Distribution Agreement

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

_____ _____

Kate Russell Date

Religiosity and the Adoption of Sex Education Policies by School Boards

By

Kate Russell
Master of Science in Public Health

Health Policy and Management

_____

Dr. Sarah Blake
Committee Chair

_____

Dr. Laurie Gaydos
Committee Member

_____

Professor Peter Joski
Committee Member

_____

Dr. Silke von Esenwein
Committee Member

Religiosity and the Adoption of Sex Education Policies by School Boards

By

Kate Russell

B.S., Baylor University, 2017

Thesis Committee Chair: Sarah Blake, PhD, MA

An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Science in Public Health
in Health Policy and Management
2019

Abstract

Religiosity and the Adoption of Sex Education Policies by School Boards
By Kate Russell

Rates of sexually transmitted diseases (STDs) have reached historic highs among US youth, who account for nearly half of the 20.3 million cases diagnosed annually (CDC, 2018). Additionally, teen pregnancy rates continue to remain much higher than other industrialized nations (Sedgh et al., 2015). These problems lead to health risks such as pelvic inflammatory disease (PID) and low birthweight infants, and together cost more than $15 billion annually (Chession et al., 2004; Hoffman, 2006; Chen et al., 2007). Comprehensive sex education (CSE) has been proven to be effective in reducing risky sexual behavior (Boonstra et al., 2014). Yet, the percentage of schools offering formal sex education has declined by 20% across the nation since 2000 even when federal funding for CSE has increased (Lindberg et al., 2016). The literature does not address the factors that influence CSE policy adoption at the local level nationwide. Thus, characterization of factors that influence how school boards vote for sex education policies is needed to help public health advocates create better interventions and educational strategies that may help increase CSE adoption nationally.

Data from the 2012 and 2016 School Health Policies and Practices Study (SHPPS) collected by the Centers for Disease Control and Prevention (CDC) are combined with data containing religiosity measures from the 2014 Pew Religious Landscape study and demographic data from the US Census. Logistic regressions found that the probability that school districts adopt CSE policies decrease with increasing religiosity of the state. Further analyses demonstrated the importance of parental input in sex education policy, and disproportionately high teen birth rates also attenuated the relationship between CSE and religiosity.

This study reveals two important factors influencing the adoption of CSE policies locally in the US: religiosity and parents. School boards react to negative community feedback by allowing parents to intervene on their children's sex education. Public health advocates should tailor interventions that engage religious leaders, parents, and school boards in the community to promote awareness of the benefits of CSE and adoption of comprehensive curricula. The goal is for this information to help increase the adoption of CSE nationally as a tool in reducing extremely high STD and teen pregnancy rates among American youth.

Religiosity and the Adoption of Sex Education Policies by School Boards

By

Kate Russell

B.S., Baylor University, 2017

Thesis Committee Chair: Sarah Blake, PhD, MA

A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Science in Public Health
in Health Policy and Management
2019

Acknowledgements

I would like to thank my thesis committee chair, Dr. Sarah Blake, for her constant support and inspiration throughout my time at Rollins and her guidance and encouragement throughout the thesis process. I would also like to thank Dr. Silke von Esenwein for coaching me through every iteration of my literature reviews and presentations, and for always providing invaluable feedback. I would like to thank Professor Peter Joski, whose door was always open for my numerous questions. I would also like to thank Dr. Laurie Gaydos, who graciously provided feedback and talked through various points of the thesis with me.

I would also like to thank my incredible classmates, Nolan, Lily, and Siyu for helping and encouraging me throughout the program and for their wonderful friendship.

Finally, I would like to thank my parents, whose unfailing support, encouragement, and friendship are with me always.

Kate Russell

Table of Contents

Chapter I: Introduction

Sexually transmitted disease (STD) rates have reached historic highs among US youth, while teen pregnancy continues to remain higher than other industrialized nations, leading to poor health outcomes and a high financial burden for those affected and taxpayers at large (Chession et al., 2004; Hoffman, 2006; Chen et al., 2007; CDC, 2018). Comprehensive sex education (CSE) is an effective public health intervention that delays the initiation of sex, reduces sexual risk-taking, and increases contraceptive use among youth (Boonstra, 2014); yet, the percentage of schools requiring sex education in the US has declined since 2000, particularly in rural and southern areas (Guttmacher Institute, 2017). The literature does not address why some school districts, despite similarities in geography and urbanicity, decide to implement CSE while others do not. Thus, identifying factors that influence how school boards vote to implement sex education policies is needed to help advocates better tailor their public health messaging to increase adoption of CSE.

This thesis seeks to investigate factors influencing CSE policy adoption among US school districts. Education policy decisions such as these are made by local school boards, which are elected by voters in the school district community. Religiosity has long been associated with political ideology and voting behavior (Esmer & Pettersson, 2007). Thus, this thesis seeks to answer a main research question: Does religiosity of a state influence the number of school districts within that state that have adopted a CSE policy? We hypothesize that more religious communities will be more likely to vote conservatively, and thus more likely to elect conservative school board members, who may be more likely to vote against a CSE policy. Additionally, we hypothesize that

disproportionately high STD and teen birth rates will act as a moderator, attenuating the effect of a highly religious community on CSE policy adoption.

Data from the Centers for Disease Control and Prevention (CDC)'s 2012 and 2016 School Health Policies and Practices Study (SHPPS) provides data on school district policies regarding CSE, parental involvement requirements, and urbanicity of the district's schools (CDC, 2017). This will be paired with the 2014 Pew Religious Landscape Study data, which provides detailed information about a state community's religiosity levels, religious affiliations, and political ideology (Pew Research Center, 2018). 2012 and 2016 state demographic information will be gathered from the U.S. Census. State teen birth rates, chlamydia rates, and gonorrhea rates are taken from the CDC, and the Sexuality Information and Education Council of the United States (SIECUS) provides the number of federal dollars received by each state for sex education (CDC, 2017; SIECUS, 2018). State level percentages are paired with each dichotomous district-level observation showing CSE policy adoption, and logistic regressions are run using year fixed effects.

In the face of skyrocketing STD rates and high teen pregnancy rates compared to other developed nations among young adults in the US, along with a decline in the percentage of schools teaching any form of sex education, immediate action must be taken to reduce risky sexual behaviors that lead to STDs and unplanned pregnancy. The objective of this study is to more fully understand what drives sex education policy adoption at the local level, which the current literature has failed to investigate. Results of this study may be valuable to public health advocates looking to target educational interventions for religious communities to foster a better understanding of the benefits of

CSE. The ultimate goal is to increase implementation of CSE across the nation and attenuate the rising rates of STDs and continued high rates of teen pregnancy that threaten our youth.

Chapter II: Literature Review

STD rates have reached historic highs among adolescents (CDC, 2018), while teen pregnancy rates continue to be much higher than other industrialized nations, particularly in southern US states (Sedgh et al., 2015). STDs, particularly when left untreated, can produce adverse health outcomes for teens and create a financial burden on the health care system (Chesson et al., 2004; Hoffman, 2006). Teen pregnancy can lead to poor health outcomes for the mother and child, and increased financial burden on the mother, her family, and society (Chen et al., 2007). An increasingly relevant public health intervention is comprehensive sex education (CSE), which is effective in delaying initiation of sex, reducing sexual risk-taking, and increasing contraceptive use among youth (Boonstra, 2014; Chin et al., 2012; Lindberg & Maddow-Zimet, 2012; Kohler et al., 2008; Kirby, 2008; Underhill, Operario, and Montgomery, 2007); yet, the percentage of schools requiring sex education of any kind in the US has been declining since 2000, particularly in rural, southern areas (Guttmacher Institute, 2017). The literature does not address why some school districts, despite similarities in geography and urbanicity, decide to implement this policy while others do not.

STDs: Defining the Problem

In August of 2018, the CDC released shocking preliminary data showing exponential growth in rates of STDs over the past four years. 20.3 million cases of chlamydia, gonorrhea, and syphilis were reported in 2017 alone, representing a 31% increase since 2013. Gonorrhea and syphilis cases, STDs facing antibiotic resistance and

higher congenital rates respectively, increased by 67% and 76% since 2013. Teen and young adult women ages 15 to 24 accounted for nearly half of chlamydia cases, the most commonly reported STD (CDC, 2018). In fact, Americans of both genders aged 15 to 24 make up only 27% of the sexually active population nationally, yet they account for half of the 20.3 million newly diagnosed STDs each year (CDC, 2013).

The two most common STDs among young people are gonorrhea and chlamydia: teens and young adults ages 15 to 24 account for 70% and 63% of cases, respectively (CDC, 2013). Those between the ages of 13 and 24 account for 26% of new HIV cases as well, with young gay and bisexual men in that age group accounting for 19% of new cases overall (CDC, 2013). One of the most salient problems associated with this rapid increase in cases is that individuals who have contracted chlamydia and gonorrhea are often asymptomatic. This fact, along with the decreased likelihood that young people will be tested for STDs as compared to older individuals, leads to many cases going undiagnosed (CDC, 2015). This may result in further spread of these diseases and may lead to long-term complications such as infertility in women (CDC, 2015).

STD rates are highest in southern states and vary by race/ethnicity. In southern states such as Louisiana, Arkansas, Alabama, and Georgia, between 2300 and over 2900 cases of chlamydia per 100,000 residents aged 13 to 24 were reported in 2015. Although rates are still high in northern states such as Massachusetts, Maine, New Hampshire, and Vermont, they report less than half the rates of southern states: between 980 and 1350 cases per 100,000 residents aged 13 to 24 (CDC, 2015). Among the same age group, far more African-American males were diagnosed with HIV in 2015 compared to Hispanic or white males (1,327 cases) (CDC, 2015). This is similar for rates of chlamydia in 13 to

24-year-olds: African-American males and females had an average rate of 3,968 cases per 100,000 people in 2015, while whites had a rate of 844 per 100,000 people (CDC, 2015). Additionally, the US reports far higher teen STD rates than other developed countries. For example, when compared with the Netherlands, thirty-three times as many US teens contract gonorrhea and nineteen times as many US teens contract chlamydia (Feijoo, 2009). Teens and young adults are especially vulnerable to STDs, and clear disparities exist depending on geography and race (CDC, 2013; CDC, 2015). This age group is specifically targeted for sex education interventions in schools, and teens living in the south are less likely to be receiving formal sex education, reflecting the disparities in STD rates (Lindberg et al., 2016).

STDs: The Consequences

STDs are responsible for a range of long-term health consequences. One is cancer: two types of human papillomavirus (HPV) account for 70% of cervical cancers, and HPV has been linked to cancers of the anus, vulva, vagina, and penis and a number of oral cancers (WHO, 2016). Pelvic inflammatory disease (PID) is an infection of the upper genital tract that may result from infection with gonorrhea or chlamydia if left untreated. Biological differences mean young women are at an especially higher risk of contracting cervical infections as compared to older women (National Academy of Sciences, 1997). Teen-aged girls have a ten-fold higher risk of developing a PID and its associated complications over young adult women (Browner-Elhanan & Coupey, 1999). Approximately one-fourth of women with PID will experience long-term effects that may include ectopic pregnancy, tubal-factor infertility, chronic pelvic pain, and/or pain during intercourse (National Academy of Sciences, 1997). Notably, fallopian tube damages

caused by PID accounts for 15% of infertility among American women. STDs are also associated with negative health outcomes for both pregnant women and their children (National Academy of Sciences, 1997).

Long-term health consequences of STDs are often unknown by the public. There are a few explanations for this, as well as why STDs often go undetected and untreated, leading to these long-term effects. Many STDs are asymptomatic, many of the major health consequences occur later in life and thus may not be recognized as linked to the original STD, and stigma associated with STDs often prevents fruitful discussion between clinicians and patients and the public at large (National Academy of Sciences, 1997).

Long-term and short-term health costs associated with treating STDs and their associated complications are high. In 2000, it was reported that the total cost of direct medical treatment for the nine million cases of eight common STDs in 15 to 24-year-olds was $6.5 billion (Chesson et al., 2004). As STD rates reach a record high among this age group, health care costs will likely rise as well (CDC, 2018).

Teen Pregnancy: Defining the Problem

The US continues to trail far behind other developed nations in reducing teen pregnancy. As compared to the US's average 57 teen pregnancies per 1,000, France, Denmark, Belgium, Spain, and Sweden all report rates in the 20's (Sedgh et al., 2015). There are also substantial differences between states. For example, northeastern states like Massachusetts, Vermont, and New Hampshire consistently have some of the lowest teen pregnancy rates (28-37 per 1,000 teens) while southern states such as Louisiana, Mississippi, Arkansas, and Texas have some of the highest (69-80 per 1,000 teens)

(Boonstra, 2014; Guttmacher, 2013). Although teen pregnancy rates have declined across all racial and ethnic groups, African-American and Hispanic teens are still twice as likely to become pregnant as their non-Hispanic white counterparts (Boonstra, 2014). The higher rates of teen pregnancy reported among minorities and among teens living in the southern US reflect locations where sex education is less likely to be comprehensive or taught at all (Lindberg et al., 2016).

Teen Pregnancy: The Consequences

Teen pregnancy results in poor health outcomes for both the child and mother. Even when controlling for confounding sociodemographic and lifestyle variables, babies born to teen mothers have a higher risk of pre-term birth, low birth weight, and mortality (Chen et al., 2007). Low birth weight babies have a higher risk for cognitive and physical development problems later in life, are more likely to suffer chronic diseases later, and grow to subnormal heights (Hack et al., 2002). They are less likely to graduate from high school and have lower IQ and academic achievement scores as compared to those born with normal birth weight (Hack et al., 2002). Increased risk of adverse birth outcomes is likely intrinsic to the age of the mother, perhaps caused by immaturity of the uterine lining or cervical blood supply, or growth of the mother herself, who may be competing with the fetus for nutrients (Chen et al., 2007). Teen mothers are also less likely to seek prenatal care services and more likely to be hospitalized during pregnancy than older mothers (those who are 20-24 years of age) (Gavin et al., 2005). Children born to teen mothers are also at an increased risk for hyperactivity, dyslexia, mental illness, cerebral palsy, blindness, and deafness (SCAA, 2008).

