Sex Education Laws and HIV: an 8 State Analysis

Abstract

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By

Sonia James-Raju

Introduction: Human Immunodeficiency Virus (HIV) continues to threaten public health, despite a 40-year history of risk and prevention mitigation efforts. Advances in science and medicine have increased knowledge on how the virus is spread and how to treat it. This has driven clinical practices and policy initiatives. Policy has the capacity to drive primary prevention. Some policy, however, can pose barriers and impede primary prevention initiatives. This study investigates of the potential effect of sex education policy on primary prevention among young adults ages 13-24.

Methods: Sex education policy in 8 states in the western and southern United States was collected and assessed for the impact these policies had on HIV incidence rates on young adults ages 13-24 using legal epidemiology methods. This cross-sectional study used data relevant to 2020-2022. Qualitative analysis state sex education and HIV education laws were coded for and analyzed in MonQcle. Statutes were assessed for inclusion of primary prevention education and resources within mandated curriculum. States were also assessed for type of content included in mandated curriculum and who mandated the curriculum (the state or local jurisdiction). An odds ratio was calculated at the end to assess the association between sex education of policy and HIV incidence.

Findings: Young adults that live in states with opt-out parental consent sex education policy have higher odds of having a new diagnosis of HIV than young adults living in states with opt-in parental consent policy. A weak association of statistical significance was found during analysis, the OR was found to be 0.76, 95% CI [0.68, 0.86]. This association reflects that there is a weak association between sex education laws with opt-in parental permission and HIV incidence in young people ages 13-24, however, there are many policy elements and confounding factors that may affect the odds ratio for HIV surveillance data collected between 2020-2022.

Conclusion: This study analyzed the association between opt-in parental consent policy and HIV incidence in young adults ages 13-24. Young adults have lower odds of having newly diagnosed HIV in states where active or opt-in consent is mandated for student participation in education programs. There are no strong associations between who sets the curriculum and HIV incidence in young adults, however, there is an opportunity to analyze the health impacts of mandated within each state and which of these sex education trends may not be keeping up with changing societal needs.

Keywords: HIV education, opt-in/opt-out parental consent, parental permission, sex education, sex education policy, sex education law

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Author's Statement

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Sonia James-Raju

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Chapter I: Introduction

Human Immunodeficiency Virus (HIV) has been a threat to public health for over 40 years and disproportionately affects young adults (here referring to those ages 13-24 years old). HIV is transmitted through contact with blood, semen, vaginal fluid and breast milk. It is a retrovirus that can lead to long term health complications, and requires expensive antiretroviral therapy (ART), and has psychosocial impacts on the individuals and community. Eventually, an untreated HIV infection will result in the infected individual having acquired immunodeficiency syndrome (AIDS) and death. HIV is preventable and has no cure. Once detected, however, standard of care utilizes ART. HIV remains a public health concern in every nation (World Health Organization, 2024b). In the United States there were 38,043 new cases of HIV were diagnosed in 2022. A population that is disproportionately affected is young adults that are between the ages of 13-24. Within this population, 7,099 were newly diagnosed with HIV in 2022; this comprised approximately 19% of new HIV diagnoses nationally (Centers for Disease Control and Prevention, 2024c, p. 12).

Young people are disproportionately affected due to lack of understanding and general lack of resources (Talks on Law, n.d.). This population is dependent on the guidance and structure provided by parents and the institutional structures that support the population, such as schools, community centers and other pillars of the community. CDC surveillance also reports that in 2022, absolute disparity between young people ages 23-24 is significantly greater with an incidence rate of 28.6 new HIV diagnoses per 100,000 people than young adults ages 18-19 that have an incidence rate of 12.1 new HIV diagnoses per 100,000 (Centers for Disease Control and Prevention, 2024c). This reflects gaps in primary prevention that may not translate into adulthood. Having an HIV diagnosis is not the death sentence it was before. With tools for earlier detection and advances to Antiretroviral Therapy (ART), people living with HIV (PLWH) are living longer lives than in previous decades. If diagnosed as a young adult, this means that PLWH will be a part of the HIV healthcare continuum for a longer period of time and can result in greater healthcare economic burden for the long run for both the individual and the community.

With appropriate prevention, this is a virus that can have fewer incidence and therefore less prevalence in the coming years. Using policy to advance public health objectives in public

schools can help in getting this priority population to better health outcomes. Sex education is a tool that was used to spread awareness and education about HIV to young people starting in the 1980s (Centers for Disease Control and Prevention, 2023b; Coursolle & Morcelle, 2017; Healthy People 2030, n.d.-a; SIECUS, 2024b). Using the existing formalized structure of the school setting increases the span sex education programming can reach more individuals. Public school can reach a larger proportion of young people in general due to states mandating attendance starting as early as age 5 (Centers for Disease Control and Prevention, 2023b; Kirby et al., 2007; National Center for Education Statistics, 2017). The Sex Information and Education Council for the United States (SIECUS) is a non-profit organization that advocates for comprehensive sex education policy starting as early as kindergarten (SIECUS, n.d.).

It is estimated 65% of young people will be sexually active by the age of 18 (Keller, 2020). Being sexually active increases vulnerability to sexually acquired diseases, like HIV. In 2022, 49.6 million students enrolled in grades K-12 public schools (National Center for Education Statistics, n.d.). The Federal Reserve reports that in 2022 young people spent about 19% of their time (or 6.3 hours per day) in school (Hall & Nielsen, 2020). With young people spending so many daily hours in school, this creates the ideal environment to implement HIV prevention strategies in the public-school setting. Positive associations exist between education and better health and wellbeing. Sex education is a tool to that leads to improvements in healthy behaviors through increasing healthy behavior knowledge (Braveman et al., 2011; Centers for Disease Control and Prevention, 2023a; The Lancet Public Health, 2020). Education is a power that is delegated to states to oversee and implement (Pelsue, 2017). Therefore, sex education, a component of overall education, and its content is decided by the state legislatures. Each state is responsible for determining school curricula. This can lead to variation in the content which is dictated by policy. Associations between policy and the HIV health impacts must then be determined to evaluate if policy is advantageous or creates barriers.

One of these mechanisms is opt-in parental permission policy. This is when parents must give active consent (instead of passive consent or opt-out consent) to allow their children to participate in sex education activities in a public school. Opt-out parental permission for student participation in sex education activities is the default or the standard for most sex education

programs in the United States. In 5 states, however, this is not the case, and active parental permission is mandated.

This study evaluates the association between policies that require opt-in parental permission for student participation in sexual health education and HIV outcomes in young adults ages 13-24 years of age. The goal of the analysis is to inform sex health education policies that could lead to reduced HIV infections among young people. The study accomplishes these goals through the following research questions:

1. Is there an association between higher HIV incidence among young people in states with opt-in parental permission policy vs. states with opt-out parental permission policy for participation in sexual education activities?

2. Do other policy elements, specifically, whether the state or local jurisdiction is responsible for the curriculum, affect HIV incidence within the target population?

