The Scientific Repercussions of *Roe v. Wade* and the Uneven Burden of Contraception in American Culture

A Research Paper submitted to the Department of Engineering and Society

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

Abby Rieck

Spring 2023

On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

Advisor

Joshua Earle, Department of Engineering and Society

STS Research Paper

INTRODUCTION

On the morning of June 24, 2022, large crowds descended on the United States Supreme Court – both in protest and in celebration– following the decision of the Court to overturn *Roe v. Wade*, a landmark 1973 ruling which constitutionally protected the right to an abortion. Across the United States, protests swelled in city centers, town plazas, and parks: in New York City, crowds flooded Union Square and Washington Square Park. In Florida, hundreds gathered in protest outside of Tallahassee's Historic Capitol, and in Washington, abortion rights demonstrators surged into the streets of downtown Seattle, occupying full city blocks. In Little Rock, Arkansas, the shouts of outraged protestors, chanting "my body, my choice," clashed fiercely with the voices of men who read Bible verses in triumphant celebration (Hubler, 2022). In each city, crowds were dense with banners and poster boards, adorned with metal coat hangers and powerful messages of defiance: *Old men, stop telling me what to do with my body*. *People's bodies are more regulated than guns*. *Forced birth is enslavement* (Yan, 2022). The polarizing strikedown of the policy would reverse fifty years of precedent and, in its wake, yield ripple effects with major social, political and technological implications.

The recent upheaval of *Roe v. Wade* has pushed reproductive politics to the forefront of public debate. Once the primary beneficiaries of the 1973 *Roe v. Wade* ruling, women now disproportionately bear the consequences of its reversal. On a global scale, female sterilization represents the most common contraceptive method, accounting for nearly 24 percent of contraception use worldwide. By comparison, contraceptive methods that require men's direct participation – including male sterilization, the male condom, and withdrawal – together account for 27.4 percent of contraceptive practice worldwide. Of these options, male sterilization

represents the only long-acting method and accounts for only 2 percent of global contraceptive practice (United Nations, 2019). These statistics effectively illustrate the gender biases that underpin modern contraceptive practices.

The following thesis paper explores the scientific repercussions of *Roe v. Wade* and the uneven burden of contraceptive responsibility in American culture. In the Research Methods section, I outline the methods and frameworks used to compile my research and guide my analysis. Next, I summarize the key findings from my research analysis. More specifically, I explore the early history of contraception, beginning with the eugenic origins of contraceptive technology. I will move forward chronologically, next exploring the history of *Roe v. Wade* and the culturally-normative gender biases which shape modern contraceptive practices. Finally, I will examine the disproportionate impact of the reversal of *Roe v. Wade* and propose solutions to correct these disparities and contraception-related gender inequalities.

RESEARCH METHODS

A comprehensive literature review was conducted to answer my central research question. The subsequent research analysis was guided by principles of three distinct STS frameworks: social constructionism, the feminist critique framework, and the reproductive justice framework.

i. SOCIAL CONSTRUCTIONISM

The social constructionist framework posits that social categories – such as gender, race, class, and sexuality – are not inherently meaningful but, rather, take on meaning derived from cultural context and social interaction (Kang et al., 2017). The distinction between sex and gender was popularized by early feminist theorists, who argued that gender evolved from

socially-constructed beliefs and ideas about biological sex (Littlejohn, 2021). This dichotomy between sex and gender represents a recurring theme in modern feminist science and technology studies (Åsberg & Lykke, 2010). In the following paper, I apply the principles of social constructionism to analyze the intersection between culturally-normative gender roles and modern contraception use.

ii. FEMINIST SCIENCE AND TECHNOLOGY STUDIES

The feminist science and technology studies aim to investigate and expose the gender biases and social inequities inherent in the production of science and technology. Feminist studies challenge the objectivity of science by asserting that knowledge can never be obtained from a neutral standpoint. Rather, feminist scholars argue that all knowledge is situated and, therefore, is deeply entangled with social assumptions about gender and power dynamics (Adrian et al., 2018; Åsberg & Lykke, 2010; Haraway, 1988; Wagman & Parks, 2021). Consequently, as products of their sociocultural surroundings, scientific and technological artifacts can serve to reinforce existing inequalities and patterns of oppression (Coen-Sanchez et al., 2022). In response, the feminist critique framework challenges hierarchies of knowledge and provides a set of feminist criteria for producing knowledge and designing technologies in a more socially just manner (Adrian et al., 2018).

Since the emergence of feminist critique studies in the late 20th century, issues of reproductive health – such as a woman's right to abortion and contraception accessibility – have remained a central focus of the field. By challenging the idea that gender stereotypes are biologically-based and therefore immutable, feminist activists aim to reform the role of gender in shaping reproductive health practices (Adrian et al., 2018). Consistent with these aims, I utilize the principles of the feminist critique framework to argue that gendered classification of

contraception methods contribute directly to reproductive health-related disparities. Further, I apply feminist criteria to propose several solutions for addressing these disparities.

iii. REPRODUCTIVE JUSTICE THEORY

As the feminist critique movement unfolded in the late 20th century, the field received significant criticism for championing causes relevant only to women of the white, middle class (Adrian et al., 2018). Emerging as a product of these critiques, the reproductive justice theory aims to unite reproductive rights and social justice by highlighting the intersection between reproductive outcomes and social location (Morison, 2021; Ross, 2020). Specifically, the reproductive justice framework asserts that reproductive freedom is dependent on social factors such as race, gender, class, education status. This fundamental definition represents a significant expansion of the pro-choice movement, which focused narrowly on the individual right to abortion while obscuring the ways in which laws and policies disparately reward the reproductive activity of different groups of women (Ross, 2020). By broadening the scope of the reproductive health movement, the reproductive justice framework unites both mainstream and marginalized communities in a common movement against reproductive oppression. In the following sections, I apply this framework to my analysis of the racial and socioeconomic disparities in reproductive health services and outcomes.

