experiences). Other (time-variant) individual-level factors that were adjusted included age (log-transformed), educational attainment, self-reported health, household income, smoking status, alcohol abuse or dependence, and frequency of physical activity per week. With respect to social-relational factors, we considered supportive factors (through family and employment) such as marital status, employment status, and parental status. For the community factors, we adjusted for time-invariant regional factors included as dummies for 9 provinces and 8 metropolitan cities. Time trends were adjusted by including year dummies and a continuous month variable.

Statistical Analysis

We applied a difference-in-differences (DID) technique using linear fixed-effects regression with robust standard errors to examine the impact of the #MeToo movement on depressive symptoms among women with and without recent experiences of SV. By first establishing parallel prepolicy trends in outcomes between the control and treatment groups, the DID model used the control group as a counterfactual to assess the average treatment effects of the #MeToo movement on SV survivors' depressive symptoms. The treatment effect was estimated by calculating the second difference (i.e., DID estimates) in the pre–post difference between the treatment and control groups. The following model was used for the statistical analysis:

$$\begin{aligned} DepressiveSymptoms_{ijt} = \\ \alpha + survivor_i \\ + \lambda MT_t + \delta(survivor_i \times MT_t) \\ + X_{it} + Y_{it} + M_{it} + R_{ij} + \varepsilon_{ijt} \end{aligned} \quad (1)$$

where $DepressiveSymptoms_{ijt}$ indicates the CESD score for individual i in region j at time t, *survivor* is a binary indicator of any recent experience of SV before #MeToo, MT is a binary variable indicating premovement versus postmovement, and δ indicates the treatment effect. The individual fixed effect α adjusts for time-invariant individual characteristics, X_{it} is a vector of all time-varying variables, Y_{it} and M_{it} adjust for time trends (annual and intra-annual changes), R_{ij} is a region fixed effect, and ε_{ijt} is the error term. In model 1 (unadjusted), CESD scores were predicted by log-transformed age, time, and region fixed effects. Model 2 (fully adjusted) included all of the predictors just mentioned and additional covariates for sociodemographic and health-related variables.

An important assumption in DID is that treatment and control groups (the SV group and the reference group in our case) have parallel trends in outcomes during the premovement period. We tested this assumption by using fixed-effect regression to predict changes in CESD scores through interactions between years (dummies) and treatment assignment status (i.e., experience vs no experience of SV) alongside the previously described covariates. If there is no significant interaction between time and treatment assignment status in the premovement period, the assumption of parallel trends is met. The test results are available in Table B, a plot of the predicted values is shown in Figure B, and sensitivity analysis results are available in Tables C through G (available as supplements to the online version of this article at http://www.ajph.org).

RESULTS

The baseline characteristics of respondents are shown in Table 1. Women with a history of SV can be seen to have more depressive symptoms.

We tested the parallel trend assumption for our DID analysis (Table B and Figure B) and found no evidence that trends in the outcome differed by treatment assignment status in the pre-#MeToo period (waves 4–6). Figure B shows that the SV and reference groups had parallel trends in the pre-#MeToo period, establishing the appropriateness of our DID approach. DID estimates from the fixed-effect regression predicting CESD scores are presented in Table 2 (models 1 and 2). The unadjusted model (model 1) showed that the #MeToo movement led to reductions in depressive symptoms (i.e., a decrease in CESD score of 1.57; 95% confidence interval [CI] = −2.37, −0.78) for the SV group relative to the reference group. After adjustment for health-related and sociodemographic confounders (model 2), there was a differential effect of the #MeToo movement across the 2 groups, with the impact of the movement on CESD scores being 1.64 points (95% CI = −2.46, −0.82) lower in the SV group than in the reference group.

The results of our sensitivity analyses (Tables C–G) were consistent with our main results.