Chapter II: Literature Review

Policy Landscape

State policies may establish prevention strategies that aim to reduce the risk of HIV. This stops the transmission of the virus before it happens and reduces overall disease burden, incidence, and prevalence. Policies that target structural and socio-ecological conditions can impact how disease is spread within a population (Kisling & Das, 2023). Initiatives like the Ending the HIV Epidemic and recommendations from Healthy People 2030 offer evidence-based recommendations and best practices on how to manage primary HIV prevention at the clinical and policy level.

The Ending the HIV Epidemic (EHE) seeks to increase the nation's investment into tools for primary and secondary prevention and technology. It works as a complement to the National HIV/AIDS Strategy and focuses on investment into community-based strategies. Program investments aim to reduce new HIV infection rates by 75% by 2025 and 90% by 2030 (Centers for Disease Control and Prevention, 2024a). The EHE initiative has 4 science-based pillars: diagnose, treat, prevent and respond (Centers for Disease Control and Prevention, 2024d). EHE specifies that primary prevention should include strategies on disseminating prevention materials through health education on the following topics: sexual activity, condom use, taking Pre-exposure prophylaxis (PrEP), abstinence, getting tested and treated for sexually transmitted infections, information regarding injectable drugs and needle sharing, pregnancy and male circumcision (Centers for Disease Control and Prevention, 2024g, 2024h). The EHE initiative is struggling to meet program goals; according to the EHE website, "[t]he United States has made modest progress in recent years, but is not on pace to reach these goals" (Centers for Disease Control and Prevention, 2024d).

National objectives set by Healthy People 2030 also identify areas of health and wellbeing that need improvement. One of these measurable objectives is to "[i]ncrease the proportion of adolescents who get formal sex education before age 18 years FP-08" (Healthy People 2030, n.d.-b). The current target is that 59.1% of young people young people receive formal sex education before 18, and at the time of publication of 2030 objectives, the rate was at 54.5% for years 2017-2019. This rate is just above the baseline rate of 52.8% young people receiving formal sex education (Healthy People 2030, n.d.-b). Increasing the number of young

people young people that receive sex education in the public-school setting can help achieve EHE goals. Through sex education, young people young people can learn healthy behaviors like HIV prevention through barrier devices (HIVInfo.NIH.gov, 2023).

State legislatures primarily control sex education curriculum setting and implementation. Some state legislatures, however, delegate these responsibilities to the local school boards or other local government entities. In 2023, there were over 100 bills introduced into various state legislatures that target sexual health education, including digital censorship and increasing parental oversight on the sex education offered in schools (SIECUS, 2024a, p. 3). There is no Federal sexual health education standard, nor is there federal oversight over sex education content requirements. However, Title V of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 creates an incentive for states to adopt an abstinence only until marriage curriculum (104th Congress, 1996). This ties federal funding to an abstinence only curriculum. There does not appear to be strong evidence that this curriculum is evidence based or associated with better health outcomes; however, there is evidence that teaching accurate and comprehensive sex education improves health outcomes (Kaiser Family Foundation, 2018; Society for Adolescent & Medicine, 2017).

Recent federal efforts to set a national standard curriculum were introduced into Congress twice. The Real Education and Access for Healthy Youth Act (REAHYA) was introduced into Congress (H.R. 3312 in 2021;H.R. 3583 in 2023) (GovTrack, 2023, n.d.). This bill sought to remedy sex education standards by setting a national standard to assure that young people receive comprehensive and medically accurate sex education (GovTrack, n.d.). The bill failed both attempts, reflecting potential barriers for sexual health education legislation within the current political climate. However, enacting a bill like this would help get to target goals of Healthy People 2030's FP-08 health objective for the nation.

Other features of this act would have extended education and sexual health promotion to a wider population to include young people ages 10-29; repealed requirements for certain kinds of federal funding and award grants to health care entities and organizations that service youths to increase services for marginalized youths. Additionally, it would restrict funding to sex education programs that are considered to be medically inaccurate or programs that present inaccurate or incomplete information (GovTrack, n.d.). Due to this bill not being passed, a federal standard is

still not set. This enables state legislatures to retain control over the whether sex education should be mandatory, and what kind of content should be in the curriculum regardless of whether the curriculum is evidenced based or not.

Approaches to Sex Education:

"The goal of education about human sexuality is to raise sexually healthy adults" (Society for Adolescent & Medicine, 2017). The Centers for Disease Control and Prevention (CDC) recommend that sexual health education should be "medically accurate, developmentally appropriate and culturally relevant" (Centers for Disease Control and Prevention, 2023b). Sex education may not prevent young people from being sexually active, but when presented in a comprehensive and effective manner, it can reduce risky health behaviors and lead to overall better health outcomes within the population. The CDC identifies 5 core components of an effective health education program:

1. A set of learning outcomes that relates to health- knowledge, attitudes and skills.

2. A plan for progressive developmentally appropriate learning experiences.

3. Continuity of education and learning experiences.

4. Sequential learning plans to keep teachers and students on track with learning objectives.

5. Assessment of knowledge gained to assure program fidelity (Centers for Disease Control and Prevention, 2023a).

Figure 1. What Works in School, retrieved from https://www.cdc.gov/healthyyouth/health-education/ (Centers for Disease Control and Prevention, 2023b)

Figure 1 shows the overlap of what health education components work and how aspects of one can influence the other. To obtain better health outcomes, these separate spheres need to work in conjunction with each other, therefore there is overlap in objectives and applied practice. More specifically, it shows how quality (or comprehensive) health education, when combined with health services and a safe and supporting environment can foster the development and adaptation of healthy sexual behaviors in young people.

Sex education, as taught in the United States, includes three main categories: abstinence only until marriage (AOUM), abstinence plus education (AOUM+), and comprehensive sex education (Kaiser Family Foundation, 2018). AOUM emphasizes abstinence only until marriage and discourages sex outside of a marital scenario. This program is based on "morals" and does not generally discuss contraception or condoms (Kaiser Family Foundation, 2018). AOUM+ also emphasizes abstinence until marriage but also provides education material on contraceptives and condoms to prevent sexually transmitted infections and pregnancy. Comprehensive sex education is holistic, medically accurate, and tailored to the developmental stage of the young person. Topics covered in a comprehensive sex education curriculum may include anatomy and physiology, healthy relationships, consent, pregnancy, gender identity and orientation, LGBTQIA+ inclusion and HIV/AIDS awareness and education. Comprehensive sex education offers health promotion material on contraceptive, how to avoid unwanted pregnancy, healthy relationships, and other culturally appropriate topics (Hawkins, 2024; Kaiser Family Foundation, 2018).

Sex education programs primarily target teenagers, because most sex education courses started as teen pregnancy prevention (Hall et al., 2016). Comprehensive sex education programs that start as early as kindergarten have the potential for better health outcomes (Gaines & Miller,

2022; SIECUS, n.d.). Starting sex education material in earlier years helps develop healthy behaviors at a younger age. These behaviors can later be built upon as the child gets older and applied as healthy sexual behaviors throughout adulthood. This would build on common and established models and community practices. Associations between comprehensive sex education and better health outcomes were seen during the 1980s and 1990s when sex education programs were prominent in most public schools. The decline of comprehensive sex education programs in recent years and greater emphasis on AOUM, has led to changing health outcomes. This lack of formal and comprehensive sex education and awareness are resulting in increases to sexually transmitted infections and HIV incidence (Hall et al., 2016; Kaiser Family Foundation, 2018; Lindberg et al., 2016).