Children born to teen mothers perform lower on standardized tests, are less likely to complete high school, and are 50% more likely to repeat a grade as compared to children born to older parents (SCAA, 2008). As a result of lower educational attainment and greater risk for behavioral problems, it may be more difficult for these children to obtain higher education and find well-paying jobs in the future, increasing the likelihood that they will become unemployed, become teenage parents themselves, and/or be incarcerated during their adolescence or early 20s (SCAA, 2008). Teen mothers also face educational difficulties; they complete between 1 and 2 fewer years of education as compared to non-teen-mothers and only 2% obtain a college degree by age 30 (Fletcher & Wolfe, 2009; SCAA, 2008). They consequently earn lower incomes later on and are more likely to be on cash assistance programs (Fletcher & Wolfe, 2009).

Aside from the increased financial burden and poorer health outcomes facing teen mothers and their children, teen childbearing has been estimated to cost US taxpayers $9.1 billion each year (Hoffman, 2006). Additionally, Medicaid pays for two-thirds of all teen births in the US (Gavin et al., 2005). Given the tremendous health and financial implications for teen mothers and their children, the continued high rates of teen pregnancy should be a priority for public health advocates in the US. Sex education is one intervention that helps reduce unplanned teen pregnancy, yet is severely underutilized (Boonstra, 2014; Lindberg & Maddow-Zimet, 2012; Underhill, Operario, and Montgomery, 2007; Kohler et al., 2008).

Trends in Risky Sexual Behavior among American Teens

Increases in the rates of STDs and continued high pregnancy rates among American teens leads researchers to questions regarding sexual behaviors among this age

group. One may assume that given these high rates, more young people are having sex earlier, more frequently, or with more partners. This view is often supported in the media, believed to be a result of societal change and objectification of women and sexuality in pop culture. Public health researchers investigate this quantitatively, and the results are surprising.

The CDC currently tracks risky sexual behaviors among American teens via the Youth Risk Behavior Surveillance System (YRBSS). Nearly every indicator has shown improvement from 2007 to 2017: the percentage of high school students who had ever had sex, who had four or more lifetime sexual partners, and who were currently sexually active had all declined significantly (CDC, 2018). Why, then, in this same time frame, have STD cases skyrocketed in this age group? One measure between 2007 to 2017 in the CDC's latest report showed a significant decline: the percentage of high school students who used a condom during last sexual intercourse fell from 61.5% to 53.8%. Meanwhile, the percentage of high school students who used a condom and effective hormonal birth control remained at only 8.8%. Notably, although the percentage of sexually active students using hormonal birth control has increased, 29.4% is still low.

Just as the U.S. trails behind other developed nations in teen STD and pregnancy rates, we report riskier sexual behaviors. A 2009 report by Advocates for Youth attempting to understand the discrepancies in teen pregnancy and STD rates between the US and European countries found that French, Dutch, and German teens were more likely to use condoms at their most recent sexual encounter than their US peers (Feijoo, 2009). Additionally, large differences in contraceptive pill use among females were reported: 61% of Dutch teens reported having used the pill during their most recent

sexual encounter compared to only 11% of US teens (although this study used earlier data, far more Dutch teens reported pill use even compared to 2017 data from the US) (Feijoo, 2009).

Additionally, American students who are at risk of contracting STDs are not receiving proper testing. The CDC recommends that all individuals between the ages of 13 and 64 be tested for HIV at least once, and that sexually active women younger than 25 be tested for gonorrhea and chlamydia annually (CDC, 2017). However, a CDC Morbidity and Mortality Weekly Report released in 2009 reported that only 13% of US high school students had ever been tested for HIV. Testing was more common among females and non-Hispanic black students as compared to Hispanic and non-Hispanic white students. Interestingly, more students who had received instruction about HIV/AIDS in school reported being tested for HIV (13.2%) than those who had not (9.7%) (CDC, 2009).

Although US adolescents are delaying initiation of sex, they are practicing riskier sexual behaviors and are not utilizing essential health care when they do begin. CSE is one intervention that can improve contraceptive and condom use and increase the likelihood that individuals will seek health care services to test for STDs, reducing their own risk of long-term health consequences and spreading STDs to others (Boonstra, 2014; Lindberg & Maddow-Zimet, 2012; Underhill, Operario, and Montgomery, 2007; Kohler et al., 2008).

Defining Comprehensive and Abstinence-Only Sex Education

Education is a powerful tool used to combat rising STD rates and high unplanned pregnancy rates among American adolescents (Boonstra, 2014; Lindberg & Maddow-

Zimet, 2012; Underhill, Operario, and Montgomery, 2007; Kohler et al., 2008). Sex education programs are vital in teaching young Americans how to protect themselves against STDs and unplanned pregnancy and helping to promote healthy relationship behaviors later in life. However, sex education curricula vary dramatically among public school districts across the nation. There are two main types: comprehensive sex education (CSE) and abstinence only sex education (AOSE).

CSE provides the essential knowledge and tools to teenagers required to combat the recent rise in STDs and continued high unintended pregnancy rates. CSE curriculum covers reproductive anatomy, human development, and human sexuality (UNPF, 2018). Although students are taught that refraining from sex (abstinence) is the only 100% effective way to prevent STDs and pregnancy, CSE must include medically accurate information about safe sex practices such as how to use contraception and condoms (Kaiser Family Foundation, 2017). CSE also covers information on interpersonal communication skills and healthy relationships (UNPF, 2018). According to the Future of Sex Education's definition adapted from the CDC, CSE "should include a variety of topics including anatomy, physiology, families, personal safety, healthy relationships, pregnancy and birth, sexually transmitted diseases including HIV, contraceptives, sexual orientation, pregnancy options, media literacy and more. It should be medically accurate" (FoSE, 2018; CDC, 2018).

Conversely, Section 510(b) of Title V of the Social Security Act provides the first federal definition of AOSE that all federally funded programs must meet: AOSE "teaches abstinence from sexual activity outside marriage as the expected standard for all school age children," and states that abstinence is "the only certain way to avoid out-of-wedlock

pregnancy, [and] sexually transmitted diseases..." Additionally, federal abstinence programs are not permitted to discuss benefits of contraceptive methods in preventing pregnancy or STDs and may only mention their failure rates (Santinelli, 2008).

Timeline of Federal Sex Education Policy and Its Effectiveness

Support for sex education in the US has been widespread since the 1960's, but disagreement over the details of curricula has created large variations in quality and efficacy of these programs across the nation. Largely political, two arguments emerged: those who favor AOSE programs believe comprehensive education will promote promiscuity and increase risky sexual behaviors among teens, while those who support CSE believe it will decrease these behaviors. The scientific consensus clearly supports CSE and refutes the notion that CSE will promote risky sexual behavior, yet little has changed in the way of political attitude and federal funding (Boonstra, 2014; Chin et al., 2012; Lindberg & Maddow-Zimet, 2012; Kohler et al., 2008; Kirby, 2008; Underhill, Operario, and Montgomery, 2007).

In 1981, Congress passed the Adolescent Family Life Act (AFLA) "to promote chastity and self-discipline" and to fund AOSE programs developed primarily by religious groups. This was the first time that federal funds were allocated to sex education programs in schools. Only four years later, the American Civil Liberties Union (ACLU) challenged the program in Bowen v. Kendrick (487 U.S. 589 (1998)), claiming violation of the First Amendment. In a 5 to 4 decision, the Supreme Court disagreed that "advancement of religion" was a primary goal of the AFLA, they but remanded the case to district court in order to decide whether it violated the establishment clause "as applied" (Oyez, 1987). In other words, the lower courts should decide whether during the

actual application of the law, versus when the law was created, a primary function of AFLA programs was to advance religious objectives. Eventually, in 1993, the case was settled out of court and it was determined that AFLA programs should remove religious references and must include medically accurate information within their curriculum (NCAC, 2018).

In 1996, Title V of the Welfare Reform Act established a federal definition of AOSE and created a state-matching grant to fund these programs. They must teach that "sexual activity outside of the context of marriage is likely to have harmful psychological and physical effects" and that abstinence outside of marriage be the "expected standard" (Section 510(b)). Additionally, federal funding could not be used to promote the use of birth control or instruct on its proper use (PPFA, 2012). As federal funding for AOSE emerged and strengthened during the 1980's and 1990's, the US experienced its highest rates of teen pregnancy ever recorded (Kost, Maddow-Zimet, & Arpaia, 2017).

In the early 2000's, a number of new studies provided evidence against federal AOSE programs: reports showed they were ineffective in preventing teen pregnancy and STDs. In 2004, Representative Henry Waxman (D-CA) released the Waxman Report, a study conducted by the Committee on Government Reform of the US House of Representatives evaluating 13 federally funded AOSE programs. They found that 11 of the 13 programs contained misleading or false information about contraception effectiveness, risks of abortion, replaced scientific facts with religious views, and "treated stereotypes about girls and boys as scientific fact" (Guttmacher, 2004; Santinelli, 2008). In 2006, the Government Accountability Office (GAO) reported that most of the federally funded AOSE programs were not evaluated by the Department of Human

Health and Services (HHS) for scientific accuracy (PPFA, 2012). A 2007 study found that teens receiving one of four Title V funded programs were less likely than other teens to believe that condoms reduce the risk of STD infection (Trenholm, 2007). In the same year, a UNAIDS and WHO evaluation of AOSE programs in high-income countries showed that none improved the use of condoms among teens (Chen et al., 2007), while the National Campaign to Prevent Teen and Unplanned Pregnancy released a summary of 115 studies that found no AOSE program helped reduce risky sexual behaviors, postpone time of first sex, or improve the use of condoms among sexually active teens (Kirby, 2007). AOSE programs were even shown to produce results opposite of their intent: young adults between the ages of 18 and 24 that took a pledge of abstinence in adolescence are less likely to use a condom at first sexual intercourse, and are more likely to participate in oral sex, perhaps as a result of virginity being culturally linked to vaginal sex (Bruckner & Bearman, 2005).

Meanwhile, evidence provided support for more comprehensive programs. A review of 56 studies confirmed earlier results of the ineffectiveness of AOSE, while reporting that the majority of CSE programs increase condom and contraceptive use, reduce sexual risk taking and delay time of first sex (Kirby, 2008). A 2012 meta-analysis by the CDC continued the trend, showing that comprehensive programs produced statistically significant reductions in unprotected sex and risk of contracting STDs (Chin et al., 2012). Many studies have supported these conclusions (Boonstra, 2014; Lindberg & Maddow-Zimet, 2012; Underhill, Operario, and Montgomery, 2007; Kohler et al., 2008).

Following the growing scientific consensus that AOSE programs were ineffective in reducing risky sexual behaviors among teens and that CSE programs did reduce these behaviors, the Obama administration made the historic decision to establish the Office of Adolescent Health (OAH) and federal funding for evidence-based sex education programs. The Teen Pregnancy Prevention Program (TPPP) received $110 million in redirected funds from federally funded AOSE programs. Under TPPP, Tier 1 programs were those whose effectiveness had been demonstrated through rigorous scientific evaluation and received most of the funding. A smaller portion of funding also went to Tier 2, which was used to develop and test new and innovative TPPP programs (Kappeler & Farb, 2014).

The 2016 presidential election resulted in a dramatic shift in American politics. Under the new administration in July 2017, HHS notified 81 TPPP grantees that their originally five-year funding period would end two years early (SIECUS, 2018). Not long after, in April 2018, the Trump administration announced that any existing program using these funds would be required to conform to new rules, despite having received the funds under different requirements. Under these new rules, programs must emphasize abstinence only and they no longer need to be chosen from a list of evidence-based curricula (Belluck, 2018). Since the announcement was made, four lawsuits were filed on behalf of ten grantees in Washington, Maryland, and DC suing for illegal termination of TPPP funds. In each case, federal judges ruled against HHS and in favor of the TPPP grantees (SIECUS, 2018). At a time when STDs among American youth has reached historic highs, the most successful form of sex education has lost support at the federal level. Without support at the federal level, even school boards that would like to adopt a

more comprehensive approach to sex education may not be able to without available funding.

Sex Education Policy Set Locally

Although federal policy has played an important role in the political narrative surrounding sex education and has provided large amounts of funding for states to distribute, decisions regarding sex education curriculum are left to the states. States decide whether or not to accept federal funding for AOSE or CSE programs and establish overall rules mandating whether schools must provide sex education, whether it must be medically accurate, and whether or not they must inform parents before providing sex education (NCSL, 2016). The adoption of these laws at the state level can be shocking; less than half of states mandate sex education and only 13 require information presented to be "medically accurate" (NCSL, 2016; Guttmacher Institute, 2018). However, these guidelines are broad and do not set specific guidelines on the curriculum that is taught. Ultimately, specific programs and curriculum chosen for each school district is decided at the local level, but they must fall within the guidelines set by the state (KFF, 2002).

Most education policies, including those related to sex education, are determined by board members who are elected by the community for two to four-year terms and likely reflect that community's political ideology. In fact, studies have illustrated discrepancies between school district and state policies regarding sex education (Donovan, 1998). Although outside factors and funding play a role in these decisions, it is ultimately up to the local school district board, whose views are likely reflective of the voting community, to decide what type of sex education policy is adopted.

Parental Input on Sex Education

There is a long, documented history of the influence and attitudes of parents on sex education in the US (Luker, 2007; Moran, 2009; Zimmerman, 2015). Moran's *Teaching Sex: The Shaping of Adolescence in the 20th Century* (2009) outlines the origins of American society's difficulty discussing sexuality among adolescents beginning in the Victorian era and how the term "adolescent" was created in order to better describe the phenomenon between youth and adulthood. Parents were highly resistant to the idea that sexuality be discussed in schools; in fact, the first sex education program developed for college students in Chicago in 1912 was quickly closed due to community backlash. Even talking with young adults about sex was seen as immoral. Both Moran (2009) and Luker (2007) credit the sexual revolution of the 1960's for American society's softening attitude toward formal sex education. However, Luker's *When Sex Goes to School: Warring Views on Sex-and Sex Education-Since the Sixties* (2007) documents how substantial resistance to sex education has continued among parents. Over a decade, Luker travels to communities of differing demographics and geography within the US, interviewing parents and pastors about sex education. Although these are small qualitative interviews, they reveal sharp divides between parents and pastors on sex education that tend to run along traditional "conservative" and "liberal" lines.