BACKGROUND

i. SANGER'S EUGENIC LEGACY

Working as a nurse among the crowded tenements of New York's Lower East Side, Margaret Sanger encountered an overwhelming demand and a pressing need for birth control access and education ("How Birth Control And Abortion Became Politicized," 2011). However,

the 1873 Comstock Law prohibited the distribution of any items, advertisements, or literature related to sex, contraceptives, or abortion through the U.S. Postal Services; many states – including New York – pass anti-obscenity laws to supplement the federal legislation, which restricted the discussion of contraception except by physicians acting to cure or prevent disease (Malladi, 2018). In conscious defiance of these laws, Sanger opened the United States' first birth control clinic in October of 1916 and began distributing informational pamphlets about contraception and sexually-transmitted diseases. However, just nine days after the clinic was opened, Sanger was arrested for illegally distributing prohibited material and sentenced to thirty days in prison ("How Birth Control And Abortion Became Politicized," 2011; Malladi, 2018; Sanger, 1919).

Following her release from jail, Sanger continued to appeal her case, aiming to challenge the constitutionality of the obscenity law in the state's highest courts. Her defense was founded in the argument that limiting the distribution of birth control infringed upon women's constitutional liberties by forcing unwanted conception and enabling unsafe pregnancies. The case of *The People of the State of New York vs. Margaret H. Sanger* was decided by the New York State Court of Appeals – the state's highest court – in January 1918. While the constitutionality of the New York obscenity laws were upheld, the Court's judgment significantly broadened the law's interpretation by redefining the term "disease" to encompass "any change in the state of the body or an organ that causes a disturbance in function or health." This reinterpretation permitted physicians to prescribe contraception to female patients who sought to prevent pregnancy out of medical necessity (Gordon, 2020; Malladi, 2018).

Leveraging this legal loophole, Sanger opened a new clinic staffed by female physicians in 1923; this clinic – and its successors – eventually evolved into the Planned Parenthood

Federation of America, a nonprofit organization that remains today as an integral part of Sanger's enduring legacy (Gordon, 2020). For her groundbreaking contributions to the birth control movement, Margaret Sanger was once widely hailed as a feminist icon and reproductive-rights pioneer. However, Sanger's legacy of heroic feminism has largely been tarnished by her harmful connections to the eugenics movement of the early 20th century, which aimed to improve the fitness of humankind through selective breeding.

Today, Margaret Sanger is widely regarded as a vocal eugenicist who advocated for birth control as a means of curbing procreation among "unfit" minorities. A slew of evidence supports these allegations. In 1920, Sanger stated publicly that "birth control is nothing more or less than the facilitation of the process of weeding out the unfit [and] of preventing the birth of defectives" ("A Brief History of Birth Control in the U.S.," n.d.). She reiterated this sentiment in a 1921 article, writing, "the most urgent problem today is how to limit and discourage the over-fertility of the mentally and physically defective" (Latson, 2016). In 1926, Sanger delivered a speech to a women's auxiliary branch of the Ku Klux Klan in Silver Lake, New Jersey. Further, Sanger openly endorsed the 1927 Supreme Court ruling in *Buck v. Bell*, which upheld the practice of forced sterilization under the Constitution (Planned Parenthood, 2021). These incidents – along with others – inextricably link Sanger to the eugenics movement. Sanger's actions have prompted modern-day consequences as New York's Planned Parenthood takes steps to disassociate from their original founder (Gordon, 2020; Stewart, 2020).

However, defenders of Sanger claim that her association with the eugenics movement was more convoluted than what is implied by existing accusations. Seeking to legitimize the then-controversial birth control movement, Sanger aligned with doctors, academics, and other members of the scientific community, who offered vehement support for eugenics in the early

twentieth century ("A Brief History of Birth Control in the U.S.," n.d.). Thus, Sanger's supporters argue that her embrace of eugenics rhetoric was unlikely based in heartfelt belief but, rather, a political ploy to broaden birth control's appeal (Latson, 2016). Her advocates cite her work with black leaders – such as W.E.B. Du Bois and Martin Luther King Jr. – to refute claims that she supported eugenics along racial lines. Additionally, while Sanger did concentrate her efforts on minority communities, her advocates acknowledge that these groups were most vulnerable to the effects of unplanned pregnancy due to financial constraints and limitations to healthcare access (Latson, 2016).

While her true motives will remain subject to debate, the controversy surrounding Margaret Sanger speaks to the troubling origins of the birth control movement. A tumultuous history of eugenic ideologies and coercive sterilization practices established a legacy of distrust among minority women, a legacy which continues to inform modern trends in contraceptive use. These modern disparities will be examined in more detail in Section 3, entitled "Roe v. Wade and the Disproportionate Impact of its Reversal."

ii. A HISTORY OF ROE V. WADE IN THE UNITED STATES

In 1970, Jane Roe (a pseudonym used in court documents to protect the plaintiff's identity) filed suit against Henry Wade, the district attorney of Dallas County, challenging a Texas law that criminalized abortion except for the purpose of saving a woman's life. In her lawsuit, Roe alleged that the state law violated her right to personal privacy, protected under the Fourteenth Amendment ("Roe v. Wade," n.d.-a).