TABLE 1— Baseline Sample Characteristics and Depressive Symptoms Across Women With (n = 114) and Without (n = 4315) a History of Experiencing Sexual Violence (SV): South Korea, 2012–2019

	Women Without a History of SV, No. (%)	Women With a History of SV, No. (%)	CESD Score Among Women Without a History of SV, Mean (SD)	CESD Score Among Women With a History of SV, Mean (SD)	*P*[a]
Marital status					
Married	2911 (67.46)	76 (66.67)	6.97 (5.08)	6.93 (5.42)	.17
Unmarried	1279 (29.64)	30 (26.32)	5.33 (5.06)	6.27 (4.76)	.67
Divorced/separated/widowed	125 (3.00)	8 (7.00)	8.63 (5.71)	9.33 (5.16)	.73
Age, y					
19–30	888 (20.58)	19 (16.67)	4.43 (4.74)	4.79 (4.32)	.23
31–40	1093 (25.33)	35 (30.70)	6.11 (5.02)	6.23 (5.57)	.92
41–50	2334 (54.09)	60 (52.63)	7.53 (5.11)	8.02 (5.33)	.6
Income quartile					
1	1335 (30.94)	46 (40.35)	7.23 (5.48)	7.72 (5.49)	.53
2	1181 (27.37)	27 (23.68)	6.89 (5.05)	7.59 (5.41)	.55
3	976 (22.62)	22 (19.30)	5.94 (4.82)	6.50 (5.62)	.72
4	823 (19.07)	19 (16.67)	5.58 (4.95)	4.58 (4.13)	.4
Education					
High school or below	2570 (59.56)	72 (63.16)	6.99 (5.28)	7.50 (5.47)	.96
College or above	1745 (40.44)	42 (36.84)	5.86 (4.89)	5.95 (5.06)	.51
Employment					
Employed	1996 (46.26)	57 (50.00)	6.71 (5.07)	7.40 (5.79)	.23
Not in the labor force	2217 (51.38)	57 (50.00)	6.36 (5.23)	6.46 (4.88)	.2
Unemployed	102 (2.36)	0 (0.00)	6.63 (5.24)	. . .	. . .
Self-reported health					
Good/very good	3177 (73.63)	86 (75.44)	5.88 (4.94)	6.24 (5.17)	.61
Fair/bad/very bad	1138 (26.37)	28 (24.56)	8.36 (5.32)	9.03 (5.43)	.41
Smoking status					
Smoker	42 (0.97)	2 (1.75)	8.50 (7.73)	11.5 (0.71)	.37
Nonsmoker	4273 (99.03)	112 (98.25)	6.51 (5.13)	6.85 (5.36)	.64
Alcohol abuse/dependence					
Yes	182 (4.22)	5 (4.39)	9.27 (5.81)	11.40 (3.43)	.41
No	4133 (95.78)	109 (95.61)	6.41 (5.10)	9.27 (5.81)	.66

Note. CESD = Center for Epidemiologic Studies Depression Scale. No data were missing across the variables listed.

[a]From a Kruskal–Wallis test (CESD scores between women with and without a history of SV).

DISCUSSION

Women with a history of SV saw additional mental health benefits from the #MeToo movement relative to women without a history. Specifically, after adjustment for potential confounders and time trends, the standardized mean difference between the treatment and control groups was 0.33 (95% CI = 0.14, 0.52), providing evidence that the #MeToo movement had a moderate beneficial effect on the mental health of SV survivors. Our findings were consistent across women of different socioeconomic positions and across work and nonwork settings. According to our systematic search (Figure A), this is the first study to provide empirical evidence that the #MeToo movement improves depressive symptoms among SV survivors.

Our findings also show that the benefits were consistent across social strata, which suggests that #MeToo is not a social movement that solely benefits women in privileged social positions.