Sex Education and HIV/AIDS

The 1980s introduced HIV and AIDS education and integrated it into existing sex education and health promotion programming. This was in response to the public outcry for more aggressive prevention strategy once it was realized that HIV was a virus that affected all people and not just gay men. In an article printed by Time Magazine in 1986, Harvey Fineberg of Harvard School of Public Health commented that the need for sex education was matter of "life or death"; this same article reported that 86% of Americans were in favor of sex education (Rothman, 2014). In 1984, SIECUS was one of the first organization to respond to the epidemic through sex education by co-sponsoring the "Gay Men's Health Crisis" conference. This led to the publication of *HIV/AIDS: How to Talk to Your Children About AIDS* (SIECUS, n.d.). This publication was novel at the time and set the tone for HIV/AIDS education targeted towards young people. Since then, HIV and AIDS education material was added to existing sex education curricula and is currently mandated in 30 states plus Washington D.C. (Guttmacher Institute, 2023).

HIV education in some jurisdictions can leave impressionable young people with the feeling that this is a "gay disease" (SIECUS, 2024b). As with sex education, HIV education curriculum priorities are set by the state through legislation, with some states allowing local school districts to set the education priorities. This has contributed to the existing variance of education materials and policies across the country (Cross, 2021; First, 1993; Gaines & Miller, 2022; Kaiser Family Foundation, 2018). Recommendations for sex education material to reduce the spread of HIV

through sexual contact can be found from agencies and organizations like CDC, SIECUS, Advocates for Youth and Planned Parenthood plus many more. These recommendations for primary prevention include the usage of condoms to reduce the spread of HIV/AIDS (Centers for Disease Control and Prevention, 2024b, 2024h; HIVInfo.NIH.gov, 2023; World Health Organization, 2024a). If the state legislature, however, does not determine that the content material needs include evidence-based practices like barrier device use, or that the content be medically accurate or culturally appropriate, public health outcomes may be negatively impacted. The past few decades have revealed mixed health outcomes associated with factors such as prioritizing AOUM or having fewer mandatory formal and comprehensive sex education programs (Kaiser Family Foundation, 2018; Lindberg et al., 2016).

Role of Parental Permission

Protections for the right of parents fall under the 1st amendment under the free exercise clause and 14th amendment under due process, equal protections, and privacy rights of the Constitution (Alemansour et al., 2019).. The free exercise clause of the First amendment protects parental rights in certain scenarios, depending on the context. The fourteenth amendment reinforces a parent's right to direct their child's education through the right to family autonomy (Constitution Annotated, n.d.) However, parental rights are not absolute and may conflict with the public health interest. The rights of the parent are becoming a central focus as more restrictive bills are being introduced into state legislatures (SIECUS, 2024a, p. 14). Parental rights may be limited in some circumstances to further public health interests; and they cannot exempt themselves from complying with all laws. This is especially true about laws that are neutral and generally applicable (Congressional Research Service, 2020; Talks on Law, n.d.).

The Religious Freedom and Restoration Act of 1993 (RFRA) reinforces the free exercise of religion by increasing scrutiny on the government from brining undue burden onto its citizens (Congressional Research Service, 2020). The Act assures extra protections that are not covered in the Constitution. Under the parameters of this act, a parent can claim undue burden to sex education laws. In this case, the sex education policies are generally applicable, neutral laws that further public health objectives and essential services. Sex education and HIV education laws are set as a public health intervention and is meant to benefit the whole of society by reducing HIV incidence within the population, and more specifically within young people.

Sex education is described to exert an undue burden to parents under the due process clause of the 14th amendment. This burden the parent may perceive is that sex education contents are in direct conflict of what they deem appropriate, or in direct conflict of their religious convictions. Challenges to sex education are seen in court cases before and after the implementation of RFRA. Some examples of court cases post-RFRA include *Brown v. Hot, Sexy, and Safer Productions* (1995) *Parker v. Hurley* (2008) and *Leebaert v. Harrington* (2003).

In *Brown v Hot, Sexy and Safer,* the defendant, Suzi Landolphi was hired by the school Parent Teacher Organization to deliver an AIDS awareness assembly to high school students at Chelmsford High School, a public school, in Massachusetts. The two plaintiffs and their families claimed that the interactive presentation made them feel “humiliated and intimidated” ("Brown v. Hot Sexy and Safer Productions INC (1995)," 1995). More specifically:

> (1) their privacy rights under the First and Fourteenth Amendments; (2) their substantive due process rights under the First and Fourteenth Amendments; (3) their procedural due process rights under the Fourteenth Amendment; and (4) their First Amendment rights under the Free Exercise Clause (in conjunction with a deprivation of the parent plaintiffs' right to direct and control the upbringing of their children). Plaintiffs also allege that the Program created a sexually hostile educational environment in violation of Title IX of the Education Amendments of 1972, 20 U.S.C. § 1681 et seq ("Brown v. Hot Sexy and Safer Productions INC (1995)," 1995).

The first circuit ruled in favor of the defendant, but stressed the need for the parents to have an opt-out permission option for them to exempt their children from participation. In this case, the school had not provided the parents with notice about the mandatory assembly on AIDS awareness. Prior to this case, there is lack of evidence suggesting that opt-out parental consent policies were used by states or school districts as a standard for parental permission on HIV/AIDS education.

Other examples of sex and health education challenges include *Parker v. Hurley* (2008) and *Leebaert v. Harrington* (2003). Both these cases raise 14th amendment issues as the personal beliefs of the parents were infringed upon by sex and health education materials that were disseminated by the local school districts ("Leebaert v. Harrington (2003)," 2003; "Parker v. Hurley, 514 F.3d 87 (2008)," 2008). Much like *Brown v. Hot, Sexy and Safer*, it was ruled that

the fundamental rights of the parent were not violated, and that the rights of the school board to educate their children on sex and health education topics were upheld.

Following the *Brown v. Hot, Sexy and Safer* case, other states have permitted parents to opt-out of permitting their child to participate in sex education activities. Recent data from the Guttmacher Institute specifies that 35 have this policy (Guttmacher Institute, 2023). However, evidence indicates that opting out increases a young person's risk because they will not receive the same health behavior information as those that do participate in sex education activities and programming (Alemansour et al., 2019; Bialystok, 2018; Hawkins, 2024; SIECUS, 2018). Young people lack understanding of healthy sexual behaviors and resources to primary prevention, such as condoms or PrEP. Without competent sex education, they may also lack access to resources.