In January of 1973, the Supreme Court ruled 7-2 in favor of Roe, striking down the Texas statute and effectively legalizing the procedure nationwide. The Court held that a woman's right to abortion was inherent to one's fundamental "right to privacy" protected by the Due Process

Clause of the Fourteenth Amendment. Therefore, state laws that broadly prohibited abortion without respect to the stage of the pregnancy or other interests were ruled unconstitutional (Editors, History.com, 2018; "Roe v. Wade," n.d.-a; "Roe v. Wade," n.d.-b).

Following this momentous verdict, states could no longer regulate decisions surrounding abortion in the first trimester of pregnancy; this right was reserved for the child bearer and her physician. While the Court ruling permitted increased regulation as pregnancy advanced into the second and third trimesters of pregnancy – given states' interest in the "potentiality of human life" – these regulations were required to include exceptions in cases where maternal health was endangered ("Roe v. Wade," n.d.-a). Ultimately, the Supreme Court decision in the case of *Roe v. Wade* drastically improved the safety and accessibility of abortion care across the country. Further, as women gained newfound reproductive freedoms, an era of sexual liberation in the United States was ignited ("Roe v. Wade," n.d.-b).

iii. THE RISE OF A LIBERATION MOVEMENT

The advent of the hormonal birth control pill in 1960 and the landmark 1973 ruling in *Roe v. Wade* ignited a sexual revolution in the United States, which challenged long-standing cultural norms surrounding sexuality, morality, and interpersonal relationships. Newfound access to abortion and modern contraceptive technologies enabled the separation of sex from procreation by dramatically reducing the risk of pregnancy (Verbruggen, 2017). Sexual expression, which was traditionally confined to the privacy of monogamous relationships, had entered boldly into the public domain. Opinion polls conducted in the midst of this social movement highlight the liberal shift in cultural values: in 1965, 26 percent of all Americans opposed abortion, even when the pregnancy represented a serious risk to the woman's health; seven years later, this percentage fell to 8 percent (Luker, 1994).

From a technological standpoint, the introduction of the first hormonal birth control pill granted American women unprecedented freedom over their own fertility. Consequently, female-centric contraceptive technology was largely celebrated as a liberating force, freeing women from the obligation of motherhood and the dependence on male partners for effective contraception (Bailey, 2006; "The Pill and the Women's Liberation Movement," n.d.). Moreover, the social implications of the birth control pill extended beyond sexual encounters; by increasing female agency in reproductive decision-making, women were more likely to remain in school, pursue longer-term careers, and work more in the paid labor force during ages historically associated with child rearing. In fact, women born in 1955 – who benefited from early access to the birth control pill – reported 24 percent higher labor-force participation rates at the age of twenty-five as compared to women born in 1940 (Bailey, 2006). Ultimately, this liberation movement would fundamentally shape the future of contraception development in the United States.

Galvanized by broad cultural transformations, American women embraced advancements in female contraceptive technology, thus prompting a wave of innovative development. By the turn of the century, new methods like the intrauterine device, the contraceptive implant, the birth control shot, the female condom, and the morning-after pill had been introduced to market ("A Brief History of Birth Control in the U.S.," n.d.). On the other hand, the landscape of male contraceptive technology remained largely unchanged by the sexual revolution. The first human vasectomy was performed in 1897, and since then, technological options for men to actively prevent pregnancy have remained threefold: condoms, withdrawal, or a vasectomy procedure (United Nations, 2019).

Despite efforts to develop a hormonal contraceptive option for men, pervasive gender biases largely impeded the technology's path to market. The reports on clinical trials conducted in the 1950s and early 1970s foregrounded loss of sexual desire and problems with erections and seminal fluid production as major adverse effects of the contraceptive compounds. This dysregulation of sexual function was widely regarded as a threat to hegemonic masculinity, a perception which stunted further development of the technology (Oudshoorn, 2003). However, these concerns surrounding sexual desire did not translate to the assessment of the female hormonal contraceptive pill. In a study involving over 3,000 women, the authors found that 43 percent of those using hormonal contraceptives reported a decrease in libido, compared to only 12 percent of women using hormone-free contraceptives (Caruso et al., 2022). Therefore, culturally-entrenched gender norms play a significant role in determining contraceptive risk acceptability. For men, contraceptive health risks are frequently magnified as they are often compared to the conditions associated with healthy, untreated men. By contrast, the health risks associated with female contraceptives are frequently minimized as they are calculated against the risks of pregnancy, such as maternal mortality (Oudshoorn, 2003). This gendered discrepancy in risk acceptability creates disparate health risks for female contraceptive users.

In summary, the era following the *Roe v. Wade* ruling saw a surge in gender-biased contraceptive innovation. While the development of female contraceptive technologies widely expanded the sexual and social autonomy of American women, it also reinforced a cultural narrative that women must bear the burden of preventing and resolving pregnancies. As a consequence, women disproportionately shoulder the health risks associated with the use of modern hormonal contraceptive methods.

iv. ROE V. WADE OVERTURNED

Since the ruling in 1973, the issue of abortion rights has remained a polarizing debate among the American public. While many ensuing cases aimed to overturn *Roe v. Wade*, the original Court ruling – though modified and reinterpreted– remained largely intact for nearly fifty years. In 2022, the Supreme Court heard *Dobbs v. Jackson Women's Health Organization*, a case that, like many before it, challenged the precedent established by *Roe v. Wade*. However, unlike predecessor cases, the Court ruled in favor of a Mississippi law – which banned most abortions after 15 weeks of pregnancy – and effectively overturned the landmark ruling of *Roe v. Wade* (Editors, History.com, 2018).

