POLICY AND PARITY: HOW GENDER EQUALITY AND REPRODUCTIVE TECHNOLOGIES INFLUENCE THE INNOVATION AND DIFFUSION OF MARRIAGE EQUALITY POLICES.

by

Meika R. Berlan

A dissertation submitted to the faculty of
The University of North Carolina at Charlotte
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in
Public Policy

Charlotte

2016

Approved by:

_____
Dr. Stephanie Moller

_____
Dr. Joseph Whitmeyer

_____
Dr. Suzanne Leland

_____
Dr. Yvette Huet

ABSTRACT

MEIKA R. BERLAN. Policy and Parity: How gender equality and reproductive technologies influence the innovation and diffusion of marriage equality policies. (Under the direction of DR. STEPHANIE MOLLER)

My research examines the adoption and diffusion of marriage equality policies in states across the US. I analyze how gender equality and reproductive technology reshape norms around marriage and family to foster the broad support of same sex marriage policies. Scholars recognize that the institution of marriage is modernizing, but little research exists on how these changes have influenced the public policies that are in place to regulate this union. I use data from a variety of government sources to measure inequality between the sexes in economic, political, and social domains, as well as the prevalence of assistive reproductive technology. An event history analysis is employed to analyze whether these factors are important to a state's decision to adopt, after controlling for other influential variables. The results of my analysis indicate that gender equality is not a significant factor in decisions to adopt, but the assistive reproductive technology does have a significant and robust impact on policy adoption. The significance of assistive reproductive technology to the adoption of same sex marriage policies demonstrates that changing norms and growing possibilities around childbearing cultivate support for public policies that institutionalize these shifts. The findings from my study are important and useful, as same sex marriage policies have far-reaching implications. This line of inquiry highlights how changing social norms are powerful enough to prompt the adoption of public policies that more accurately depict the values and beliefs of a modern society.

ACKNOWLEDGMENTS

I would like to thank my dissertation chair Dr. Stephanie Moller for her encouragement, commitment to my success, and meaningful guidance over the years. I am grateful for her confidence in me and her counsel over the years. I would also like to thank my dissertation committee, Dr. Joseph Whitmeyer, Dr. Suzanne Leland, and Dr. Yvette Huet whose expertise was invaluable. I appreciate the support, insights, and feedback they provided over the course of my dissertation. I am thankful for the opportunity to learn from each member of my committee, which contributed immensely to my success.

I would like to acknowledge Jennie Wienke, Brian Jones, Jackson Deziel, and Samuel Grubbs who provided much needed and much appreciated camaraderie and fellowship that truly enriched my experience in the doctoral program.

I am grateful to my husband Brian Berlan for supporting me through this journey and always having confidence in me. His patience, love, and dedication mean so much to me and were integral to successfully earning my PhD. I would also like to thank my family, Michele, Jim, and Jaime Garner, for their continued love and support. I am very thankful for their enthusiasm and encouragement over the course of my doctoral studies.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

LGBT (lesbian, gay, bisexual, and transgender) individuals and same sex couples have started to occupy a larger place within our society. The growing presence of sexual minorities across all facets of life has induced discussion around the integration and assimilation of this minority group into broader society. Essential to this deliberation is determining the role that public policies will have in managing and governing how rights, benefits, and protections are ascribed to LGBT individuals, couples, and their families. Like other minority groups, the LGBT community has struggled to obtain an equal place within society as they seek acceptance, recognition, and rights under the law. It is this pursuit of equality that has sprung various actors into motion and generated new public policies in an effort to regulate how sexual minorities are included in society. The discourse surrounding the issues faced by the LGBT community has evolved leaving diffuse public policies in the wake.

The public policies that are adopted to address LGBT issues are important because they institutionalize new social norms at the macro level, and convey how individuals perceive this group at a micro level. Policy making activities regarding LGBT issues have transpired in several policy domains including healthcare, labor, and family – with the issue of marriage equality taking center stage in recent years. The debate about same sex marriage was contentious as the public and political leaders remained actively engaged to ensure that their deeply held core beliefs were upheld through public policies.

Marriage, as a sociopolitical institution, is heavily embedded in American culture and has deep roots in religion and government. Over time the norms around marriage have changed, challenging the status quo and inspiring heated debate among ardent opponents and supporters divided on the issue; the eventual outcome forcing change and progress. Advocates of same sex marriage prevailed after the Supreme Court ruled that same sex couples had a constitutional right to marry. This landmark decision reshaped the political landscape by forcing the hands of many state policy makers, requiring that they extend the right to marry to same sex couples.

My dissertation focuses on same sex marriage policies to analyze how shifting social norms and medical advancements regarding childbearing drove the adoption of these public policies at the state level. My research builds on the existing literature by introducing two new key variables of interest – gender equality and reproductive technology – to the body of inquiry. The inclusion of these two variables in my analysis acknowledges that gender role norms and options for reproduction have modernized the institution of marriage, thereby facilitating the redefining of public policies that govern this union. I draw on literature from political science and sociology because of the complexity of the issue and the dynamic political environment. This interdisciplinary approach allows me to comprehensively test how important changes within society motivated political action. *The research questions that frame my dissertation are "Does gender equality impact the adoption of state marriage equality policies?" and "Does reproductive technology influence the adoption of state marriage equality policies?"* Through my quantitative analysis I tease out whether gender inequalities and reproductive technologies influenced the adoption of state marriage equality policies.

Relevance

Sweeping political change around same sex marriage occurred in just a decade. In 2004 Massachusetts became the first state to issue marriage licenses to same sex couples. Following the adoption of Massachusetts's policy was a wave of political action that expanded rights to same sex couples in the form of domestic partnerships, civil unions, and other marriage equality policies. During this same time other states reacted with opposition, implementing statutory bans and constitutional amendments that prevented same sex couples from entering into any union recognized by the government. In the summer of 2013 the US Supreme Court overturned the Defense of Marriage Act (DOMA), ruling that it was unconstitutional. This ruling had far reaching implications and demonstrated that the federal government recognized the growing trend towards the support and acceptance of same sex marriage among Americans. The decision also improved the ability for state law makers to introduce marriage equality policies since the federal government no longer sanctioned marriage as strictly between one man and one woman. Two years from the decision to overturn DOMA, on June 26, 2015, the US Supreme Court ruled again, this time instigating the nationwide legalization of same sex marriage. Although, this ruling shortly became the law of the land, states were still debating the issue of same sex marriage, which led to major resistance against the implementation of the Supreme Court's decision. There was national attention on this issue following the ruling, as Americans remained divided. These political developments underscore the relevance of my research and affirm the need to examine the factors that drove some states to adopt marriage equality policies and not others.

The pursuit of marriage among same sex couples and the controversy that has surrounded the debate confirms that the institution of marriage remains relevant in modern America and is uniquely important to governing bodies. Marriage carries meaning in both public and private spheres, with public policies that regulate this union institutionalizing the social norms that surface and embed themselves in society. The government's continued efforts to use this institution as a way to create social order communicates its purposeful existence in American society.

Marriage equality represents only a single item on the broader agenda of the LGBT movement in their quest for equal treatment across all aspects of public and private life. The pursuit of equality for sexual minorities is "the civil rights challenge of our time" as touted by national and international political officials alike. Studying cases like same sex marriage identifies how state level characteristics facilitate or impede progress that fosters the inclusion of sexual minorities. The insights and information gleaned from research of this nature is important to policy makers, advocates, and the public who are trying to more successfully address the needs and concerns of a growing LGBT community.

My study tests whether communities that are more unequal generate greater inequalities across different populations. The normalization of inequality within these communities may be powerful enough to implicitly shape policy making activities that marginalize other groups of people and institutionalize their unequal treatment through public policies. There are several defining characteristics (age, sex, race, etc.) that can be attributed to inequality; however the people in these distinct groups are protected against overt and explicit discrimination under the law. Unlike the aforementioned protected

classes, sexual minority status (sexual orientation and gender identity) is still relatively new and the inclusion and protection of sexual minorities in public policies is still not standard in state laws across the US. The exclusion of sexual minorities from these public policies creates a window of opportunity to examine the factors that drive the innovation and diffusion of new public policies that redress these concerns. My findings illuminate how, as a modern, postindustrial society Americans manage discrimination through policy making.

One scientific advancement that has empowered women by increasing opportunities for procreation is assistive reproductive technologies (ART). Women's reproductive abilities make them fundamentally different than men and together with roles of motherhood have historically been used to create and exacerbate gender inequality (Bem 1993; Chodorow, 1999). ART provides women with more options for childbearing, allowing them to delay marriage, grow more attached to the labor market, and pursue parenthood outside of traditional marriage. These technologies also provide benefits to men by increasing options for reproduction (surrogacy, sperm donation, etc.), allowing them to bear and raise children independently. Family planning has also changed because of ART as it expands options for opposite sex couples and enables same sex couples to conceive and reproduce. These shifts to childbearing norms demonstrate how assistive reproductive technologies can contribute to the dismantling of gender inequality. Recognizing and studying how this influences marriage as an institution, provides insights into the decisions that political officials make and the public policies that are generated from this political process.

CHAPTER 2: LITERATURE

The existing body of knowledge is useful for understanding the rich context in which policy making takes place and in identifying the factors that influence the policy making process. I draw on scholarship from the fields of sociology and political science to build a theoretical foundation that frames my argument and guides my research design. These two areas of social science provide insights and information that are integral to examining the complexities of same sex marriage and the factors that drive policy making in this domain. My review of the literature culls together relevant pieces of scholarship and builds on research findings to develop a theoretical framework and facilitate the creation of a rigorous analytical strategy.

I articulate a cogent argument by highlighting how the scholarship within these fields are interconnected and how, when examined together, they improve the understanding of policy making in regards to same sex marriage. The sociological literature has established that social norms around marriage and family have changed (Amato, 2004; Cherlin, 2004), expounding on the causes and implications of these sociological shifts. Complementing this research, political science scholarship identifies how these shifts are institutionalized through the adoption and diffusion of public policies. Together they guide my meaningful selection of variables and frame causal explanations for why marriage equality policies surfaced and were actualized across the US.

I argue that a more egalitarian society, driven by the empowerment and integration of women in economic, political, and social domains, fosters opportunities for alternative lifestyles [outside of traditional marriage arrangements] to emerge and gain wider acceptance. As women are better educated, integrated into the workforce, and engaged in politics, gender inequality declines, lifestyles adapt, public attitudes evolve, and new social norms around sociopolitical institutions are derived. Marriage as a union for women to pursue economic security and for partners to have and raise children evolves into a union that is mutually beneficial, companionate, and reflects a joint commitment that honors the lifestyle choices of individual couples (Cherlin, 2004). Political leaders have started to recognize that healthy marriages should be rooted in egalitarian principles and that couples should be free to define and organize their relationship how they see fit (Amato, 2004). Drawing on the marital resilience perspective, advocates argue that the government should play no role in sanctioning one type of family as better than others (Amato, 2004). It is in this environment that the possibility for same sex marriage surfaces and rises, driven by efforts of LGBT community to obtain equal rights.

The literature provides a rich history of the LGBT movement, elucidating how and why sexual minorities have pursued equal treatment under the law, over time. While progress has been made, the full integration and inclusion of sexual minorities in society continues to be problematic as they face adversity and discrimination. Research shows that sexual minorities experience minority stress (Meyer, 1995), employment discrimination (Badgett, 1996; Pizer et al., 2011), acts of violence (Comstock, 1992; Herek & Berrill, 1992; Herek et al., 1997; Jenness & Grattet, 2001; Stotzer, 2009), and

lack access to healthcare (Ash & Badgett, 2006; Buchmueller & Carpenter, 2010), among other issues. These findings indicate that sexual minorities face persecution simply because of their status and legitimize claims for protection under the law through more inclusive public policies. A deeper understanding of LGBT issues is needed, but requires improvements to the collection and access of sexual minority data.

The framing of my argument begins with a discussion of LGBT data collection and shortcomings and is followed by a review of LGBT community's historical roots of action. A discussion of the research regarding gender equality and reproductive technologies will follow. Next, I discuss how policies targeting the LGBT community are generally viewed in terms of morality and how the innovation and diffusion of these policies differ. I conclude with a synopsis of related research, denoting the findings from these studies and addressing their relevance to my dissertation.

The LGBT Data Divide

The nascent collection of data and body of knowledge around the LGBT community has plagued research in this domain. It is only recently that government and administrative bodies have begun to gather relevant data that fosters the scientific study of this population. Gates & Ost (2004) published the Gay and Lesbian Atlas using data from the 2000 US Census to examine the spatial organization and geographic location patterns of same sex couples, which were present in 99.3% of counties. This publication is notable because it drew attention to the presence of LGBT individuals and couples in communities all over the US. The Gay and Lesbian Atlas was one of the first books to compile data on gay and lesbian households and provided detailed information and yielded important insights about same sex unmarried households (Gates & Ost, 2004).

The continued deficiency of data regarding sexual minorities stems from the lack of tools and agreement in how to properly define and measure basic concepts like LGBT status. In a report conducted by The Williams Institute, Gary Gates (2011) found that approximately 3.5% of adults in the US identified as lesbian, gay, or bisexual (which is about 9 million people), with another 0.3% of people identifying as transgender. Gates (2011) contends that the proper measurement and inclusion of sexual orientation and gender identity questions in large population-based surveys are critical to recognizing the presence of sexual minorities, conducting research on LGBT issues, and informing the policy debate.

Another issue that affects the collection of data and creates unique challenges in the measurement of sexual orientation and gender identity is the ability and social pressure to conceal LGBT status. As self-reported data, measures of LGBT status can be flawed and depend heavily on external influences that shape an individual's decision to openly disclose their sexual orientation or gender identity. Public policies also facilitate or impede the disclosure of sexual orientation and gender identity – with the exclusion of such protected status in nondiscrimination policies inhibiting individuals from disclosing this information (Badgett, 1996). Despite these constraints some scholars have made a devoted effort to collect, record, analyze and share research about the LGBT community. These studies have contributed to the identification of consequences associated with LGBT status, including the economic (Badgett, 1995, 2006; Alm, Badgett, & Whittington, 2000; Albelda, Ash, and Badgett, 2005), political (Haider-Markel & Meier, 1996; Wald, Button, & Rienzo, 1996; Rimmerman, Wald, and Wilcox, 2000), and social (Herek & Berrill 1992; Vaid, 1996; Brewer, 2003, 2014) ramifications.

A recent report from Gary Gates (2015) at the Williams Institute presented demographic information about same sex couples using the US Census's 2013 American Community Survey (ACS), which collected data on married and unmarried same sex couples for the first time in a nationally representative sample. The collection of this type of data allows for the comparison across same sex and opposite sex couples, providing new information about general trends and broad evaluations of the two groups. The demographic information in Table1 demonstrates some similarities between same sex and opposite sex couples. Marriage moderates the likelihood of being in poverty, increases the likelihood of owning a home, and has a positive effect on income for same sex and opposite sex couples. Childbearing is common among opposite sex couples, while the number of same sex couples having children has varied over time; in 1990 12% of same sex couples were raising children, increasing to 19% in 2006 and dropping to 16% in 2009 (Gates, 2011). Marriage is highest for whites, and Hispanics are more likely to be married than blacks regardless of couple type.

Table 1: Same sex couple and opposite sex couple demographic comparison

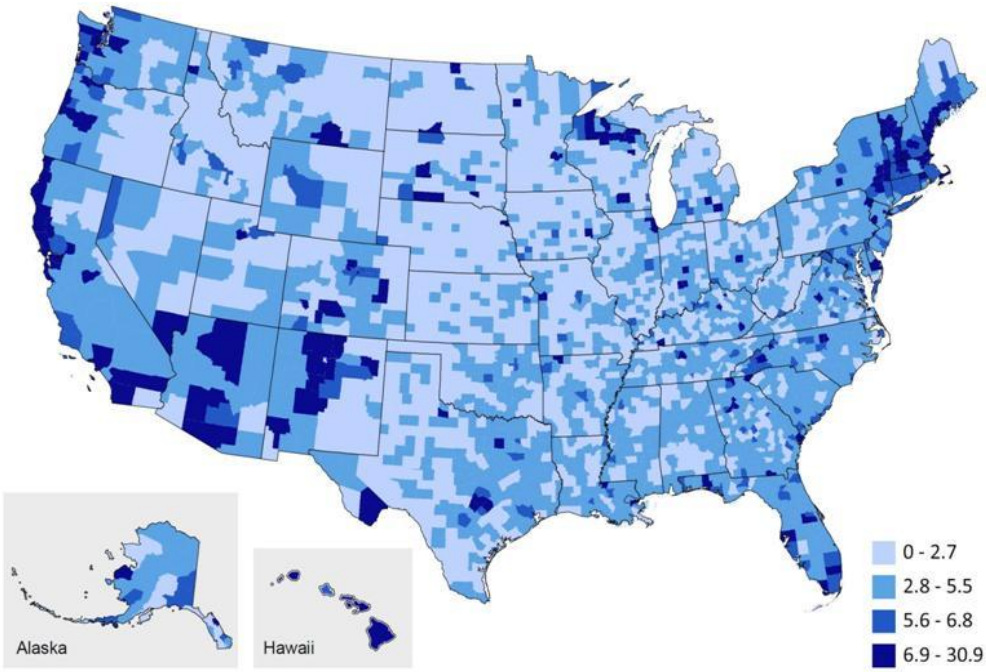
	Same Sex Couples			Opposite Sex Couples		
	All	**Married**	**Unmarried**	**All**	**Married**	**Unmarried**
DEMOGRAPHICS						
Age	50	46	45	50	51	38
Children under 18	18%	27%	15%	43%	43%	44%
Median HH Income	$89,600	$106,000	$83,300	$75,600	$79,000	$54,000
Living in Poverty	15%	4%	18%	8%	6%	30%
Home Ownership	66%	71%	65%	76%	80%	41%
RACE & ETHNICITY						
White	77%	77%	77%	73%	74%	64%
Black	6%	6%	6%	7%	7%	11%
Hispanic	11%	10%	12%	13%	12%	20%

Source: Williams Institute Report, Demographics of Married and Unmarried Same Sex Couples, 2015

The data from the 2013 ACS also included geographic information, which allowed Gates (2015) to generate an updated map of the geographic location and spatial

patterns of same sex couples in the US. Moving forward, the collection of this data will be extremely important to analyzing trends over time and across couple type.

Figure 1: Same sex couple households as a percent of total couple households by state



Source: US Williams Institute Report, Demographics of Married and Unmarried Same Sex Couples 2015

A LGBT History

The research of LGBT issues has expanded tremendously in recent decades. Social problems such as discrimination (Harper & Schneider, 2003; Badgett & Frank, 2007; Almeida et. al., 2009), homelessness (Cochran et. al., 2002), and violence (Herek, Gillis, & Cogan, 1999; Herek et al., 1997; Meyer, 2008), as well as interpersonal problems like emotional, mental (Meyer, 1995, 2003), and physical health (Kruks, 1991; Noell & Ochs, 2001) are the focus of much investigation, as attempts to improve the understanding around sexual minorities increase. While most of these issues remain problematic, progress towards greater acceptance of sexual minorities in society is improving (Pew Research Report, 2013). The legalization of same sex marriage granted

legitimacy and expanded rights to same sex couples. However, other public policies at the federal and state levels still lack protections for sexual minorities in many facets of public and private life.[1] Investigation into the factors that facilitate or inhibit social and political progress is necessary to understand the unequal treatment of this group.