Utilizing opt-in parental permission changes the default. In this context, parents may be distracted, reluctant or unwilling to sign consent for their child to participate in sex education programming (Bayer, 2024; Bialystok, 2018; SIECUS, 2018). This system assumes that parents will be the primary delivery systems of sexual health information, however, this may not be the case depending on the family and household (Hyde et al., 2010; SIECUS, 2018). In other words, opt-out, passive permission or passive consent policy maintains the status quo, as many parents may not choose to deviate from the default option, while the default option in opt-in may leave the young person without exposure to any sex education material (Bayer, 2024).

This type of controversy is not new to sex education and is exemplified by the previous mentioned case law. As long as sex education has existed, objections by parents to sex education have existed (Bialystok, 2018; Cross, 2021; First, 1993). This became especially true with the introduction of HIV/AIDS education and awareness content into sex education programs. The basis for objection may be due to the secondary topics associated with teaching HIV/AIDS awareness, such as homosexuality, condom use, gender identity and orientation etc. This creates a conflict between what the parent perceives to be a burden imposed by the government on a fundamental right to family autonomy and the public health interest.

In response to parental opposition, most states that mandate sex education have adopted opt-out sex education participation. This allows for states that mandate sex education and HIV education, to give the parent a chance to "opt-out" of their child participating in the activity in school. This is also known as passive permission participation. In this type of parental consent,

parents are encouraged to review the material in the curriculum before opting out of participation. This type of parental permission captures a greater proportion of student body in the public-school setting because parents may be hesitant to go against the status quo, may not have a strong enough objection, or be too busy or distracted to perform a content review (Bayer, 2024; Bubb & & Pildes, 2014; SIECUS, 2018). Bubb and Pildes (2014) make the argument in Behavioral Law Economic (BLE) theory that when individuals are presented with choice, they will "stick with the defaults chosen by the plan designer, the defaults function as effective mandates" (p.1618). They go on to say that even though the default may be more of a mandate, offering an opt-out option gives the illusion of choice.

Another type of parental permission policy is opt-in parental permission. This has been integrated into 5 states sex education statutes. Mississippi, Nevada, North Carolina, Texas and Utah have opt-in policies. This type of policy only permits a student to participate in sexual health education as part of the broader curriculum if the parent gives written consent. This type of permission captures fewer students in the public-school setting since this requires active consent by the parent (SIECUS, 2018). This can deprive young people of resources that may not have at home. Opt-in parental permission assumes that the parent is willing and capable of delivering sex education content that medically accurate and culturally appropriate to their children, (Hyde et al., 2010; SIECUS, 2018) while also assuming that the parent is also actively engaged in the day to day education needs and activities (Bayer, 2024). Table 1 shows a side-by-side comparison between opt-in and opt-out parental permission policies.

Opt-in	**Opt-out**
Active permission	Passive permission
May not capture whole student body	Captures majority of student body
May take away resources from student	Offers resources to students

Assumes parents are willing and able to teach healthy sex behaviors to child	Parents with strong opinion can still express opinion
Policy in only 5 states	Policy in 35 states
	Maintains the status quo

Table 1. Comparison between opt-in parental consent policy and opt-out parental consent policy.

Despite case law supporting the actions of schools, and the implementation of parental engagement through opt-out parental consent laws, organizations like Alliance Defending Freedom advocate for opt-in policies through toolkits which state "[p]arents should pursue opt-in policies which give parents the most choice by requiring schools to obtain their prior written consent to any lessons involving Critical Theory, gender identity, sexual orientation, romantic or sexual relationships" (Alliance Defending Freedom, 2024b). Other toolkits by this same organization offer financial support to parents that wish to challenge education material on the basis of religious freedom (Alliance Defending Freedom, 2024a). This type of support to oppose sex education is also seen in toolkits offered by organizations like Parents Defending Education, Family Watch International or Stop CSE (Family Watch International, 2024; Parents Defending Education, 2024; Stop CSE, 2024). The work of these organizations makes getting to EHE or Healthy People 2030 objective goals difficult. This is further compounded by recent efforts to defund HIV education by conservative members of congress (SIECUS, 2024a, p. 27).

Chapter III: Methods and Procedures

Scope

This study evaluates the association between sex education opt-in parental permission and HIV incidence in young people ages 13-24. I used legal epidemiology methods as outlined by Wagenaar et al. in the second edition of *Legal Epidemiology Theory and Methods* and Burris et al., in the second edition of *The New Public Health Law*. Adopting legal mapping methods and observational study methods, a study protocol was created to perform a cross-sectional analysis of a legal intervention. In this analysis framework, statutes are analyzed at a specific time to see how the law applies to public health topics and how interventions effect and influence health outcomes (Wagenaar, 2023, p. 10). These methods help determine if a legal intervention can lead to positive or negative health outcomes (Anderson & Burris, 2014). Comparison states are used as synthetic controls for analysis. This creates a control group that is demographically similar as the exposed group (Burris, 2023, p. 289). In this analysis, I selected comparison states based on U.S. Census data on state population size. For purposes of this study, I compared policies active between 2020-2022. The exposure variable of interest is state laws that govern sexual health education programs and include an opt-in parental permission mandate. The outcome variable of interest is HIV incidence among young people ages 13-24.

State Selection

This study collected legislation from eight states. I identified states using two state-level characteristics within the legislation. First, parental permission policies for participation in sexual health education programs were identified. This includes opt-in states (parents must authorize participation) and opt-out states (students participate unless parents opt their child out from program participation). Second, the search matched opt-in and opt-out states by population sizes in the same geographical region. This study analyzes policies that govern sexual health education in 8 states (effective 2020-2022), including four opt in states (Mississippi, Nevada, North Carolina and Utah) and four opt out states (Georgia, New Mexico, Oregon and West Virginia).

The Guttmacher Institute's website served as a primary source for state identification (see Table 2 for selected states). Policy surveillance charts published by the Guttmacher Institute revealed legal trends in sex education that could be potential risk-factors for increased HIV

incidence in young people ages 13-24. This includes states with opt-in policies. Using this policy surveillance published by the Guttmacher Institute as reference and validated by SIECUS, opt-in states were identified as Mississippi, Nevada, North Carolina, Texas and Utah (Guttmacher Institute, 2023; SIECUS, 2018).

Inclusion criteria for opt-in states:

- State mandates sex education.
- State mandates opt-in parental permission.

Exclusion criteria included:

- not mandating sex education,
- being a U.S. territory,
- not having legal or epidemiological data to report.

Based on these criteria, the following states were selected: Mississippi, Nevada, North Carolina and Utah.

The next step was to identify states for the comparison group. 4 states were selected using the following inclusion/exclusion criteria:

Inclusion criteria for opt-out states:

- mandate sex education,
- mandating an opt-out parental consent policy,
- be in the same CDC recognized geographic location as the at-risk state, and have a population size that is similar in size to the at-risk state.

Exclusion criteria:

- not having a sex education mandate in the state,
- being a state outside of the CDC recognized geographic region,
- being a U.S. territory,
- population size is too large or too small compared to at-risk state using U.S. Census Bureau Data for 2020,
- not having legal or epidemiological data to report.