There are a few small studies that have attempted to quantify the factors that influence sex education curriculum taught by interviewing teachers. For example, a national survey of public secondary school teachers in 1999 revealed that 32% were concerned about community reaction to sex education, for all topics except abstinence (Landry et al., 2003). A 2008 survey of 335 sex educators in Illinois reported that

available curriculum, school input, and personal values (curriculum and school input based on district policy) rank highest in influencing what they taught during sex education, yet over 40% agreed that parent input has some or a great deal of influence (Lindau et al., 2008). A more recent survey of 82 middle school teachers in Hawaii asked about the importance of various factors on their sex education curriculum as well. Although teachers reported that their own personal values and the available curriculum (based on district policy) had the greatest influence on what was taught, 60% said that parental input had some or a great deal of influence (Woo et al., 2011). Thus, parental influence may play a large role in influencing sex education policy, potentially through advocating to school board members or teachers. Luker (2007) interviewed many parents active in campaigning against CSE who were heavily involved in the church and considered themselves religious. Parental religiosity within a state may be important in sex education policy adoption.

Current National Trends in Sex Education

Despite the fact that CSE helps reduce risky sexual behavior in teens, the percentage of schools requiring sex education in the US has been declining (Guttmacher Institute, 2017). Fewer teens are taught about methods of birth control, while more teens are being taught to say no to sex without receiving any information on birth control (Guttmacher Institute, 2017), perhaps indicating a continued push toward AOSE. The percentage of schools teaching kids about a variety of topics, including abstinence, reproductive anatomy, and methods of contraception have all declined by roughly 20% between 2000 and 2014. Perhaps most shockingly, the percentage of schools that instruct teens on how to correctly use a condom fell from a dismal 55% in 2000 to an even lower

35% in 2014 (Guttmacher Institute, 2017). Interestingly, declines in formal education on STDs, birth control, and saying no to sex were all highest in nonmetropolitan areas (Lindberg et al., 2016). This seems to correlate with the higher number of teen pregnancies and STD rates observed in more rural counties and may be representative of different cultural and community values in rural areas. Thus, understanding why these school districts are less likely to adopt CSE is critical for tailoring public health messaging and interventions that may encourage these districts to adopt CSE.

The Literature Gap: Factors Influencing CSE Policy Adoption

Between 2006 and 2013, significant declines have been reported in formal instruction on birth control, STDs, and HIV/AIDS, particularly in non-metropolitan areas (Lindberg, Maddow-Zimet and Boonstra, 2016). Meanwhile, especially in southern regions, the most common remaining programs are AOSE (Landry et al., 2003). Although the literature has observed differences in sex education policy based on the geography and urbanicity of the school district, there is little understanding of what factors drive local school districts to adopt CSE policies over AOSE (Lindberg & Maddow-Zimet, 2016). Some small studies have surveyed teachers in an effort to identify predictors of the curricula ultimately taught in their classrooms, but a gap exists in examining predictors of sex education policy adoption at the school district level.

There are likely many indicators that influence whether a school district board will vote to adopt a CSE policy. Some of these may be barriers or facilitators that originate from outside the district, including the availability of state and federal funding for sex education and the state's requirements surrounding sex education and parental involvement. Demographics of the district or state's voting community must play a role.

Average age, household income, education level, and political ideology all influence how an individual will vote. Additionally, elected school board members have their own opinions and ideologies that direct how they vote on sex education policy. It is assumed that these board members' ideologies will be representative of the voters who elected them.

Religiosity is one factor that is consistently linked to political ideology and voting behavior (Peterson, 1992; Esmer & Pettersson, 2007). Data from the Pew Religious Landscape Study (2014) shows that the more frequently an individual attends church, the more likely they are to vote conservatively. Additionally, individuals identifying with certain religious groups, such as Evangelical or Mormon, are more likely to vote conservatively. Mainline Protestants are less likely to identify as very conservative when compared to Evangelicals or Mormons, and Jews, Muslims, Hindus, and Buddhists even less so (Pew, 2014). Interestingly, Luker (2007) proposes a divide even within denominations between the "sexual right and left," where those who attend church more frequently and attend more theologically conservative churches viewed sex as sacred and rules regarding non-marital sex non-negotiable. On the other hand, sexual liberals tended to have a more forgiving view of morality and saw sex as natural (Luker, 2007).

Several books (Luker, 2007; Moran, 2009; Zimmerman, 2015; Bolz-Weber, 2019) and articles have investigated how religion shapes views on sexuality and sex education, often connecting opposition to CSE through the rise of the Religious Right political movement. Just before data in the early 2000's began to show a significant decline in the number of schools teaching sex education of any kind (Lindberg et al., 2016), the Sexuality Information and Education Council of the United States (SIECUS)

reported a large increase in the number of local controversies surrounding CSE policy. The late 1990's saw the introduction of many bills intended to limit the content of sex education programs in schools that had been implemented largely in response to the 1980's AIDS epidemic. However, between 1992 and 1997, more than 500 local disputes over sex education occurred, most of which were initiated by a few parents or by members of a local conservative or church group who often had backing by national organizations such as Focus on the Family (Ross & Kantor, 1995; Donovan, 1998).

So far, the literature has not attempted to measure the influence of religiosity among voting members of the school district community on what type of sex education policy is adopted by that school district. Only one article mentions religiosity in relation to sex education curricula: Lindburg et al. (2016) utilized survey data from the National Survey of Family Growth to reveal that adolescents who reported the highest levels of religious attendance showed significant declines in receipt of information on birth control and how to say no to sex, as compared to adolescents who reported less or no religious attendance. The authors were unable to establish causality, as they did not control for whether parents of children reporting high religious attendance were allowed to opt their child out of receiving sex education training, or whether religiosity had an impact on the likelihood of school districts themselves adopting a CSE policy.

The impact of religiosity on local public policy adoption is particularly important in the US, as we report higher levels of religiosity than other developed nations, and we are home to the highest number of Christians in the world (Esmer & Pettersson, 2007; Pew, 2015). Although the number of Christians as a share of the US population has declined between 2007 and 2014, this has primarily affected Mainline Protestant and

Catholic populations. Interestingly, the number of Evangelicals has gained roughly 2 million adherents since 2007. Evangelicals are concentrated in more southern states and are more likely to identify as very conservative than other Christian denominations (Pew, 2015). AOSE policies dominate in local public school districts within rural, southern areas (Landry et al., 2003). Given that religiosity, particularly evangelical beliefs, have been associated with negative attitudes toward sex education (Luker, 2007), it follows that religiosity may be influencing the adoption of sex education policies at a local level. With STD rates climbing and unintended pregnancies among adolescents remaining at alarming rates particularly in these southern, rural areas (CDC, 2018), it is even more important that evidence-based sex education is being employed at schools. Clearly, a more complete understanding of factors that affect sex education policy adoption at a local level are extremely important.

Conclusion

Overall, southern states have a higher percentage of schools that do not require sex education and rural areas have seen the greatest declines in schools requiring formal sex education in recent years (Lindberg et al., 2016). These same southern areas report higher rates of teen pregnancy and STDs (CDC, 2018). As a result, strategies for adoption of CSE policies should be a priority for these southern, rural school districts. Although they are the areas least likely to have implemented CSE, there are still many southern, rural counties that have decided to implement these policies. The current literature lacks understanding on what the differences between these seemingly similar school districts are. Through the utilization of data from the CDC's SHPPS survey, researchers are able to examine the predictors of CSE adoption in public schools.

After the identification of differences and/or predictors between the school districts that do and do not implement CSE, public health advocates may use this information to more narrowly tailor their public health messaging in persuading more districts to adopt CSE policies. Providing more powerful communication tools to public health education advocates will hopefully increase the percentage of schools that ultimately decide to implement policy changes and educate more youth, thus reducing teen pregnancy and teen STD rates in the US.

Chapter III: Methods

Theoretical Framework

In order to examine the relationship between religiosity of a state's population and the percentage of school districts in that state that adopt a comprehensive sex education (CSE) policy, a conceptual model is created from Berry & Berry's (1999) unified model of state government. This is a policy innovation and diffusion model, which maintains that adoption of any public policy is a product of social, political, and economic characteristics internal to states (internal determinants) and diffusion effects that follow an S-curve (McLendon & Cohen-Vogel, 2008). Diffusion is the idea that whether or not a state adopts a policy depends on if a neighboring state (regional diffusion) or state that is ideologically similar (isomorphism diffusion) to the state of interest adopts the policy first (Berry & Berry, 1999). The S-curve represents the fact that the rate of adoption among states begins slowly with few early adopters, increases dramatically as other states are influenced by early adopters, and then tapers off over time as most states have adopted the policy.

Berry & Berry (1999) propose the following formula for their state policy model:

Equation 1. Berry & Berry State Policy Model

$$Adopt_{i,t} = f(Motivation_{i,t}, Resources/Obstacles_{i,t}, Other\ Policies_{i,t}, External_{i,t}),$$

where $Adopt_{i,t}$ is the probability that state *i* will adopt the policy in year *t*. However, this study evaluates how determinants both internal and external to the state affect policy adoption at the local school district level.

Thus, the formula has been modified to reflect local public policy:

Equation 2. Adapted Berry & Berry Local Policy Model

$$Adopt_{i,t} = f[\text{Internal Determinants } (Motivation_{i,t}, Demographics_{i,t}, Resources/Obstacles_{i,t}), \text{External Determinants}_t],$$

where $Adopt_{i,t}$ is the number of school districts in state *i* that adopt the policy in year *t*. However, most internal determinants remain as factors at the state level (with the exception of parental involvement requirements at the district level) while external determinants are all factors outside state *i*, such as federal funding and influence.

Motivation represents whether or not the "political will" exists in the school district community for the policy to move forward. Motivation factors include character of public opinion represented through voting behavior, severity of the problem being addressed by the policy (in this case, high teen STD rates and unplanned pregnancy rates), the percentage of school board members who are conservative, and the percentage of those school board members that vote conservatively. Other motivation factors that predict the strength of political support for CSE include the strength and number of policy advocates in the state and interested policy entrepreneurs.

Berry & Berry's (1999) model mentions "social, political, and economic" characteristics of a state when describing internal determinants, but it does not include demographics explicitly in the model equation. Thus, demographics are added into the model, including age, gender, race/ethnicity distribution, median income and education levels, urbanicity, and regional distribution of the state. Obstacles to policy adoption are those that may influence the ability of school districts within the state to feasibly adopt a policy. This includes district parental involvement requirements such as requiring school districts to notify parents before teaching any sex education or allowing parents to opt

their children out of instruction completely. These requirements may motivate school districts to move away from CSE policies in hopes of avoiding conflict with parents. "Other policies" have been removed from the equation and instead are included as external determinants.

External determinants are any factors outside of the state that would have influence over the number of school districts within a state adopting CSE. This includes the amount of federal funding available for CSE versus AOSE programs. Diffusion occurs when neighboring or ideologically similar states influence adoption of the policies by state *i*. For example, if nearby states have a high percentage of school districts with a CSE policy, the neighboring state may also have a high percentage.

Focal Relationship

The focal relationship of this model is the association between religiosity of a state's population and the number of school districts within that state that have adopted a CSE policy. Religiosity is often defined broadly as strong religious feelings or beliefs. Typically, social science research also includes "religious commitment" in the definition of religiosity, and it is often measured by church attendance (Esmer & Pettersson, 2007). In order to fully capture the "feelings and beliefs," however, others have proposed a multi-dimensional approach to operationalizing religiosity that includes strength of belief in the divine and/or importance of religion in one's life (Clayton, 1971). For this project, religiosity as a construct is defined as religious commitment due to strong religious feelings or beliefs and is measured by church attendance.

According to the United Nations Population Fund (UNPF), CSE curricula should include "scientifically accurate" information about anatomy, reproductive health, and

human development and information about contraception, STDs, and childbirth. Typically, abstinence is taught as the only means to guarantee protection from STDs and unwanted pregnancies, but CSE also teaches about condoms and contraception as a means of reducing risk. Guttmacher, Advocates for Youth, UNPF, and the Personal Responsibility Education Program (PREP) created under the Obama administration to provide federal funding to states for CSE all also include information about healthy relationships and communication skills in their guidelines for CSE curricula. Thus, a CSE policy is one that requires students to receive instruction on preventing STDs and pregnancy by abstaining from sex or reducing risk by correctly using condoms or other methods of contraception, providing information on anatomy and human sexuality, and covering interpersonal communication skills and healthy relationships.

Character of Public Opinion: A Mediator

The central mediators through which religiosity may influence adoption of a CSE policy are voting behavior, strength of CSE advocacy, or availability of interested policy entrepreneurs. Voting behavior is defined as the political candidate (and thus political party) for which one votes. It represents the ideology of the community by showing how conservative or liberal the people living within the school district are. Voters elect school board members whose personal political ideologies align with their own.

Religion has been a source of influence in political expression and voting in the United States for decades, and it is often associated with more conservative voting patterns (Pew, 2014). Therefore, higher levels of religiosity of the state is predicted to be associated with more conservative voting behavior. Although individual school board members' personal political ideology and voting behavior is unmeasured, it is assumed

that the more conservative the state's community votes, the more likely that a higher percentage of school board members within the state will vote conservatively. It is hypothesized that the more conservative the board, the more likely a CSE policy will not be adopted.

It should be noted that this assumption is made due to data limitations. School district data used to construct the dependent variable, whether or not a district has CSE, is de-identified and thus may only be linked to its state. Thus, average levels of conservatism and religiosity within the state are used in the analysis and linked to individual school district observations of CSE policy adoption. This is limiting, because large variations exist in both conservatism and religiosity between school district communities within a state. Although this is not an ideal approach, this is why we assume higher religiosity levels of a state will predict that on average within that state, more school district boards will vote more conservatively.

Religiosity may also influence the number of policy brokers or strength of advocacy for CSE in the community. Strength of advocacy is the number of individuals or organizations active in the area who are campaigning for the policy by engaging with voters, school administrators, board members, or others who may have influence over CSE policy. Policy brokers are specific individuals who help with the passage of public policies by mediating between advocacy coalitions during the process of policy creation and adoption (Bratt, 2013). It is hypothesized that decreased religiosity of a state is associated with increased strength of advocacy for CSE and an increase in the number of policy brokers, which in turn is associated with a higher likelihood of adopting a CSE policy.