Eskridge (1993, 1996) recounts the history of homosexuality and same sex couples in great detail. He provides evidence that homosexuality and same sex couples have long been in existence and that various religious, social, and political action beginning in the thirteenth century drove sexual minorities to conceal their sexual orientation and gender identity, receding from public life. In his research he points to sodomy laws as the first laws to be enacted that made homosexuality illegal, institutionalizing the belief that homosexuality was deviant behavior. He argues that from this point forward society became more critical and grew more rigid against untraditional gender roles and sexual expression. As the modernization of society continued and the government gained greater power, homosexuality was increasingly portrayed as a threat to social order. He argues that despite the condemnation of homosexuality, same sex couples continued to exist, hidden from mainstream society. It is only recently that LGBT individuals came forth, with same sex couples beginning to occupy a more prominent place in society (Eskridge, 1993).

The political and social gains achieved by the LGBT community are a product of decades of groundwork and grassroots efforts. The general consensus among scholars is that the genesis of the LGBT social movement began on Saturday, June 28, 1969, marking the first day of the Stonewall Riots in New York City (Eskridge, 1993, 1996;

[1] ENDA (Employment Nondiscrimination Act) and the Equality Act are proposed federal legislation that

Button, Rienzo, and Wald, 1997; Engel, 2001; d'Emilio, 2015). Engel (2001) states "This event is so crucial because it signifies the emergence of group action among a previously docile, powerless, and seemingly invisible minority" (p. 20). While the Stonewall Riots provided a platform for gay rights and marked a pivotal point in the formation of several gay rights groups around the country, the shared identity of the LGBT community had long been forming (Eskridge, 1993; Engel, 2001; d'Emilio, 2015). From this movement several formal organizations emerged to tackle LGBT issues and promote political, social, and institutional change for their constituency.

Over the years the LGBT movement focused on a wide array of issues spanning from health to employment. Several advocacy groups centered attention on marriage equality in the 2000's, seeking equal treatment under the law for sexual minorities (Engel, 2001). Marriage equality for LGBT individuals and couples provides expanded access to rights, benefits, and protections under the law (Ash & Badgett, 2006; Badgett, 2009), as well as other emotional and mental health benefits (Herek, 2006; Badgett, 2011). Gaining access to the institution of marriage also provides legitimacy to same sex couples (Chambers, 1996). Marriage carries religious, political, and social meanings that extend to public and private life. The meaning of marriage in modern times has shifted and the norms and perceptions around this institution have changed, but it remains integral to organizing society (Cott, 2009).

Domestic Partnerships and Civil Unions

The lack of formal access and recognition of their relationship status by the government did not prevent sexual minorities from engaging in rituals that allowed them to proclaim their allegiance to one another (Lewin 1998; Hull, 2003, 2006). Before the

implementation of formal policies recognizing same sex unions, sexual minorities created meaning and proclaimed their love and commitment to one another through ulterior methods. Hull (2006) found that same sex couples used "a variety of ways to express and interpret their mutual commitment, including terms for their partners, private rituals, and everyday practices such as commingling finances or more generally 'sharing a life'" (p.32). A more outwardly display of union status was achieved by a public commitment ceremony where same sex couples made proclamations that asserted their love and loyalty to their partner (Lewin, 2001; Hull, 2006).

Although these alternatives to marriage provided same sex couples with personal meaning, they lacked access to important rights and benefits that are normally provided to married couples. In an interview-based study of 71 individuals in same sex relationships, Hull (2003) found a strong desire for the legal recognition of their union and interpreted the enactment of rituals and ceremonies by same sex couples as demonstrations of this desire for legal rights. Although, sexual minorities and advocates agree that equal treatment under the law is necessary, there is some disagreement about the continued institutionalization of marriage in modern society (Polikoff, 1993; Eskridge, 1993; Eskridge and Spedale, 2006). Asserting herself as a "lesbian feminist", Nancy Polikoff (1993) argues that marriage is an oppressive institution and that the discourse around same sex marriage provided an opportunity to transform the institution into a more equal arrangement for everyone. Polikoff (1993) contends that marriage as a relic of a patriarchal system is inherently unequal, especially in terms of gender, and has negative implications for society.

Different from marriage policies – domestic partnership and civil union laws were introduced in several different states as a policy solution to redress the demands of same sex couples seeking marriage licenses. Despite the inherent separate but equal treatment of sexual minorities under these policies, they did provide tangible, mental, and emotional rewards to sexual minorities. A qualitative study conducted by Balsam and colleagues[2] (2008) followed up with same sex couples impacted by the adoption of the Vermont Civil Union law and found the legislation yielded benefits for all same sex couples; even those who did not obtain a civil union. Their findings stated that "both types[3] of same sex couples reported greater relationship quality, compatibility, and intimacy and lower levels of conflict" (Balsam et. al., 2008).

Each domestic partnership and civil union policy varied by state but, provided new extended rights and recognition to same sex couples that they lacked access to previously. In some states these public policies looked and performed like marriages, but did not have the same title as marriage nor were they recognized outside of state boundaries. These deficiencies were problematic and made same sex couples uniquely vulnerable because of the constraints placed on the benefits and protections provided by these types of policies. Civil union and domestic partnership laws allowed the separate but equal treatment of the LGBT community based on their status, which was inherently prejudicial (Eskridge, 2013). The argument for marriage equality was rooted in formal equality, in which the state was obligated to provide the same rights to both same sex and opposite sex couples (Eskridge and Spedale, 2006).

---

[2] This study consisted of a snowball sample of 65 male and 138 female same sex couples who had a civil union in the first year the law was enacted, 23 male and 61 female same sex couples not in a civil union, and 55 opposite sex couples who were married and had a sibling in the same sex couple sample.

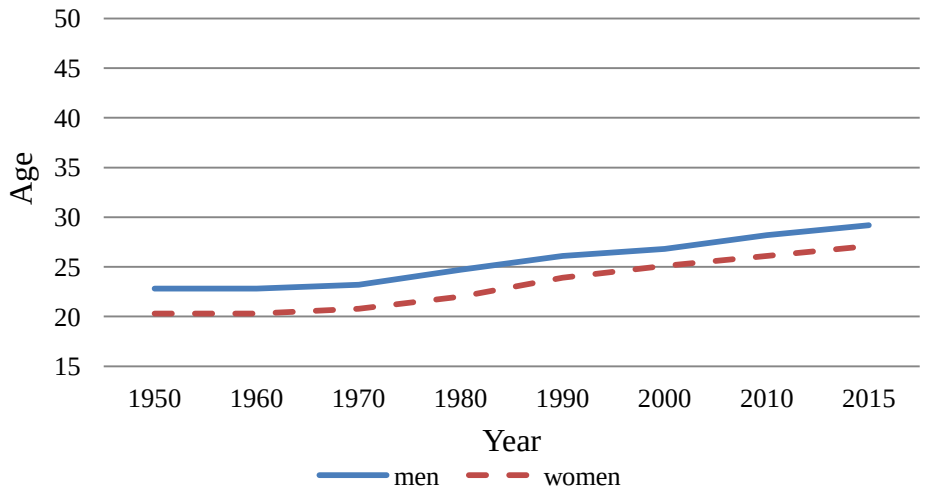
[3] This refers to same sex couples who did and did not obtain civil unions.

Marriage – A Changing Institution

Scholarship of same sex marriage has grown substantially in the wake of these events; however our understanding of what factors have contributed to these dramatic changes is still limited. The successful pursuit of marriage by same sex couples in the mainstream demonstrates a wave of sociopolitical transformations related to the institution of marriage and the public policies developed to regulate this union. The literature reveals that the institution of marriage is changing (Amato, 2004; Cherlin, 2004; Coontz, 2005), as demonstrated by older ages at the time of marriage (Cherlin, 1980; Goldstein & Kenney, 2001; Inglehart & Norris, 2003; Robinson and Godbey, 2010), dual earner households with women increasingly attached to the labor market (Cherlin, 1980, 2004; Oppenheimer, 1988; Goldstein & Kenney, 2001; Barnett & Hyde, 2001; Sweeney, 2002; Inglehart & Norris, 2003), greater choice in family planning (Stevenson & Wolfers, 2007), an increasing prevalence of premarital sex (Cherlin, 2005; Stevenson & Wolfers, 2007), cohabitation (Bumpass & Sweet, 1989; Manning, 1993; Manning & Landale, 1996; Raley 2001; Cherlin, 2000, 2005; Inglehart & Norris, 2003; Stevenson & Wolfers, 2007) and nonmarital births and childrearing (Manning 1993; Manning & Landale, 1996; Raley, 2001; Cherlin, 2005), as well as trends towards companionate (Burgess & Locke, 1945; Amato, 2004; Barlow & Probert, 2004) and individualized marriage (Cherlin, 2004, 2005) and same sex households (Cherlin, 2004, 2005; O'Connell & Feliz, 2011). The modernization of marriage in this way is attributed to the reduction of gender inequality found in postindustrial societies, with women obtaining higher levels of educational attainment, increasing their participation in and attachment to the labor force, seeking and securing political office, and leading more self-

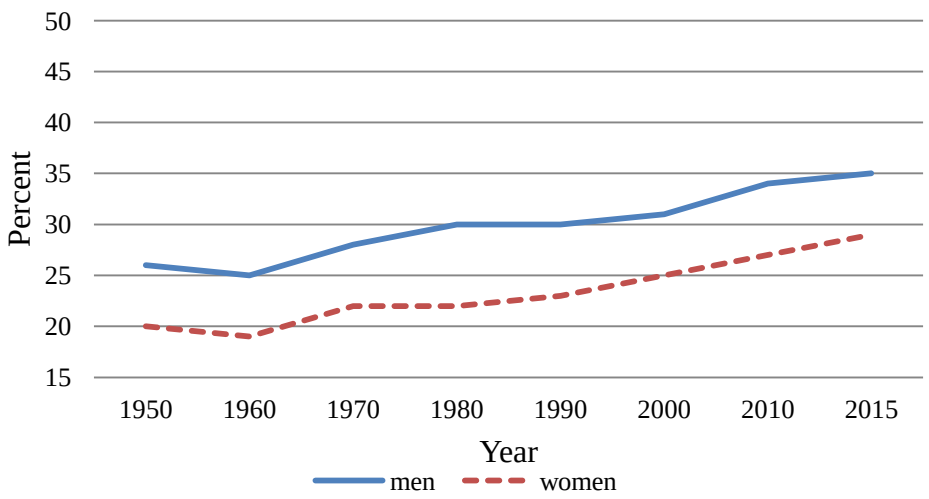
directed lives, especially regarding financial independence and partnering and reproductive decisions (Inglehart & Norris, 2003). Greater opportunities for women and their ability to challenge traditional gender norms also expand the opportunities for men to pursue nontraditional roles in society, such as stay-at-home dad and homemaker (Barnett & Hyde, 2001). As women have stronger attachments outside of the home and men pursue roles inside of the home, the institution of marriage modernizes, along with the gender roles traditionally associated with marriage. I argue that the confluence of these factors, i.e. reduced gender inequality, leading to the modernization of marriage, have generated a new space in society for same sex couples to legally and successfully pursue marriage.

Figure 2: Median age of women and men at first marriage from 1950 to 2015



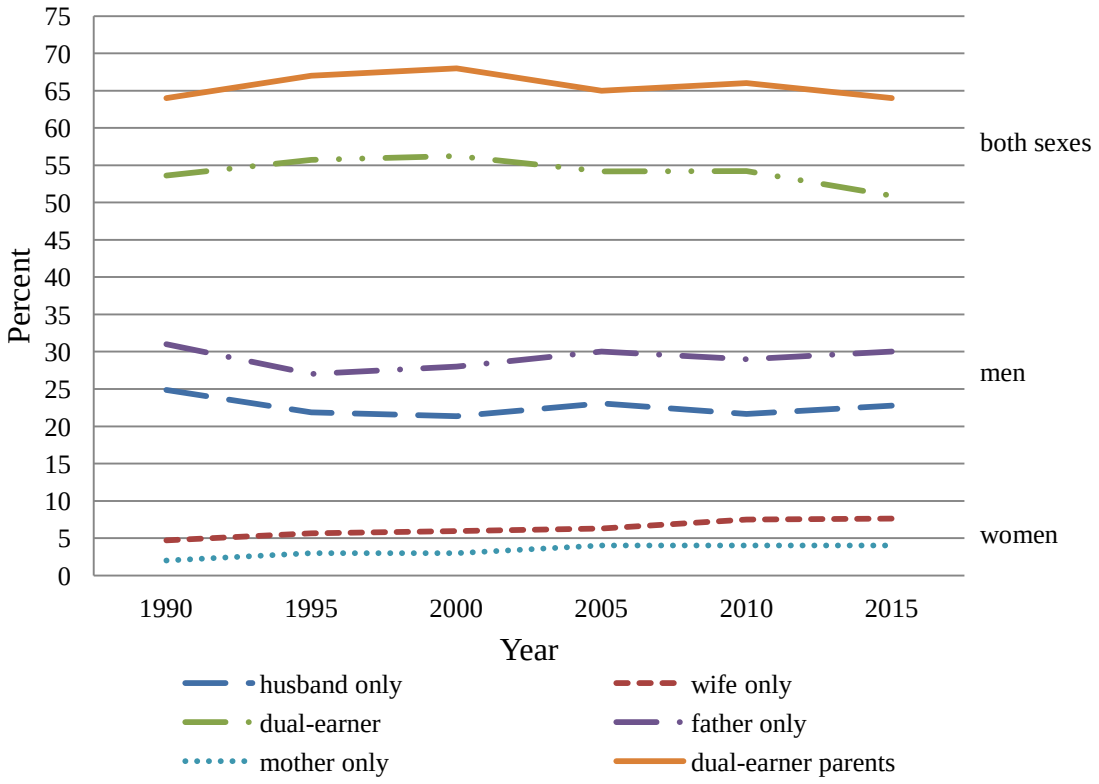
Source: Analysis of the Census Bureau, American Community Survey data from 1950 to 2015.

Figure 3: Percent of unmarried women and men from 1950 to 2015



Source: Analysis of the Census Bureau, American Community Survey data from 1950 to 2015.

Figure 4: Percent of married individuals (with and without children) in the labor force



Source: Analysis of the Census Bureau, American Community Survey data from 1950 to 2015

Marriage as a historical institution has served many functions in society and between individuals, drawing attention from policy makers and prompting political action (Coontz, 2005). And although decisions regarding partnering have moved to a more personal domain (Cherlin, 2004), the government continues to regulate these unions as a tool for organizing society and ascribing rights and benefits (Cott, 2009); while at the same time Americans continue to uphold marriage as a legitimacy granting institution (Chambers, 1996). Chambers (1996) identifies three fundamental categories in the regulation of marriage – emotional attachments, parenting, and economic arrangements – which he argues appropriately addresses the needs of both opposite and same sex couples. Furthermore, Chambers (1996) argues "that the special rules for married people serve legitimate purposes, and that gay men and lesbians should not shrink from embracing them, nor should politicians shrink from extending them" (p. 448). While the terms that define marriage are changing, the institution itself is likely to remain a pillar in American society (Amato, 2004; Coontz, 2005).

One fundamental cause that has led to the modernization of marriage is the integration and empowerment of women in many aspects of social and political life. There is a rich literature on the history of gender inequality in education, labor, politics, and within the home; however recent research has indicated trends of growing egalitarianism between the sexes. These trends towards increasing gender equality are due to increased educational attainment (DiPrete & Buchman, 2013), stronger labor market attachment, growing economic security (Blau, Brinton, & Grusky, 2006; Reskin & Roos, 2009; Blau & Kahn, 2013), and greater control over fertility and partnering decisions (Smock, 2000) among women.

Gender Equality – Women: Education, Labor, and Politics

Divisive gender roles – women inside of the home and men at work – have faded and opportunities for women regarding their professional and lifestyle choices have become available in modern societies (Inglehart & Norris, 2003). However, while strides towards greater gender equality have been made, inequality persists. Ridgeway (2011) articulates that "Gender is at root a status inequality – that is, a system of inequality that is founded on cultural beliefs about status differences between types of people – men and women." (p. 156). This inherent discrepancy and the disparate values assigned to masculine and feminine roles engender inequality between the sexes. Women have been challenging these inequalities for decades and have made gains in the home, workplace, and community but, there is still much ground to cover for equality of the sexes to be reached.

Higher levels of education among girls (DiPrete & Buchman, 2013), increased participation in the workforce (Misra, Budig, & Boeckman, 2011), and a growing presence in political bodies (Thomas, 1991; Bratton & Haynie, 1999; Bratton, 2005) has provided women with enriching opportunities to flourish in nontraditional gender roles and instigate systemic change that fosters female empowerment and the development of women. It is through the increased visibility, integration, and political power of women that social and political institutions advance to reinforce modern norms around gender roles and behavior. Marriage as one such sociopolitical institution has lost value, in the traditional sense, as a channel for success among women, fostering reliance on a man and a life based purely in a domestic realm (Cherlin, 2004; Amato, 2004; Coontz, 2005). The

aforementioned changes to marriage are heavily impacted by the convergence of gender roles in larger society (Cherlin, 2004; Amato, 2004; Coontz, 2005).

The Education of Women

The education of women has important ramifications for society. Developed countries, like the United States, experience a greater demand for a skilled labor force, spurring the education of women to meet these economic pressures (Inglehart & Norris, 2003). Additionally, a better educated population leads to economic growth and development (Hanushek & Woessman, 2008) and produces social rewards that improve the lives of individuals, communities, and society more broadly (Hout, 2012).[4] The education of women plays an integral role in sustaining progress, enhancing the rights and opportunities for women, and modernizing embedded social and political institutions that underpin societal norms. Such institutions include marriage, wherein education, as a tool for empowerment and independence, reduces women's reliance on men and facilitates the redefinition of gender roles to reflect the new norms of contemporary society. The education of women is therefore critical to the economic and social conditions of a developed society.

On an individual level, "Education occupies a critical nexus for women between the private and public spheres" (Ford, 2010, p. 234). The education of women enables females to pursue responsibilities outside of the home, moving into nontraditional gender roles that provide economic security for themselves and their families. Increased education also produces economic rewards that facilitate partnering and marriage

[4] Hanushek and Woessman (2008) argue that higher quality schooling, not just increased educational attainment among the population, is what yields stronger cognitive abilities, which is the driving force behind improved economic conditions and outcomes. Hout (2012) points to greater tolerance and support of civil liberties as social rewards of education.

(Oppenheimer, 1988), higher levels of income, more stable employment, and more steady income. The access and attainment of education diminishes the importance of a partnership, as educational attainment increases the value of an individual in the marketplace and society, improving the likelihood of economic success and security. This freedom improves women's ability to choose a partner (Oppenheimer, 1988), enabling women to make partnership decisions for reasons other than those typically associated with traditional marriage. The tools and information obtained through education not only expand opportunities for employment and produce economic benefits, but are also linked to political activism (Burns, Schlozman, and Verba, 2001; Norris, 2002) and greater agency (Ford, 2010).

Women and Labor

The social and economic changes that surface in postindustrial societies like the United States, include a greater demand for an educated workforce, occupational specialization, more equal divisions of labor at home and at work between men and women, as well as an increase of women in the workforce to address the new demands of a modern society (Inglehart & Norris, 2003). Gender roles converge as women enter the workforce in large numbers, thereby reducing attention to reproduction and childrearing (Inglehart & Norris, 2003; Robinson & Godbey, 2010). The institution of marriage is thereby pressured to adapt to these new gender roles and norms (Cherlin, 2004; Amato, 2004). Growing opportunities for the employment of women and efforts to minimize the pay gap between women and men allows women to "cash in" on their education and improves the motivation for remaining in the labor market. Increasing the value of women as workers enables them to lead more autonomous lives (Blau & Kahn, 2006),

and as opportunities and rewards to employment increase for women, decisions to partner, when to partner, and who to partner with expand (Oppenheimer, 1988).