TABLE 2— Changes in Depressive Symptoms After the #MeToo Movement in South Korea: 2012–2019

	b (95% CI)	
	Model 1: Unadjusted[a]	Model 2: Fully Adjusted[b]
#MeToo (ref = premovement)	−5.72 (−6.63, −4.80)	−5.92 (−7.16, −4.68)
SV × #MeToo	−1.57 (−2.37, −0.78)	−1.64 (−2.46, −0.82)
Log of age	4.78 (0.11, 9.44)	7.42 (1.56, 13.27)
Marital status (ref = unmarried)		
Married		−0.76 (−1.61, 0.09)
Divorced/separated		0.95 (−0.56, 2.47)
Widowed		3.93 (1.21, 6.63)
Parental status (ref = no child)		
1 child		0.12 (−0.37, 0.61)
≥2 children		0.04 (−0.32, 0.41)
Education (ref = bachelor's degree)		−1.60 (−2.87, −0.33)
Income		−0.23 (−0.35, −0.11)
Employment status (ref = employed)		
Unemployed		0.43 (−0.07, 0.93)
Not in the labor force		0.30 (0.05, 0.54)
Health status (ref = good/very good)		0.86 (0.66, 1.06)
Regular physical activity (ref = no exercise)		0.27 (0.07, 0.47)
Smoking (ref = nonsmoker)		0.38 (−0.99, 1.75)
Alcohol abuse (ref = no alcohol abuse)		1.37 (0.74, 2.00)

Note. CI = confidence interval.

[a]Adjusted by age, year, month, and region fixed effects.
[b]Fully adjusted for sociodemographic and health-related variables. Sexual violence (SV) was time invariant in our study (0 = no experience of SV; 1 = experience of SV [in reference to the pre-#MeToo period]). Because difference-in-differences techniques using fixed-effect analyses estimate only the effects of time-variant factors, the effect of sexual violence cannot be directly estimated. However, under fixed-effect modeling, the effect of a time-variant predictor (i.e., #MeToo) can be estimated separately (through an interaction) across time-invariant factors (i.e., SV history).

The #MeToo movement in Korea has provided a unique opportunity for a deeper understanding of the social ecological model and the effects of SV on women's mental health. Our study provides empirical evidence that the social environment perpetrating rape culture influences SV survivors' mental health. In addition, at a theoretical level, the social ecological framework is a useful lens to explore multilevel factors supporting SV survivors but is largely descriptive and static. Whereas previous investigations largely examined cross-sectional associations between societal-level factors and health outcomes, our study contributes to the social ecological framework by examining how changes in the social environment affect changes in mental health in a dynamic fashion.

Previous studies on this topic have focused on providing evidence of the association between experiences of SV and women's mental health.[27,28] For example, in a community-based sample of nonsmoking women, those with a history of SV were at greater risk of clinically depressive symptoms, clinically relevant anxiety, and poor sleep than those without a history of SV.[27] In a 13-year follow-up study, exposure to sexual harassment in the workplace was independently associated with an excess risk of suicide and attempted suicide.[28] However, these studies did not examine how societal-level changes can ameliorate the impact of SV on those who have already been exposed.

Our quasi-experimental study uniquely contributes to the literature by showing how exogenous changes in the societal-level environment, through increased support for SV survivors, may reduce survivors' depressive symptoms. Our quasi-experimental approach provides stronger evidence because it exploits "external shocks" to the societal-level environment brought about by the #MeToo movement. In contrast with a study employing only endogenous variations (e.g., comparing environments with varying levels of SV support and victim-blaming practices), our DID approach allowed us to estimate unbiased effects of societal-level environmental factors.