For some states, the fallout was swift. Thirteen states enacted laws that were designed to be "triggered" by the reversal of *Roe v. Wade*. In the wake of the Supreme Court decision, these trigger laws took near-immediate effect, abruptly criminalizing abortion with few exceptions (Hernandez, 2022; Nash & Guarnieri, 2022). Though without trigger laws, thirteen additional states are expected to enact similar abortion bans, further devastating abortion access across large parts of the country (Nash & Cross, 2021).

The proliferation of state-level abortion bans have placed undue stress on abortion clinics nationwide. In anti-abortion states, clinics were forced to close or swiftly relocate. Within one hundred days of the Supreme Court ruling, 66 clinics across 15 states were forced to suspend abortion services (Kirstein et al., 2022). Oppositely, in states where abortion remains protected, clinics are overwhelmed by an influx of out-of-state patients seeking abortion services. In August of 2022, Illinois clinics reported three-week wait times with 86 percent of patients traveling from out of state (Durkee, 2022). Similarly, the number of legal abortions performed in North Carolina rose 37 percent between April and August of 2022. Other abortion-friendly states, including

Kansas and Colorado, experienced a similar upsurge in abortion demand. During that same period, however, the number of abortions performed nationwide decreased by 6 percent (Norris & Upadhyay, 2022).

In the upcoming sections, I investigate the uneven burden of contraceptive responsibility in American society and further analyze how the *Dobbs v. Jackson Women's Health Organization* ruling amplifies these gender-based disparities in modern reproductive politics.

MODERN CONTRACEPTION PRACTICE IN THE UNITED STATES

i. TRENDS IN MODERN CONTRACEPTION USE

Worldwide, 922 million women of reproductive age use contraceptive methods as a means of preventing unwanted pregnancies (United Nations, 2019). In the United States, contraception use among reproductive age women is virtually universal, with 99.1 percent of sexually-experienced women reporting use of at least one form of contraception in their lifetime (Daniels, 2013). Further, a 2018 report by the National Center for Health Statistics revealed that 65 percent of reproductive aged women in the United States were currently using contraception (Daniels & Abma, 2022). Female sterilization and the oral contraceptive pill represent the leading contraceptive methods in the United States, comprising 18.6 percent and 12.6 percent of contraceptive use, respectively. By contrast, male-dependent methods – such as male sterilization and male condoms – prove notably less prevalent, accounting for 5.9 percent and 8.7 percent of nationwide contraceptive use, respectively (Daniels & Abma, 2022).

Demographic variables, including age and ethnicity, have been shown to influence patterns of contraceptive use. Specifically, the National Center for Health Statistics reported a significant increase in contraceptive use with age, from 37.2 percent among women aged 15–19

to 73.7 percent among women aged 40–49 (Daniels & Abma, 2022). Similarly, an analysis of the 2006-2010 National Survey of Family Growth reveals striking racial disparities in contraceptive use, with both Hispanic and black women being more likely to rely on low efficacy methods of contraception as compared to white women. Further, black women reported higher rates of contraceptive non-use as compared to their white and Hispanic counterparts (Dehlendorf et al., 2014).

ii. The Role of Gender in Shaping Contraception Use

In the United States, contraceptive technology is commonly classified on the basis of gender. Charts published by the Centers for Disease Control and Prevention label condoms worn externally as "male condoms" and those worn internally as "female condoms"; similar interpretations – linking certain condoms to certain bodies – are widespread in public health. However, in her novel *Just Get On The Pill*, Krystale Littlejohn argues that these narrow classifications stem from a socially-constructed understanding of gender rather than from biological differences between male and female bodies. Ultimately, both the "male" and "female" condom come into contact with both partners and serve to protect both partners from pregnancy and sexually transmitted infections (STIs). Therefore, Littlejohn argues that neither method can be accurately classified as inherently "male" or "female." Nevertheless, gendered ideas about birth control play a central role in shaping patterns of contraceptive adoption (Littlejohn, 2021).

A nationally representative survey conducted by Indiana University found that 65 percent of women have never bought a condom (Littlejohn, 2021). Rather, consistent with social narratives surrounding birth control, men frequently assume the responsibility of providing external condoms during sexual encounters. Oppositely, women are more likely to prioritize the

use of prescription birth control, even when these methods fail to align with their individual preferences. In her interviews, Littlejohn encountered a number of women who resorted to use of prescription birth control after their male partners expressed resistance to condom use (Littlejohn, 2021). However, the gendered division of contraceptive responsibility is not solely defined by intra-relationship power dynamics; medical providers have also been shown to critically reinforce socially normative ideas about gender and birth control.

Analyzing transcripts from more than one hundred contraceptive counseling visits in the San Francisco Bay Area, Kimport et al. found that clinicians consistently fail to discuss male body-based contraceptives and, therefore, undermine these methods as viable long-term contraception options for women. While at least one female-body based method was mentioned in every visit, male body-based methods were addressed in fewer than half. Further, Kimport and colleagues observed that when discussing male body-based contraception, clinicians tended to emphasize the presumed negative aspects of these methods (e.g. lower efficacy of withdrawal and condoms) while overlooking features that patients might view positively (e.g. the lack of associated side effects) (Kimport, 2018). These findings expose the ways in which healthcare providers perpetuate normative expectations around contraceptive use.