Socialization surrounding work begins very early with boys and girls being socialized to engage in different tasks and chores – boys beginning chores later and being asked to do more physically demanding work that is carried out less frequently, whereas girls engage in more household chores such as cooking and cleaning (White & Brinkerhoff, 1981; Valian, 1999). This inequality in household labor also continues into adulthood with women continuing to do a majority of the household work regardless of their race, education, class, and occupational status (Ridgeway, 2011). Women face inequalities in labor outside of the home as well, demonstrated by the underrepresentation of women in leadership and executive positions (Daily, Certo, & Dalton, 1999; Eagly & Carli, 2007), male dominated occupations (Blau et al., 2006), as well as unequal wages (Ridgeway, 2011; Council of Economic Advisers, 2014) and wage penalties associated with motherhood (Budig & England, 2001; Budig & Hodges, 2010). The "glass ceiling" is still ever present in today's companies, with minority women facing even greater challenges (Valian, 1999; Ford, 2010).[5] Corporate culture has fostered a chilly climate for women, valuing masculine behavior and operating under good ole' boy networks, (Ford, 2010). Norms around parenthood also continue to constrain women in the labor force with social norms and organizational policies reinforcing women as the primary caretaker; this is demonstrated through work-family policies that promote women staying home to care for new children (Misra et al., 2011; Boeckman et al., 2014). Organizational

[5] In June 2009 less than 5% of CEOs of Fortune 500 companies were female (Ford, 2010). Women of color face a "concrete ceiling", which demonstrates the increased difficulty they have in securing executive positions (Ford, 2010).

and public policies can more effectively tackle these inequalities through different policy interventions (Misra et al., 2011).

Women in Politics

The empowerment of women through education and employment increases the likelihood of political participation (Burns, Schlozman, Verba, 2001; Norris, 2002) and the introduction and adoption of public policies that promote the egalitarian treatment of women and minorities (Thomas, 1991; Bratton & Haynie, 1999; Carroll, 2001). The presence of women in political power, even in small amounts, shifts political attention and resources to issues widely and policy domains found to be important to women, such as gender discrimination (Thomas, 1991;Bratton & Haynie, 1999; Carroll, 2001; Bratton 2005). Ford (2010) recognizes that "traditional definitions of politics make conflicts and terrain public, whereas many of the most significant issues and problems facing women are considered private" (p. 7). Participating in politics enables women in governing bodies to instigate meaningful change that more fully integrates women into society and institutionalizes their equal treatment. Political office provides another mechanism for women to be engaged in society and serves as a valuable channel for achieving success and independence outside of traditional domestic domains. Women as instigators of change and makers of public policy systemically increase the range of opportunities available to women, thus decreasing the value of marriage in its traditional form.

The inclusion of women in political bodies is critical as they possess unique perspectives and preferences that are valuable to problem solving and policy making (Ford, 2010). The experience of women is important in setting the political agenda (Carroll, 2001; Ford, 2010). Women have gained ground in legislatures but, they are still

less likely to be nominated or elected into executive roles (governor, chief of staff, etc.) (Center for Women in Politics, 2015). Public policies that are adopted to facilitate the equal treatment of women also empower men. The equal treatment of women provides men with opportunities to expand their roles – demonstrated by women's increasing economic returns in the labor market, allowing mothers to be breadwinners and fathers to stay at home to raise the children and take care of the home (Chesley, 2011; Parker and Livingston 2016).

Gender Equality – What it Means for Men

The empowerment of women produces flexibility in how men organize their lives as individuals, husbands, and fathers (Galinsky, Aumann, & Bond, 2009). As women obtain higher levels of education and become more active in the labor market, opportunities for men expand beyond the "breadwinner" role. A growing number of "breadwinner moms" (Wang, Parker, & Taylor, 2013) and "stay-at-home dads" (Livingston, 2014; The Council of Economic Advisors 2014) indicate societal shifts that provide men with opportunities to seek roles outside of the workforce and reject conformity to traditional masculine gender roles (Rochlen et al., 2008). As the norms of men as breadwinners and women as caregivers diversify, individuals and couples broaden how their roles are defined and carried out inside of marriage (Cherlin, 2004). Greater acceptance of women taking on masculine roles and men assuming feminine roles becomes a more generalized practice (Galinsky et al., 2009) as individuals and families pursue flexible options that function best for their personal situations.

Gender Equality and Marriage

Traditional marriage, much like conservative gender roles, constrain female sovereignty and produce inequality by reinforcing the dependence of women on men (Baxter & Kane, 1995) and reducing women's identity to sexual roles of reproduction and child rearing (Chodorow, 1999). Conventional marriage has long represented a union rooted in religion whose sole purpose is the continuation of mankind (Inglehart & Norris, 2003; Cott, 2009) and can still operate in this way – providing a way for women to fulfill expectations of motherhood and obtain financial support, thereby decreasing the importance of education and employment. As the institution of marriage evolves alongside shifting gender roles, I posit that public policies that define and orient marriage in society will change as well.

The new individual nature of partnership decisions among couples illustrates a shift from a social institution to a private arrangement (Amato, 2004; Barlow & Probert, 2004; Cherlin, 2004). As marriage moves into this private realm, decisions regarding partnership become less socially and politically oriented and personal motives for partnership prevail. This shift creates opportunities for alternative lifestyles to emerge and sexual minorities to pursue meaningful relationships. Although many Americans still disapprove of homosexuality and same sex marriage (Pew Research, 2015) the shift towards companionate (Burgess & Locke, 1945) and individualized (Barlow & Probert, 2004; Cherlin, 2004) marriages in the larger sociopolitical arena alters the domain where partnership decisions are made. As the institution of marriage evolves alongside shifting gender roles, I posit that public policies that define and orient marriage in society will change as well. This leads to my first hypothesis.

H_1: The greater the gender equality within a state, the greater the likelihood of adopting a statewide marriage equality policy.

H_2: The greater the ratio of women's to men's earnings, the greater the likelihood of adopting a marriage equality policy.

H_3: The greater the presence of women in the state legislature, the greater the likelihood of adopting a marriage equality policy.

H_4: The greater the presence of women in the labor market, the greater the likelihood of adopting a marriage equality policy.

Assistive Reproductive Technology

A related factor that has reshaped fertility and childbearing decisions, thereby altering the some of the social norms around marriage and family, is reproductive technology. Research indicates that despite women of childbearing age being aware of reproductive technologies that assist with fertility, they are less knowledgeable of its limits and the negative consequences that can arise from the use of these methods (Maheshwari et al. 2008; Daniluk, Koert, and Cheung 2012). Aware of the complications that can arise from delayed childbearing, but believing that available fertility treatments can effectively address related issues, some women choose to postpone childbearing (Maheshwari et al. 2008: Daniluk, Koert, and Cheung 2012). Assistive reproductive technologies (ART) are more readily available and affordable in developed countries, like the United States. Sperm and egg donation, artificial insemination, surrogacy, and in vitro fertilization have all reshaped the possibilities around childbirth. These medical advancements have enabled women to wait longer to conceive, allowed single individuals to pursue parenthood, and facilitated reproduction for same sex couples. As technology

regarding reproduction progresses, the options around fertility and childbearing broaden, providing couples and individuals more choices for conception.

Infertility has been shown to increase martial conflict and decrease sexual self-esteem for both wives and husbands (Andrews, Abbey, & Halman, 1991), with women experiencing higher levels of stress (Greil, 1997). Most research about the relationship between marriage and fertility treatments are qualitative in nature, making generalizations to the broader public difficult. This body of qualitative research has examined how couples respond to IVF fertility treatment, finding that the treatment cycle produces anxiety and the outcome of a pregnancy often predicts negative or positive emotional responses for wives and husbands (Holter et. al., 2006; Verhaak et. al., 2007). Questionnaires of couples engaging in fertility treatments indicate that they are often well-adjusted and in stable relationships (Sydsjö et. al., 2005; Holter et. al., 2006).

Although fertility rates have declined in egalitarian societies (Inglehart & Norris, 2003), couples still commonly pursue marriage to start families and raise children. Blank (1990) presents three shifts within society that have increased the demand for reproductive technologies – increasing prevalence of alternative lifestyles and families, a desire to have children instead of adoption, and postponement of pregnancy among women [who are more attached to the labor market]. With greater options available to individuals and couples for reproduction the need for marriage to consist of a woman and man is diminished, as heterosexual intercourse becomes less necessary for conception. Scholars are still building a body of research that clarifies how reproductive technology affects marriages (Peterson et al., 2006) and families (Golombok et al., 1995, 2002; Colpin & Soenen, 2002; Owen & Golombok 2009). The growing prevalence of these

technologies demonstrates increased acceptance and utilization of these options for reproduction and family building. This frames my second hypothesis.

H_5: The greater the use of reproductive technology within a state, the greater the likelihood of adopting a statewide marriage equality policy.

It should be noted that reproductive technologies are more relevant to the family formation of lesbian, gay, and bisexual couples, and less so for transgendered individuals. LGB couples are still able to draw on reproductive technologies as they personally identify with their biological sex. LGB individuals have different sexual orientations, which does not impact their ability to biologically reproduce. Transgendered individuals face contradictions with their biological sex assignment at birth (as either a person born with either male reproductive anatomy or female reproductive anatomy). In recognition of this, fertility clinics also advertise specifically to lesbian and gay couples, generally excluding other sexual minorities from their outreach efforts.

The Role of Religion

Religion heavily influences opinion around reproductive technologies and frames arguments for how and why couples should use reproductive technologies (Dutney 2007). Religion also extends to debate around the institution of marriage, as religion and marriage have been intertwined for centuries (Inglehart & Norris, 2003; Cott, 2009), and impacts the attitudes about same sex marriage in the American public (Olson & Green, 2006a; Sherkat et al., 2011). While many people are still resistant to homosexuality and same sex marriage, these trends are decreasing and indicate signs of greater acceptance among religious groups (Pew Research, 2013). As religion plays a different part in the lives of Americans, the conservative gender roles and traditional marriage supported by

most religions (Dutney, 2007; Cott, 2009) loses ground in contemporary American society (Inglehart, 1990). Therefore, assessing the influence of religion in states across the US is important to analyzing the issue of same sex marriage policies. Research has shown that the role of religion in the lives of American's has been changing, with younger generations less attached to organized religion (Inglehart, 1990).

H_6: The higher the percent of Evangelical Protestants within a state, the less likely a state is to adopt a marriage equality policy.

Morality Politics and Policy

"Contemporary observers of American politics apparently have reached a new consensus around the proposition that old disagreements about economics now pale in comparison to new divisions based on sexuality, morality, and religion, divisions so deep as to justify fears of violence and talk of war in describing them" (Fiorina, 2004). The United States, as a postmaterialist society, provides security to individuals, who in turn become more concerned with existential issues (Inglehart, 1990). Among these issues of existentialism are autonomy and the ability to lead a self-directed life. Inglehart (1990) argues that in advanced industrial societies there is greater security, which enables individuals to accept greater diversity and diminishes the importance of "traditional religious social and sexual norms" (p. 177-178). The increased security and reduced significance of "traditional religious social and sexual norms" in providing moral guidance to Americans allows individuals to have greater agency in seeking out personal fulfillment and pursuing self-directed lives, which includes determinations regarding sexual orientation and gender identity. The embeddedness of traditional religious social and sexual norms have weakened and become less functionally important in the

organization of society and moral lives of Americans (Inglehart, 1990). However, for those whose security remains challenged, traditional religious social and sexual norms lessen the stress of the unknown and provide moral guidance in how to understand society (Inglehart, 1990). Traditional and religious social and sexual norms also diminish uncertainty of political and social issues like homosexuality and same sex marriage, providing a moral compass for how individuals feel about these issues. This is especially true considering the explicit linkages between homosexuality, marriage, and religion.

The study of "morality policies" has researchers divided on whether some policies *are* moral policies (Meier, 1994; Studlar, 2001; Mooney & Schuldt, 2008) or whether these policies are *framed* in morality (Mucciaroni, 2011). Morality policies redistribute and regulate values within society that shape social norms, further endorsing one set of ideals over the other (Gusfield, 1986; Tatalovich & Daynes, 2011; Mooney & Lee, 1995; Meier, 1994).[6] Scholars argue that morality policies differ from other public policies because there is no economic component (Mooney & Lee, 1995; Mooney, 2001; Studlar 2001; Mooney & Schuldt, 2008). However, marriage policies do bear some economic implications, with some scholars using this economic argument to demonstrate the effects of a marriage equality policy on taxes (Alm, Badgett, and Whittington 2000; Albelda, Ash, and Badgett, 2005; Badgett 2006, 2009, 2007; Badgett, Gates, & Maisel, 2008). Therefore, while the literature consistently frames same sex marriage policies as morality policies, it is important to recognize that there are economic elements to these policies.

Mooney and Lee (1995) argue that morality policies are unique because they foster deliberation and consideration of first principles. Mooney (2001) articulates three

[6] Scholars are divided on whether morality policies are regulatory (Tatlovich & Daynes, 1988) or redistributive (Meier, 1994).

characteristics of morality policies as technically simple, fostering debate over first principles, and having a higher rate of political participation from the public. Tatalovich and Daynes (2011) argue that "moral conflicts illustrate social regulations insofar as the laws codifies right or wrong conduct", providing the definition of social regulatory policy as "the exercise of legal authority to affirm, modify, or replace community values moral practices and norms of interpersonal conduct." (p. xxxii).

Mooney and Schuldt (2008) assert the distinction of morality policies as a type of policy and support this claim with evidence that public policies determined to be "moral policies" elicited greater contention over moral values, are technically simple, and less amenable to compromise, as posited by scholars in the field. On the other side of this debate, Mucciaroni (2011) argues that bifurcating morality policies as either sinful or moral is too simplistic and limits the scope of the debate to two sides, requiring that each side advocates for their position using only sin/morality dialogue. Mucciaroni (2011) analyzed the framing of gay and lesbian rights finding that a steadfast commitment to a singular moral/ religious dialogue [as required for morality policies] conceals the true intricacies of framing strategies and neglects to recognize several key points of the debate. While scholars disagree about whether morality policies are a type of policy or a framing strategy, it is apparent that morality is a defining characteristic.

Same sex marriage is presented as a moral issue in the literature (Haider-Markel, 2001; Mucciaroni, 2011; Mooney & Schuldt, 2008) with involved parties couching the debate in morality/sin dialogue and advocating for policy alternatives employing moral arguments (Haider-Markel & Meier, 1996); there is also a large body of research about the economic rewards of same sex marriage policies (Alm, Badgett, and Whittington

2000; Albelda, Ash, and Badgett, 2005; Badgett 2006, 2009, 2007; Badgett, Gates, & Maisel, 2008). Issues related to the LGBT community more generally have also largely been considered morality policies in the literature (Haider Markel & Meier 1996; X Smith & Tatalovich, 2003; Mooney & Schuldt, 2008; Mucciaroni, 2011). Meier (1994) argues that morality policies fall under two categories – one-sided and two-sided. In instances where the debate is two-sided – when there is active participation by citizens on both sides – the policies under consideration redistribute values (Meier, 1994). When the debate is one-sided, coined "politics of sin" by Meier (1994), all people are in agreement and the policy process is stifled, leading to ineffective public policies. The social construction around morality policies is critical and shapes the possibilities around policy alternatives and policy adoption (Meier, 1999).

The issue of marriage equality has risen to prominence in the political arena, engaging the public and policy makers in the debate, which is common for issues of morality (Haider-Markel & Meier, 1996, 2008). The ease at which the general public understands and relates to the issue of same sex marriage indicates they will be more involved in the discourse and play a larger role in shaping political outcomes (Gormley, 1986). Involvement from the public occurs because same sex marriage policies are simple and easy to understand, but highly salient as the debate is over deeply held core beliefs (Gormley, 1986). Smith and Tatalovich (2003) argue that most people are motivated to participate in moral controversies because of their deep beliefs pertaining to equality and liberty, while others are driven to participate due to self-interest. Politicians are also more likely to be engaged in discussions and policy making activities because impediments to involvement (mainly information) and political support can be easily

secured through an engaged constituency (Haider-Markel & Meier, 1996). An active public and involved political officials create the internal impetus needed for policy adoption. Together they shape the policy activities that lead to the innovation and diffusion of same sex marriage policies.

Policy Innovation and Diffusion

The innovation and diffusion of morality policies differ from their counterparts (Mooney, 2001), being heavily driven by internal state characteristics (Berry & Berry, 1990). For this reason I focus on the internal state characteristics that drive states to adopt marriage equality policies for same sex couples. Drawing on the policy innovation and diffusion literature provides a framework for selecting, accounting for, and analyzing important factors both inside and outside of the state that shape policy making activities. Internal determinants and diffusion models have been useful in understanding why policy makers innovate and how public policies spread temporally and geographically (Walker, 1969; Gray, 1973; Berry & Berry, 1990, 1999; Mooney & Lee, 1995; Haider-Markel, 2001). Research in this area focuses on how unique state characteristics (internal determinants model) alongside social learning and external pressures (diffusion model) influence the adoption and eventual spreading of public policies. Walker (1969) defines innovation as "a program or policy which is new to the state adopting it, no matter how many other states may have adopted it", with the study of innovation examining "the conditions under which state decision makers are most likely to adopt a new program" (p. 881). Furthermore, Rogers (2010) defines diffusion as "the process by which an innovation is communicated through certain channels over time along the members of a social system" (p. 10).

Social learning occurs when states learn from one another. The policy making process can generate valuable information that is useful to policy makers in other states. When a proposed policy is being considered for adoption, policy makers use information and insights from other states to gain clarity and to craft a more effective policy for their individual state. Earlier research has demonstrated that geographic proximity facilitates the sharing and learning of ideas, leading to policy innovation and diffusion (Walker, 1969; Berry & Berry, 1990; Haider-Markel, 2001). However, the power of these influences are declining due to technology, nationalized efforts, and increased professionalization of organizations (Gray, 1994). Information sharing and social learning, which have been integral to the diffusion of public policies, are no longer limited by state borders and regional networks.

In recognition of a changing political landscape scholars have expanded the literature, branching off from research around internal and external influences. More recent studies have examined the innovation and diffusion of public policies based on policy characteristics (Nicholson-Crotty, 2009) and policy complexity (Boehmke, 2009; Taylor et al., 2012). While other studies have narrowed the focus of internal determinants looking more closely at ideology (Grossback, Nicholson-Crotty, & Peterson, 2004) and how states engage in and utilize social learning (Volden, Ting, & Carpenter, 2008). These developments have also expanded the types of policies that have been analyzed, increasing the breadth and depth of how we understand the innovation and diffusion of public policies in contemporary American society.

Previous studies indicate that there is a strong relationship between the adoption of morality policies and internal state characteristics (Mooney & Lee, 1995; Haider-

Markel, 2001; Taylor et al., 2012). Internal state characteristics are relevant and important to the innovation and diffusion of state morality policies because they often divide the public around core beliefs (Mooney & Lee, 1995) and actively engage citizens in the debate, thereby reducing the influence of external forces (Haider-Markel & Meier, 1996; Haider-Markel, 2001). Studies have shown that religion, political ideology, national campaigns, and election cycles are relevant internal determinants that shape the adoption of LGBT policies (Haider-Markel, 2001). Religious variables have been found to have a mixed relationship to attitudes around same sex marriage and other LGBT issues – Evangelical Protestants oppose same sex marriage, while Catholics and Jews are more likely to support same sex marriage (Haider-Markel, 2001; Olson, Cadge, & Harrison, 2006b). Liberal political ideology and higher levels of education are also found to be related to greater acceptance of the LGBT community and related issues.[7]

My study pulls heavily from the internal determinants model of policy innovation and diffusion (Berry & Berry, 1990, 1999) to test whether gender equality and the use of reproductive technology, as an internal state characteristics, are significant to the adoption of marriage equality policies. The existing scholarship that examines same sex marriage policies fail to recognize the role that gender related variables and innovative technologies can have in shaping social norms around marriage and family. The way in which these factors reshape how society is organized extends all the way to the macro political arena, eventually leading to legitimization and institutionalization of these new social norms through public policies. I argue that gender equality and the use of reproductive technologies are relevant and important internal state characteristics that

[7] This is also true for tolerance – better educated people and communities are more tolerant and trusting (Helliwell & Putnam, 1999).

influence the adoption of same sex marriage policies; especially as the public becomes engaged (Gormley, 1986) and politicians take sides to garner support (Haider-Markel & Meier, 1996).