Severity of the Problem: A Moderator

Although religiosity has been shown to be one of the most important predictors of voting behavior (Esmer & Pettersson, 2007) and thus may play an important role in predicting whether a school board will vote to adopt a CSE policy, it is possible that the severity of the problem changes this relationship. It may be that teen STD and unplanned pregnancy rates (the rate of 15 to 19-year-olds living in the state infected with an STD or reporting a birth) are so high that religious values are ignored in favor of a CSE policy to address the problem. In fact, Berry & Berry (1999) maintain that problem severity is important in determining the level of motivation for policy innovation. Thus, depending on the severity of teen STD and birth rates in the state, the relationship between religiosity and adoption of a CSE policy through voting behavior may be weakened.

Confounders: Internal Determinants (State)

Demographic confounders of the state community include age, gender, race/ethnicity composition, household income level, and education level. Age and gender are the distribution of state adults that are of a particular age or sex. Race/ethnicity is the distribution of state residents that fall within various categories. Distribution of household income level and education level categories of the state is also used.

Geographic characteristics, as mentioned previously as having been studied before, include region of the state and the percentage of school districts within the state residing in different urbanicity levels. The more rural and more southern a school district is, the less likely they are to adopt CSE (Landry et al., 2003), and the more likely they are to report higher levels of religiosity (Pew, 2018).

Additional internal determinants include the number of school districts within a state that require parental notification before human sexuality instruction is provided or allow parents to opt their children out of this instruction. Districts with these requirements are hypothesized to report higher religiosity and fewer school districts that have adopted CSE.

Confounders: External Determinants (Federal)

External determinants of policy adoption are those outside of the state. First is the availability of state funding for sex education programming, which is the dollar amount of funds the state received from the federal government. This may be split into dollar amounts received from CSE federal programs and AOSE federal programs. States that receive more money from AOSE federal programs may be more likely to report higher levels of religiosity and thus have a lower percentage of school districts using CSE.

The diffusion effects explained in Berry & Berry's (1999) model may also account for whether or not a CSE policy is adopted. For example, if nearby states have a high percentage of school districts adopting CSE policies, it may increase the percentage of school districts within state *i* adopting as well. This may also be true if other states with similar ideological characteristics (even if they are not directly nearby) have a high percentage of school districts adopting this policy.

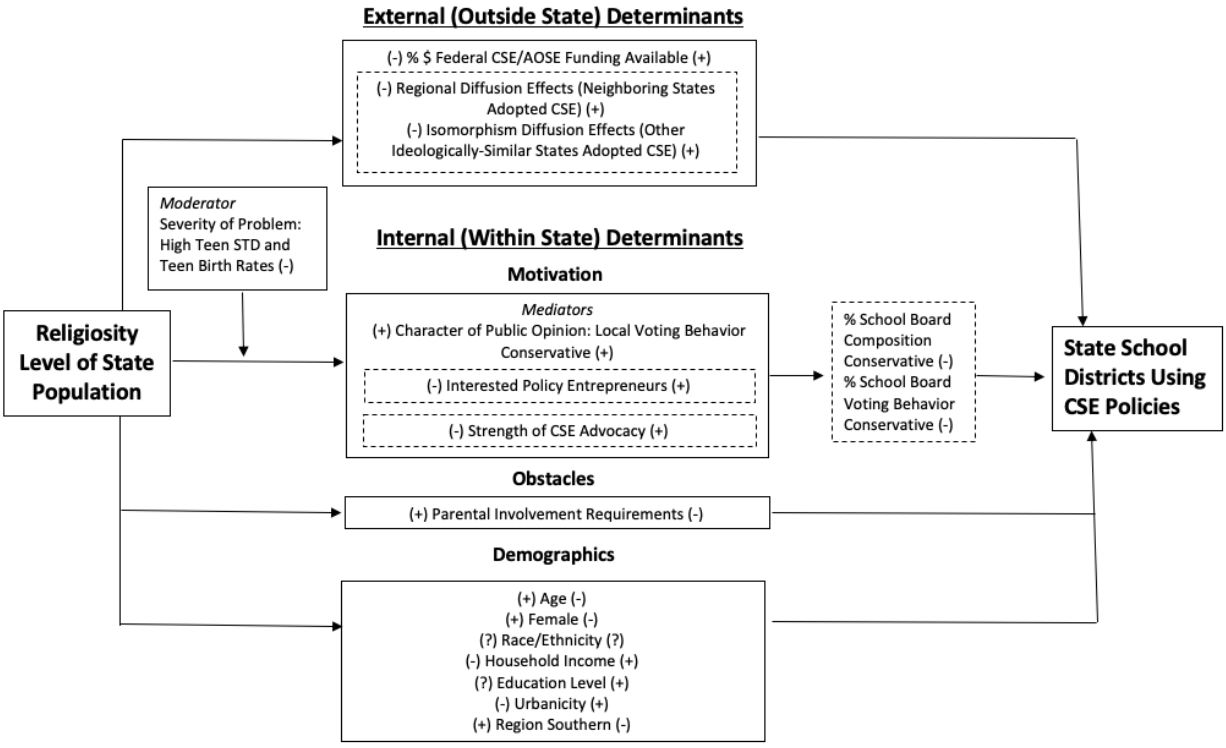

Figure 1. Conceptual Framework

Hypotheses

H1: There is an inverse relationship between the religiosity of a state and the number of school districts within the state adopting a CSE policy, after controlling for demographic confounders.

- H1a: This inverse association is strengthened after also controlling for district parental involvement requirements.
- H1b: Voting behavior is a partial mediator of this inverse association, after controlling for confounders.
- H1c: This inverse association will be weakened in school districts with higher rates of teen STDs and teen births, after controlling for confounders.

H2: States with a higher proportion of individuals identifying as Evangelical or Mormon will be more likely to have a lower number of school districts adopting a CSE policy, after controlling for confounders.

Data Description

Data for this study comes from the 2012 and 2016 School Health Policies and Practices Study (SHPPS) conducted by the Centers for Disease Control and Prevention (CDC) and the 2014 Pew Religious Landscape Study conducted by the Pew Research Center. SHPPS school district-level data is linked to state data in the Pew Religious Survey. CDC data is used to produce rates of chlamydia, gonorrhea, and births among 15- to 19-year-olds for each state in 2012 and 2016. Finally, SIECUS produces annual reports that detail the federal grants and funds sent to each state from specific programs. This information is used to calculate total federal funding received by each state intended for sex education. It is also divided into the percent of federal dollars received that must meet AOSE standards and those that meet CSE standards.

The SHPPS is a nationally representative web-based survey of school administrators in public school districts that is conducted every two to six years. The survey includes years 1994, 2000, 2006, 2012, 2014, and 2016. It collects information on school health policies and practices at the state, district, school, and classroom levels. Survey questions cover seven modules on: health education, physical education, health services, counseling, psychological and social services, nutrition services, employee wellness, and all school health and safety policies and activities. Each public school district designates a respondent who has the most knowledge about or primary

responsibility for the policies and practices of each module. Of the 957 eligible school districts in the 2016 survey, 740 completed at least one module (77.3%) (CDC, 2017).

The Pew Religious Landscape Study is a nationally representative telephone survey of 35,071 U.S. adults conducted by the Pew Research center in 2007 and 2014. 60% of respondents were contacted via cellphone, and 40% were contacted at a landline. Along with general demographic information, the survey asks detailed questions about religiosity, religious practices, and religious affiliation. Also provided are individuals' political party affiliation and political ideologies, allowing a measure of likely voting behavior within the state. Survey weights are used in both the SHPPS and Pew dataset and are accounted for within the analysis.

Measures

Religiosity

The construct of religiosity is typically measured in the literature by church attendance or membership. Often the only data available for use to measure religiosity may be the number of individuals in a community that identify as part of a particular congregation or as an adherent to a particular religion. Most commonly, though, frequency of church attendance is used in the literature. According to the Pew survey, attendance increases with age, decreases with income category, is constant among education levels, and is higher among women than men. Attendance is highest among African Americans, followed by Latinos, whites (tied with Other/Mixed), and Asians (Pew, 2018).

Church attendance has been criticized as a measure of the abstract concept of "religiosity," as some may attend church specifically for social or other reasons. The Pew

dataset allowed investigation into the use of a potentially richer measure of religiosity, which includes Frequency of Church Attendance, Belief in God or a Universal Spirit, and Importance of Religion in One's Life. However, upon investigating these measures nationally, it was found that frequency of church attendance was a better overall measure of religiosity. Belief in God or a universal spirit is a very vague measure, and over 80% of individuals in the survey responded yes to this, inflating the number of individuals who might follow a specific religious practice. Importance of religion in one's life was also much higher than church attendance within a state as well. This, along with the fact that church attendance is the most accepted measure of religiosity in the literature, is why this study uses church attendance.

Due to the fact that the percentage of individuals that attend church weekly is averaged at the state level, leaving this measure of religiosity as a continuous variable meant that observing variation between states was difficult. In order to maximize variation between states by observing how a state with the highest levels of religiosity as compared to a state with the lowest levels of religiosity differs in CSE policy adoption, a categorical religiosity variable is created. The percentage of individuals within a state that attend church weekly are separated into three quantiles: 1) low religiosity, 2) medium religiosity, and 3) high religiosity. States that are considered "low" religiosity have a smaller percentage of individuals that attend church weekly than states with "medium" or "high" religiosity.

A separate analysis is conducted to examine whether any association exists between the distribution of different religions or Christian denominations and the percentage of schools adopting CSE in any state. The second hypothesis, for example,

purports that states with a higher percentage of the population identifying with the Evangelical Protestant Tradition or Mormonism to have fewer schools with a CSE policy. States with a higher percentage of individuals identifying with a Mainline Protestant Tradition, however, may be more likely to have more schools teaching CSE. Overall, the following religions/denominations are also examined: Evangelical Protestant Tradition, Mainline Protestant Tradition, Historically Black Protestant Tradition, Catholic, Mormon, Orthodox Christian, Jehovah's Witness, other Christian, Jewish, Muslim, Buddhist, and Hindu.

School District Adopts Comprehensive Sex Education

In order to measure whether or not a school district had a CSE policy in place in 2012 or 2016, a variable is created from four questions asked in the SHPPS survey: has your district adopted a policy stating that high schools will teach about pregnancy prevention, HIV prevention, other STD prevention, or human sexuality? If school districts responded yes to all of these criteria, then they are categorized as having adopted CSE. A dichotomous variable is created and school districts that include the above in their curriculum will be considered a 1) yes versus a 2) no.

Additionally, school administrators were asked if their school district health standards are based on the National Sexuality Education Standards (NSES), which follow CSE guidelines. In order to assess whether this measure was similar to the created one, the overall percentage of school districts that met the created CSE variable criteria is compared to the percentage that responded yes to following NSES standards. The created measure for CSE defined 52% of school districts, while the NSES standards identified

50%. The more conservative created measure is used for this analysis, coding a yes or no for each school district.

Potential Mediator Measures (Internal to State)

Character of public opinion regarding a policy is represented by the voting behavior of a community. Voting behavior of a state is measured by political ideology of that state, based on data from the Pew Religious Landscape Study. Political ideology is separated into very conservative, conservative, moderate, liberal, and very liberal. It is hypothesized that a state with a higher proportion of individuals that identify as very conservative will elect school board members that are also conservative, and that state will be more likely to have a lower number of school districts with CSE.

The strength of CSE advocacy and the number of interested policy entrepreneurs within the state is unmeasured in this analysis. However, these may also function as mediators of the focal relationship, as states with high religiosity may be less likely to have CSE advocacy and interested policy entrepreneurs, thus reducing the chances of school districts adopting CSE. Likewise, direct measure of the percentage of school board members within the state that identify as conservative and/or vote conservatively on school district matters will be unmeasured. This is aimed to be captured in the state political ideology measure.

Moderator: Teen Pregnancy and STD Rates

Two continuous variables will represent the severity of the problem. One variable measures the rate of births per 1,000 15 to 19-year-olds in each state (CDC). Rates of gonorrhea and chlamydia per 100,000 15 to 19-year-olds will also be included (CDC).

Obstacles Internal to the State

The set of obstacles controlled for in the analysis are pulled from SHPPS data, coded as yes or no for each school district. Included are the number of school districts within the state that require parents to be notified about human sexuality instruction (parental notification) and those that allow parents to exclude their children from human sexuality education altogether (parental exclusion). These requirements are combined, where a school district is coded as 1) having parental involvement requirements if they have either a parental notification or parental exclusion requirement or as 0) having neither.

Other Internal Determinants of the State

Demographic measures of each state will be obtained from the US Census for years 2012 and 2016. For age, the following categories are used: 0-19, 20-44, 45-64, and 65+. Race/ethnicity will be six categories: white, African-American, Native American and Alaskan Native, Asian, Hawaiian Native and Pacific Islander, and other race. Hispanic or Latino ethnicity is also included. Median household income is included for each state. Education level is expressed as the percentage of individuals that have a bachelor's degree or higher. Sex will also be included as the percentage of females.

A rural or urban indicator variable for school districts is included. Finally, the region of the school district will also be categorized into 4 groups: 1) Northeast, 2) Midwest, 3) South, and 4) West.

External Determinants (Federal)

Federal funding supporting sex education distributed to each state likely influences the number of school districts that adopt CSE within each state. SIECUS reports federal dollars each state receives from federal programs/grants every year. Total

federal dollars received for sex education is calculated. Additionally, each source of federal funding is categorized into two variables: the total funding that must be used for AOSE programs and the total funding that must be used for CSE programs. Another variable is created for the percentage of overall federal sex education funding intended for AOSE and CSE programs within the state. The percentage of funding intended for AOSE of each state is included in the model, hypothesized to be inversely related to adoption of CSE within school districts.

Regional diffusion is represented by whether or not neighboring states adopted CSE. Isomorphism diffusion represents other ideologically similar states adopting CSE. Both of these external determinants are unable to be measured.