State matching at the geographic-level was determined referencing the CDC's definitions on geographic division and regions (Centers for Disease Control and Prevention, 2024f). The CDC divides the United States into 4 geographic regions: Northeast, Midwest, South and West. A second level of matching was conducted. I used population sizes of opt-in states to select comparison opt-out states. Population size was retrieved from Decennial Census 2020 total population dataset published by the United States Census Bureau (U.S. Census Bureau, 2020). States were selected within southern and western region states. Based off census data the following states with opt-out policies were selected: New Mexico and Oregon for the West region and Georgia and West Virginia for the South region (see Table 2 for opt-in/opt-out population comparison). All states in this used in this analysis mandate sex education to assure that there was a law assess.

Opt-In State	Region	Total Population Size	Population Ages 10-24	Comparison State (Opt-Out)	Comparison State Population Size	Population Ages 10-24
NV	West	3,104,614	588,822	**NM**	2,117,522	431,869
UT	West	3,271,616	855,591	**OR**	4,237,256	767,344
MS	South	2,961,279	630,916	**WV**	1,793,716	328,904
NC	South	10,439,388	2,121,095	**GA**	10,711,908	2,275,555

Table 2 U.S. Census Bureau Decennial Data (2020) with population estimates of ages 10-24 in opt-in states (2022) and comparison (opt-out) states. Comparison states are within CDC identified geographic regions (Centers for Disease Control and Prevention, 2024f; U.S. Census Bureau, 2020, 2022).

Data collection:

I conducted structured searches for legislation that established and informed sexual health education within K-12 grades through legal databases, including Westlaw Campus and the National Conference of State Legislatures (NCSL). I used Boolean search terms for each state to obtain laws from both databases. The date parameters were set to find laws between 01/01/2020 to 12/31/2022 in the advanced search to capture all sex and health education laws that were effective between these dates. I used the following Boolean search terms to obtain data: "sex education" "health education" "HIV education" "human immunodeficiency virus education" "AIDS education." I validated all laws against *The SIECUS State Profiles 2019/2020* data sets

published by SIECUS (2024c). This step was performed as a self-check and to assure the reproducibility of the search protocol.

Question #	Question	Possible Answer	Description	Question Type
Question 1	Is the state Opt-in?	Yes No	To determine the if this is at risk state or comparison state.	Binary-mutually exclusive
Question 2	Is HIV education included?	Yes No	Establishes if HIV/AIDS education is a policy priority.	Binary-mutually exclusive
Question 3	Is primary prevention like condom use or PrEP in the curriculum?	Yes No	Teaches healthy sexual behaviors in primary prevention and where to obtain barrier devices and PrEP.	Binary-mutually exclusive
Question 4	What feature dominates the policy?	AOUM= abstinence only until marriage SRA= sexual risk avoidance TPPP= teen pregnancy prevention program HIV= HIV/AIDS prevention GIO= gender identity and orientation PREP= personal responsibility education program Other= other	Determines main features of the law, and if comprehensive sex education is being offered	Categorical- check all that apply
Question 5	Authority to finalize	State County School District School	Establishes preemption. If the state sets the floor, this can cause greater variance	Categorical- check all identify all that apply

			within the state on what is taught.	

Table 3. Code Book used for analysis with description.

Data Analysis

Laws from the eight states were collected and coded in MonQcle. Deductive qualitative analysis using the codes from Table 3. After initial coding, the datasets were coded two more times to identify and resolve discrepancies, reduce error and assure reliability. Looking through the data in MonQcle, states were sorted into "opt-in" states and "opt-out" states. From this, trends within the datasets were identified, using the coding questions for guidance. The data was arranged into three domains: condom and PrEP education, main features of the sex education curriculum and authority to finalize. Condom and PrEP education were assessed to analyze whether the content connected young people to primary prevention education and resources. Main features such as AOUM, sexual risk avoidance, teen pregnancy prevention, HIV/AIDS prevention, gender identity and orientation were assessed to see what priorities each state mandated in the curriculum. Finally, authority to finalize was assessed to ascertain if a standard state curriculum versus varied curricula would impact HIV incidence in the target population. All data is documented in table 4 (see Chapter IV: Results).

To identify associations between the laws and epidemiology data, population statistics were needed to calculate the odds ratio for HIV incidence in young people that live in opt-in parental permission states. Population demography was retrieved from the American Community Survey for 2022 (U.S. Census Bureau, 2022). Age groups for the target population were stratified by the survey in the following strata: 10-14 years old, 15-19 years old and 20-24 years old (see appendix 1). These ages groups were used to capture both young people in school and those recently out of school. The 20-24 years old strata reflect the efficacy of the sex education program once the young adult is potentially out of the structured environment of a public school and parental household. All strata were added to calculate the total population of the target population in analyzed states.

The odds ratio (OR) was calculated using this population total HIV incidence case numbers from AIDSVu datasets. HIV.info.NIH.gov specifies that HIV incidence in young people <13 years of age are attributed to vertical transmission from mother to child (HIVinfo.NIH.gov,

2024), and have been considered negligible for the odds ratio calculations. Table 5 shows OR calculations (see Chapter IV: Results).

Chapter IV: Results

Listed below in table 3 shows the sexual health education laws that were identified during data collection. Except for Nevada, all laws were retrieved through WestLaw Campus or NCSL. The state of Nevada did not produce any results in WestLaw Campus or NCSL search engines. NRS 389.036 was identified as the sex education law for Nevada. It was retrieved from the state legislature's website: https://www.leg.state.nv.us/. All laws were in effect between the years 2020-2022.

Opt-In State	Law	Effective Date
Mississippi	§ 37-13-171. Abstinence-only or abstinence-plus education	July 1, 2021
Nevada	NRS 389.036	June 6, 2021
North Carolina	N.C. Gen. Stat. § 115C-81.30 Reproductive health and safety education provided by local school administrative unit	July 20, 2017
Utah	• U.C.A. 1953 § 53G-10-403 • § 53G-10-403. Required parental consent for sex education instruction	May 14, 2019
Opt-Out State	**Law**	**Effective Date**
Georgia	Ga Comp. R. & Regs. 160-4-2-.12 Comprehensive Health and Physical Education Program Plan.	Nov. 24, 2021
New Mexico	• 6.12.2.10 Human Immunodeficiency Virus (HIV), NM ADC 6.12.2.10 • N.M. Admin. Code § 6.29.6.10 – Content Standards with Benchmarks and Performance Health Education, Grades 9-12 • 6.29.6.11 Sexuality Performance Standards Exemption	• November 15, 2005 • June 30, 2009 • June 30, 2009
Oregon	OAR 581-022-2050 Human Sexuality Education	July 5, 2017
West Virginia	• W. Va. Code St. R. § 126-51-8 § 126-51-8. Disease Prevention Measure Through Practice and Education. • W. Va. Code, § 18-2-9 § 18-2-9. Required courses of instruction	July 9, 2021

Table 4. Sex Health Education Laws retrieved during data collection

All 8 states in this analysis mandate sex education. Additionally, all eight states mandate HIV/AIDS education as part of sexual health education. However, this is not reflective of all U.S. states, 30 states plus D.C. mandate HIV education content be part of sex education (Guttmacher Institute, 2023). Table 5 shows a synopsis of qualitative data from the datasets and the comparative incidence rates (IR).