Although internal determinants models have been the most effective tool for examining morality policies, a quick examination of the geographic diffusion of marriage equality policies shows a concentration of these policies in the northeast. Most of the states that have adopted a marriage equality policy in my dataset (from 2004 to 2012) were located in the northeast region, with Massachusetts as the early adopter leading this trend. Despite research that shows diffusion variables have less of an effect on morality policies generally, I posit that there is some pressure, in addition to internal characteristics, that influences the adoption of a marriage equality policy within a state. Drawing on this research I develop my final hypothesis.

H_7: Diffusion variables will have a small positive effect on the likelihood of adopting a statewide marriage equality policy.

Haider-Markel (2001) examined the diffusion of same-sex marriage bans, testing internal determinants and regional patterns of innovation and diffusion to determine which factors best explained bans to same sex marriage. The findings demonstrated that larger macro level forces effectively "push" policies into states and work cohesively with internal state characteristics to generate support and promote policy adoption. While this study provided insights into the role that internal economic and political factors have, Haider-Markel (2001) fails to acknowledge and examine other relevant internal state characteristics, such as norms around gender, marriage, and family that foster the adoption of policies related to the government's regulation of marriage.

Related Studies

Studies have focused on understanding the role that interest groups (Haider-Markel, 2001), religion (Olson et al., 2006b; Sherkat et al., 2011), and public opinion (Brewer 2003, 2005, 2014; Brewer & Wilcox, 2005) have in shaping attitudes and decisions to adopt same sex marriage policies. Most of the research is centered on individual attitudes, perceptions, and behaviors – not broader, macro sociopolitical factors. The study conducted by Haider-Markel (2001) looked at state level factors that impacted the adoption and diffusion of bans to same sex marriage policies in the 1990's, but much has changed from this point and political variables were the only factors analyzed in the study. Frank and McEaney (1999), McVeigh and Diaz (2009), and Gaines and Garand (2010) have widened the line of inquiry to include analyses of variables related to gender and sexuality.

Frank and McEaney (1999) examine the "cultural opportunity structure" and "political opportunity structure" within a country to evaluate the role that these sociopolitical factors play in shaping policies that regulate same sex relations. In their study, Frank and McEneaney (1999) argue "gender equality furthermore, allows persons to sample from a broader set of roles and identities, which helps constitute claimants for lesbian and gay rights" (p. 918). Using a cross national dataset of information collected by the International Lesbian and Gay Association (ILGA) and regional and country reports, Frank and McEaney (1999) identify three key variables – individualism, gender equality, and world linkages that shape the cultural opportunity structure. Gender equality is measured as a country's commitment to women's rights, the percent of women in the labor force, and country level participation in women's international organizations. They

found that trends towards individualization and gender equality work together to create a "cultural opportunity structure" that facilitates the adoption of public policies that support same sex relations (Frank & McEneaney, 1999). The findings from this study highlight the import of gender equality as a driving factor behind more liberalized policies on same sex relations; gender equality being statistically significant across all models.[8] The results of this analysis indicate how powerful the cultural context can be, and more specifically, how gender equality operates to dismantle gender oppression and oppression related to sexuality (Frank & McEneaney, 1999).

McVeigh and Diaz's (2009) study, a decade later, was similar in nature to the research conducted by Frank and McEneaney (1999) in that they focused on gender roles and family structure. They argue that "traditional gender roles and families structures should foster negative attitudes towards both homosexuality and same sex marriage due to the prevalence of social norms and practices that reinforce boundaries and maintain sex-based power differentials." (McVeigh & Diaz 2009, p. 894). A sample of counties from 28 states, during the years of 2000 to 2008, with same sex marriage policies on the ballot were used to account for the variation in communities across the states. Labor data – the percent of women 16 years and older who did not work in 1999 and occupational sex segregation – were used as measures of traditional gender roles. Traditional family structure was a combined measure including the percent of households composed of a married family with children under age 18, percent of same sex households, and percent of unmarried households. The results from this analysis indicate that counties with

[8] The gender equality measure was calculated at country level and consists of three variables – women's rights scores (1985), women as a percent of the labor force (1980), and memberships in international women's organizations (1983).

traditional gender roles and traditional family structure are more likely to oppose same sex marriage (McVeigh& Diaz, 2009).

The research conducted by Gaines and Garand (2010) analyzed individual level factors that influence the support or opposition to same sex marriage. Like McVeigh and Diaz (2009) they consider how gender roles influence attitudes around same sex marriage, arguing that concepts of sexual orientation and gender are intertwined. Gaines and Garand (2010) expand on this with the inclusion of a measure for attitudes towards women's rights, stating that marriage is rooted in patriarchy which suppresses the rights of both women and sexual minorities. A factor variable is created to measure individual feelings about the discrimination of women and women's rights and consists of a seven point scale ranging from "women should play traditional roles" to "women should have equal roles". The results of this analysis report that gender roles are significant to attitudes of same sex marriage, while support for women's rights is not.

The study conducted by Frank and McEeaney (1999) provides evidence that the modernization of social/cultural and political structures foster progress and the liberalization of public policies. This finding is important because these public policies institutionalize progress and modernity and reflect the current social and political climate. While the studies of McVeigh and Diaz (2009) and Gaines and Garand (2010) indicate that gender, gender ideation, and attitudes about gender have implications for individual attitudes about same sex marriage policies. The findings from this research are important because they demonstrate that variables related to gender matter and convey a need to understand whether the actual integration of women, not just perceptions and attitudes in society, has causal implications on policy making at the state level. My study enhances

the understanding gleaned from these pieces of scholarship by expanding the discourse and analyzing how actual gender equality within a state facilitates or impedes the adoption of policies that support marriage equality.

My research fits well among these studies, focusing on how gender equality in a state impacts the adoption of same sex marriage policies. My study differs from the existing scholarship because it focuses broadly on the gendered context of the state instead of micro level measures of gender roles. Conducting a state level analysis builds on the research highlighted above, as well as other state level analyses that examine the innovation and diffusion of bans to same sex marriage policies. In addition to the gender variables I include a measure for reproductive technologies to account for the changing norms around childbearing, which no other earlier study has examined. Including a measure of reproductive technology allows me to test whether advancements around childbearing have had an impact on marital policies. Testing these variables contributes to the understanding around marriage and family norms and what that means for policy making efforts. Earlier research of the adoption of bans to same sex marriage (Haider-Markel, 2001) is used to guide the selection of other relevant independent variables and control variables.

CHAPTER 3: DATA AND METHODS

The literature provides a strong foundation from which to build my analytical strategy. I use information from previous studies to develop a rigorous research design to test the effects of my key independent variables. I conduct a quantitative analysis because it is both appropriate for examining the unit of analysis under study and improves the external validity of the findings, extending the applicability of the results to each and every state across the US. A quantitative analysis provides a systematic method for examining my data and testing the effect that gender equality and reproductive technology have on the adoption of same sex marriage policies. Furthermore, a quantitative analysis better situates my research in the larger body of scholarship and complements earlier studies that examine LGBT politics and policies.

A strong research design is crucial to producing meaningful results. The variables and social phenomenon that are the focus of my dissertation are unobserved, which makes the conceptualization and operationalization of these variables critical to ensuring the validity of my results. The proper measurement of variables is also important to the internal validity, assuring that the concepts being examined are defined and quantified appropriately. My interdisciplinary approach allows me to design a cogent scientific research design that produces valid and reliable results. In this chapter I present my research design and discuss in depth my data and analytical strategy.

Couched in the innovation and diffusion literature, my dissertation identifies what factors are significant to the adoption and diffusion of marriage equality policies, paying special attention to internal state characteristics. I begin by introducing my dataset, identifying the sources of data and defining how each variable is conceptualized and operationalized. Next, I present the descriptive statistics and discuss other relevant evaluations of the data to ensure the information used to test my hypotheses is thoughtful and accurate. Lastly, I discuss the analytical method.

Discussion of the Data

The construction of a dataset is integral to the research design because it provides the basis from which the analysis is conducted and the results are produced. Considerations include making sure the data used to measure the concepts under study are logical and contain strong measurement validity. The reliability of the data is also important to ensure variables are consistently measured over time and across place. A clear plan of study allows for repetition employing the same research design. I use previous studies guide the procurement of data for some variables, while other data is used to measure new concepts being introduced into my analysis.

My dataset, the MRB Database, is comprised of information gathered from various government agencies and research institutes. The main data collection method consisted of downloading tables of selected data from organizational websites. In some cases I spoke with organizational representatives to obtain clarification or gain access to specific data. Most of the data I collected was publicly available. I completed a special request for access to data provided by the Center for Disease Control, which was used to

measure the use of reproductive technology. The agencies that the data was collected from have been used in similar research and are reputable sources for information.

My dataset includes information for all fifty states and Washington D.C. for years 2004 through 2012; a total of nine years. This produced 459 observations that were included in the study. The unit of analysis is state year, which allows me to analyze state level policies and how they change over time. The data for each variable were available for every state in each year, allowing me to incorporate all of the cases in the population, including Washington D.C., despite it not being a state. It would have been more beneficial to use data calculated monthly for each variable for greater precision in measurement; however this was not an option due to the collection methods of each agency from where the data was gathered. To ensure consistency across variables, data were measured on a per year basis. Focusing on state level patterns of policy adoption facilitated data collection, as state data is frequently available on a per year basis and is commonly used in social science research.

The measurement of my data reflects a longitudinal, fixed panel design. This type of research design requires the collection of data across the same entities at several points in time and has many benefits for conducting research. Of those benefits are improved external validity and more accurate causal inference (Hsiao, 2014). Using panel data also controls for heterogeneity among the states and provides greater variability to reduce collinearity between variables (Baltagi, 2015; Hsiao, 2014). Employing a fixed panel design allows me to more rigorously test the relationship between the dependent and independent variables, while minimizing the factors that confound the findings.

Policy complexity can also inhibit valid findings. When public policies are multifaceted and/or policy goals are unclear, the desired outcome of the policy may be undistinguishable, making it both difficult to measure and interpret. The public policy being studied in my dissertation, marriage equality, has a clear purpose and outcome – to extend recognition, rights, and protections of marriage to same sex couples; not limiting marriage to opposite sex couples. The change in policy, to extend equal rights to same sex couples, is reflected in the language used to define the policy, which articulates a clear policy goal.

Conceptualization and Operationalization

In the study of public policy and in the social sciences more generally, conceptualization is very important to the research design as it takes abstract (sometimes unobserved) concepts and articulates a concrete definition. This definition becomes important to the operationalization of variables and facilitates the development of valid measures for each concept. Thoughtful and precise determinations about the conceptualization and operationalization improve the measurement of variables and interpretation of findings, producing more meaningful results. Theory and existing research are useful tools for making these determinations.

Based on my research question, I have selected the adoption of a marriage equality policy within a state as the dependent variable. Conceptualization of this variable is important because domestic partnership and civil union laws have also been adopted in states throughout the US to legally regulate unions between same sex couples. Domestic partnership and civil union laws are different from marriage equality laws because they allow the separate but, equal treatment of sexual minorities and same sex couples.

Although domestic partnership or civil union laws may provide some or all of the same rights, protections, and benefits of marriage to same sex couples, they are different from marriage equality policies because they are not recognized as marriages under the law. Additionally, domestic partnerships and civil unions are only recognized within the state where they were granted and are not recognized by other state governments or the federal government. Therefore, I differentiate between domestic partnership and civil union laws and marriage equality laws in conceptualizing my dependent variable. I define marriage equality policies as public policies that extend *equal* recognition, rights, protections, and benefits of *marriage* to same sex couples, and are titled as such.[9]

I obtained information on state level policies for marriage through a Westlaw search. Westlaw is a database managed through Thompson and Reuters that is used to compile and store legal information at the state and federal level. I refined my search by selecting "all states" as the jurisdiction. Next, I narrowed the search further by choosing "statutes and court rules." I used the search term "same sex marriage" and "marriage" to locate specific state policies in the database. I examined each state law to determine how each state defined marriage. A state policy to ban same sex marriage explicitly defines marriage as "between one man and one woman." There is greater variation in the verbiage used to define marriage within states that have adopted marriage equality policies however, it remains clear that the state recognizes marriages between all couples – both opposite sex and same sex. In states with marriage equality policies the law references two individuals instead of specifying the two individuals as a woman and man. Two examples of the terminology used to define marriage in states that have adopted

[9] Being titled a "marriage equality policy" means the law defines the act of marriage and is considered a state marriage law – not a domestic partnership or civil union law.

marriage equality policies follow: “Marriage is a civil contract between *two persons* who have each attained the age of eighteen years, and who are otherwise capable.” (Washington, 2012 c 4 § 10). “Only a marriage between *two individuals* who are not otherwise prohibited from marrying is valid in this State.” (Maryland, 2012 c 2 § 1). These examples of marriage equality laws, while not uniform still clearly articulate that marriage is extended to include any two people; same sex or opposite sex. I confirmed the information for the marriage equality policies by visiting state government websites and reviewing the bills and enacted legislation to confirm the details of the law.

I operationalize the adoption of a marriage equality policy as a dichotomous measure. I have chosen a binary measure because states either extend marriage to same sex couples or they do not, which is inherently bifurcated. States without a marriage equality policy in each year assume a value of 0 and states that adopt or have a marriage equality policy in each year are assigned a 1. A score of 1 denotes the occurrence of the event [the adoption] or the existence of the policy. A time axis variable that measures the time of “survival” is also required as a component of the dependent variable by event history models. The measure of this variable begins in 2004, the year from when the first state, Massachusetts, adopted their marriage equality policy. The measurement of the time component in the dependent variable should be theoretically chosen and should attempt to prevent the left censoring of data (Box-Steffensmeier & Jones, 2004).[10] This time axis variable is measured in years, extending from 2004 to 2012. The year 2004 was chosen as the starting point because it was theoretically important and prevents the left censoring of data. I chose to conclude the time axis measure nine years later in 2012,

[10] Right and left censoring of data truncates the dataset. Right censoring is more prevalent in event history analyses and signifies the event occurring after the periods of observation. Left-censoring indicates an event has occurred before the periods of observations.

which is the year before the Supreme Court decision that reshaped state same sex marriage policies. Although ending data collection in 2012 does truncate the data, leading to right censoring, decisions by states to adopt a same sex marriage policy changed fundamentally after the Supreme Court ruling and the results from the study would be confounded by this event. Furthermore, right censoring is less problematic than left censoring and can be addressed appropriately by current analytical techniques (Box-Steffensmeier & Jones, 2004).

There were a total of nine state marriage equality policies adopted from 2004 to 2012. I have plotted the state policies to illustrates that the adoption of marriage equality policies follows the s-shaped curve commonly found in the study of innovation and diffusion of public policies (Berry & Berry, 1999). This curve shows the first early adopter (Massachusetts) and the increased adoption of policies by other states in 2009 and following years. Table 2 and Figure 5 also visually highlight a weakness of my study – limited variation over time, in the dependent variable. After the Massachusetts adoption no other state adopted a policy until 2009; at which point three states adopted a policy creating three tied cases. This four year period of stagnation and the presence of tied cases can produce weaknesses with my analysis. Recognizing this allows me to employ statistical techniques that have been developed to produce more reliable results for rare events and tied data. Taking these issues into consideration I chose to conduct an event history analysis, using the Cox Proportional Hazards Model and Breslow Method to alleviate these concerns.[11]

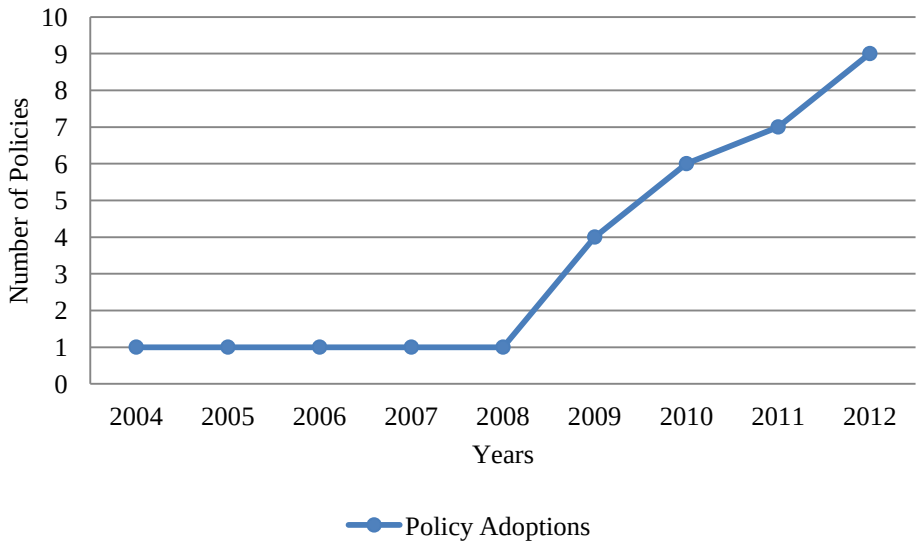
[11] I address this concern in greater detail in the discussion of my analytical approach and the use of the Cox Proportional Hazards Model and Breslow Method for my statistical analysis. I also discuss this weakness in Chapter Five where I present the limitations of my study.

Table 2: States that adopted a same sex marriage policy from 2004 to 2012

#	State	Year
1	Massachusetts	2004
2	Connecticut	2009
3	Iowa	2009
4	Vermont	2009
5	Washington DC	2010
6	New Hampshire	2010
7	New York	2011
8	Maine	2012
9	Washington	2012

Source: Analysis of data on state marriage equality policies from 2004 to 2012 gathered from Westlaw.

Figure 5: State same sex marriage policies



Source: Analysis of data on state marriage equality policies from 2004 to 2012 gathered from Westlaw.

Internal Determinants

Gender equality

They key independent variables of interest include gender equality, assistive reproductive technologies (ART), and religion. I chose these variables because I hypothesize they shape norms around the institution of marriage and pressure the public and state policy makers to adopt new public policies. The unique contribution of this

study is based on the introduction and inclusion of gender variables and measure of technological innovation regarding reproduction. Incorporating gender equality and ART variables into the analysis of marriage equality policies provides a different lens to analyze and understand the adoption of same sex marriage policies. Religion is included as an independent variable because of its consistent relationship with same sex marriage and LGBT issues more generally.

Gender equality is conceptualized as the equal integration of women and men across different aspects of society. The US has high gender equality compared to other countries around the world; however inequalities between women and men are still present. For that reason I focus specifically on three components of gender equality here in the United States, economic, political, and social. The inclusion of gender equality variables into my analysis measures how the position of women and men in society has changed and what that means for modern marriage. Wage inequality between women and men is operationalized as women's earnings as a percent of men's and was captured from the US Census. Political representation is operationalized as the percent of women in the state legislature and was collected from the Center for American Women and Politics (CAWP). The last variable that measures gender equality is women in the labor force, which was operationalized as the percent of all women (civilian and non-institutionalized) in the labor force and was obtained from the US Bureau of Labor Statistics.

Although the aforementioned gender equality variables address measures across several domains, other facets of equality remain uncaptured by the three single variables. Therefore, data on additional measures of gender equality were captured and recorded.

Due to constraints of the model the inclusion of these variables as separate measures would be problematic. Additionally, correlations between variables could bias the results. To best account for the complexity of gender equality without over burdening the model a composite variable was created.