Table 1. Measures

Construct	Measure in Dataset	Coded for Analysis
Focal Relationship – SHPPS and Pew		
State Religiosity	RELGROUP: constructed from ATTEND; states with X-X % of individuals who attend church weekly ATTEND: Aside from weddings and funerals, how often do you attend religious services... more than once a week, once a week, once or twice a month, a few times a year, seldom, or never? (Pew)	1) Low religiosity >=32% 2) Medium religiosity 33 to =>37% 3) High religiosity 38 to =>53%
State Religiosity by Religion/Denomination	RELTRAD: combines family categories (Pew)	1) Evangelical Protestant Tradition 2) Mainline Protestant Tradition 3) Historically Black Protestant Tradition 4) Catholic 5) Mormon 6) Orthodox Christian 7) Jehovah's witness 8) Other Christian 9) Jewish 10) Muslim 11) Buddhist 12) Hindu
School District Teaches CSE	HED30e: HS teach pregnancy prevention HED30f: HS teach HIV	1) Yes if sum to 4 2) No if sum to less than 4

	HED30g: HS teach STD HED30h: HS teach human sexuality (SHPPS)	
Internal Determinants (District Level)		
School District Urbanicity Level	SAMPSTRA: Urban locale stratum (SHPPS)	1) Urban (city, suburb, town) 2) Rural
School District Region	STATENAME: name of state (SHPPS) Note: states grouped to each region based on US Census categories	1) Northeast: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, Pennsylvania 2) Midwest: Illinois, Indiana, Michigan, Ohio, Wisconsin, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota 3) South: Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, DC, West Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, Texas 4) West: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Alaska, California, Hawaii, Oregon, Washington
School District Parental Involvement Requirements	PINVOLV: created from: HED31: HS parents notified about human sexuality instruction HED33: HS parents can exclude children from human sexuality instruction (SHPPS)	1) Yes if HED31=1 or HED33=1 2) No if HED31 and HED33 = 0
Board Members Conservative	Unmeasured	Unmeasured
Board Members Vote Conservatively	Unmeasured	Unmeasured
School District Has Interested Policy Entrepreneurs	Unmeasured	Unmeasured
School District Has Strong CSE Advocacy	Unmeasured	Unmeasured
Internal Determinants (State Level)		
State Voting Behavior	IDEO: In general, would you describe your political views as... (Pew)	1) Very Conservative 2) Conservative 3) Moderate 4) Liberal 5) Very Liberal
State Age	AGEREC: What is your age? (Census)	1) 0-19 2) 20-44 3) 45-64

		4) 65+
State Sex	SEX: Are you male or female? (Census)	1) Male 2) Female
State Race/Ethnicity	RACETHN: Created variable combining responses to HISP and RACECMB. (Census)	1) White 2) Black 3) Native American and Alaskan Native 4) Asian 5) Hawaiian Native and Pacific Islander 6) Other race 7) Hispanic or Latino
State Household Income	INCOME: Last year, that is in 2013, what was your total family income from all sources, before taxes? (Census)	Median household income ($)
State Education Level	EDUC: What is the highest level of school you have completed or the highest degree you have received? (Census)	Bachelor's degree or higher (%)
State Teen STD Rates	Rate of chlamydia/gonorrhea per 100,000 per state, ages 15-19 (2012 & 2016 data) (CDC)	Count
State Teen Birth Rates	Rate of teen births per 1,000 per state, ages 15-19 (2012 & 2016 data) (CDC)	Count
External Determinants (Federal Level)		
Federal $ from CSE Programs	Created variable from SIECUS state profiles totCSEfund: PREP, TPPP, DASH, Competitive PREP Grant, Personal Responsibility Education, Teen Pregnancy Prevention Initiative perCSEfund: totCSEfund/totsexedfund	Count and percentage
Federal $ from AOSE Programs	Created variable from SIECUS state profiles totAOSEfund: Title V, Competitive Abstinence Education Grant perAOSEfund: totAOSEfund/totsexedfund	Count and percentage
Regional Diffusion Effects (Neighboring States Adopted CSE)	Unmeasured	Unmeasured
Isomorphism Diffusion Effects (Other Ideologically-Similar Districts Adopted CSE)	Unmeasured	Unmeasured

Analytic Strategy

The dependent variable, CSE, is a dichotomous variable (0/1) and the independent variable, religiosity, is a categorical variable (low, medium, or high state religiosity). Thus, a logistic regression model is estimated. The SHPSS and Pew Religious Landscape study both implemented a complex survey design. The Pew dataset's state survey weights are used when the data is collapsed to the state-level in SAS 9.4. The SHPPS district weights are accounted for in the Stata survey command during the analysis. We measure how weekly church attendance within a state affects the likelihood of a school district within that state having CSE.

The research question for this study is: do states with higher religiosity levels reduce the likelihood that school districts have adopted CSE? In order to answer this question, two main hypotheses are investigated. The first hypothesis (H1) states that there is an inverse relationship between the religiosity of a state and the number of school districts within the state that have a CSE policy, after controlling for confounders. In order to test this, a logistic regression is run. The dependent variable is dichotomous, as a school district either does or does not have a CSE policy. The other district-level variables are also categorical, such as urbanicity and region of the district. The independent variable, religiosity of a state, is categorical, separated into low, medium, and high religiosity based on church attendance. The demographic characteristics such as sex, age, race, and household income are also percentages at the state-level. Thus, for every district within a state, these demographic characteristics are the same. Additionally, year fixed effects are added. Marginal effects are then reported. Statistical significance is determined at the 0.05 alpha level.

The second part of the first hypothesis (H1a) states that this negative association will be strengthened after controlling for district parental involvement requirements. The same layout is followed from the first regression, with the addition of district parental involvement requirements. Marginal effects are reported. The third part of the first hypothesis (H1b) states that voting behavior is a partial mediator of the negative association in H1. This regression is the same as H1, with the addition of the political ideology variable, the percentage of the state identifying as very conservative. Finally, the last part of H1 (H1c) states that the observed negative association in H1 will be weakened in school districts with higher rates of STDs and unplanned births among teens. This regression follows H1, with the addition of state teen chlamydia, gonorrhea, and birth rates. Marginal effects are reported.

The second hypothesis (H2) proposes that states with a higher proportion of individuals identifying as Evangelical or Mormon will be more likely to have a lower number of school districts adopting a CSE policy. In order to test this, a logistic regression is run similarly to the above mentioned. However, the independent variables are the percentage of individuals identifying as Evangelical or Mormon. Regressions are also run for other religions and sects of Christianity: Mainline Protestant, Historically Black Protestant, Catholic, Orthodox Christian, Jewish, Jehovah's Witness, Other Christian, Muslim, Hindu, and Buddhist. Marginal effects are reported, and statistical significance is set at alpha level 0.05.

Chapter IV: Results

Descriptive Statistics

Descriptive statistics are reported in Tables 1 and 2. Table 1 reports various school district and state characteristics by levels of state religiosity. State religiosity levels differ significantly by church attendance. For example, states in the low religiosity category report that on average 27.9% of individuals within the state attend church weekly, while the average is 42.6% in high religiosity states. The number of school districts within states of each religiosity level is roughly equally distributed (between 404 to 481 school districts in each). Surprisingly, the percentage of school districts with a CSE policy does not vary significantly between levels of state religiosity. However, parental notification and exclusion requirements are both significantly associated with the religiosity level of states: more school districts within the low religiosity states have these parental involvement requirements than medium or high religiosity states. Region of the school district is also associated with state religiosity. Far more school districts in the Northeast and West are in low religiosity states, while nearly all (82.4%) of southern school districts are in high religiosity states. However, urbanicity of school districts is not associated with state religiosity.

All state demographics are associated with state religiosity levels. There are slight differences in age, such as more 45 to 64-year-olds and fewer 0 to 19-year-olds residing in low religiosity states. Household income and educational attainment (percent of population with a bachelor's degree) decreases as the religiosity of the state increases. More African-Americans live in states with high religiosity, while more Asians,

Hawaiian Natives and Pacific Islanders, other races, and Hispanics live in low religiosity states. Finally, large increases in chlamydia, gonorrhea, and birth rates among 15 to 19-year-olds are observed as state religiosity increases.

Table 1. Demographic Characteristics by Religiosity Level of State

	Religiosity Level of State			
Variable	*Low*	*Medium*	*High*	*p-value*
Total school districts (n, %)	404 (30.7)	481 (36.6)	430 (32.7)	
Religiosity measure: weekly church attendance (%)	27.9	35.1	42.6	0.000
School District Characteristics (%)				
Comprehensive sex education policy	53.7	47.1	52.7	0.099
Region				
Northeast	43.9	22.5	0.0	0.000
Midwest	12.7	66.9	17.6	
South	1.3	3.8	82.4	
West	42.1	6.9	0.0	
Urban	51.9	49.9	43.9	0.058
Parental Involvement Requirements				
Parents must be notified before sex education taught or parents may exclude children from sex education	85.9	78.1	75.5	0.009
State Demographics (%)				
Female	50.7	50.8	50.8	0.029
Age				
0-19	25.4	26.3	27.4	0.000
20-44	33.5	32.7	33.6	0.000
45-64	27.1	26.6	25.7	0.000
65+	13.9	14.3	13.3	0.000
Median Household Income ($)	60172.25	56420.34	50600.63	0.000
Race				
White	78.7	81.5	78.1	0.000
Black	8.2	11.3	15.8	0.000
Native American and Alaskan Native	2.0	1.8	2.6	0.001
Asian	7.7	4.2	3.0	0.000
Hawaiian Native and Pacific Islander	0.5	0.1	0.2	0.000
Other race	6.5	3.7	3.6	0.000
Hispanic	16.5	11.1	14.2	0.000
Education: Bachelor's degree	33.7	30.6	26.4	0.000

Chlamydia rate per 100,000, ages 15-19	1585.7	1903.1	2187.8	0.000
Gonorrhea rate per 100,000, ages 15-19	182.7	360.0	467.8	0.000
Birth rate per 1,000, ages 15-19	18.4	23.2	33.8	0.000

*Chi-square tests used to determine p-values

Table 2 reports the distribution of individuals within a state that identify with a given religion or Christian denomination by the overall religiosity level of the state. All but the Mormon faith was significantly associated with state religiosity level. For example, as more of the state population identifies as Evangelicals, Mainline Protestants, and Historically Black Protestants, state religiosity increases. Inversely, as more of the state population identifies as Catholic, Orthodox Christian, Jehovah's Witness, other Christian, Jewish, Muslim, Hindu, or Buddhist, state religiosity decreases.

Table 2. Denomination/Religion by Religiosity Level of State

	Religiosity Level of State			
Denomination/Religion	*Low*	*Medium*	*High*	*p-value*
Total school districts (n, %)	404 (30.7)	481 (36.6)	430 (32.7)	
Evangelical	17.3	23.5	37.0	0.000
Mainline Protestant	13.0	19.1	15.7	0.000
Historically Black Protestant	3.1	4.6	8.5	0.000
Catholic	26.1	23.0	14.1	0.000
Mormon	1.3	1.2	1.0	0.116
Orthodox Christian	0.8	0.4	0.2	0.000
Jehovah's Witness	0.8	0.6	0.7	0.000
Other Christian	0.4	0.3	0.3	0.000
Jewish	17.3	1.7	0.6	0.000
Muslim	13.0	1.0	0.7	0.000
Buddhist	3.1	0.5	0.4	0.000
Hindu	26.1	0.7	0.2	0.000

Logistic Regression Analysis

The purpose of this study was to investigate whether the religiosity of a state's population would impact the number of school districts within that state that have a CSE policy. Tables 3 and 4 report marginal effects from the logistic regressions run for each hypothesis tested. Table 3 reports the results for the following hypotheses using year fixed effects: H1, H1a, H1b, and H1c. The first and main hypothesis (H1) stated that there would be an inverse relationship between the religiosity of a state and the number of school districts in the state with a CSE policy, after controlling for demographic confounders. The results from this regression confirm this hypothesis, which includes the focal relationship and state demographic characteristics, are listed in the first column under (H1). Here, the probability of school districts having a CSE policy is 17.7 percentage points ($p<0.05$) lower among high religiosity states and 12.3 percentage points ($p<0.05$) lower among medium religiosity states than low religiosity states. Additionally, some state demographics are significant. For every 1 percentage point increase of individuals within a state aged 20 to 44, there is a 6.2 percentage point increase in the probability of school districts having a CSE policy. However, it should be noted that this is insignificant in subsequent regressions. Interpreting in a similar fashion, for every 1 percentage point decrease of individuals who identify as Native American or Alaska Native within a state, there is a 2.5 percentage point increase in the probability of school districts having a CSE policy. However, on average, Native Americans and Alaska Natives make up less than 2% of a state's population. Given the small population to sample from, subsequent regressions showing this relationship should not be taken as relevant. Finally, for every 1 percentage point increase in federal funding for AOSE a

state receives, there is a 0.4 percentage point increase in the probability of school districts having a CSE policy.

The results from hypothesis H1a, the first sub-hypothesis which states that the negative association in H1 will be strengthened after controlling for district parental involvement requirements, are reported in column two as marginal effects. In this regression, the relationship between state religiosity and CSE is no longer significant, which is likely due to the reduction in sample size upon introduction of this variable, as only half of school districts responded to these items in the SHPPS questionnaire. However, a significant positive relationship is reported between districts requiring parental notification and CSE ($p<0.05$): for every 1 percentage point increase in the number of school districts with a parental involvement requirement, there is a 13.1 percentage point increase in the probability of school districts having a CSE policy.

The second sub-hypothesis, H1b, states that voting behavior is a partial mediator of the proposed inverse relationship between religiosity and CSE. This regression shows a significant inverse relationship between religiosity and CSE nearly identical to that in H1. Additionally, the significant positive relationship between federal AOSE funding and CSE is also significant as in H1. A negative relationship is observed between the percentage of individuals identifying as very conservative within a state and CSE, but this is not significant. If voting behavior were acting as a mediator, one would observe a change in the significance between CSE and religiosity once political ideology was added to the model. However, that is not the case.

Finally, hypothesis H1c states that the proposed inverse relationship between religiosity and CSE in H1 will be weakened in states with higher rates of STDs and births

among teens. In fact, as compared to H1, the relationship between religiosity and CSE becomes insignificant with the addition of STD and birth rates. This points to STDs and birth rates potentially serving as a moderator as proposed in H1c. Additionally, as observed in H1 and H1b, there is a significant positive relationship between federal AOSE funding and CSE.