Opt-in	Are condoms mentioned in the curriculum?	What is the dominant feature?	Who sets the curriculum?	Population (ages 10-24)	HIV incidence*	HIV Incidence Rate‡
Mississippi	Yes	AOUM, SRA	State	630,916	125	25
Nevada	No	HIV, OTHER	School District	588,822	86	18
North Carolina	Yes	AOUM, HIV, OTHER	School District	2,121,095	306	18
Utah	No	AOUM	Not Specified	855,591	31	5
Opt-out	**Are condoms mentioned in the curriculum?**	**What is the dominant feature?**	**Who sets the curriculum?**	**Population (ages 10-24)**	**HIV incidence***	**HIV Incidence Rate‡**
Georgia	No	AOUM, TPPP, HIV	School District	2,275,555	593	32
New Mexico	Yes	AOUM, SRA, TPPP, HIV, OTHER	School District	431,869	14	4
Oregon	Yes	AOUM, HIV, GIO, OTHER	State	767,344	33	5
West Virginia	No	HIV	State	328,904	10	4

Table 5. Synopsis table of findings with HIV incidence and HIV incidence rate for ages 13-24. 2022. *HIV incidence is number of new cases in 2022. ‡Incidence rates are per 100,000. All HIV data retrieved from: https://aidsvu.org/resources/#/datasets (AIDSVu, 2024)

Table 6 shows the breakdown of states that mention the use of condoms as primary prevention against HIV, STI and pregnancy. PrEP was not mentioned explicitly by any state;

however, New Mexico does emphasize community involvement in NM ADC 6.12.2.10 and building "healthy communities" in NM ADC 6.29.6.10. Here, I was looking to see what, if any mention of primary prevention was present and how participants were instructed on use, resources and access. 4 states mentioned the use of condoms within their sex education statutes. Mississippi and North Carolina mention that "failure rates" must be emphasized *if* condoms are to be taught. North Carolina also prohibits the distribution of condoms and emphasizes "heterosexual relationships" as a primary prevention strategy for HIV (North Carolina General Assembly, 2017). This type of language embedded in the statue can create stigma towards LGBTQIA+ youths and propagate bias and discrimination against this sub-population. This can also create additional stigma when members of this sub-population, or members of other marginalized communities, seek out additional information on HIV testing, PrEP access or seek universal support from educators, parents, and peers.

Table 6 also shows the states that include or prioritize "abstinence only" sex education content. 3 of the 4 opt-in states favor abstinence only as a main feature of how the sex education curriculum is structured when compared to opt-out states. Nevada being the only exception (Nevada Legislature, 2021). While Nevada legislation requires instruction on other topics (e.g., HIV, sexual reproduction, and sexual responsibility), it does not make specific mention of abstinence as a requirement. Legislation in Utah specifies HIV education and abstinence, but lacks further detail (Utah Code Annotated, 2019). Mississippi stresses abstinence throughout their state law. This is reflected in the title of MS ST § 37-13-171, "Abstinence- only or abstinence-plus education". This law states that the State Department of Health set the curriculum, and that abstinence is the only policy that is to be taught in all schools.

State	Opt-In or Opt-Out?	Condoms?	AOUM?
Mississippi	In	Yes	Yes
North Carolina	In	Yes	Yes
Utah	In	N/A	Yes
Georgia	Out	N/A	Yes
New Mexico	Out	Yes	Yes
Oregon	Out	Yes	Yes

Table 6. Curriculum content specified in state sex education laws.

In states that are opt-out, there are other features that are part of the curriculum in addition to abstinence. Georgia's "Rule 160-4-2-.12. Comprehensive Health and Physical Education

Program Plan" states that local committees will finalize the curriculum and can add community values to that curriculum as determined by a local committee. New Mexico and Oregon have sex education curricula that explicitly specify that education materials be "medically accurate" (New Mexico Administrative Code, 2009; Oregon Administrative Rules, 2017). New Mexico specifies the involvement of the community, cultural relevance of education material, use of condoms, as well as what resources are available to each local community.

Oregon includes definitions on what specific terms are to be included within the curriculum, which also includes gender expression and gender identity and periodic review for content to be compliant with evidence-based practices and recommendations. This data is seen in table 7. There are also mandates for local school boards to review for scientific accuracy two times per year. These two states can be considered to have comprehensive sex education standards (SIECUS, 2020a, 2020b). Both New Mexico and Oregon have lower HIV incidence within the target population which are reflected in table 5. West Virginia had 2 laws pertaining to sex education; one pertains to HIV education, while the other is on the procedure for parents to opt their children out of HIV education classes. West Virginia has a lower HIV incidence compared to the other states in this analysis, this may be due to confounding factors. Table 8 also provides other curriculum features that were identified during coding.

State	Opt-in or Opt-out?	Other
Nevada	In	Sexual Reproduction, Sexual Responsibility, Condom Failure
North Carolina	In	Condom Failure, Heterosexual Relationships
New Mexico	Out	Medically Accurate, Culturally Relevant, Community Involvement
Oregon	Out	Gender Identity and Orientation, Best Practices

Table 7. Other curriculum mandates

Curriculum content for opt-in states was set by the school board in 2 of 4 states and is presented in table 8. The state of Mississippi curriculum is set by the state Department of Health as stated in "§ 37-13-171 Abstinence-only or abstinence-plus education" for the entire state. Utah does not have a mandate or specification as to who sets the sex education in their schools (Utah Code Annotated, 2019). North Carolina and Nevada allow their school districts to set the curriculum for their students (Nevada Legislature, 2021; North Carolina General Assembly, 2017). For opt-in states, North Carolina and Nevada have the same incidence rates (AIDSVu, 2024), but are still lower than Mississippi (see table 5).

Opt-In State	Who sets the curriculum?	Opt-Out State	Who sets the curriculum?
Mississippi	State	Georgia	School District
Nevada	School District	New Mexico	School District
North Carolina	School District	Oregon	State
Utah	Not specified	West Virginia	State

Table 8. Who set the curriculum in each state

Among opt-out states, Georgia and New Mexico allow for the school districts to set their own curriculum. Georgia also has language that "community values" can be added by local committee approval (Georgia Department of Education, 2021). The states of Oregon and West Virginia set the standard for what sex education is taught in schools (Oregon Administrative Rules, 2017; West Virginia Code, 2021). Out of these states, Georgia has the largest population of young people ages 10-24 (2,275,555 young people total). It also has the highest number of new case diagnoses of HIV (see table 5). No association between preemption and HIV incidence emerged through this analysis. Other confounding factors such as curriculum content and the medical accuracy of disseminated material may establish stronger relationships.

	HIV positive	HIV negative	Total
Exposed (opt-in)	548	4,195,876	419,6424
Unexposed (opt-out)	650	3,803,022	380,3672
			8,000,096
odds ratio	0.76	95% CI: [0.68, 0.86]	

Table 9. Odds Ratio. OR= 0.76: 95% CI [0.68, 0.86]. HIV incidence was obtained from 2022 AIDSVu datasets (AIDSVu, 2024).