Principal Components Analysis

A Principal Component Analysis and Factor Analysis were conducted to determine which method was more appropriate for combining the gender related variables into a single gender equality measure. From these results it was determined that Principal Component Analysis (PCA) was the most appropriate method. This determination was made because a PCA is computationally simpler, but still captures needed variance while condensing the variables into a single measure. "The central idea of PCA is to reduce the dimensionality of a dataset consisting of a large number of interrelated variables, while retaining as much as possible of the variation present in the dataset." (Joliffe, 2002, p. 1). This statistical procedure is useful when variables are highly correlated or to reduce the number of variables in the model by creating a single composite measure. The PCA technique is a linear transformation that reduces collinearity (Dunteman, 1989); multicollinearity can be problematic for survival analysis just as it is problematic in traditional OLS regression models (Allison, 2010).[12] The reduction in the number of variables and the transformation to reduce collinearity produced by a PCA improves the efficiency of the model by condensing variables that share a linear relationship into a single variable.

[12] There are no statistical tests to determine whether multicollinearity is problematic for survival analysis, but a preliminary traditional regression analysis can be conducted to determine whether multicollinearity is present (Allison 2010).

To conduct the PCA, data on several different measures related to gender equality were collected. The variables that were used have been found in research of gender equality and are relevant across economic, political, and social domains. The variables that were included in the PCA were women's earnings as a percent of men's, occupational sex segregation, women in poverty, women in the state legislature, women and education, women in the labor market, and single mothers. The measurement and source of data collection for each variable is located in the table below.

Table 3: Variables used for the Principal Component Analysis

Variable	Measure	Source	Notes
Women's to Men's Earnings	Women's earnings as a percent of men's	US Census Table B20004	2004-2006 – 1 year estimates 2008-2007 – 3 year estimates 2012-2009 – 5 year estimates
Women's Educational Attainment	Percent of women 25+ with a bachelor's degree or higher*	US Census Table B15002	2004-2006 – 1 year estimates 2008-2007 – 3 year estimates 2012-2009 – 5 year estimates
Women's Labor Force Participation	Percent of women in the civilian labor force	Bureau of Labor Statistics	
Occupational Sex Segregation	Index of Dissimilarity	Minnesota Population Center	
Women in the State Legislature	Percent of women in the state legislature	Center for Women in Politics	Nebraska unicameral and Washington DC city council
Women in Poverty	Percent of women in poverty	US Census Table B17001	2004-2006 – 1 year estimates 2008-2007 – 3 year estimates 2012-2009 – 5 year estimates
Single Mothers	Percent of female headed families with children under 18	US Census Table B11004	2008 – 3 year estimates

* Degrees Included: Bachelor's, Master's, Professional, & Doctorate

The first step was to conduct a correlation analysis to evaluate the relationships between each of the different variables. The correlation coefficients provide insight into how closely related the variables are to each other and whether they are positively or negatively associated. These results are helpful when determining how to condense all of the individual measures into a single component variable. Relatively highly correlated variables indicate a strong association between each other. A high correlation coefficient is needed to create a proper component variable. The caveat to this is that if coefficients

are too high there may be measurement error, as a very high score indicates the variables may be measuring the same concept.[13] Low correlation coefficients mean there is little to no association between the variables, indicating that they are independent measures and can be treated as such in the model; therefore they should not be included in the PCA.

Table 4: Results from the Correlation Analysis

Variable	Women's to Men's Earnings	Women's Educational Attainment	Women's Labor Force Participation	Occupational Sex Segregation	Women in the State Legislature	Women in Poverty	Single Mothers
Women's to Men's Earnings	1.00						
Women's Educational Attainment	0.51	1.00					
Women's Labor Force Participation	0.01	0.48	1.00				
Occupational Sex Segregation	-0.66	-0.70	-0.18	1.00			
Women in the State Legislature	0.34	0.53	0.32	-0.47	1.00		
Women in Poverty	-0.02	-0.04	-0.11	0.05	-0.33	1.00	
Single Mothers	0.21	0.00	-0.36	0.04	-0.04	0.00	1.00

The measures for women in poverty and single mothers have low correlation coefficients across every other variable. Therefore, these two variables have been removed from the PCA based on the information yielded by the correlation analysis. The measure for occupational sex segregation is highly correlated with most of the variables in the analysis. Women's earnings as a percent of men's is highly and negatively correlated with occupational sex segregation, indicating that as segregation of women in men across occupations increases the earning power of women declines. Occupational sex segregation is also highly and negatively correlated with women's education, which illustrates that as women obtain higher levels of educational attainment, gender

[13] This requires that further determinations about including those variables into the analysis should be made.

disparities across occupational categories decrease. The positive correlation coefficient between occupational sex segregation and women in politics, demonstrates that an increased presence of women in the legislature is associated with declining gender disparities across occupations. Education is also shown to be positively and somewhat correlated with women in the labor force and the political participation of women – as women achieve higher levels of education their participation in the labor force and politics increases. Whereas education is strongly and negatively correlated with occupational sex segregation, signifying that increased education of women leads to reduced segregation of women and men in occupations.

Communalities that are produced as part of the PCA represent the amount of variance that is explained by the component and is derived by summing the squared loadings. A review of the communalities in Table 5 demonstrates that most of the variables have communalities higher than 0.5, with the exception of the labor force variable. While this can be reason for exclusion, this variable is theoretically important and therefore kept in the model.

Table 5: Communality scores

Variable	Communality
Women's Educational Attainment	0.788
Women's to Men's Earnings	0.513
Women's Labor Force Participation	0.213
Occupational Sex Segregation	0.735
Women in the State Legislature	0.510

The component matrix indicates that all of the variables reach at least 0.50 (the recommended minimum for inclusion), with most of them closer to 0.70 and 0.80. Evaluating these scores is necessary to identifying which variables, if not all, should be

included in the component produced by the PCA. The labor force variable has the lowest score, 0.462, and education has the highest at 0.788. The first component to be created by a PCA has the best fit – meaning that the first component generated through this analysis explains the most variation with the fewest variables (Dunteman, 1989).

Table 6: Component matrix

Variable	Component
Women's Educational Attainment	0.888
Women's to Men's Earnings	0.716
Women's Labor Force Participation	0.462
Occupational Sex Segregation	-0.857
Women in the State Legislature	0.714

A single component was chosen based on the scores from the communality table and component matrix. An evaluation of these statistics indicates that a PCA effectively reduced the gender equality variables into a single component that captures enough variance to yield explanatory power in the full model. This single variable will be incorporated into the model as a composite measure for gender equality.

Reproductive technology

Including a measure for reproductive technology is important because it affects the norms around children and family. Assistive reproductive technologies include a wide range of procedures. The Center for Disease Control (CDC) defines assistive reproductive technologies as "all fertility treatments in which both eggs and sperm are handled" (CDC Website). This definition, used by the CDC, is based on the 1992 Fertility Clinic Success Rate and Certification Act (CDC Website). Conceptualization of ART in this way includes in vitro fertilization (IVF), which the CDC states is the number one type of ART treatment (CDC Website). Based on this information, I operationalize

the measure for ART as the number of IVF procedures started within a state as a proportion of all lives births for that state and year. Creating a proportion allows me to control for outliers – states with much higher and/or lower rates of IVF because of their sheer size. Live births per year was collected from the CDC as well. These data were obtained from the CDC's National Art Surveillance program for each state and year in the study.

Religion

The institution of marriage is rooted in religion, making religion a relevant variable to include in the analysis. Furthermore, previous literature has demonstrated the significance of religion on the adoption of same sex marriage bans (Haider-Markel, 2001), as well for morality policies more generally; including state lotteries (Berry & Berry, 1990), abortion policies (Mooney & Lee, 1995), and gay and lesbian rights (Haider-Markel & Meier, 1996). Therefore, I have chosen religion as an independent variable instead of a control variable, because of its theoretical importance. Religion is also relevant and significant to the union of marriage, being presented as a sacred institution in almost all religious factions (Sarkar, 2001; Cesari, 2004; Cott, 2009). Marriage was incorporated into the United States legal system at a time when Christianity was deeply embedded in American life and culture (Cott, 2009) and over time has been institutionalized by public policies at the state and federal level. It has been demonstrated that religiosity shapes norms and attitudes regarding marriage, especially same sex marriage (Haider-Markel & Meier, 1996; Haider-Markel, 2001; Barclay & Fisher, 2003; Sherkat et al., 2011).

The religion variable is operationalized as the percent of Evangelical Protestant adherents [among the total population] within a state. These data were gathered from the 2010 U.S. Religion Census: Religious Congregations and Membership Study which is conducted by the Association of Religion Data Archives (ARDA) and has been used in other studies (Haider-Markel, 2001; Barclay & Fisher, 2003; Sherkat et al., 2011).

Diffusion Variables

To analyze patterns of diffusion and to test whether external influences shaped state policy decisions, two diffusion variables were included in the analysis. They are traditional measures of diffusion that are prevalent in the literature – the percent of border states that have a marriage equality policy and the percent of states in the region that have adopted a marriage equality policy. These variables indicate whether external pressures from neighboring states and/or social learning from other states in the region affect policy adoption. In the literature, diffusion variables are not found to be significant predictors in the adoption of morality policies (Mooney & Lee, 1995), especially policies related to same sex marriage (Haider-Markel, 2001). The inclusion of diffusion variables in my model recognizes that historically, external pressures have had a significant impact on state politics and policies. While there has been little support that these influences matter, testing this assumption will determine whether or not morality policies continue to be primarily shaped by internal state characteristics.

Control Variables

Important state level control variables are education, state wealth, population, percent urban population, and the presence and power of the LGBT community. These variables have demonstrated their significance to the innovation and diffusion of morality

policies (Berry & Berry, 1990; Haider-Markel & Meier, 1996; Mooney & Lee, 1999; Haider-Markel, 2001; Taylor et al., 2012). Education is measured as the percent of the state population with a college degree or higher at age 25 or older. Population is measured as the state population. The measure for percent urban population is also introduced as a different control variable because urban centers are usually more diverse and more densely populated, enabling greater contact among different types of people and promoting acceptance (Allport, 1954). I was unable to procure state level data that directly measures the power of the LGBT community and/or their advocacy efforts. I use a proxy measure to captures this group's impact – the percent of same sex households in the state. Data for this variable was gathered from the US Census. A similar measure was used by Haider-Markel and Meier (2003) in their analysis of county-level ballot measures related to LGBT rights, in which they used the number of unmarried same sex households per one thousand of the county population. The self-identification of LGBT persons is significantly related to political activity and political attitudes (Hertzog, 1996).

The measure for same sex households is used in the literature but, there are shortcomings associated with the operationalization of this variable. Data for same sex households can be a troublesome measure, often experiencing measurement error (Black et. al., 2007). The identification by couples as a same sex household is self-reported data, which may introduce bias into the sample. Furthermore, the declaration of LGBT status is often underreported and calculations are underestimated as reporting is heavily influenced by social acceptance and norms (Coffman, Coffman, & Ericson, 2013). Although same sex households provide a crude measure, the underreporting of LGBT and same sex couple status leads to a more conservative estimate of the effect.

The data for variables (education, population, urban population, and same sex households) were all gathered from the US Census and were collected for each state and year. State wealth is included as a control variable because it is possible that wealthier states have greater resources, which can facilitate or impede their ability to address issues facing the public (Berry & Berry, 1990; Mooney & Lee, 1995; Haider-Markel, 2001). State wealth is operationalized as the per capita GDP and was collected for each state and year from the US Bureau of Economic Analysis. The control variables were then averaged over the nine years for each state.

The aforementioned control variables provide insight into the context of a state but, provide more general demographic information. To address this point I include a variable that teases out the embedded ideology of the public within a state. The variable that I use to measure this influence is regional political subculture, which was created initially by Elazar (1984) and was updated by Lieske (1993, 2010). This measure is a classification that is created from several individual variables. The classification system for the regional political subcultures has five categories – moralistic, individualistic, pluralistic, bifurcated, and separatist. These five categories are produced from eleven cultural characteristics.[14]I created a dummy variable for states that were considered "moralistic" from Lieske's (2010) most recent classification. This variable is held constant during the observation period because the demographic information[15] used to create it does not change drastically over time.

[14] The eleven cultural characteristics include Heartland, Latino, Nordic, Border, Mormon, Global, Blackbelt, Native American, Germanic, Rurban, and Anglo-French.

[15] Demographic information that changes over time and is analyzed in developing this measure include but are not limited to immigration, migration, and differential rates of racial and ethnic fertility (Lieske 2010).

Table 7: List of variables

Variable	Measure	Source	Notes
DEPENDENT VARIABLE			
Marriage Policies	Adoption of Marriage Equality Policy	Westlaw Next State Government Websites	
INDEPENDENT VARIABLES (Internal Determinants)			
Women's to Men's Earnings	Women's earnings as a percent of men's	US Census Table B20004	2004-2006 – 1 year estimates 2008-2007 – 3 year estimates 2012-2009 – 5 year estimates
Women's Labor Force Participation	Percent of women in the civilian labor force	Bureau of Labor Statistics	
Women in the State Legislature	Percent of women in the state legislature	Center for Women in Politics (CAWP)	Nebraska unicameral and Washington DC city council
Component Variable	Education, earnings, labor force participation, occupational sex segregation, and political participation measures	Various government agencies (see Tables 5 and 6)	Calculated by Author
Assistive Reproductive Technology	Percent of IVF procedures	CDC ART Success Rates Reports CDC National Vital Statistics Reports	Table 1 – IVF Table 12 – Birth Rates
Religion	Percent of Evangelical Protestants	Association of Religion Data Archives (ARDA)	Religious Congregations & Membership Study 2010
INDEPENDENT VARIABLES (External Determinants)			
Border Adoption	Percent of border states with policy		Calculated by Author
Regional Adoption	Percent of states with policy in the region	US Census Regions	Calculated by Author
CONTROL VARIABLES			
Bachelor's Degree +	percent of state population with a college degree or higher 25+	US Census Table B15002	2004-2006 – 1 year estimates 2008-2007 – 3 year estimates 2012-2009 – 5 year estimates
Political Subculture	Measured as a dummy variable for states with a moralistic subculture	Liekse 2010	
Population	Entire State Population	US Census Table B01003	2004-2006 – 1 year estimates 2008-2007 – 3 year estimates 2012-2009 – 5 year estimates
Urban Population	Percent of state population living in an urban area	US Decennial Census	2010
Same Sex Households	Percent of households that are unmarried same sex households	US Census Tables B11009 and S1101	2004-2006 – 1 year estimates 2008-2007 – 3 year estimates 2012-2009 – 5 year estimates
State Wealth	GDP per capita	Bureau of Economic Analysis	All industry total

Table 8: Descriptive statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Assistive Reproductive Technology	459	0.032	0.025	0.003	0.138
Women's to Men's Earnings	459	0.677	0.055	0.510	0.930
Women's Labor Force Participation	459	0.604	0.043	0.482	0.70
Women in the State Legislature	459	0.235	0.069	0.082	0.410
Component	459	0.000	1.661	-3.427	0.783
Religion	459	0.165	0.111	0.023	0.455
Border Adoption	459	0.083	0.204	0.000	1.000
Pacific	459	0.002	0.021	0.000	0.200
Midwest	459	0.011	0.034	0.000	0.20
Northeast	459	0.054	0.147	0.000	0.667
South	459	0.011	0.025	0.000	0.118
Bachelor's Degree +	459	0.272	0.055	0.171	0.477
Population	459	5,870,659	6,563,248	152,185	37,325,068
Urban Population	459	0.703	0.146	0.380	1.000
Same Sex Households	459	0.006	0.002	0.003	0.015
State Wealth	459	$48,911	$18,624	$31,652	$166,962

The descriptive statistics above provide some general insights about the data. On average roughly 25% of people 25 and older have a bachelor's degree, 70% of people live in an urban area, and same sex households consist of a very small percent of the state population (0.60%) on average. In regards to key independent variables – women on average earn 68% of what men earn, consist of almost a quarter of the state legislators, and make up about 60% of the labor force. On average IVF procedures make up a small proportion of live births (3%) and range from 0.3% (Arkansas in 2004) to 14% (Massachusetts in 2011). The statistics for the religion variable indicate that on average just over 15% of the population are Evangelical Protestants.

Table 9: Correlation Analysis

Variable	Assistive Reproductive Technology	Women's to Men's Earnings	Women's Labor Force Participation	Women in the State Legislature	Component	Religion	Bachelor's Degree +	Population	Urban Population	Same Sex Households	State Wealth
Assistive Reproductive Technology	1.00										
Women's to Men's Earnings	0.44	1.00									
Women's Labor Force Participation	0.17	0.01	1.00								
Women in the State Legislature	0.29	0.34	0.32	1.00							
Component	0.19	0.72	0.47	0.72	1.00						
Religion	-0.49	-0.04	-0.42	-0.55	-0.54	1.00					
Bachelor's Degree +	0.78	0.47	0.46	0.52	0.01	-0.54	1.00				
Population	0.13	0.19	-0.31	0.00	-0.41	0.01	0.05	1.00			
Urban Population	0.63	0.35	0.00	0.33	-0.41	-0.41	0.58	0.40	1.00		
Same Sex Households	0.57	0.63	0.12	0.51	0.72	-0.41	0.75	0.08	0.51	1.00	
State Wealth	0.52	0.54	0.28	0.19	0.67	-0.26	0.71	-0.05	0.49	0.72	1.00

A correlation analysis indicates that the variables range in the strength of their relationships with one another. The religion variable is consistently negatively associated with most of the other key independent variables of interest. A negative correlation coefficient signifies that as the percent of Evangelical Protestants within a state increases the women to men's earnings ratio, amount of women in the labor force, percent of women in the state legislature, and number of IVF procedures all decrease. Of the gender variables religion is most strongly and negatively correlated with the percent of women in the state legislature. The correlation between the percent of women in the state legislature and the percent of women to men's earnings ratio is positively associated, which indicates that a greater presence of women in state politics is associated with higher wages for women. The correlation analysis also shows a positive relationship between women in the state legislature and women in the labor force, meaning that higher rates of political participation among women is linked to higher labor force participation. The findings demonstrating the positive relationship between women's earnings, presence in politics, and participation in the labor force has been supported in the literature (Carroll, 2001). Education is highly correlated with ART, same sex households, and state wealth. This demonstrates that higher levels of education are associated with an increased presence of same sex households, greater prevalence of ART, and higher GDP per capita.

The Analytical Method

Building on the information obtained from the initial evaluation of the PCA, descriptive statistics, and correlation analysis, I moved into the next phase of the quantitative analysis – building a model to effectively test the hypothesized relationship between the dependent variable and independent variables. I conducted a quantitative

analysis because it yields generalizable findings, allowing me to make assertions about individual states based on the results.

I employ an event history analysis (EHA), which is common to the study of policy innovation and diffusion.[16] This method is growing more prevalent in the social sciences as scholars use these models to examine a variety of economic, political, and social phenomena. As Box-Steffensmeier and Jones (2004) argue "Many of the problems, hypotheses, and theories underlying social science research have, at their core, an implicit or explicit interest in the notions of timing and change" (p. 2). EHA is inherently comparative as the data used in this type of research requires several observations of many entities over time (Box-Steffensmeier & Jones, 2004). The functionality of the EHA models stems from the ability to explain what factors increase the risk of specific entities (Vermunt & Moors, 2005). Today the use of EHA is common practice for the research and analysis of public policies (Jones & Branton, 2005) and specifically in the study of policy diffusion in the United States (Buckley & Westerland, 2004).