Table 3. Marginal Effects for all Variables

	(H1)	(H1a) Parental Involvement	(H1b) Political Ideology	(H1c) STD and Birth Rates
Dependent Variable				
School Districts with CSE Policy				
Independent Variable				
State Religiosity Level				
Low	0	0	0	0
Medium	-0.123*	-0.059	-0.123*	-0.081
High	-0.177*	-0.089	-0.178*	-0.104
State Demographics				
Female	0.106	0.022	0.106	0.093
Age				
Age 20-44	0.062*	0.001	0.062	0.082
Age 45-64	0.006	-0.004	0.006	0.012
Age 65+	0.029	0.029	0.029	0.032
Race				
Black	-0.006	-0.003	-0.006	0.000
Native American or Alaska Native	-0.025**	-0.020**	-0.025**	-0.018*
Asian	-0.015	-0.002	-0.015	-0.024
Hawaiian or Native Pacific Islander	0.016	0.010	0.016	0.036
Other Race	-0.007	0.016	-0.007	-0.003
Hispanic or Latino	-0.000	-0.000	-0.000	0.002
Bachelor's Degree or Higher	-0.006	0.003	-0.006	-0.018
Median Household Income	0.000	-0.000	0.000	0.000
Urban	0.025	-0.018	-0.025	0.029
Region				
Northeast	0	0	0	0

Midwest	0.011	-0.004	0.011	0.040
South	0.112	0.047	0.112	0.111
West	-0.003	-0.067	-0.002	-0.035
% Federal AOSE Funds	0.004**	-0.001	0.004**	0.003*
Parental Involvement Requirements (Parental Notification or Exclusion)		0.131**		
State Voting Behavior				
Very Conservative			-0.000	
State Teen STD and Birth Rates				
State Chlamydia Rate per 100,000				0.000
State Gonorrhea Rate per 100,000				-0.000
Teen Birth Rate per 1,000				-0.009
Observations	1287	800	1287	1287

Marginal effects
* $p < 0.05$, ** $p < 0.01$

Upon observing the change in significance after the addition of teen STD and birth rates to the model in H1c, these regressions were run again while separating the STDs from birth rates. This was done in order to parse whether the addition of one of these variables in particular led to the change in significance of the focal relationship. Results are reported in Table 4 as marginal effects. Only when state teen birth rates were added to the model did the relationship between religiosity and CSE become insignificant. Significant inverse relationships are also seen between gonorrhea and CSE and birth rates and CSE. The marginal effect for gonorrhea rate is very small, but the effect for birth rate is higher: for every 1 percentage point reduction in teen birth rates of a state, there is a 1.2 percentage point increase in the probability of school districts having a CSE policy.

Table 4. Breakdown of H1c Results

	Chlamydia Rate	Gonorrhea Rate	Birth Rate
Dependent Variable			
School Districts with CSE Policy			
Independent Variable			
State Religiosity Level			
Low	0	0	0
Medium	-0.131**	-0.105*	-0.090
High	-0.182*	-0.126	-0.143
State Demographics			
Female	0.078	0.087	0.104
Age			
Age 20-44	0.078*	0.081*	0.072*
Age 45-64	0.012	0.012	0.009
Age 65+	0.038	0.041	0.022
Race			
Black	0.001	0.003	-0.007
Native American or Alaska Native	-0.021**	-0.021**	-0.019*
Asian	-0.026	-0.019	-0.024
Hawaiian or Native Pacific Islander	0.039	0.025	0.038
Other Race	0.001	-0.007	-0.001
Hispanic or Latino	-0.000	0.002	0.000
Bachelor's Degree or Higher	-0.009	-0.014	-0.013
Median Household Income	0.000	0.000	0.000
Urban	0.025	0.029	0.026
Region			
Northeast	0	0	0
Midwest	0.033	0.038	0.020
South	0.080	0.038	0.189
West	-0.015	-0.053	0.014
% Federal AOSE Funds	0.003*	0.003*	0.004**
State Teen STD and Birth Rates			
State Chlamydia Rate per 100,000	-0.000		
State Gonorrhea Rate per 100,000		-0.000*	
Teen Birth Rate per			-0.012*

1,000			
Observations	1287	1287	1287

While running the regressions for hypotheses H1a, the sample size was reduced by nearly 500 observations. This was due to the lower response rate to those items in the SHPPS questionnaire. The relationship between religiosity and CSE lost its significance when parental involvement requirements were added to the model. Different explanations could account for this. In order to address whether the loss of sample size, rather than addition of parental involvement requirements, may have contributed to this change, the H1 regression was run with the same sample size as H1a. This was done by limiting the dataset only to observations that did respond to parental involvement items on the SHPPS questionnaire. Results are reported as marginal effects in Table 5 and show that the relationship between religiosity and CSE is no longer significant when the sample size is limited. It appears that an increase in sample size and loss of the parental involvement variable allows the significant relationship between state religiosity and CSE to remain. The reduction in sample size seems to account for the loss in significance of the focal relationship, rather than the addition of parental involvement requirements themselves. However, there remains a significant positive relationship between CSE and parental involvement requirements.

Table 5. Marginal Effects for H1, with Reduced Sample Size

	(H1)	(H1a) Parental Involvement
Dependent Variable		
School Districts with CSE Policy		
Independent Variable		
State Religiosity Level		

Low	0	0
Medium	-0.068	-0.059
High	-0.133	-0.089
State Demographics		
Female	0.024	0.022
Age		
Age 20-44	-0.002	0.001
Age 45-64	-0.004	-0.004
Age 65+	0.029	0.029
Race		
Black	-0.003	-0.003
Native American or Alaska Native	-0.020**	-0.020**
Asian	-0.002	-0.002
Hawaiian or Native Pacific Islander	0.004	0.010
Other Race	0.011	0.016
Hispanic or Latino	0.001	-0.000
Bachelor's Degree or Higher	0.005	0.003
Median Household Income	-0.000	-0.000
Urban	-0.021	-0.018
Region		
Northeast	0	0
Midwest	0.022	-0.004
South	0.102	0.047
West	-0.057	-0.067
% Federal AOSE Funds	-0.001	-0.001
Parental Involvement Requirements (Parental Notification or Exclusion)		0.131**
Observations	800	800

Marginal effects
* $p < 0.05$, ** $p < 0.01$

Table 6 reports results from hypothesis H2, which proposes that states with a higher proportion of individuals identifying as Evangelical or Mormon will be more likely to have a lower number of school districts adopting CSE. Logistic regressions were run where each religion and Christian denomination was the independent variable. All control variables used in H1, such as state demographics, were used in each of the regressions. Year fixed effects were also included. Marginal effects are reported in Table 6. Indeed, a significant negative relationship between the Evangelical population of a state and CSE is reported: for every 1 percentage point increase of individuals identifying as Evangelical in a state, there is a 1.2 percentage point decrease in the probability that

school districts will have a CSE policy. Additionally, a significant positive association is reported between the percentage of a state identifying as Mainline Protestant and CSE: for every 1 percentage point increase of individuals identifying as Mainline Protestant in a state, there is a 1 percentage point increase in the probability of school districts having a CSE policy.

Regressions including the percentage of individuals within each state who identified as Jewish, Muslim, Buddhist, and Hindu were also run. However, the results for these religions were not reported because they represent such a small percentage of each state.

Table 6. Marginal Effects for Type of Religion on CSE

% State Identifying with Religion	*Marginal Effect*
Evangelical	-0.012**
Mainline Protestant	0.010*
Historically Black Protestant	-0.005
Catholic	0.009
Mormon	0.005
Jehovah's Witness	0.087
Other Christian	-0.090

Marginal effects
* $p < 0.05$, ** $p < 0.01$

A breakdown of these regressions by hypotheses H1-H1c are reported in Table 7, which show change in a similar pattern as observed in Table 3 with religiosity and CSE. With the reduction of sample size and addition of parental involvement requirements, the previously significant relationships between Evangelical population and CSE and Mainline Protestant population and CSE become insignificant. For H1b, these relationships are again significant. Finally, upon the addition of STD and birth rates,

these relationships become insignificant. Results of H1c were further broken down as in Table 4, to see whether teen birth rates were driving the change in H1c. Similarly, significance of these relationships between Evangelicals and Mainline Protestants and CSE were not diminished until teen birth rates were included in the model.

Table 7. Marginal Effects for Type of Religion, by Hypothesis

	(H1)	(H1a) Parental Involvement	(H1b) Political Ideology	(H1c) STD and Birth Rates
Evangelical	-0.012**	-0.006	-0.013**	-0.007
Mainline Protestant	0.010*	0.006	0.011*	0.009
Historically Black Protestant	-0.005	-0.001	-0.006	-0.015
Catholic	0.009	0.016*	0.009	0.005
Mormon	0.005	-0.011	0.005	-0.002
Jehovah's Witness	0.087	-0.040	0.090	0.090
Other Christian	-0.090	-0.005	-0.089	-0.061

Marginal effects
* $p < 0.05$, ** $p < 0.01$

Chapter V: Discussion

Summary of Findings

The purpose of this study was to investigate whether an increase in the religiosity of a state's population would result in a decrease in the number of school districts within that state that have a CSE policy. Results confirm this relationship, as a significant inverse association is reported between religiosity and adoption of CSE in the first hypothesis (H1) and second sub-hypothesis (H1b). The relationship becomes insignificant upon addition of parental involvement requirements (H1a) and addition of STD and birth rates (H1c). The change in significance upon the addition of parental involvement requirements is likely due to the reduction in sample size when that variable is introduced to the model. However, a significant positive association is observed between parental involvement requirements and CSE. Additionally, attenuation of the

significant focal relationship upon addition of teen birth rates may support H1c as a moderator. Finally, significant associations between Evangelical and Mainline Protestant populations of a state and CSE adoption are reported.

Additionally, a significant inverse relationship between individuals within a state that identify as Native American or Alaska Native and CSE was noted. This may be explained by tendency of Native Americans and Alaskan Natives to live in specific regions and states within the US. It may be that these states happen to be those that have fewer school districts with a CSE policy. SHPPS data did not include schools that reside under the Bureau of Indian Schools, which oversees tribally-controlled schools. Although federal grants for sex education funding are available to these schools, they were not included in the calculation for overall federal sex education funds received by a particular state because these schools were not included in the analysis. Additionally, Native Americans and Alaska Natives on average account for less than 2% of a state's population.

Conclusions

Lower Probability of CSE Policies in States with Higher Religiosity

Hypothesis H1, in which religiosity of a state's voting community influenced CSE policy adoption within the state, relied on the assumption that voters elect board members who best represent their political ideologies, which have long been connected to religious beliefs (Esmer and Pettersson, 2007; Pew, 2014). The school board members elected by more religious communities, who more likely vote conservatively, would then be more likely to vote against a CSE policy in favor of either no sex education or an abstinence-based approach. Results from this study show that school districts residing in states with

high or medium religiosity have a lower probability of adopting a CSE policy than low religiosity states.

This relationship follows the literature well, as religion has profound influence on the shaping of individual views on sexuality and sex education (Luker, 2007; Moran, 2009; Zimmerman, 2015; Bolz-Weber, 2019). Indeed, religious groups have been credited with a large increase in the number of local controversies surrounding CSE policy in the late 1990's (Donovan, 1998), shortly before declines in the number of schools teaching formal sex education of any kind were reported in the 2000's (Lindberg et al., 2016). In fact, one study showed that adolescents who attended church more frequently were less likely to receive information on sex education topics (Lindberg et al., 2016).

Additionally, when religiosity is separated into Christian denominations, states with a higher percentage of Evangelicals are less likely to have CSE policies in their school districts, whereas states with a higher percentage of Mainline Protestants are more likely to have CSE policies. These differences between the population of different Christian denominations within states are also reflective of the literature. Support for CSE has become more common among progressive faith-based communities, particularly among Mainline Protestants (Boonstra, 2008) with some congregations even creating and implementing their own comprehensive sexuality programs for youth in their communities (Hack & Roberts-Dobie, 2016). However, more theologically conservative congregations, such as Evangelicals, are less receptive to comprehensive approaches to sex education and have historically been champions of the movement against CSE in schools (Luker, 2007; O'Doherty, 2017).

The conceptual framework for this study proposed that religiosity influences CSE policy adoption through the voting behavior of school district communities and subsequently their elected school board members. Based on H1b, then, adding political ideology to the model should attenuate the relationship between CSE and religiosity because it is acting as a mediator. However, results did not support this conclusion. Alternatively, religiosity may influence the adoption of CSE policies in other ways, besides through the voting behavior of a community. It may be that religious organizations within the community independently advocate for and influence school board decisions regarding sex education. Parents within a religious group may also be more likely to present their views to school boards or school administrators, enacting their influence directly to these individuals rather than through voting.

Parental Involvement Requirements are More Common in States with More CSE

Results showed that parental involvement requirements were more common among districts in states with higher adoption of CSE. Once parental involvement requirements were included in the model, the significant relationship between religiosity and CSE diminished, likely as a result of reduced sample size. However, a subsequent regression showed that parental involvement requirements were less likely to occur in more religious states. It may be that state religiosity affects CSE policy adoption and adoption of parental involvement requirements simultaneously: the less religious a state, the more school districts within that state have CSE and/or parental involvement policies.

Considering these results, it is worth referring to the prevalence of parental involvement requirements listed in Table 1. The majority of school districts across all religiosity levels have implemented these requirements. Notably, low religiosity states

have more school districts with parental notification and exclusion requirements (85.9%) than medium (78.1%) and high religiosity states (75.5%). Meanwhile, only about half overall (47-54%) follow a CSE policy.

One explanation for this is that school districts who teach little to no sex education have no need to include parental involvement laws. The dependent variable is dichotomous, and so does not specify how many sex education topics (if any at all) are taught in the school districts that do not qualify as comprehensive in the definition used to construct the CSE variable. Thus, school districts who do not teach sex education or those that teach a less comprehensive sex education curriculum may not feel the need to include parental involvement requirements because parents may be less concerned about the content being taught (or not taught). It is also likely that parents who are more religious already live in areas where CSE is not being taught. Given that religiosity negatively impacts the adoption of CSE and is inversely associated with parental involvement requirements, it may be that districts with more religious parents are discouraged to adopt CSE and thus have no need for parental involvement requirements.