The odds ratio was calculated to be 0.76, 95% CI [0.68, 0.86] for opt-in states compared to opt-out states (control group). The OR value indicates that there is a weak association between states with opt-in parental permission for sex education and HIV incidence. Although this is statistically significant this is an unexpected result when looking at incidence cases and incidence rates that are detailed in table 5. Mississippi, Nevada and North Carolina have high IR

values of 25, 18 and 18 per 100,000 people respectively. While opt-out states like Oregon and New Mexico have IR values of 5 and 4 per 100,000 people respectively.

Chapter V: Discussion

Interpretation

Generally, there is less literature on the impacts of opt-in sex education policy than there is for opt-out policy (Bayer, 2024). This may be due to opt-in policy not capturing as many students that are enrolled in public school. Within this context, the default option is not the healthy option. Applying Behavioral Law Economic (BLE) theory, this means that there is no longer an unofficial mandate, and that the status quo cannot be maintained in this environment. However, due to the lack of longitudinal evidence on the long-term impacts of opt-in policy, it is difficult to determine if this is a sustainable approach to reducing HIV incidence. According to BLE theory, this may not be the case.

This study found that states with an opt-in parental permission policy have an OR value of 0.76, 95% CI [0.68, 0.86] when compared to opt-in states. This indicates that the odds of having a new HIV diagnosis are lower in opt-in states than in opt-out states in the target population. The OR value is an unexpected result, as the IR is higher in opt-in states than in opt-out states and may be attributed to confounding factors. This includes factors such as small sample size and the types of laws that are being implemented in larger states that have historically have higher HIV incidence and prevalence rates. As a cross-sectional study, there are policy elements that may not be reflected in epidemiological data, such as primary prevention policy in response to increasing HIV incidence and prevalence. A longitudinal study that looks at HIV incidence before and after policy implementation would provide better data on the association between policy and HIV incidence data.

Expanding this study to a larger, fifty states analysis may also provide better observational data since this is an eight-state analysis, making it a small sample size. A larger (50 state) analysis may reveal a higher OR for opt-in states due to reductions in sampling error. The data in this set may also be skewed due to Georgia, an opt-out state, having an IR of 32 new HIV diagnoses per 100,000 people. This was inconsistent with other opt-out states which had an IR of 4 or 5 new HIV cases per 100,000 people. Due to this small sample size, there is an opportunity here to increase the sample size, through a 50 states analysis, and see if the results are any more or less consistent with expectations. Other confounding factors that may affect the data are discussed in the Limitations section.

States with opt-in education policy also tend to prioritize abstinence within the curriculum. Curricula that stress abstinence only have not been linked to decreases in HIV incidence amongst younger populations. This is primarily due abstinence only sex education programs not actually delaying or preventing young people from having sex (Cross, 2021; Kaiser Family Foundation, 2018; Shatz, 2008). When abstinence only programs are taught in isolation, they may not teach the most medically accurate information or leave out important topics that can contribute to a holistic or comprehensive sex and HIV education program. Mississippi is the best example of this because the statute not only mandates abstinence only instruction but prohibits any other health behavior content from being taught in the classroom.

The lack of comprehensive sex and HIV education , when compounded by digital censorship laws that seek to limit the kind of information that young people can access online, may result in creating barriers to HIV prevention access and knowledge gaps (SIECUS, 2024a). States like North Carolina prioritize teaching abstinence only until marriage while complementing with misinformation in curriculum content. An example is in N.C. Gen. Stat. § 115C-81.30, which in addition to teaching abstinence only teaches that heterosexual relationships are a prevention strategy for HIV. This is not only stigmatizing, but inaccurate, because it does not include education material on other routes of HIV transmission through needle sharing, heterosexual relationships, vertical transmission from mother to fetus etc. Another example of misinformation being spread through sex education content is North Carolina and Mississippi having language in their statutes that either prohibits the distribution of condoms (North Carolina General Assembly, 2017) or only permits the discussion of condoms within the context of failure rates and not success rates (Annotated Mississippi Code, 2021; North Carolina General Assembly, 2017).

Teaching about the failure rate of condoms and the not the efficacy in primary prevention does not comply with evidence-based practices and consequently impacts the number of young people who have access to medically accurate knowledge and resources. This is reflected epidemiologically by rises to disease incidence and prevalence. Rising trends in overall STI incidence, like HIV are an example of this (Kaiser Family Foundation, 2018). Mississippi and North Carolina have language in their statutes that condoms are only to be taught in a way to convey the failure of condom usage and not the efficacy of this evidence-based practice. Epidemiological data reflects that Mississippi has an HIV IR of 25 per 100, 000 people, and

North Carolina has an IR of 18 per 100,000 people, which is higher than the national average of 11.3 per 100,000 people across all age groups (HIV.gov, 2024). Condom use is a healthy sexual behavior that is recommended by the CDC and WHO. It is a proven method that can lower the spread of HIV in unaffected individuals and is recognized as an evidenced based practice (Centers for Disease Control and Prevention, 2024h; HIVInfo.NIH.gov, 2023; World Health Organization, 2024a). Focusing more on the efficacy of condom use instead of the failures would benefit the target population and can lead towards lower HIV transmission rates and better health outcomes.

Long term, the lack of medically accurate information will lead to the lack of healthy sexual behaviors. This will contribute to the overall prevalence of HIV within the general population. This will then contribute to higher long-term health care expenditures and the need to maintain connections to the healthcare continuum and ART. For some sub-populations, access to the HIV healthcare continuum may be difficult due to social or commercial determinants of health. In an economic simulation study, it was estimated that individuals who are diagnosed with HIV before age 25, will receive ART for approximately 39.62 years live an additional 48.09 years, live up to 66.67 years and have an average undiscounted lifetime healthcare expenditure of $1, 079,999 (Bingham et al., 2021). With proper primary prevention, this may be a healthcare expenditure that can be avoided altogether and lower overall costs to the community.

In an opt-out policy, more young people are likely to be captured by the systems that are set up in public schools (SIECUS, 2018). This maintains the status quo and assures that more young people are exposed to topics covered in sex education content. 3 of the 4 opt-out states that were analyzed had lower HIV incidence rates than opt-in states. Georgia was the outlier, having the highest HIV incidence rate (32 per 100,000 people).

Opt-out policy allows parents to exercise their 1st and 14th amendment rights to family autonomy. Under the guidance of these amendments, parents are allowed to exempt their child from sex education activities. By setting opt-out as the default, it is setting the healthy choice as the default. Behavioral Law Economic Theory states that when an individual is offered an option, the person will tend to select the default, because it operates as a type of mandate (Bubb & & Pildes, 2014). Offering the choice to “opt-out” allows those that are extremely opposed to the default to exercise their opinion and opposition, while still allowing for the default or

mandate to capture majority of the population. In general, this allows for more participants, since most parents with a strong objection are most likely to deny participation, by "opting out," therefore allowing these parents to exercise their parental choice (Bayer, 2024).