The uneven burden of contraceptive responsibility in American culture is widely justified by the biotechnological constraints of "men's" versus "women's" methods. Because the most effective methods of birth control, such as the oral contraceptive pill, work primarily in concert with the female anatomy, women are expected – often single-handedly – to assume the burden of preventing pregnancy. However, prescription birth control methods are rather ineffective for women who dislike it, lack regular access to it, or prefer not to use it. In *Just Get On The Pill*, Littlejohn recounts the stories of several women who experienced unintended pregnancies due to

inconsistent use of birth control (Littlejohn, 2021). For many of these women, the decision to begin hormonal birth control provided a reason for resistant partners to abandon condom use. Thus, while hormonal birth control can serve as a highly effective form of birth control when used properly, inconsistent use and uneven division of contraceptive responsibility may ultimately increase the risk of pregnancy. Other women reported having unprotected sex to please their partners, who were reluctant to use condoms due to associated discomfort (Littlejohn, 2021). These first hand accounts indicate that factors beyond effectiveness play a role in individuals' choices regarding birth control.

iii. THE CONSEQUENCES OF GENDER-BIASED CONTRACEPTION

The uneven burden of contraceptive use in the United States poses social, physical, and financial consequences for women. First, the use of hormonal birth control methods is often associated with adverse side effects. In fact, a nationally representative survey revealed that nearly 40 percent of women who had ever used hormonal birth control had stopped it at some point due to dissatisfaction (Littlejohn, 2021). Common side effects associated with the hormonal birth control pill include irregular bleeding, nausea, headaches, mood changes, weight gain, and decreased libido. New studies also link birth control use to depression and autoimmune diseases such as Lupus and Crohn’s Disease (Somarriba, 2019). Due to gender biases entrenched in the modern contraceptive landscape, women disproportionately shoulder the burden of these adverse physical outcomes.

Additionally, for women who choose not to use contraception, unintended pregnancy presents a considerable risk. Defined as any mistimed, unplanned, or unwanted pregnancy at the time of conception, unintended pregnancies are a growing public health crisis, making up approximately half of all pregnancies worldwide each year (Kim et al., 2016). Women who

experience unintended pregnancies often report heightened levels of stress and depression, delayed prenatal care, and an increased likelihood of smoking and consuming alcohol during pregnancy. These women are also more likely to encounter household dysfunction and physical abuse (Kim et al., 2016).

Similar research has found that black and Hispanic women are at increased odds of unintended pregnancy as compared to their white counterparts (Kim et al., 2016). Consistent with these trends, an analysis of the 2006-2010 National Survey of Family Growth revealed that both Hispanic and black women were less likely to use effective methods of contraception than white women (Dehlendorf et al., 2014). These racial disparities are likely driven by psychological and socioeconomic differences, such as education level, poverty level, and differential access to medical care (Dehlendorf et al., 2014; Kim et al., 2016).

The following section will examine how the recent reversal of *Roe v. Wade* has contributed to the exacerbation of these disparities.

ROE V. WADE AND THE DISPROPORTIONATE IMPACT OF ITS REVERSAL

The recent overturning of *Roe v. Wade* has resulted in an immediate restriction of abortion access across the country. In turn, American women stand to disproportionately bear the consequences of this radical policy reversal as restrictions to abortion access pose a significant threat to maternal health.

The United States possesses the highest maternal mortality rate among developed nations, with roughly 700 women dying every year due to complications arising from pregnancy (Bendix & Varinsky, 2022). This is an escalating concern within the United States, as the rate of maternal mortality more than doubled between 1987 to 2017 (Bendix & Varinsky, 2022). By denying

women access to wanted abortions, they will be forced to assume the risk of the United States' high – and rising – rates of pregnancy-related mortality. These concerns are substantiated by research which indicates that women denied abortions face a higher risk of pregnancy-related health issues, due in part to an increased likelihood of delayed prenatal care (Bendix & Varinsky, 2022). Consistent with these findings, a 2021 study revealed that states with restrictive abortion policies demonstrated significantly higher rates of maternal mortality as compared to states with protective policies (Addante et al., 2021). These risks to maternal health will be further exacerbated by unsafe or "back-alley" abortion procedures, which are expected to increase in prevalence following the reversal of *Roe v. Wade* (Bendix & Varinsky, 2022; Sidik, 2022).

In addition to the physical health risks, denying a woman a wanted abortion is also associated with risks to mental and financial well-being. In the Turnaway Study, researchers at the University of California, San Francisco tracked one thousand women from across the country – some who received abortions and others who were "turned away" and forced to carry to term due to gestational limits ("The Turnaway Study," n.d.). The results of this longitudinal study suggest that receiving an abortion does not harm the health and wellbeing of women, but in fact, being denied an abortion results in worse financial, health and family outcomes ("The Turnaway Study," n.d.). An analysis of the Turnaway data revealed that denied abortions led to a fourfold increase in the odds of living below the Federal Poverty Level. The study further reports that women denied a wanted abortion are more likely to stay tethered to abusive partners and suffer anxiety and loss of self-esteem in the short-term ("The Turnaway Study," n.d.).

Most importantly, however, the reversal of *Roe v. Wade* stands to disproportionately impact minority women of color and low socioeconomic status. Studies indicate that black and Hispanic women receive abortions at higher rates than their white counterparts: in 2019, black

women accounted for nearly four in ten abortions (38%) while Hispanic women account for approximately one in five (21%). This data indicates that women of color accounted for more than half of abortions in 2019 (Ranji et al., 2022). Similar research shows that maternal mortality rates are significantly higher among black women, who face three times the risk of pregnancy-related deaths compared to white women. Further, a recent study conducted by the University of Colorado, Boulder predicts that the reversal of *Roe v. Wade* could exacerbate these already alarming rates. In fact, the study estimates that maternal mortality rates could increase by as much as one-third for black women (Hassanein, 2022).