Although it may initially be surprising to observe that school districts that have a more comprehensive view of sex education (those that have implemented a CSE policy) are the ones that allow more parental intervention, it makes good "risk management" sense. For example, school districts that have adopted CSE may be more exposed to negative public and parental opinion than districts that have "less controversial" or no sex education curriculum. Thus, they may be more likely to include parental involvement requirements so as to reduce negative views of the district and its sex education policy and allow parents who are most concerned to intervene.

Importantly, results from this study show no relationship between political ideology and CSE, and political ideology does not serve as a mediator between religiosity and CSE. One reason could be that parents who are very opinionated on sex education and who affiliate themselves more with a particular political ideology or religion do not represent the majority of voters in the area. This represents another reason, besides risk management, why low religiosity states are more likely to implement parental involvement requirements. School boards in these states may respond to a minority of actively-engaged parents because they are the most active advocates. Even if a group of parents who fiercely oppose CSE is small, they may be the most active in their community, thus influencing school board members who were elected by a more moderate overall voting community of the district. Thus, these board members may respond by implementing parental involvement requirements that allow parents to modify how their children receive sex instruction in that school, regardless of the district policy. Since this explanation cannot be tested within this analysis, further research should focus on quantifying how parents may influence school boards' decisions on sex education policies. Qualitative studies would be particularly useful to identify if indeed there are sub-populations of parents that are more active in promoting an AOSE approach over CSE to school boards.

In fact, there is a long history of the impact and influence of parents on sex education in the US (Moran, 2009; Luker, 2007; Zimmerman, 2015). The few studies that have attempted to illuminate factors that influence sex education in schools are limited to surveys of teachers in specific states or smaller geographical areas. These studies look more at factors that influence what is actually taught in the classroom (versus the policy

or even the curriculum requirements), but they support the idea that parental input and/or fear of community backlash helps teachers determine what they are willing to teach kids. For example, a national survey of public secondary school teachers in 1999 revealed that 32% were concerned about community reaction to sex education, for all topics except abstinence (Landry et al., 2003). A 2008 survey of 335 sex educators in Illinois reported that available curriculum, school input, and personal values (curriculum and school input based on district policy) rank highest in influencing what they taught during sex education, yet over 40% agreed that parent input has some or a great deal of influence (Lindau et al., 2008). A more recent survey of 82 middle school teachers in Hawaii asked about the importance of various factors on their sex education curriculum as well. Although teachers reported that their own personal values and the available curriculum (based on district policy) had the greatest influence on what was taught, 60% said that parental input had some or a great deal of influence (Woo et al., 2011). Thus, parents may influence sex education curriculum by placing pressure directly on teachers responsible for conveying the curriculum, or by influencing school board members who vote on policies surrounding CSE at the district-level, such as parental involvement requirements.

High Teen Birth Rates Weaken the Relationship between CSE and Religiosity

Results from H1c point to the possibility of teen birth rates acting as a moderator, weakening the previously significant relationship between state religiosity and CSE. This would support part of hypothesis H1c, which posited that both high STD and high birth rates among teens would weaken the focal relationship. Table 3 of the results showed that after addition of teen STD and birth rates, the significant relationship between CSE and

state religiosity was diminished, with Table 4 clarifying the role of teen birth rates. Additionally, Table 5 of the results showed that after addition of teen STD and birth rates, the significant inverse relationship between the Evangelical population of a state and CSE is diminished. After subsequent regressions were run, it was determined that the addition of teen birth rates, rather than teen STD rates, also led to this change.

There are explanations for why high teen birth rates would be more likely to weaken the relationship between religiosity and CSE than high STD rates. Pregnancy produces a noticeable physical change to the body, such as weight gain and protrusion of the belly as the fetus grows, while STDs are frequently asymptomatic and underreported. This may explain why people would be more likely to respond to arguments for interventions to avoid unplanned pregnancies among teens. Particularly important in religious contexts (and specifically Evangelical congregations), avoiding the potential for abortions among teens who have unintended pregnancies may be another motivating factor for the religious influence on CSE to be attenuated, as sex education may seem the better option than face high unplanned pregnancy and birth rates among teens and thus potentially higher abortion rates in the community.

However, this is not the only explanation for the attenuation of the relationship between state religiosity and CSE with the addition of teen birth rates. It may be that religiosity in some way leads to higher teen birth rates due to differing community values and priorities. This may then not independently influence whether or not a school district adopts CSE but may be reflective of the demographics of the school district itself. Figure 1 shows this potential explanation.

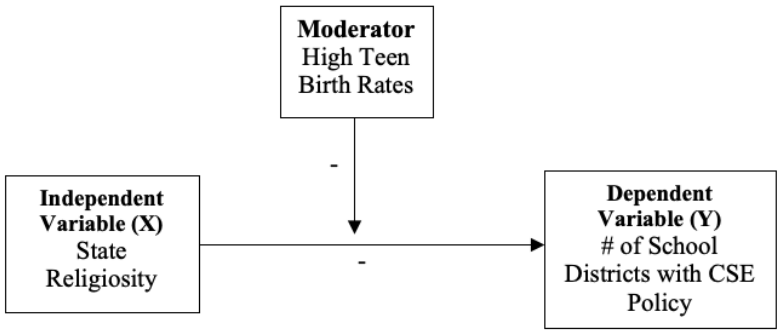

Figure 1. Teen Birth Rates as a Potential Moderator

Berry & Berry's (1999) policy and innovation model served as a helpful framework in developing a theoretical model for this study and in hypothesizing the myriad of influences on public policy. The adjustments made to this model in order to look at policy at the school district level using state and federal variables as internal and external determinants of policy adoption proved useful. This approach may be appropriate in future studies intending to evaluate the influence of religiosity or other variables on local policy adoption. However, this could be significantly improved upon by increased data availability at the local level. For example, internal determinants could change to reflect all mediators, obstacles, and demographics within a locality while external determinants reflect those at the state and federal level.

Additionally, Berry & Berry (1999) mention that problem severity can be an important determinant of the motivation to innovate in policy. For example, a policy that addresses an issue that is not easily identifiable or causing some problem would be given less attention than an issue that is pressing. Identifying these issues that may be quantified and shown to affect how policy decisions are made are important to include in such a model. This led to the development of H1c, the results of which provide notable

information on how the severity of teen birth rates change the way religiosity influences CSE policy adoption.

Strengths and Limitations

The most significant limitation this study faces is the level at which data was analyzed. Although all other data could be obtained at the school district-level, district identifiers in the SHPPS dataset are masked for privacy. Only the state of each district is disclosed, so all other variables such as religion and demographics were aggregated to the state level for the analysis. Thus, each school district within a state is linked with the overall state average of religiosity. It is likely that religiosity levels vary significantly between the communities of one school district within a state compared to another. Thus, this analysis fails to capture variation between districts within a state. Further research should link these variables at the local level in order to test whether the relationship between religiosity and CSE is strengthened.

In addition to this constraint in data availability, all datasets used in the analysis are cross-sectional surveys. Thus, only an association, rather than a causal relationship, can be established between religiosity, parental notification laws, and CSE. Additionally, survey data are subject to self-report bias and possible measurement error during implementation and coding. For the SHPPS survey, responses are not evenly distributed as the Midwest is overrepresented. This may be a result of sampling bias, as school districts within the Midwest seem more likely to respond to the survey than districts in other areas of the country.

Although there are limits in the scope of variation captured within this analysis, this study is the first of its kind. There is a large gap in the understanding behind what

drives sex education policy adoption, particularly at the local level. Only a few small surveys of teachers, typically limited to a single state, have looked at factors that influence sex education curriculum. This study looks at sex education policy adoption nationally and attempts to illuminate factors that may be involved.

Implications

The US currently faces the highest number of STD cases ever recorded, half of which are contracted by adolescents and young adults (CDC, 2018). The health and economic consequences of these skyrocketing STD numbers are staggering. Young women, biologically more susceptible to STDs than any other age group or gender, are more likely to go untreated and face long-term consequences such as PID and infertility due to lack of STD testing and treatment (CDC, 2013; Browner-Elhanan & Coupey, 1999). Billions of dollars are spent annually to treat STDs among individuals between the ages of 15 to 24 (Chesson et al., 2004). Additionally, teen pregnancy remains a critical issue for a country that still lags far behind all other industrialized nations (Sedgh et al., 2015).

Sex education is an important tool for combating this crisis of high STD and teen pregnancy rates. CSE, rather than AOSE, has repeatedly been shown to reduce risky sexual behaviors among teens (Boonstra, 2014; Lindberg & Maddow-Zimet, 2012; Underhill, Operario, and Montgomery, 2007; Kohler et al., 2008). As a result, for decades, public health advocates have worked to implement CSE in schools across the nation. However, implementation has slowed, and even reversed (Guttmacher Institute, 2017). All forms of sex education have declined across schools over the past decade despite increased scientific proof of CSE's efficacy, the high need for CSE, the amount of

federal funding available, and even consistently high public support for it. This study sought to fill in a crucial gap in the literature of sex education and public policy: what influences the adoption of CSE in school districts across the nation? How can public health advocates tailor their message to encourage school districts to adopt CSE?

The goal of this study was to identify whether or not religiosity was associated with decreased implementation of CSE policies in a state, with the idea that results could inform public health advocates in crafting messages and working with community groups to increase the adoption of CSE nationally. States with higher levels of religiosity do report lower levels of CSE adoption among school districts. Notably, school districts in states with larger Evangelical populations are less likely to adopt CSE, while school districts in states with larger Mainline Protestant populations are more likely. These results emphasize the importance of engaging with religious leaders to promote sex education.

Although increased religiosity is associated with a decline in CSE adoption, there has been support among certain religious groups for a more comprehensive approach to sex education. A study suggesting churches are underutilized resources for implementing sex education conducted qualitative interviews with Mainline Protestant faith leaders in the Midwest, many of whom expressed support for CSE and had even offered such programs through their churches (Hach & Roberts-Dobie, 2016). These views are becoming more common among progressive faith-based communities, typically Protestant and Jewish (Boonstra, 2008). Notably, authors of the study observed differences in views on sex education within the same denomination, suggesting that

when engaging with religious communities, individual congregations are more important than the overall denomination (Hach & Roberts-Dobie, 2016).

Engaging local congregations and religious leaders is particularly important in this context, as sex education policy is determined at the local level and is influenced by religiosity (Donovan, 1998; O'Doherty, 2017). For example, Donovan (1998) recommends the creation of local advisory committees composed of religious leaders, parents, medical professionals, and other community leaders to review and recommend sex education curriculum to school boards. Perhaps including objective discussion of the diversity of religious views on sexuality, with no emphasis on a particular ideology, would alleviate concerns about the exclusion of morality often attributed to CSE by Evangelical leaders (O'Doherty, 2017). Although collaboration with faith-based organizations take time, the history of partnerships between public health officials and religious leaders has proved fruitful. Former US Surgeon General Dr. David Satcher once said, "Through partnership with faith organizations and the use of health promotion and disease prevention sciences, we can form a mighty alliance to build strong, healthy, and productive communities" (Levin, 2014).

Additionally, parental involvement requirements are more common in states with higher CSE adoption and lower religiosity. These results suggest that public health advocates should also focus messaging and educational campaigns toward both religious organizations and parents. Besides children in schools, parents have the most invested in the sex education debate than any other group. Parents are fierce advocates for what they believe is right for their child, as they should be. The sex education debate has long struggled with how much instruction and curriculum should be regulated by schools or by

parents. For decades, parents have argued that it is their duty, rather than the school's, to teach their personal values around sexual activity to their children (Moran, 2009; Luker, 2007; Zimmerman, 2015). However, according to Lindberg et al. (2016), while receipt of formal sex education has declined across the country between 2006 and 2013, the percent of adolescents receiving instruction from a parent has not changed significantly during this time. This suggests that even when children no longer receive formal sex education from schools either because the school no longer teaches it or because their parents have opted them out of instruction, few children will receive a replacement from parents. Thus, the argument allowing parents to withdraw or limit their children's instruction based on the fact that they would be better educators seems limited. Even if parents are teaching their children, the curriculum they use cannot be measured and important aspects may be left out.

Based on the results of this study, it seems that school boards who have adopted a more comprehensive sex education curriculum avert this issue by simply relaxing rules so that parents can become more involved in their children's sex education. Literature showing fear of parental backlash to controversial sex education programs by teachers, school administrators, and school boards has been extensively documented (Landry et al., 2003; Luker, 2007; Lindau et al., 2008; Moran, 2009; Woo et al., 2011; Zimmerman, 2015; Ross & Kantor, 1995; Donovan, 1998). However, this approach merely limits the opportunity for all children and teens to access CSE. This is why engagement with both parents and religious leaders in a community by public health advocates is important and may help alleviate parents' concerns and demonstrate the effectiveness and need for CSE.

The attenuation of the relationship between religiosity and CSE by high teen birth rates leads to another way to refine a public health message. If in fact community members are more influenced by high teen birth rates rather than high teen STD rates, and if this influences initial religious views towards CSE, then initiatives promoting CSE as an effective intervention to parents, religious leaders, and school boards should highlight teen pregnancy. Focusing on an outcome that produces physical changes, such as pregnancy, may be more helpful than focusing on STDs, which are frequently asymptomatic, in demonstrating the need for a CSE policy in districts that have not yet adopted one.

Public health advocates should be encouraged to work with local congregations and religious leaders, parents, and schools in promoting CSE throughout the country. Additionally, interventions teaching schools how to better communicate this information to parents may be helpful in discouraging the use of parental involvement requirements and decrease the likelihood that parents will opt their child out of CSE. In order to help facilitate the adoption of CSE by school boards, the federal government should continue and expand upon the Obama Administration's provision of federal funding for evidence-based sex education programs.