Opt-in legislation defaults to the parent. In some cases, the parent may not have the resources to offer comprehensive sex education and changing the default may create a knowledge gap for the young person. In an opt-out scenario parents with strong objections do have alternative options available without impacting the status quo. The OR shows that opt-in policies can be harmful, and when combined with other legal barriers, may not expose the young adult to materials and resources that could benefit them into adulthood (SIECUS, 2018).

Curriculum setting was also assessed, and for both opt-in states and opt-out states, there does not appear to be a clear association between the state setting the curriculum or the local jurisdiction. New Mexico has language pertaining to dissemination of material related to primary prevention resources and access in order to build "healthy communities". The state gives the local communities authority to tailor the material to meet the needs of their communities, and get to better health outcomes (New Mexico Administrative Code, 2009). Georgia's Rule 160-4-2-.12 does allow for the integration of "community values" but does not mandate it to be medically accurate (Georgia Department of Education, 2021). The absence of an association between who has the final authority to finalize may indicate that it does not matter who finalizes the material, as long as the disseminated information is medically accurate. A better determinant of HIV impacts may be more dependent on state mandated sex education content that is not evidenced-based. Literature review shows that AOUM programs have been assessed for associations (Boyer, 2018; Kaiser Family Foundation, 2018; Society for Adolescent & Medicine, 2017), however, other programs and practices should be evaluated as well.

Limitations

Limiting factors of this analysis include the size of the study and other laws that may be used to create stigma towards the target population. This study is a small sample size consisting of an 8-state analysis of sex education policy of states in the southern and western regions of the United States. Other policy driven limitations include laws that may work in conjunction with sex education policies such as anti-LGBTQIA+ laws, or laws restricting abortion access and reproductive healthcare, as well as legal barriers due to digital censorship laws which can limit

the type of information a young adult may intake (SIECUS, 2024a). The social stigma surrounding HIV/AIDS remains a confounding factor and may contribute towards fearmongering tactics used to influence policymakers, parents and educators.

Other confounders include the demographic makeup of these regions and states and young people that are not enrolled in public school, homeschooled, or have dropped out of school altogether are less likely to receive sex education in a classroom context. The concentration of historically marginalized communities within some of the evaluated states may have impacts on HIV case incidence for 13-24 years olds due to health equity issues not covered by this assessment. These factors also contribute to the metropolitan statistical areas that are affected by HIV and contribute to more than half of statistically significant new cases. The Atlanta metropolitan area is part of this (which includes Cobb County, Dekalb County, Fulton County and Gwinnett County) and the whole state of Mississippi (Centers for Disease Control and Prevention, 2024e).

Future Work

For the future, conducting a larger scale 50 state analysis, which would increase the sample size and reveal a more comprehensive cross-sectional analysis of how the laws are affecting HIV incidence and looking at what other laws and policies may be driving the implementation of comprehensive sex education or creating barriers. Looking at evidence-based practices, there is an opportunity here to assess the validity of what content components are associated with better health outcomes, other than abstinence only programs. Creating a longitudinal study can also assess if healthy behaviors taught as a young adult are also associated with better HIV health outcomes in older populations. Additionally stratifying the young adult target population further to see how these laws may create barriers to historically marginalized communities like communities of color and LGBTQIA+ youths.

Conclusion

Prevention strategies to minimize the transmission of the disease, especially amongst our young people, need to be a public health priority. The World Health Organization has stated that HIV continues to be a public health issue as transmission rates continue to grow globally (World Health Organization, 2024b). The United States has accomplished lowering overall incidence,

however, it fails to keep up with EHE goals (Centers for Disease Control and Prevention, 2024d). In order to keep up with EHE goals, there needs to be continued investment into communities and investment into evidenced based prevention strategies.

Healthy People 2030 has identified getting sex education material to young people under 18 as a critical public health objective. Getting comprehensive sex education to young people can help in reducing incidence amongst younger populations. Excluding young people through opt-in legislation does more harm and creates barriers for primary prevention strategies to properly be implemented. Opt-out parental permission systems of mandatory sex education capture a larger portion of the target population in the public-school setting. With comprehensive and medically accurate information being disseminated, this kind of system can reach the largest number of individuals who will be prepared and close the knowledge gap on healthy sexual behaviors once they leave school. Opt-out still allows the parent to retain family autonomy, by capturing a greater proportion of the population, while not infringing upon family autonomy of other parents.

Opt-in policies are working against the best interest of the young adult. Although the OR value of 0.76 may be skewed due to outliers in this small sample size, changing the default option to opt-in instead of opt-out has given some parents the right to dictate to the school district and the state what their individual wants and needs are, instead of benefitting the greater population. New outcry to defund HIV education programs also work against the health outcomes of the younger generation as this defunding will result in fewer persons learning healthy sexual behaviors and create knowledge gaps. Organization likes Parents Defending Education, Stop CSE and the Alliance Defending Freedom post blogs and offer toolkits on how to advocate for the repeal of comprehensive sex education (Alliance Defending Freedom, 2024b; Parents Defending Education, 2024; Stop CSE, 2024).

It is important to note that HIV prevention is not simply dependent on sex education and the dissemination of comprehensive sex education materials. EHE lists 4 pillars to get to lower HIV incidence rates. There are other factors that contribute to health outcomes from policy, such as legislative or social factors that fall within these four pillars. This may be creating barriers to testing, access to PrEP, or barriers to ART. Intersectional collaboration with policy, schools and communities can create better, and stronger HIV reduction strategies.

The challenge to policymakers is balancing the interests of the population at large and the concerns of the individual parent. Eliminating opt-in legislation and maintaining the status quo with opt-in policies will still capture a greater majority of young people enrolled in public schools. Policymakers need to create a national standard that assures medically accurate and comprehensive sex education material to get to EHE goals and lower overall HIV incidence within the population. Having one like what is proposed in REAHYA will assure that no matter what state and what school district a young person is reared in, they will all receive comprehensive and medically accurate sex education. Having a national standard can lead to better primary prevention and overall better health outcomes by lowering overall HIV incidence.

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Appendices

State	10-14 y.o	15-19 y.o.	20-24 y.o.	Total
MS	205,864	215,884	209,168	630,916
NV	200,260	193,726	194,836	588,822
NC	678,318	704,046	738,731	2,121,095
UT	278,120	277,956	299,515	855,591
GA	741,043	762,949	771,563	2,275,555
NM	141,184	144,717	145,968	431,869
OR	250,140	257,747	259,457	767,344
WV	102,819	111,760	114,325	328,904
Total				8,000,096

App 1. Population of young people in analyzed states. Population data retrieved from 2022 American Community Survey (age and sex S0101) (U.S. Census Bureau, 2022).

State	Population Total ages 10-24	New HIV Cases Diagnosed
MS	630,916	125
NV	588,822	86
NC	2,121,095	306
UT	855,591	31
GA	2,275,555	593
NM	431,869	14
OR	767,344	33
WV	328,904	10

App 2. Population of 10-24 year olds in each state. Age <10 is assumed to be attributed to vertical transmission and considered negligible for these calculations (HIVinfo.NIH.gov, 2024).