Elevated rates of abortion and maternal mortality among minority communities may be attributed to disparities in healthcare access, which affects women's access to contraception and other sexual health services that are critical to family planning. Approximately 24 percent of Hispanic women and 13 percent of black women between the ages of 18 to 49 lack health insurance. By contrast, less than one in ten (9%) white women are uninsured (Ranji et al., 2022). Ultimately, disparities in insurance coverage and other systemic barriers to healthcare access will compound the risk of negative reproductive outcomes for minority women in a post-Roe environment.

Finally, following the reversal of *Roe v. Wade*, racial minorities and women of low socioeconomic status face disproportionate financial barriers to abortion access. The median cost of obtaining an abortion exceeds $500 (Ranji et al., 2022). Further, with an increasing number of states enacting abortion restrictions, the cost of an abortion procedure will increase drastically as women incur additional expenses associated with out-of-state travel. Traveling for an abortion may also lead to missed work, resulting in further loss of pay (Ranji et al., 2022). These financial

consequences will disproportionately impact black and Hispanic women, who are twice as likely to identify as low income as compared to white women (Ranji et al., 2022).

The upcoming section presents several solutions, which rely on both public policy and biotechnological innovation, to mitigate and overcome these inequalities which are likely to emerge in post-Roe society.

PROPOSED SOLUTIONS

i. GOVERNMENT AND PUBLIC POLICY

In a post-Roe era, the federal government will play a substantial role in shaping the future of reproductive health practices in the United States. By funding biotechnological innovation, eliminating disparities in healthcare access, and financially supporting abortion havens, the government at both federal and local levels can effectively protect maternal health and alleviate the burden of contraceptive responsibility.

By funding research grants, the government may directly contribute to the development of novel male contraceptive technology. Though the path to market is often tumultuous, these products may eventually serve to level the playing field between men and women in the context of reproductive health. The provision of a long-term and reversible contraceptive option for men through government-funded research may expand the range of contraception choices for individuals seeking to prevent pregnancy. These developments, in turn, may help to reshape the cultural narrative surrounding gendered responsibilities in pregnancy prevention.

Further, in order to improve the reproductive health outcomes of minority women, the government must work more diligently to equal and affordable healthcare access. Guaranteeing equitable access to dependable healthcare can significantly enhance a woman's access to

contraception and reproductive health services, which in turn can lead to increased reproductive freedom and better reproductive outcomes. Such efforts are critical to eliminating reproductive-related disparities observed within minority communities.

Finally, the government – on both federal and state levels – should work to financially support abortion havens. This financial support is critical for sustaining the operations of clinics which are overwhelmed by an influx of patients traveling from states with restrictive abortion laws. . By supporting abortion havens, governments can reduce the incidence of unsafe, back-alley abortion procedures and, in turn, safeguard the health of abortion-seeking women.

ii. HEALTHCARE POLICY

While many insurance policies provide coverage for conventional female contraceptive methods, many fail to provide similar coverage for male contraceptive methods, such as the vasectomy procedure and condoms (Krause, 2016). Asymmetrical coverage policies significantly contribute to the perceived disparity between men and women with regard to contraceptive responsibility. Thus, health insurance policies must provide equal coverage for all contraceptive methods to ensure that financial obstacles do not exacerbate the female burden of pregnancy prevention.

In addition, healthcare policies should be reformed to offer financial assistance for low-income women who must travel out of state for abortion services. Financial barriers, such as travel expenses and missed work, can create significant disparities in access to care. By removing these barriers, healthcare policy can promote equitable access to reproductive healthcare services for women of all socioeconomic backgrounds.

Lastly, healthcare providers must acknowledge their role in the feminization of contraception and take steps to correct it. Providers can start by offering comprehensive

education on all FDA-approved contraceptive methods to all patients, regardless of gender, to ensure that patients are empowered to make informed decisions about their reproductive health.

iii. INNOVATION IN THE BIOTECHNOLOGY INDUSTRY

The failure of the biotechnology industry to innovate in the male contraceptive field has also contributed to the perpetuation of gender disparities in reproductive health. To address this, the industry must actively shift the social narrative and prioritize designing with the male anatomy in mind. While widespread adoption of a male-oriented contraceptive may raise concerns, iterative design and innovation can lead to a solution that is socially acceptable. This approach will promote further innovation in the future, ultimately leading to more equitable and comprehensive reproductive health options for all genders.

CONCLUSION

The recent overturning of *Roe v. Wade* is a setback in the ongoing struggle for reproductive rights, which began with Margaret Sanger and the eugenics movement. The early development of contraceptive technology was often tied to the idea of preventing procreation in minority communities which, at the time, were deemed unfit. While the 1973 ruling significantly changed sexual culture in the United States, it also perpetuated a gendered division of contraceptive responsibility, with new solutions largely designed for the female anatomy. As a result, women continue to bear the brunt of the social, physical, and financial burdens associated with pregnancy prevention, while minority women face even greater disparities in access to effective contraception.

The rollback of abortion access will only worsen these disparities, particularly among marginalized communities. To address these inequities, the government, healthcare providers,

and biotechnology industry must work together to reduce barriers to reproductive health services and expand the availability of contraceptive technology. This will require a shift away from gendered narratives about contraceptive responsibility and a commitment to providing comprehensive education and coverage for all FDA-approved methods. Only by taking these steps can we create a future where birth control decisions are truly personal, equitable, and uninfluenced by dominant cultural narratives.