The #MeToo movement may have decreased survivors' depressive symptoms by (1) reducing social stigma and the victim-blaming culture, (2) providing social support and a sense of solidarity through online engagement with other survivors,[29] (3) making it easier to report SV and seek judicial recourse,[30] and (4) encouraging employers and other institutions to implement policies to help reduce SV.[31]

Limitations

Our study involved limitations. First, social desirability bias may have led to underreporting of SV incidents (e.g., failure to disclose SV because of stigma). Such underreporting could lead to

misclassification in the reference group, which would result in our findings being biased toward the null. Second, we measured only recent history of SV (1 year before each wave), and thus information about lifetime SV was omitted. As a result, we do not know whether #MeToo conferred additional mental health benefits on women who experienced SV in their childhood or earlier life. Third, we did not have information on the relationship between the survivor and the perpetrator or on the severity of SV incidents. Therefore, we were unable to detect differential effects of the #MeToo movement on survivors of SV committed by intimate partners versus strangers and among those who experienced harassment versus serious assaults.

Fourth, we modeled the #MeToo movement as an instantaneous process, but the impact of the movement may have been gradual. However, given the unprecedented interview of Seo Ji-Hyun on one of Korea's largest networks and a surge of posts reporting sexual misconduct on a popular online #MeToo message board,[32] it may be reasonable to treat the movement as having an abrupt effect. Finally, our analyses could have been strengthened by replicating results for other validated mental health outcomes (e.g., anxiety disorder), but the Korean Longitudinal Survey of Women and Families did not include these other measures. However, there is strong evidence that the CESD is a reliable and valid metric for assessing depressive symptoms.

Public Health Implications

Our study shows that changes in the social environment through the Korean #MeToo movement potentially helped improve the mental health of SV survivors. More broadly, #MeToo marked the beginning of sociopolitical changes that included challenging misogyny and rape myths, improving the process of reporting SV, and establishing specific political and legislative reforms (e.g., laws against *molka* in Korea). Despite these pivotal advancements in Korean society, it is important to highlight the public health implications of judicial and institutional barriers that continue to damage SV survivors' mental health, which should be addressed through policy changes, including changes in anachronistic laws that reflect sexism and misogyny. In the following, we highlight calls for reform by activists and movement supporters that target judicial and institutional reform.[33]

A previous literature review highlighted how failure in the justice system can exacerbate the impact of the initial crime and lead to revictimization, which has been linked to poor mental health outcomes.[34,35] In Korea, revictimization can occur as a result of the following reasons:

1. The use of defense arguments based on rape myths (e.g., implied consent through the survivor's past sexual behaviors or clothing worn at the time of an attack) can deter victims from reporting.[10,36]
2. Some current Korean laws fail to protect SV victims as a result of a limited definition of rape, for example division of rape and "like rape" (in which the latter involves penetration with anything other than male genitals and carries a lighter sentence).[37]
3. Pressure from police or court authorities for victims to drop charges or take an out-of-court settlement[10] can diminish the seriousness of these crimes and downplay the severity of damage to SV survivors.
4. Perpetrators can weaponize Korea's criminal defamation provisions, wherein tarnishing another person's social reputation is considered a crime even if it is based on well-supported facts, which may deter SV survivors from reporting crimes.[38–40]

These instances of revictimization can alienate SV survivors from the justice process, leading to emotional distress and hopelessness; thus, policy changes in these areas could greatly contribute to SV survivors' mental health in Korea. In addition, initiatives such as sexual assault response teams, aimed at improving survivors' help-seeking experiences (e.g., use of victim advocates), have been shown in qualitative studies to reduce distress and promote therapeutic experiences among victims.[41]

CONCLUSIONS

Our results showed that the #MeToo movement has the potential to lead to substantial improvements in the mental health of SV survivors. Although #MeToo started as a social media movement, it grew beyond social media platforms to the broader society by challenging misogyny and rape myths offline, improving processes for reporting SV, and enacting political and legislative reforms. Further actions that facilitate changes in the social environment will likely improve the mental health of SV survivors. AJPH

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C. Kim originated the initial project and conducted the data analysis. C. Kim and A. Chum contributed to the interpretation of the study results. All of the authors contributed to the first draft and the revision and editing of the article.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

HUMAN PARTICIPANT PROTECTION

The data used in this study are publicly available via the Korean Longitudinal Survey of Women and Families and did not require ethical assessment for academic research purposes.

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