Recommendations for Future Research

Ideally, more detailed and publicly available data should be collected on sex education policies and curriculum across the country. These data would allow researchers to connect demographic, religious, and political ideology variables to sex education at the district level. Wide variation exists in these variables within states; some school districts may be located in areas with low religiosity while others are located in areas with high

religiosity. The ability to link data at the local level, then, would allow researchers to further confirm, or likely find a strengthened relationship between, religiosity and CSE policy adoption. Also, limited information exists regarding the number of school children who only receive part of or none of the sex education instruction taught through their schools because their parents have withdrawn them. Further research should look to characterize this population of children and/or parents so that interventions seeking to educate parents and increase the percentage of kids who receive formal sex education nationally can be more narrowly tailored.

Variation of theological viewpoints within major Christian denominations and within other minority religions within the US should also be considered. Traditionally, minority religions within the US have been underrepresented in social sciences research. In the future, surveys should consider over-sampling of these populations so that better data could be used to understand how other religions within a community may affect policy adoption at the local level. Qualitative studies may also prove useful in supplementing more thorough quantitative data on other religions in the US. It is likely that, similar to our findings with Christianity, different denominations and congregations will vary in level of theological conservativism and thus whether individuals in a given community support sex education policy.

Additionally, further research should try to understand better this relationship between parental involvement, religiosity, and CSE policy adoption. It may be that we do not observe a connection between political ideology and CSE because voting behavior is not necessarily driving district school board member behavior. It may be that parents or religious organizations in the community are more active in advocating for their views on

sex education directly to school board members, and as a result, the school board amends sex education policy by allowing parents to intervene. In order to confirm whether this is in fact the case, studies should try to measure levels of parental advocacy in school districts, and whether this is what drives CSE adoption or modification via parental involvement requirements. Public health advocates could use this information to target their messaging and educational campaigns towards groups of parents and religious communities that are more likely to pressure school board members against adoption of CSE or allowing parental intervention of sex education within their schools.

References

Association of Religion Data Archives. (2011). US Religion Census: Religious Congregations and Membership Study, 2010 (County File). Retrieved from: http://www.thearda.com/Archive/Files/Descriptions/RCMSCY10.asp

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, *51*(6), 1173.

Berry, F. S., & Berry, W. D. (1999). Innovation and diffusion models in policy research. *Theories of the policy process*, *169*.

Bolz-Weber, N. (2019). *Shameless: A Sexual Reformation*. Convergent Books.

Boonstra, H. D. (2008). Matter of faith: Support for comprehensive sex education among faith-based organizations. *Guttmacher Policy Review*, *11*(1), 17-22.

Boonstra, H.D. (2014). What is Behind the Declines in Teen Pregnancy Rates? *Guttmacher Policy Review, 17*(3), 15-21.

Bowen v. Kendrick. (n.d.). *Oyez*. Retrieved September 9, 2018, from https://www.oyez.org/cases/1987/87-253

Bratt, D. (2013). Clarifying the Policy Broker in the Advocacy Coalition Framework. In *International Conference on Public Policy Grenoble, France. pp* (pp. 1-23).

Brückner, H., & Bearman, P. (2005). After the promise: the STD consequences of adolescent virginity pledges. *Journal of Adolescent Health*, *36*(4), 271-278.

CDC. Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, Healthy Schools. *Whole School, Whole Community, Whole Child (WSCC)*. Retreived from: https://www.cdc.gov/healthyschools/wscc/index.htm

CDC. National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Reported Cases of STDs on the Rise in the US. https://www.cdc.gov/nchhstp/newsroom/2015/std-surveillance-report-press-release.html. November 6, 2017.

CDC. National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. STD & HIV Screening Recommendations. Retrieved from: https://www.cdc.gov/std/prevention/screeningreccs.htm. April 27, 2017.

CDC. National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. *Sexually Transmitted Infections Among Young Americans.* April 2013.

CDC. National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. NCHHSTP AtlasPlus. August 2017. Retrieved from: https://www.cdc.gov/nchhstp/atlas/index.htm?s_cid=bb-od-atlasplus_002

CDC. National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. YRBS Data Summary and Trends Report. June 2018. https://www.cdc.gov/healthyyouth/data/yrbs/pdf/trendsreport.pdf

CDC. (2017). School Health Policies and Practices Study (SHPPS). Retrieved from: https://www.cdc.gov/healthyyouth/data/shpps/index.htm

Chen, X. K., Wen, S. W., Fleming, N., Demissie, K., Rhoads, G. G., & Walker, M. (2007). Teenage pregnancy and adverse birth outcomes: a large population based retrospective cohort study. International journal of epidemiology, 36(2), 368-373.

Chesson, H. W., Blandford, J. M., Gift, T. L., Tao, G., & Irwin, K. L. (2004). The estimated direct medical cost of sexually transmitted diseases among American youth, 2000. Perspectives on sexual and reproductive health, 36(1), 11-19.

Chin, H. B., Sipe, T. A., Elder, R., Mercer, S. L., Chattopadhyay, S. K., Jacob, V., ... & Chuke, S. O. (2012). The effectiveness of group-based comprehensive risk-reduction and abstinence education interventions to prevent or reduce the risk of adolescent pregnancy, human immunodeficiency virus, and sexually transmitted infections: two systematic reviews for the Guide to Community Preventive Services. American journal of preventive medicine, 42(3), 272-294.

Clayton, R. R. (1971). 5-D or 1?. *Journal for the Scientific Study of Religion*, 37-40.

Donovan, P. (1998). School-based sexuality education: the issues and challenges. *Family Planning Perspectives*, *30*(4), 188-193.

Esmer, Y., & Pettersson, T. (2007). The effects of religion and religiosity on voting behavior. In *The Oxford handbook of political behavior*.

Donovan, M. K. (2017). The looming threat to sex education: A resurgence of federal funding for abstinence-only programs. Guttmacher Policy Review, 20, 44-47.

Feijoo, A. Adolescent Sexual Health in Europe and the U.S. – Why the Difference? Advocates for Youth, 2009.

Future of Sex Education (FoSE). (2018). Definition of Comprehensive Sex Education. Retrieved from: http://www.futureofsexed.org/definition.html

Guttmacher Institute. (2017). American Adolescents' Sources of Sexual Health Information. https://www.guttmacher.org/fact-sheet/facts-american-teens-sources-information-about-sex

Guttmacher Institute. (2004, December 3). New Report Finds Federally Funded Abstinence-Only Programs Offer False, Misleading Information. Retrieved from: https://www.guttmacher.org/article/2004/12/new-report-finds-federally-funded-abstinence-only-programs-offer-false-misleading

Guttmacher Institute. (2018). Sex and HIV Education. Retrieved from: https://www.guttmacher.org/state-policy/explore/sex-and-hiv-education

Guttmacher Institute. (2018, September 1). State Laws and Policies: Sex and HIV Education. Retrieved from: https://www.guttmacher.org/state-policy/explore/sex-and-hiv-education

Hach, A., & Roberts-Dobie, S. (2016). 'Give us the words': Protestant faith leaders and sexuality education in their churches. *Sex Education*, *16*(6), 619-633.

James, L. R., & Brett, J. M. (1984). Mediators, moderators, and tests for mediation. *Journal of Applied Psychology*, *69*(2), 307.

Judd, C. M., & Kenny, D. A. (1981). Process analysis: Estimating mediation in treatment evaluations. *Evaluation review*, *5*(5), 602-619.

Kaiser Family Foundation. (2002, March). Issue Update: Sex Education in the U.S.: Policy and Politics. Retrieved from: https://kaiserfamilyfoundation.files.wordpress.com/2013/01/3224.pdf

Kaiser Family Foundation. (2017, Nov 21). Abstinence Education Programs: Definition, Funding, and Impact on Teen Sexual Behavior. Retrieved from http://kff.org

Kappeler, E. M., & Farb, A. F. (2014). Historical context for the creation of the Office of Adolescent Health and the Teen Pregnancy Prevention Program. *Journal of Adolescent Health*, *54*(3), S3-S9.

Kirby, D. (2007) Emerging Answers 2007: Research Findings on Programs to Reduce Teen Pregnancy and Sexually Transmitted Diseases. Washington, DC: National Campaign to Prevent Teen and Unplanned Pregnancy. http://www.thenationalcampaign.org/EA2007/EA2007_full.pdf

Kirby, D. (2008). The Impact of Abstinence and Comprehensive Sex and STD/HIV Education Programs on Adolescent Sexual Behavior. Sexuality Research & Social Policy, 5(3), 18–27.

Knaggård, Å. (2015). The Multiple Streams Framework and the problem broker. *European Journal of Political Research*, *54*(3), 450-465.

Kohler, P. K., Manhart, L. E., & Lafferty, W. E. (2008). Abstinence-only and comprehensive sex education and the initiation of sexual activity and teen pregnancy. *Journal of Adolescent Health*, *42*(4), 344-351.

Kost, K., Maddow-Zimet, I., & Arpaia, A. (August, 2017). Guttmacher Institute. Pregnancies, Births and Abortions Among Adolescents and Young Women In the United States, 2013: National and State Trends by Age, Race and Ethnicity**.** Retrieved from: https://www.guttmacher.org/sites/default/files/report_pdf/us-adolescent-pregnancy-trends-2013.pdf

Landry, D. J., Darroch, J. E., Singh, S., & Higgins, J. (2003). Factors associated with the content of sex education in US public secondary schools. Perspectives on Sexual and Reproductive Health, 35(6), 261-262.
Levin, J. (2014). Faith-based partnerships for population health: challenges, initiatives, and prospects. *Public Health Reports*, *129*(2), 127-131.

Lindberg, L. D., & Maddow-Zimet, I. (2012). Consequences of sex education on teen and young adult sexual behaviors and outcomes. Journal of Adolescent Health, 51(4), 332-338.

Lindberg, L. D., Maddow-Zimet, I., & Boonstra, H. (2016). Changes in adolescents' receipt of sex education, 2006–2013. *Journal of Adolescent Health*, *58*(6), 621-627.

Luker, K. (2007). *When sex goes to school: Warring views on sex--and sex education--since the sixties*. WW Norton & Company.

McLendon, M. K., & Cohen-Vogel, L. (2008). Understanding education policy change in the American states: Lessons from political science. *Handbook of education politics and policy*, 30-51.

Mintrom, M., & Vergari, S. (1998). Policy networks and innovation diffusion: The case of state education reforms. *The Journal of Politics*, *60*(1), 126-148.

Moran, J. P. (2009). *Teaching sex: The shaping of adolescence in the 20th century*. Harvard University Press.

National Coalition Against Censorship (NCAC). (2018). Timeline of Abstinence-Only Education in U.S. Classrooms. Retrieved from: https://ncac.org/resource/timeline-of-abstinence-only-education-in-u-s-classrooms

National Conference of State Legislatures (NCSL). (2016, December 21). State Policies on Sex Education in Schools. Retrieved from: http://www.ncsl.org/research/health/state-policies-on-sex-education-in-schools.aspx#2

Ness, E. C., & Mistretta, M. A. (2009). Policy adoption in North Carolina and Tennessee: A comparative case study of lottery beneficiaries. *The Review of Higher Education*, *32*(4), 489-514.

Nowlin, M. C. (2011). Theories of the policy process: State of the research and emerging trends. *Policy Studies Journal*, *39*(s1), 41-60.

O'Doherty, D.A.D. (2017). The religious right and the battle over sex education in the United States. University of Toronto Journal of Religion, 8.

Peterson, S. A. (1992). Church participation and political participation: The spillover effect. *American Politics Quarterly*, *20*(1), 123-139.

Esmer, Y., & Pettersson, T. (2007). The effects of religion and religiosity on voting behavior. In *The Oxford handbook of political behavior*.

Pew Research Center (2018). Religious Landscape Study. Retrieved from: http://www.pewforum.org/religious-landscape-study/

Planned Parenthood Federation of America (PPFA). (March 2012). Issue Brief: Sex Education in the United States.

Ross, S., & Kantor, L. M. (1995). Trends in opposition to comprehensive sexuality education in public schools: 1994-95 school year. *SIECUS report*, *23*(6), 9-15.

Santelli, J. S. (2008). Medical Accuracy in Sexuality Education: Ideology and the Scientific Process. *American Journal of Public Health*, *98*(10), 1786–1792. http://doi.org/10.2105/AJPH.2007.119602

Section 510 (b) of Title V of the Social Security Act, P.L. 104–193

Sedgh, G., Finer, L. B., Bankole, A., Eilers, M. A., & Singh, S. (2015). Adolescent Pregnancy, Birth, and Abortion Rates Across Countries: Levels and Recent Trends. *The Journal of Adolescent Health : Official Publication of the Society for Adolescent Medicine*, *56*(2), 223–230.

Sex and HIV Education. Guttmacher Institute, 2017. https://www.guttmacher.org/state-policy/explore/sex-and-hiv-education

Sexuality Information and Education Council of the United States (SIECUS). (September 2018). Trump attempts to shift TPPP to promote abstinence-only ideology. Retrieved from: https://siecus.org/wp-content/uploads/2018/09/TPPP-Timeline-09.18.pdf

Social Security Administration. Compilation of The Social Security Laws, 2017. https://www.ssa.gov/OP_Home/ssact/title05/0510.htm

Trenholm, Christopher, et al. for Mathematica Policy Research Inc. (2007). Impacts of Four Title V, Section 510 Abstinence Education Programs — Final Report. Washington, DC: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation. [Online]. http://www.mathematica-mpr.com/welfare/abstinence.asp

Underhill, K., Operario, D., & Montgomery, P. (2007). Abstinence-only programs for HIV infection prevention in high-income countries. The Cochrane Library.

Voetsch, A., Balaji, A., Heffelfinger, J., Miller, K., Branson, B., Eaton, D., & Kann, L. (2009). HIV testing among high school students-United States, 2007. *Morbidity and Mortality Weekly Report*, *58*(24), 665-668.

World Health Organization (WHO). Media centre fact sheets. Human papillomavirus (HPV) and cervical cancer. June 2016. Retrieved from: http://www.who.int/mediacentre/factsheets/fs380/en/.

Woo, G. W., Soon, R., Thomas, J. M., & Kaneshiro, B. (2011). Factors affecting sex education in the school system. Journal of pediatric and adolescent gynecology, 24(3), 142-146.

Zimmerman, J. (2015). *Too hot to handle: A global history of sex education*. Princeton University Press.