BIBLIOGRAPHY

A Brief History of Birth Control in the U.S. (n.d.). *Our Bodies Ourselves Today*. Retrieved October 27, 2022, from https://www.ourbodiesourselves.org/health-info/a-brief-history-of-birth-control/

Addante, A., Eisenberg, D., Valentine, M. C., Leonard, J., Hoofnagle, M. H., & Maddox, K. E. J. (2021, November). *The association between state-level abortion restrictions and maternal mortality in the United States, 1995-2017—Contraception*. https://www.contraceptionjournal.org/article/S0010-7824(21)00090-1/fulltext

Adrian, S., Skewes, L., & Schwennesen, N. (2018). Introduction to Feminist STS at work: Challenging dichotomies and privileges. *Kvinder, Køn & Forskning*, *27*. https://doi.org/10.7146/kkf.v27i1.106340

Åsberg, C., & Lykke, N. (2010). Feminist technoscience studies. *European Journal of Women's Studies*, *17*(4), 299–305. https://doi.org/10.1177/1350506810377692

Bailey, M. J. (2006). More Power to the Pill: The Impact of Contraceptive Freedom on Women's Life Cycle Labor Supply. *The Quarterly Journal of Economics*, *121*(1), 289–320.

Bendix, A., & Varinsky, D. (2022, May 4). *The biggest health risks women would face if Roe v. Wade is overturned*. NBC News. https://www.nbcnews.com/health/health-news/health-risks-overturning-roe-v-wade-abortion-rcna27109

Caruso, S., Palermo, G., Caruso, G., & Rapisarda, A. M. C. (2022). How Does Contraceptive Use Affect Women's Sexuality? A Novel Look at Sexual Acceptability. *Journal of Clinical Medicine*, *11*(3), 810. https://doi.org/10.3390/jcm11030810

Coen-Sanchez, K., Ebenso, B., El-Mowafi, I. M., Berghs, M., Idriss-Wheeler, D., & Yaya, S.

(2022). Repercussions of overturning Roe v. Wade for women across systems and beyond borders. *Reproductive Health*, *19*(1), 184. https://doi.org/10.1186/s12978-022-01490-y

Daniels, K. (2013). *Contraceptive Methods Women Have Ever Used: United States, 1982–2010*. *62*.

Daniels, K., & Abma, J. (2022, October 31). *Products—Data Briefs—Number 327—December 2018*. https://www.cdc.gov/nchs/products/databriefs/db327.htm

Dehlendorf, C., Park, S. Y., Emeremni, C. A., Comer, Ms. D., Vincett, Ms. K., & Borrero, S. (2014). Racial/ethnic disparities in contraceptive use: Variation by age and women's reproductive experiences. *American Journal of Obstetrics and Gynecology*, *210*(6), 526.e1-526.e9. https://doi.org/10.1016/j.ajog.2014.01.037

Durkee, A. (2022, October 2). *100 Days Since Roe V. Wade Was Overturned: The 11 Biggest Consequences*. Forbes. https://www.forbes.com/sites/alisondurkee/2022/10/02/100-days-since-roe-v-wade-was-overturned-the-11-biggest-consequences/

Editors, H. com. (2018, March 27). *Roe v. Wade*. History.Com. https://www.history.com/topics/womens-history/roe-v-wade

Gordon, A. (2020, July 22). *Planned Parenthood will remove its founder Margaret Sanger's name over her views on eugenics | CNN*. https://www.cnn.com/2020/07/22/us/margaret-sanger-planned-parenthood-trnd/index.html

Haraway, D. (1988). Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. *Feminist Studies*, *14*(3), 575–599. https://doi.org/10.2307/3178066

Hassanein, N. (2022, May 3). *People of color, the poor and other marginalized people to bear*

the brunt if Roe v. Wade is overturned. USA TODAY. https://www.usatoday.com/story/news/health/2022/05/03/people-color-most-impacted-if-roe-v-wade-overturned/9626866002/

Hernandez, J. (2022, June 24). Here's what could happen now that the Supreme Court has overturned Roe v. Wade. *NPR*. https://www.npr.org/2022/05/03/1096094942/roe-wade-overturned-what-happens-next

How Birth Control And Abortion Became Politicized. (2011, November 9). *NPR*. https://www.npr.org/2011/11/09/142097521/how-birth-control-and-abortion-became-politicized

Hubler, S. (2022, June 24). Thousands Protest End of Constitutional Right to Abortion. *The New York Times*. https://www.nytimes.com/live/2022/06/24/us/roe-wade-abortion-supreme-court

Kang, M., Lessard, D., Heston, L., & Nordmarken, S. (2017). *Social Constructionism*. https://openbooks.library.umass.edu/introwgss/chapter/social-constructionism/

Kim, T. Y., Dagher, R. K., & Chen, J. (2016). Racial/Ethnic Differences in Unintended Pregnancy: Evidence From a National Sample of U.S. Women. *American Journal of Preventive Medicine*, *50*(4), 427–435. https://doi.org/10.1016/j.amepre.2015.09.027

Kimport, K. (2018). Talking about Male Body-Based Contraceptives: The Counseling Visit and the Feminization of Contraception. *Social Science & Medicine (1982)*, *201*, 44–50. https://doi.org/10.1016/j.socscimed.2018.01.040

Kirstein, M., Dreweke, J., Jones, R. K., & Philbin, J. (2022, October 3). *100 Days Post-Roe: At Least 66 Clinics Across 15 US States Have Stopped Offering Abortion Care*. Guttmacher Institute. https://doi.org/10.1363/2022.300216

Krause, R. V. R. and E. (2016, October 14). What's stopping American men from getting vasectomies? *Brookings*. https://www.brookings.edu/blog/social-mobility-memos/2016/10/14/whats-stopping-american-men-from-getting-vasectomies/

Latson, J. (2016, October 14). *Margaret Sanger, Race and Eugenics: A Complicated History | Time*. https://time.com/4081760/margaret-sanger-history-eugenics/

Littlejohn, K. (2021). *Just Get on the Pill: The Uneven Burden of Reproductive Politics*. University of California Press.