Berry and Berry (1990) introduced the use of event history analysis to the study of policy innovation and diffusion in their research of state lotteries. They argue that event history analysis is useful in studying the innovation and diffusion of public policies since policy adoptions are unobserved variables and decisions to adopt a policy are usually non-repeatable events (Berry & Berry, 1990, 1999). Furthermore, Berry and Berry (1990) state the results of this type of analysis [the hazard rate] indicates the probability of a state adopting a policy during a specified time, given no history of adoption in earlier periods. "Event history analysis allows researchers to answer a more extensive set of

[16] Event history analysis is also called survival analysis because of the inherent focus on an entity "surviving."

questions than conventional analyses by using information on the number, timing, and sequence of changes in the dependent variable" (Box-Steffensmeier & Jones, 2004, p. 1414), although the dependent variable is usually represented as a dichotomous measure (Berry & Berry, 1990). "A hazard model is a regression model in which the "risk" of experiencing an event at a certain time point is predicted with a set of covariates" (Vermunt & Moors, 2005, p. 1).

An EHA also allows for the inclusion of both time variant and invariant variables, which enables the researcher to build a more comprehensive model that accounts for dynamic covariates. The recognition of time as a factor is a major strength of the EHA (Allison, 2010) as the inclusion of variables that change over time are problematic for more traditional regression models, such as OLS (Box-Steffensmeier & Jones, 2004). In my model I include both time variant and invariant measures. It was important to measure my key independent variables by year to account for changes in levels of gender equality over time and the growing popularity of IVF procedures.

Haider-Markel (2001) applied an EHA in his research of same sex marriage bans, stating that this technique is an appropriate method and has been demonstrated to effectively "predict the probability that an event will occur at a particular point in time based on a series of independent variables" (p. 11). Other scholars have used EHA to examine the innovation and diffusion of hate crime laws (Grattet, Jenness, & Curry, 1998), bans to same sex marriage (Soule, 2004) and gay and transgender discrimination policies (Taylor et al., 2012) among other morality policies (Berry & Berry, 1990; Mooney & Lee, 1995, 1999; 2000; Pierce & Miller, 1999; Emmert & Traught, 2003). My dissertation will contribute to this body of knowledge by drawing attention to gender and

technology as relevant independent variables and refocusing the investigation on marriage equality policies instead of bans to same sex marriage. Using marriage equality policies, instead of bans to same sex marriage improves the relevancy of my study's findings, as most states have extended equal rights of marriage to same sex couples as of 2015.

EHA models have unique components to effectively address the incorporation of time into the analysis and to focus the attention on the occurrence of an event. The first component of the model is a dichotomous measure of an "event", which denotes whether the entity experiences the event or "survives"; if the event occurs the entity can be said to "fail." Related to the event measure is the time axis variable – this measure identifies how long the entity has been at "risk" of experiencing the event or how long the entity has "survived." The duration (or survival time) can be measured a variety of ways (seconds, months, years, etc.) but, should be consistently measured during the observation period and for each entity. The last element of the event history model is censoring and truncation. Censoring and truncation occur when the entity under study does not experience the event during the observation period. EHA is uniquely qualified to address this problem (Yamaguchi, 1991), which is prevalent in longitudinal data (Allison, 2010). Data can be right-censored, meaning that the occurrence of the event was not captured during the observation period (Yamaguchi, 1991; Allison, 2010); when data is right-censored the event either does not happen at all or happens after the observation period. Data can also be left-truncated (or left-censored), which occurs when the entity's history is unknown or the event occurred before the observation period; this type is less common (Yamaguchi, 1991; Allison, 2010). Event history models are useful for

researchers because they effectively address these data shortcomings, which is more problematic for other modeling techniques.

There are four main types of EHA methods – continuous-time or discrete-time and semi-parametric or parametric (Allison, 2010). Although EHA inherently assumes that an event can occur at any point in time, the ability to capture the data with great precision may be difficult [if not possible] (Box-Steffensmeier & Jones, 2004). When the exact time that an event took place is recorded and takes place during the observation period then continuous-time methods should be employed (Allison, 2010). However, limitations to data produce less precise measures, in which case discrete-time methods are more appropriate (Box-Steffensmeier & Jones, 2004). An indication that discrete-time methods are appropriate is the presence of several tied cases (Allison, 2010). Choosing between the continuous-time or discrete-time methods requires that data for the other variables be measured and collected with precision equal to the dependent variable.

I have chosen to use discrete-time methods for my dissertation because of this last point. I was able to collect data on my dependent variable with precision, narrowing the measurement down to the specific day that the policy was enacted. However, I was unable to collect data with this level of precision for the other variables included in the model. Information on the other variables was collected annually, which is not exact enough to be considered as a continuous-time measurement. Therefore discrete-time methods are more appropriate for my analysis since my variables [including my dependent variable] are measured annually. The measure of the dependent variable this way contributed to the presence of tied cases, which is another indicator that discrete-time models are more appropriate.

Tied cases that are found in the data refer to the instance that two cases experience the event at the same time – tied cases in my research represent the adoption of policies by different states in the same year. Tied cases are more common when the time axis variable is measured more imprecisely because there is a wider gap in which entities can experience an event. Tied cases are common in the study of policy innovation and diffusion. When using years to measure the time axis variable it is likely that at some point during the observation period more than one state will adopt a policy. One type of EHA model, the Cox Model derives information based on the ordered failure times; this is why it is important to recognize tied cases (Box-Steffensmeier & Jones, 2004).

The other type of method that must be distinguished in an EHA is based on the probability distribution of event times, which is either parametric or semi-parametric (Allison, 2010). Employing a parametric model requires that the probability distribution of event times is properly specified (Box-Steffensmeier & Jones, 2004). Proper specification and the use of parametric models leads to more precise results, including smaller standard errors for relative hazard rates and median survival times (Collett, 2015). Box-Steffensmeier and Jones (2004) warn that proper specification is imperative because "parametric methods directly specify the shape of the hazard rate" (p. 21). Benefits of the parametric models include effectively addressing left-censored or interval-censored data and producing predicted times to events (Allison, 2010). Models that allow the probability distribution of event times to remain unspecified are called semi-parametric (Box-Steffensmeier & Jones, 2004; Allison, 2010). The Cox Proportional Hazards Model (I will refer to this model as the Cox Model moving forward) allows the probability distribution to be unspecified (Allison, 2010) while still producing estimates

for the baseline hazard and survivor functions (Box-Steffensmeier & Jones, 2004). This model is commonly used in the social sciences.

I use the Cox Model to conduct my EHA. As Allison (2010) points out, the Cox Model "does not make specific assumptions about the probability distribution of event times" (p. 416), which is why Collett (2015) argues that "the model has flexibility and widespread applicability." I chose this model mainly because as noted above, the improper estimation of the probability distribution is problematic. Additionally, the Cox Model appropriately accounts for time varying covariates and tied cases, which are both present in my dataset. In analyses with time varying independent variables, the Cox Model can be easily interpreted because of the partial likelihood function used in estimation (Box-Steffensmeier & Jones, 2004). The partial likelihood estimation used by the Cox Model assumes that no additional information, regarding the relationship between the hazard rate and key variables of interest is produced between the time intervals (Collett, 2015). The results from an EHA and the Cox Model are reported as either hazard ratios or beta coefficients; hazard ratios are interpreted similarly to odds ratios (Allison, 2010). The method of estimation used by the Cox Model calculates the hazard ratio only at the times of failure, which in this study is the state's decision to adopt a marriage equality policy.

The Cox model has the capacity to address tied cases. My data does include tied cases, since the dependent variable is measured on an annual basis. There are two methods for tackling tied cases – the Breslow method and the Efron method. I use the Breslow Method in my analysis because it is computationally simpler than the Efron Method (Box-Steffensmeier & Jones, 2004). The Breslow method tackles the inability to

distinguish the time order of tied cases by calculating the partial likelihood function from the entire risk set; no case is dropped (Box-Steffensmeier & Jones, 2004). The Breslow method is preferred because of these strengths and allows me to maintain the highest possible number of cases in the dataset.

The inclusion of time varying covariates is a strength of the EHA however, there are specific stipulations to their inclusion in the model to prevent statistical and theoretical problems. Box-Steffensmeier and Jones (2004) state that time varying covariates are classified as either external or internal (Kalbfleisch & Prentice, 2011) and exogenous or endogenous (Lancaster, 1990). External covariates are broken down further as either fixed, defined, or ancillary (Kalbfleisch & Prentice, 2011). Fixed covariates are defined in advance and do not change during the observation period (Box-Steffensmeier & Jones, 2004; Kalbfleisch & Prentice, 2011). Defined covariates can change over time but the change is systematic and the pattern is known in advance (Box-Steffensmeier & Jones, 2004; Kalbfleisch & Prentice, 2011). Ancillary covariates are random and change in ways that are unrelated to the phenomenon under study (Box-Steffensmeier & Jones, 2004; Kalbfleisch & Prentice, 2011). Exogenous covariates are not impacted by the phenomenon being studied, while endogenous covariates are. Exogenous covariates do not pose much risk when included into the model (Box-Steffensmeier & Jones, 2004).

The key independent variables in my model are classified as ancillary and are exogenous. Although they change over time, these changes are not influenced by the policy adoption process. The ancillary variables do not threaten the model because of their exogeneity and can be easily introduced into the model. Other covariates that are included in the model are fixed and do not change during the period of observation and

are unrelated to the phenomenon of policy adoption. Therefore, they do not pose any risk to the model either.

In describing my data and articulating my analytical strategy I have outlined my methodological approach for how I will systematically test my research question. Moving forward I will present the results of the analysis and discuss the policy implications of the findings.

CHAPTER 4: RESULTS AND FINDINGS

The descriptive statistics and correlation analyses presented in the earlier chapter are helpful for obtaining a broad sense of the data. These baseline evaluations of my dataset provide insights about the distribution, organization, and relationships among the variables, which are important to choosing the proper analytical approach and modeling strategy. Before engaging in the analysis I graphed the data to observe how they are organized and visually checked for any errors or issues that would need to be addressed by my model.

Once these initial checks were complete I proceeded with the analysis. Conducting an event history analysis allows me to systematically test my hypotheses, yielding information about the "risk" of policy adoption based on a set of independent variables. Substantively, the assessment of risk provides information about the likelihood that a state will adopt a same sex marriage policy at a specific point in time based on the independent variables included in the model. The results of my analysis expand the existing discourse in this domain by presenting information about gender related variables and assistive reproductive technologies as drivers of change in the adoption of same sex marriage policies. Understanding that changing gender equality and the prevalence of assistive reproductive technologies can put states at greater (or lower) risk of adopting same sex marriage policies is useful for future research around LGBT politics and policy.

In this chapter I highlight the findings from my preliminary evaluations of the data and discuss the determinations I made to improve the analysis and ensure its appropriateness. After presenting and discussing the visual checks of the data, I describe my methodological approach and the systematic implementation of my analytical strategy. I close by presenting the results and discussing the relevant findings.

Evaluating the Data

Estimating the baseline cumulative hazard and survivor functions depict the relative risk of policy adoption when the covariates are set to 0. Graphing the hazard and survivor functions provides a visual check to ensure that the data follows the general trend framed by the theory and hypotheses. As seen in Figure 6, the graph of the baseline cumulative hazard function illustrates an increase in the risk of adoption over time. The trend indicates that states are more likely to adopt a same sex marriage policy as time progresses. In Figure 7, the survival function is plotted and illustrates the opposite – states are less likely to "survive" in the risk set with the passage of time. The step function depicted in both the hazard and survival functions are typical for event history analyses. Based on the evaluation of the graphed baseline hazard and survival functions I find evidence that the data are properly specified.

Figure 6: Baseline Cumulative Hazard Function

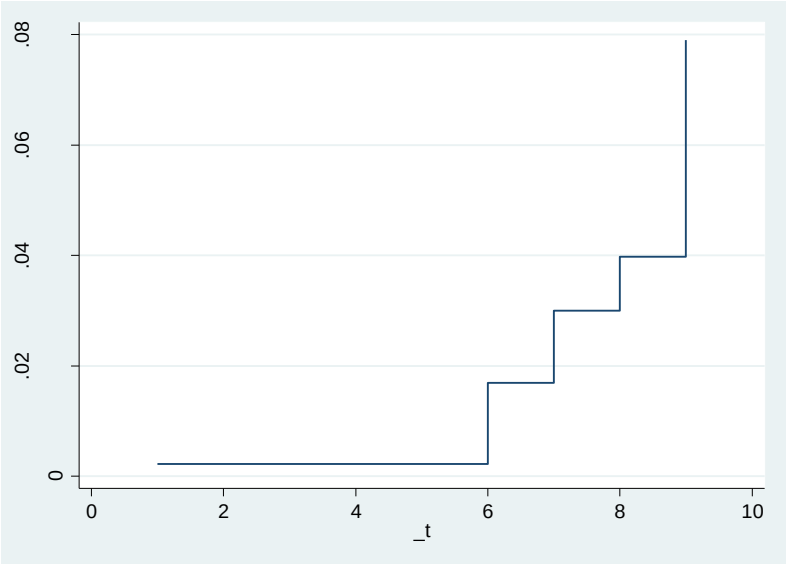
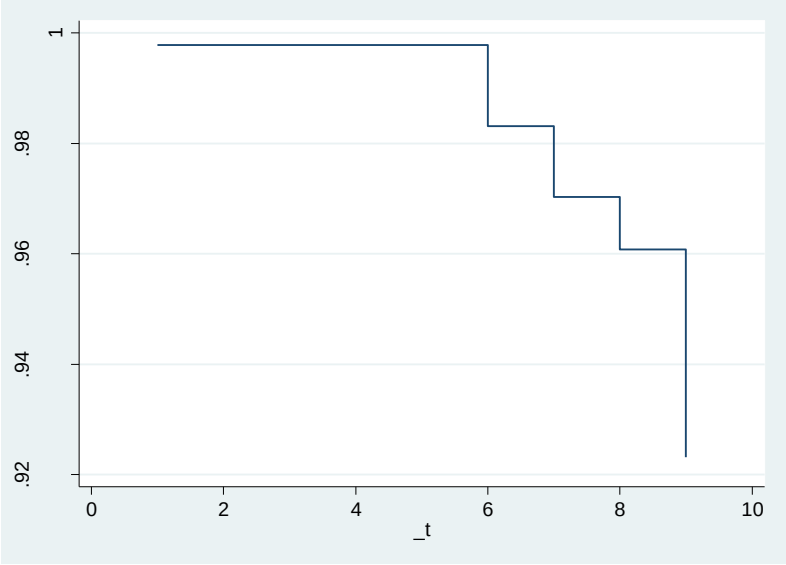


Figure 7: Baseline Cumulative Survivor Function



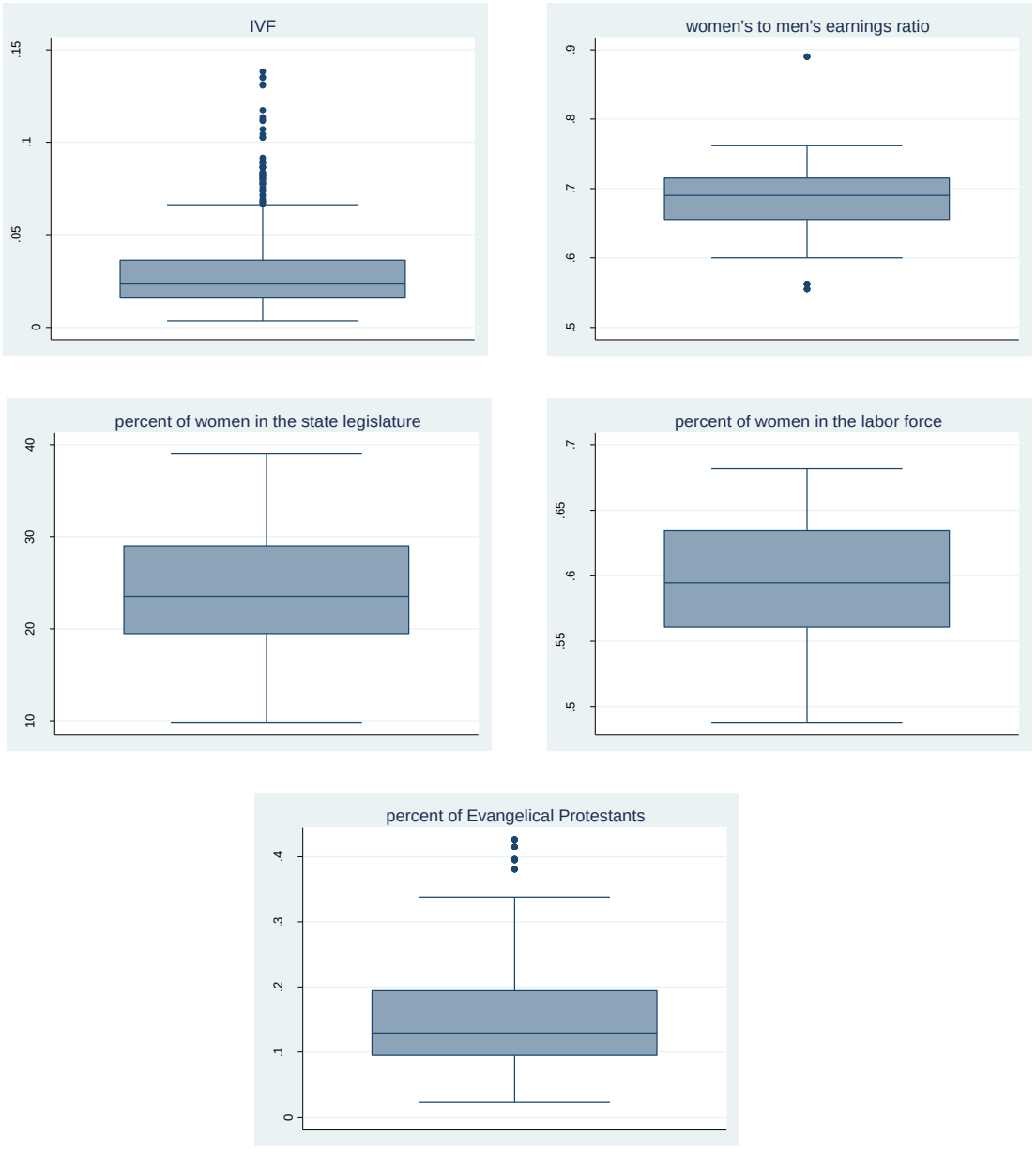
Next, I checked the data for the presence and power of outliers. Outliers can be problematic because they disproportionately influence the results based on their magnitude. Evaluating outliers ensures that no single observation has too much leverage in the analysis. Visually plotting the data can provide information about the amount and

influence of outlying observations, which is equally important in EHA (Box-Steffensmeier & Jones, 2004). A visual inspection of the outlying data points may also lead to the discovery of coding errors, unique cases, or missing information. Like other statistical models, outliers can have a powerful influence on the hazard rates, thus biasing the results. Considerations to reduce the power and presence of outliers include transforming variables or removing special cases. Drawing on theory and existing literature can facilitate decision making regarding how best to address outliers, especially when choosing to remove cases or observations from the dataset.

I graphed the data for each variable using box plots, which organizes observations based on the minimum, the first quartile, median, third quartile, and maximum. Averaging the data over years and states can improve the detection of outliers. I averaged each variable for all years by each state and by each state for all years; I've included the state averages from 2004 to 2012 here. In Figure 8 the box plots for the independent variables are graphed. Examining the outliers for the independent variables provides evidence that outliers may be problematic for the assistive reproductive technology, women's to men's earnings, and religion variables. Even though I controlled for the size of a state in the IVF variable, several outliers are still present. I reviewed the data points for IVF and found the three main outliers closer to the top of the box plot were Massachusetts, Washington DC, and Connecticut. The women's to men's earnings variable has one main outlier at the top of the box plot, which is Washington DC; the other outliers have much less power and were identified as Utah and Wyoming. The measure for religion has four outliers, Alabama, Oklahoma, Mississippi, and Arkansas. Through my initial evaluation I determined that the four religion outliers are relatively

close to the maximum and therefore may not be problematic because they have only a small amount of influence. There are no problems of outerlying cases for women in the state legislature and women's labor force participation variables.

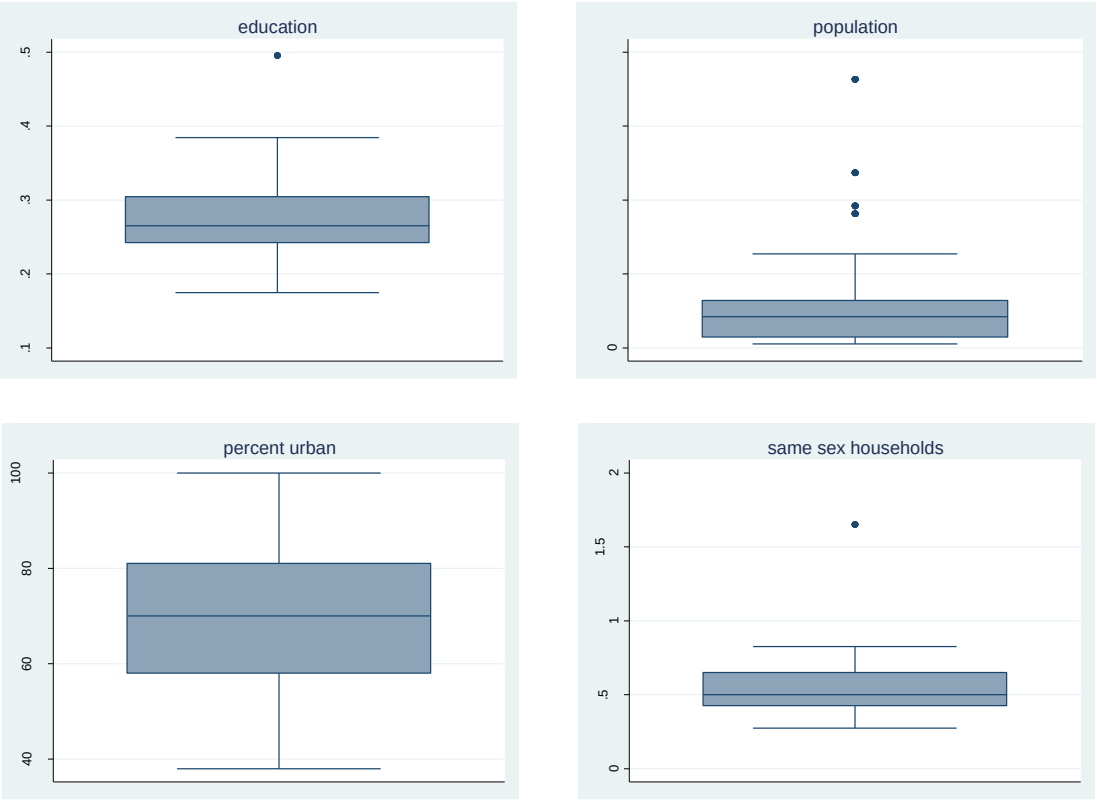
Figure 8: Box Plots of outliers (independent variables)



In Figure 9 I've included the box plots for the control variables. The population variable was the only control variable that had outliers, which brought attention to four

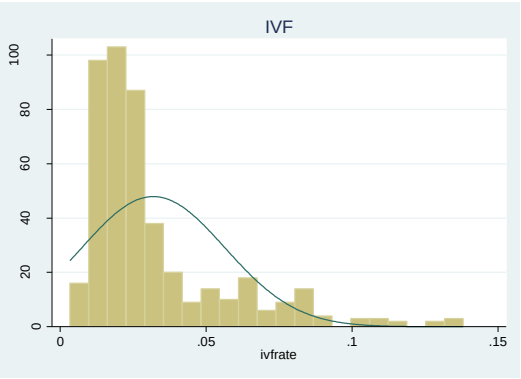
clearly delineated cases. These outliers represent the four largest states – California, Texas, New York, and Florida. This finding is not surprising as population is often log transformed to account for the heterogeneity among the states. The remaining control variables (all except percent urban) have a single outlier – Washington DC. Based on this information it appears that Washington DC may be a special case and considerations to remove it from the analysis may be warranted. Washington DC is not a state, which makes it unique from the other cases in the dataset and could lead to systematic bias. Limiting the dataset to include only the 50 states is common in the literature and in the study of morality policies (Mooney & Lee, 1995; Haider-Markel & Meier, 1996; Haider-Markel, 2001).

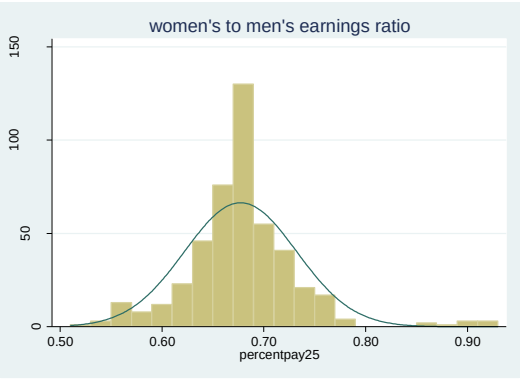
Figure 9: Box Plots of outliers (control variables)

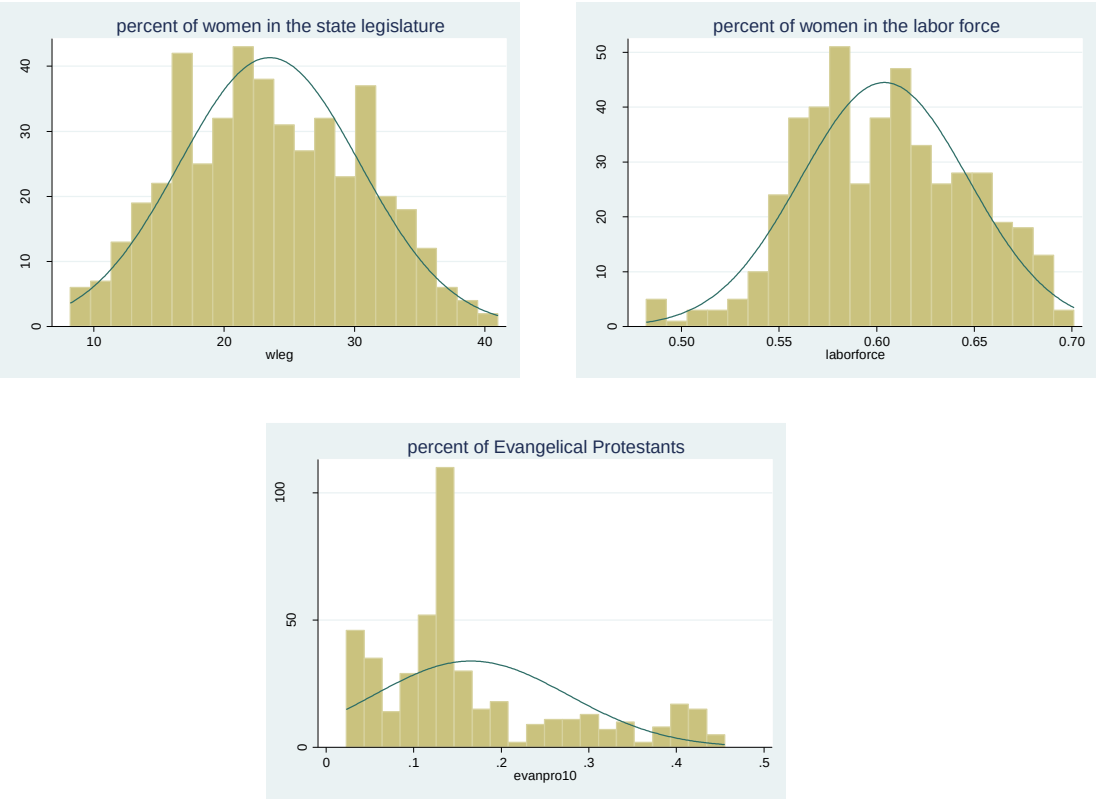


After examining the outliers I plotted the frequency distribution of each variable to determine whether the observations were normally distributed. The distributions of the independent variables in Figure 10 how that the IVF and religion variable are skewed to the right. All of the gender equality variables are normally distributed. Based on these results and an assessment of the outliers I conclude that steps to address the influence of outliers should be taken to improve the distribution of the IVF variable. I did not log transform the religion variable because it is only mildly skewed and the transformation makes interpretation of the final results less clear.

Figure 10: Frequency Distributions (independent variables)



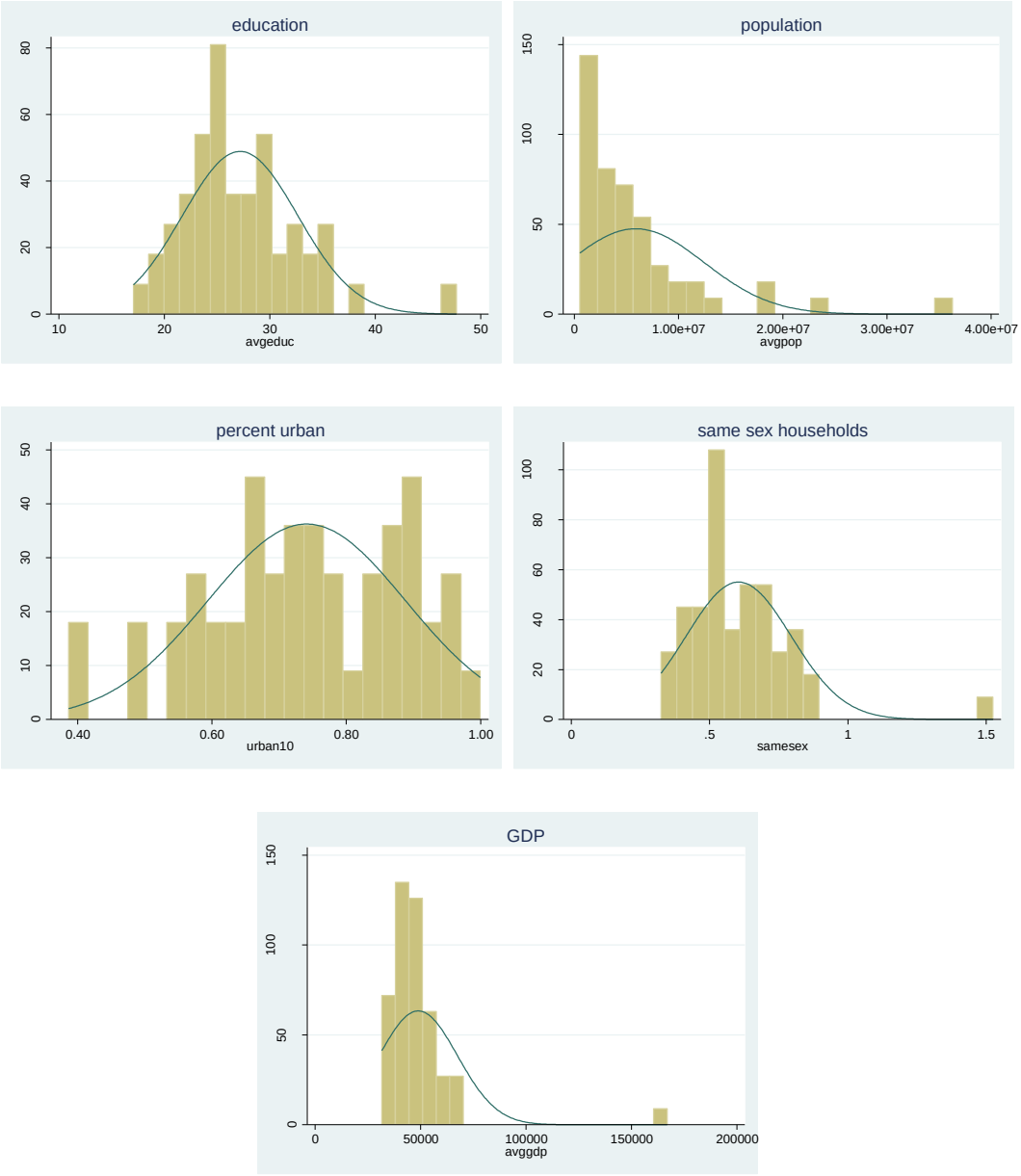




The distribution of the control variables in Figure 11 indicate that the population and state wealth variables are highly skewed to the right. You can also see the outlying cases when the distributions are graphed. The skewness of the population variable confirms the need to transform the measure, which will also subsume some of the outlying cases. I do not log transform the the state wealth variable because Washington DC as an outlying cases is most likely driving the skewness.[17]

[17] This assumption is correct. Plotting the distribution of GDP after Washington DC is dropped creates a more normal distribution.

Figure 11. Frequency Distributions (control variables)



In reviewing the data I decided to remove Washington DC from the dataset. I removed it because it is not a state and therefore has unique characteristics that make it systematically different from the other cases in the dataset. These differences impact the measurement of variables, especially key independent variables in a critical way. Washington DC does not have a state legislature, making the measurement of women in

the Council of the District of Columbia systematically different than female legislators in the states.[18] Washington DC was also found to be an outlier for measures of percent urban population and rates of IVF. It was the only case that had a population that was 100% urban, which could be problematic for the analysis.[19] Washington DC as an outlier for the measure of IVF rates indicates that the use of reproductive technology among the public there may be systematically different from other states due to its unique characteristics. Removing Washington DC as an outlying case strengthens the analysis and reduces biases that could impact the estimation of the results. Other than Washington DC there were no other cases dropped from the analysis.[20] The initial checks of the data ensured there were no coding errors, that variables were properly measured and specified, and that outliers were identified, thereby meeting the quality standards necessary to proceed with the statistical analysis. The outliers and distributions for each variable after Washington DC is dropped can be found in the Appendix.

To address the outliers and skewed distribution of the IVF and population variables I logged transformed them. This makes the interpretation of the results less clear, but reduces the influence of outliers and improves the distribution. Figure 12 shows the graphed outliers and distributions for these two variables to ensure that the transformation was purposeful and appropriate. Based on these graphs I conclude that log transforming the IVF and population variable was useful for my analysis.

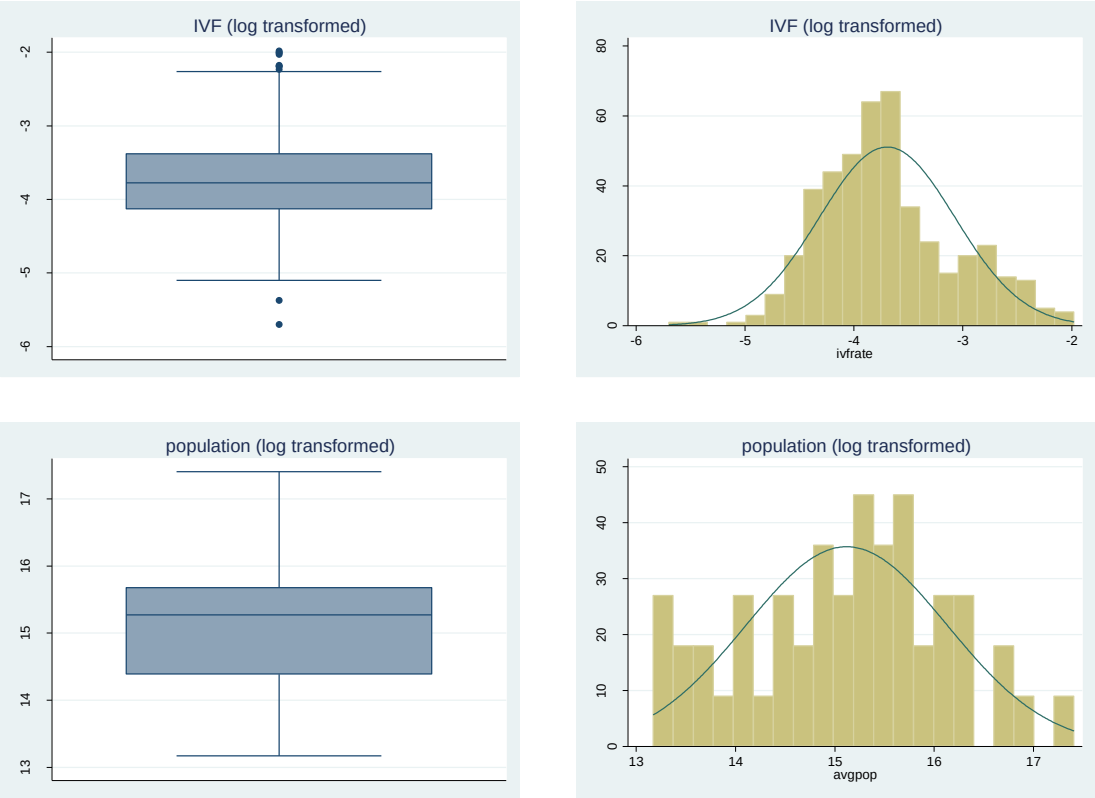
---

[18] I contend that the measurement of women in politics and their presence in the city council is fundamentally different than their presence and participation in a state legislature.

[19] I also conducted the analysis including Washington DC. The uniqueness of being 100% urban biased the estimates, driving the variable for percent urban population to be significant across all of the models.

[20] I also ran the analyses excluding California because of the discrepancies in the provision of marriage licenses due to the approval of Proposition 8, the overturning of Proposition 8 with the ruling of Hollingsworth v. Perry, which was appealed to the US Supreme Court. Dropping California from the analysis did not change the significance of the findings.

Figure 12. Transformed variables



Building the Model

The limited number of observations and truncated observation period of my study created constraints on the model. The inclusion of too many variables would over burden the model reducing the statistical power and efficiency of the analysis. To reduce the burden on the model I systematically introduced variables, keeping only the variables that were statistically significant. I began by building a model that included only the five control variables. I proceeded by introducing the first key independent variable – IVF – with all of the control variables. Building on the initial model, I only maintained variables in the model if they reached statistical significance. At which point I continued to introduce other key independent variables into the model. In taking this systematic

approach I reduced bias and was able to develop a robust final model. Employing this method ensured that significant factors were left in the model and insignificant variables were dropped from the analysis because their inclusion was more burdensome than beneficial. The general Cox Model with time variant independent variables is specified as $h_i(t) = \exp(\beta_1 X_{1i} + \beta_2 X_{2i}(t) \ldots)$ – denoting the exponentiation needed to obtain hazard ratios and the interaction with time. The results from an event history analysis can be presented as coefficients or hazard ratios. In Table 10, which includes the results for all of the models, I report beta coefficients and p values. I present the hazard ratios in a table (with the standard errors, p values, and confidence intervals) when I discuss postestimation tests and the final model.

Results

I ran 12 different models, systematically introducing variables into the equation and removing each variable that was not significant before introducing another variable. This approach ensured that the model was not over burdened from the introduction of too many variables. Based on this method Model 2 yielded the most information, with the significant results for the same sex and reproductive technology variables. I started with a model that consisted of only the control variables in Model 1, then I moved on to Model 2, using the only significant control variable – same sex households – and introduced the IVF measure which produced significant results for both variables. Next, I introduced the women's to men's earnings ratio into Model 3, which was close to significance. Once I introduced the measure for women's labor force participation in Model 4, the earnings ratio lost significance but, same sex households and IVF continued to be significant. In Model 5, I added the percent of women in the state legislature to the model, which was

not significant either. In Model 6 I added the gender equality component variable to the model with same sex households and IVF and it was not significant. The last independent variable that I introduced was religion, which was not significant and reduced the significance of the IVF variable to a p value greater than 0.05. The introduction of new independent variables into the model (beginning with Model 4) did not provide any more information regarding the adoption of same sex marriage policies at the state level. The percent of same sex households and IVF variables remained significant in the remainder of the models indicating that the significant finding for IVF is a robust result.