Luker, K. (1994, February 20). The Hard Road to Roe. *The New York Times*. https://www.nytimes.com/1994/02/20/books/the-hard-road-to-roe.html

Malladi, L. (2018, January 22). *The People of the State of New York v. Margaret H. Sanger (1918) | The Embryo Project Encyclopedia*. https://embryo.asu.edu/pages/people-state-new-york-v-margaret-h-sanger-1918

Morison, T. (2021). Reproductive justice: A radical framework for researching sexual and reproductive issues in psychology. *Social and Personality Psychology Compass*, *15*(6), e12605. https://doi.org/10.1111/spc3.12605

Nash, E., & Cross, L. (2021, October 8). *26 States Are Certain or Likely to Ban Abortion Without Roe: Here's Which Ones and Why*. Guttmacher Institute. https://doi.org/10.1363/2021.33203

Nash, E., & Guarnieri, I. (2022, June 6). *13 States Have Abortion Trigger Bans—Here's What Happens When Roe Is Overturned*. Guttmacher Institute. https://doi.org/10.1363/2022.33571

Norris, A., & Upadhyay, U. (2022). *#WeCount report April to August 2022 findings*. Society of

Family Planning. https://doi.org/10.46621/UKAI6324

Opposition Claims About Margaret Sanger. (n.d.). Retrieved February 9, 2023, from https://www.plannedparenthood.org/uploads/filer_public/cc/2e/cc2e84f2-126f-41a5-a24b-43e093c47b2c/210414-sanger-opposition-claims-p01.pdf

Oudshoorn, N. (2003). *The Male Pill: A Biography of a Technology in the Making*. Duke University Press. https://muse.jhu.edu/book/70943

Parenthood, P. (2021, April 14). Opposition Claims About Margaret Sanger. *Fact Sheet, on-line: https://www. plannedparenthood. org/files/8013/9611/6937/Opposition_Claims_*.

Ranji, U., Jul 15, I. G. P., & 2022. (2022, July 15). What are the Implications of the Overturning of Roe v. Wade for Racial Disparities? *KFF*. https://www.kff.org/racial-equity-and-health-policy/issue-brief/what-are-the-implications-of-the-overturning-of-roe-v-wade-for-racial-disparities/

Roe v. Wade. (n.d.-a). Oyez. Retrieved February 10, 2023, from https://www.oyez.org/cases/1971/70-18

Roe v. Wade. (n.d.-b). Center for Reproductive Rights. Retrieved October 10, 2022, from https://reproductiverights.org/roe-v-wade/

Ross, L. (2020). Understanding Reproductive Justice. In C. McCann, S. Kim, & E. Ergun (Eds.), *Feminist Theory Reader* (5th ed., pp. 77–82). Routledge. https://doi.org/10.4324/9781003001201-11

Sanger, M. (1919, November 10). *A 1919 circular letter from Margaret Sanger to W. E. B. Du Bois asking for financial support for the Birth Control movement.* Digital Public Library of America. https://dp.la/primary-source-sets/eugenics-movement-in-the-united-states/sources/1625

Sidik, S. M. (2022). The effects of overturning Roe v. Wade in seven simple charts. *Nature*, *608*(7922), 254–257. https://doi.org/10.1038/d41586-022-02139-3

Somarriba, M. R. (2019, May 2). *More Women Are Seeking Side-Effect Free Forms of Family Planning*. Institute for Family Studies. https://ifstudies.org/blog/more-women-are-seeking-side-effect-free-forms-of-family-planning

Stewart, N. (2020, July 21). *Planned Parenthood in N.Y. Disavows Margaret Sanger Over Eugenics—The New York Times*. https://www.nytimes.com/2020/07/21/nyregion/planned-parenthood-margaret-sanger-eugenics.html

The Pill and the Women's Liberation Movement | American Experience | PBS. (n.d.). Retrieved October 27, 2022, from https://www.pbs.org/wgbh/americanexperience/features/pill-and-womens-liberation-movement/

The Turnaway Study. (n.d.). ANSIRH. Retrieved February 15, 2023, from https://www.ansirh.org/research/ongoing/turnaway-study

United Nations. (2019). *Contraceptive Use by Method 2019: Data Booklet*. UN. https://doi.org/10.18356/1bd58a10-en

Verbruggen, R. (2017, December 3). *How the Sexual Revolution Unfolded*. National Review. https://www.nationalreview.com/corner/how-sexual-revolution-unfolded/

Wagman, K. B., & Parks, L. (2021). *Beyond the Command: Feminist STS Research and Critical Issues for the Design of Social Machines* (arXiv:2102.00464). arXiv. http://arxiv.org/abs/2102.00464

Yan, K. M., Holly. (2022, June 27). *Protests spread across the US after the Supreme Court overturns the constitutional right to abortion*. CNN. https://www.cnn.com/2022/06/27/us/supreme-court-overturns-roe-v-wade-monday/index.html