The diffusion variables that were introduced into the model were not significant either. The first diffusion variable entered into the model was the percent of border states with a marriage equality policy, which was not significant. The west region was dropped from analysis for lack of variation; there were no states in the west to adopt a marriage equality policy from 2004 to 2012. The south region was not reported in the table because the variation was so small; this yielded very inflated estimates (-103.78 and p-value of 1.00). The IVF variable lost significance in Model 12 when the northeast region was introduced. This is most likely due to the high percent of urban areas in the northeast, which increases the utilization of reproductive technology. These findings are congruent with other recent findings in the study of morality policies that indicate geographic proximity is less influential on policy decisions.

Table 10: Results from Cox Proportional Hazard Model

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Bachelor's Degree +	0.23 (0.08)											
Population	0.80 (0.25)											
Urban Population	-0.12 (0.07)											
Same Sex Households	**9.26* (0.03)**	**13.07** (0.01)**	**13.65** (0.01)**	**11.97** (0.01)**	**12.48** (0.01)**	**13.94** (0.01)**	**11.21* (0.03)**	**10.87** (0.03)**	**11.69* (0.02)**	**12.64** (0.01)**	**14.58** (0.01)**	**11.47* (0.02)**
State Wealth	0.00 (0.06)											
Assistive Reproductive Technology		**0.35** (0.01)**	**0.40** (0.01)**	**0.35** (0.01)**	**0.36** (0.01)**	**0.39** (0.01)**	0.26 (0.07)	**0.30* (0.02)**	**0.29* (0.04)**	**0.37** (0.01)**	**0.39* (0.02)**	0.24 (0.06)
Women's to Men's Earnings Women's			-2.25 (0.05)	-2.05 (0.08)								
Women's Labor Force Participation				2.74 (0.10)								
Women in the State Legislature					0.01 (0.28)							
Component						-0.05 (0.59)						
Religion							-1.12 (0.24)					
Moralistic								0.74 (0.18)				
Border									0.11 (0.42)			
Pacific										0.55 (0.52)		
Midwest											1.26 (0.42)	
Northeast												0.27 (0.25)

** significant at a p-value of 0.01 | * significant at a p-value of 0.05

Internal Determinants

Gender equality

The results from the EHA provided no support for my gender equality hypotheses. The insignificant results mean that the gender context, measured by gender equality, within the state does not significantly influence the decision to adopt a marriage equality policy.

The variable for women's to men's earnings came close to statistical significance (equal to a p value of 0.052), but did not reach the threshold necessary to declare it statistically significant. Women's labor force participation and the percent of women in the state legislature did not reach statistical significance either. I posit that the non-significant results for the gender variables may be due to the minimal change in levels of gender equality over time within states. This is demonstrated by a slight 4% change in the average of women's to men's earnings, 2% change in the annual average percent of women in the labor force and a 2% change in the annual average percent of women in state legislature from 2004 to 2012.

Assistive Reproductive Technology

The results from the final model of the event history analysis supported Hypothesis 5. This finding was affirmed in several different models, with the IVF variable reaching statistical significance in almost every model. The effect was also in the hypothesized direction – increased rates of IVF procedures increase the likelihood of adoption. The coefficient indicates that the relative risk of state adoption increases by 0.40 as the logged rate of IVF procedures increases. Exponentiating the coefficient to find the hazard ration provides more substantive meaning – the risk of adoption increases

by 50% when the logged rate of IVF procedures increases.[21] This is a substantial finding as the effect size is large and provides evidence that assistive reproductive technologies are important to policy decisions regarding marriage. There is little research that examines the impact of reproductive technologies on public policies, especially as they become more prevalent and integrated into society. My study illuminates how IVF creates the impetus needed to amend public policies that more accurately reflect the makeup of modern marriages and families.

Religion

There was no support for Hypothesis 6. Contrary to existing research the religion variable was not significant in my analysis. At the state level, findings about the significance of religion have been inconsistent. Haider-Markel (2001) found that religious groups played an integral role in the adoption of bans to same sex marriage, organizing formidable opposition to marriage equality policies. Conversely, Barclay and Fisher (2003) reported non-significant results for religious variables hypothesized to influence the enactment of legislation barring same sex marriage. They state that the non-significant results for their state level religion variables is a puzzling finding and posit that it may result from the independence of individual views from religious beliefs about same sex marriage (Barclay & Fisher, 2003).

However, I contend that my study is different from the research conducted by Haider-Markel (2001) and Barclay and Fisher (2003) because the dependent variable is the adoption of marriage equality policies, not bans to same sex marriage. I argue that the insignificant finding for religion in my study may be driven by the reframing of marriage equality as a human rights issue, instead of a religious one. A human rights frame

[21] When the coefficient of 0.40 is exponentiated you get a hazard rate of 1.49.

diminishes the importance of religious arguments, distilling support and opposition down to the provision of basic freedoms for all people. There has also been growing support for same sex marriage within the religious community in recent years (Pew Research, 2013). Additionally, I posit that the diminishing role of religion in the lives of Americans (Inglehart, 1990) may further reduce the effect of religion on policy adoption decisions, as policy makers draw on other frameworks in making determinations about public policies.

Diffusion

The diffusion variables were introduced into the strongest internal determinants model one at a time. The measures included the percent of bordering states and the percent of states within the region that had a same sex marriage policy. None of the diffusion variables reached levels of statistical significance. This finding is not surprising and supports Hypothesis 7. The non-significant results for the diffusion variables reflect findings from recent literature that argues geographic diffusion variables – border states and region – do not impact the adoption of public policies and morality policies more specifically (Berry & Berry, 1990). Technological advancements and increased channels for communication have reduced the importance of regional and bordering effects that historically influenced the innovation and diffusion of public policies as access to information is much easier. Social learning and communication occurs outside of the confines of neighbor and regional boundaries, reducing the significance of these factors to adoption decisions.

Postestimation Tests

Determining the final model allowed me to conduct postestimation tests to ensure that the analytical method and modeling techniques were appropriate. I ran the postestimation checks on Model 2, which included two types of postestimation tests – testing the proportional hazards assumption and goodness of fit. The proportional hazards assumption states that the hazard function has the same pattern over time (Box-Steffesnmeier & Jones, 2004) and that variables are properly specified (Cleves, 2010). Goodness of fit diagnostics test how well the model fits the data, ensuring that the observed values are aligned with predicted values.

I discuss the results from a linktest and test of the Schoenfeld residuals to check the proportional hazards assumption. Meeting this assumption confirms the proper specification of a Cox Model (Steffensmeier & Jones, 2004). The linktest is not unique to EHA and detects misspecification and omitted variable bias. This test creates estimates from a secondary model, producing two estimates, _hat and _hatsq. The _hat statistic is the linear predicted value, whereas _hatsq is the squared linear predicted value. A properly specified model has an insignificant _hatsq as this estimate should not have any explanatory power. In the case that the _hatsq is significant there is a chance that an important variable is omitted from the model or one of the variables is misspecified. The results from the linktest I conducted reported a p-value of 0.344 for _hatsq, which indicates that the proportional hazards assumption is met.

Next, I examined the Schoenfeld residuals. This diagnostic assessment checks the proportional hazards assumption by testing whether there is a nonzero slope when Schoenfeld residuals are regressed on the function of time (Cleves, 2010) with a linear

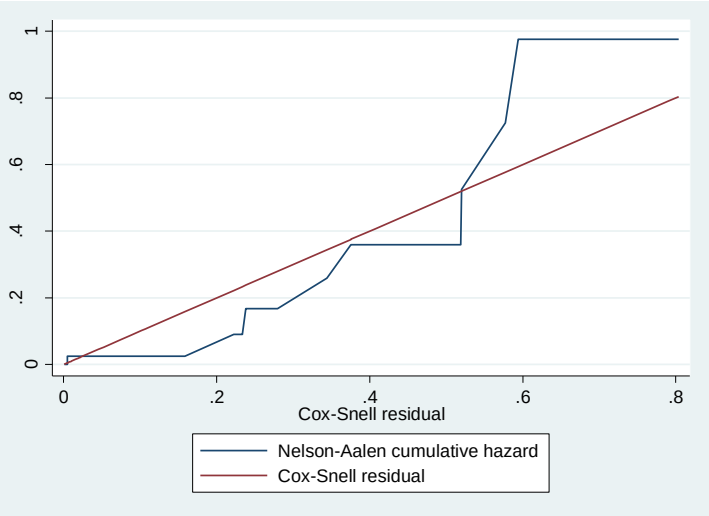
relationship indicating no violation (Box-Steffensmeier & Jones, 2004). The null hypothesis is a slope of zero. For this test, time variant variables cannot be included in the model. I calculated state averages for the IVF variable for this diagnostic test. The results from this test yielded a global p-value of 0.401 meaning the null hypothesis of a zero slope cannot be rejected. I also tested each variable using the detail command which indicated no problems with the specification of variables; the results are in Table 12. This test provides additional evidence that the proportional hazards assumption was met.

Table 12. Results from the Schoenfeld Residual Test

Variables	**Rho**	**P Value**
Same Sex Households	-0.014	0.956
Assistive Reproductive Technology	-0.402	0.1869
Global		0.401

Examining the goodness of fit can be determined by plotting the Cox Snell residuals. This method graphs residuals against a 45 degree line to see how closely the residuals fit the line. A visual inspection of the plotted residuals illustrates how well the model fits the data. The graph of the Cox Snell residuals in Figure 13 indicates that the model is properly specified. I made this determination based on my data and because the residuals follow the 45 degree line relatively closely. The deviation of residuals from the plotted line occurs because I truncated the observation period, which led to a large proportion of censored cases. Censored data creates larger deviations of data points from the line, especially at the right hand tail. These deviations are not problematic when understood and the assumption of proportional hazards can be accepted if the variation is reasonable based on the data (Cleves, 2010).

Figure 13: Cox Snell Residuals



These diagnostic checks and postestimation tests are important to understand the data and ensure that the model is appropriately configured, leading to efficient and unbiased results. A benefit of the Cox Model is that it provides more flexibility for addressing data shortcomings and relaxes the assumption of proportional hazards – approximations are still acceptable even when this assumption is violated (Allison, 2014). Allison (2014) states that examining the potential of omitted variable bias, measurement error, and informative censoring are more critical to understanding model misspecification than testing the proportional hazards assumption.

Robustness Checks

I retested the final internal determinants Cox Model using robust standard errors. The robust standard errors help alleviate data shortcomings that are present in my dataset. Overall the same sex variable lost significance and the IVF variable remained statistically significant with the robust standard errors. In Table 13 I present the hazard ratios for Model 2 with and without the robust standard errors. The hazard ratio is interpreted like

odds ratios. A hazard ratio describes the level of relative risk a case faces at a specified point in time based on the covariates. Hazard ratios provide more substantive meaning when interpreting the effect of significant variables on the adoption of same sex marriage policies. The robust model is specified as $h_i(t) = \exp(\beta_1 \text{Same Sex Households} + \beta_2 \ln IVF_{2i}(t))$.

Table13: Results from the final Cox Model (with and without robust standard errors)

Variables	**Hazard Ratio**	**Std. Error**	**P Value**	**Conf. Interval**
Same Sex Households	480,984**	2,369,072	0.008	3.43 – 22.74
Reproductive Technology	1.41*	0.21	0.011	0.05 – 0.64
Final Cox Model – Robust				
Same Sex Households	480,983	3,940,602	0.055	$0.05–4.53e^{12}$
Reproductive Technology	1.41*	0.28	0.04	0.96 – 2.07

** significant at a p-value of 0.01 | * significant at a p-value of 0.05

CHAPTER 5: LIMITATIONS AND IMPLICATIONS

Social science research is often plagued with imperfect information and focuses on the study of social phenomena that are difficult to observe and measure. Recognizing data shortcomings and understanding how they influence the research design and analysis is important to ensuring that best practices for addressing these concerns are applied. The acknowledgment of impediments to accuracy affirms that claims about findings are reasonable and justified. Identifying data deficiencies and limitations of the analysis is also important to the replication of a study, which determines the reliability of results.

Disclosing the limitations of a study has important implications, especially when the information and findings are used to create and implement solutions to real world problems. As policy makers move towards evidence-based policies the study of economic, political, and social issues becomes more important. The quality of data and the scientific method serve as the foundation for the development, adoption, and evaluation of effective public programs and policies. In this chapter I identify the limitations of my research and discuss the steps I took to address them. I close by presenting policy implications and recommendations based on the findings from my analysis.

Data Limitations

Deficiencies in the Dependent Variable

In studies of policy innovation and diffusion scholars examine the factors that shape these activities over time, often including several years of observations in a single analysis. The longevity of the observation period leads to more observations, greater variation, and more statistical power. A weakness of my study is the truncation of the observation period, which was due to changes in the political landscape at the federal level. I begin the observation period in 2004, upon the adoption of the first marriage equality policy in Massachusetts, and end it in 2012. I chose to conclude the observation period in 2012 because of a Supreme Court ruling in 2013. The ruling overturned the Defense of Marriage Act, which provided formidable grounds for challenging bans to same sex marriage at the state level. The ruling fundamentally shaped the adoption decisions of state policy makers – creating incredible external pressure and precedent at the federal level to overturn bans to same sex marriage. A dummy variable could have been introduced to denote this event but, the extreme nature of this change would have rendered the dummy variable obsolete and confounded findings. The influence of this decision is demonstrated by the number of states that adopted marriage equality policies in 2013, nearly doubling from 2004 to 2013.

The truncation of the dataset in this way is also problematic because there is little variation in the dependent variable during the observation period. This includes a period where there were no adoptions of policies from 2004 to 2009, with most of the activity occurring from 2009 to 2012. This would not be as troublesome if the observation period was longer because more variation would have been captured. The truncation of the

observation period limited the number of observations included in the analysis. The stagnation in state adoptions from 2004 to 2009 reduced the variation in the dependent variable. These issues can create challenges for the model and challenge the statistical power of the analysis. While this does create limitations, the information yielded provides important insights and information about the public policies that are adopted to ascribe rights sexual minorities and same sex couples.

The LGBT Data Divide

Another limitation of my research is the measurement, collection, and availability of data for the LGBT community. The dearth of information pertaining to sexual minorities and same sex couples has been problematic for decades; especially in large nationally representative samples. Gates (2011) argues that estimates of the LGBT community fluctuate because of "differences in the definitions of who is included in the LGBT population, differences in survey methods, and a lack of consistent questions asked in a particular survey over time" (p. 2). Failure to present survey respondents with opportunities to provide this information perpetuates the inefficiencies that currently exist in regards to data of sexual minorities.

It is only recently that a measure for same sex couples was included in large general demographic surveys. In 1990 the US Census Bureau introduced "unmarried partner" to the relationship item question to capture the growing diversity of household relations.[22] The inclusion of this new category provided the first chance to gather information about same sex cohabitating couples in a large national sample (Gates, 2009). In the same year, relationship status information was edited for same sex spouses,

[22] It wasn't until later that this information was collected for the Current Populations Survey (1995) and Survey of Income and Program Participation (1996) (US Census Bureau, 2013).

which entailed switching the sex of a respondent, transforming the household to an opposite sex married couple (Gates, 2009; US Census Bureau, 2013).[23] These actions demonstrate the counterproductive activities that have taken place over the years in attempts to measure and collect data about sexual minorities and same sex couples. It also highlights problems of data collection and measurement error that stifles research in this area. The inclusion of same sex couple identifiers into large population based surveys before the inclusion of LGBT status questions demonstrates that couple status is technically easier to measure than individual level LGBT status.

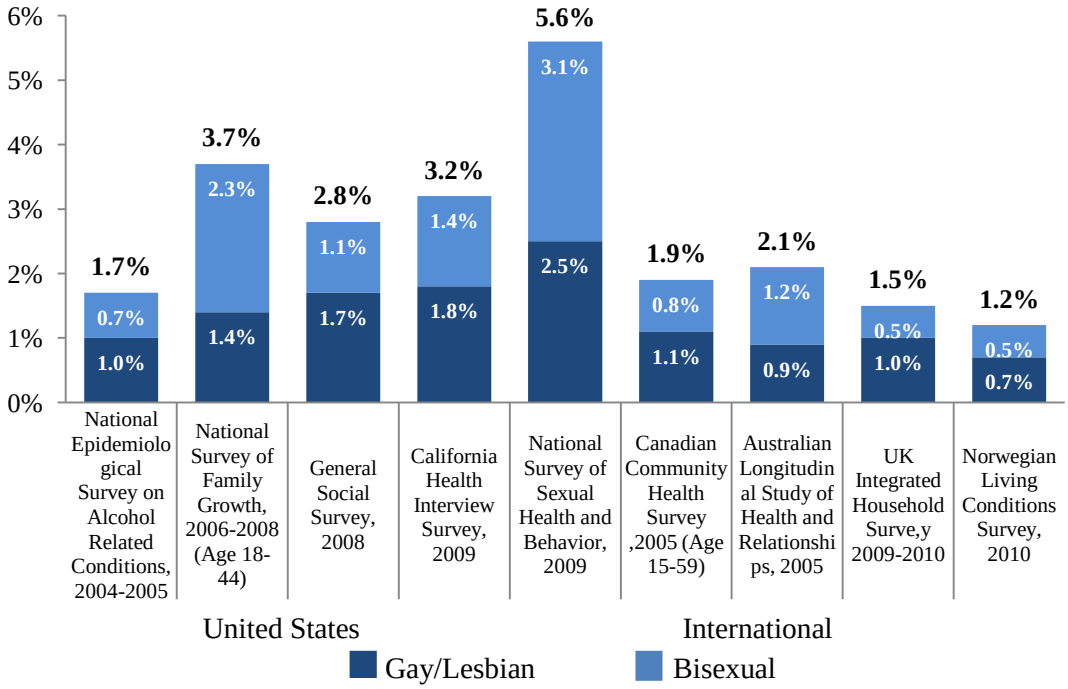
The collection of sexual orientation and gender identity information for individuals is both inadequate and problematic. Kinsey et al. (1948) challenged the norm that heterosexual and homosexual concepts were purely bifurcated, arguing that sexual behaviors, preferences and identities were more fluid and operated on a continuum, which led to the creation of the Kinsey Scale. The Kinsey Institute states that there is no 'test' that declares an individual's place on the continuum and that scores are assigned based on individual factors (Kinsey Institute, 2016). This historical debate about how to measure heterosexuality and homosexuality continues as administrators grapple with how to include these questions in their data collection efforts. Gates (2011) states that questions about "identity, behavior, attraction, and relationships all capture related dimensions of sexual orientation" but, they fail to define and measure the entirety of such a multifaceted concept (p. 2). Coleman (1987) addressed the complexity of sexual orientation, offering "a model for assessment of sexual orientation which includes nine dimensions: current relationship status, self-identification identity, ideal self-identification identity, global acceptance of their current sexual orientation identity,

[23] The census believed that households reporting same sex spouses were errors (Gates, 2009).

physical identity, gender identity, sex-role identity, and sexual orientation identity as measured by behavior, fantasies and emotional attachments, and finally the individual's past and present perception of their sexual identity compared to their idealized future" (p. 9). However, this type of comprehensive measure is too onerous on respondents and cannot be reduced for efficiency. The slow introduction of sexual orientation and gender identity questions are appearing as scholars and practitioners collaborate to identify proper tools for measurement. The Williams Institute has worked to facilitate these efforts and released two reports that specified best practices for collecting sexual orientation data (Williams Institute, 2009) and gender identity data (Williams Institute, 2014).

The inability to properly measure these concepts has led to the absence of information about sexual orientation and/or gender identity. Even national level estimates of the size of the LGBT population vary and are based on different measurement of concepts, different survey methods, and inconsistency in measurement over time (Gates, 2011). Individual questions about LGBT status are still excluded from many population-based datasets. To argue this point Gates (2011) culled together estimates of the LGBT community from several different national and international datasets, illustrating the discrepancies that exist.

Figure 14. Percent of adults who identify as Gay, Lesbian, or Bisexual



Source: Gary Gates (2011)

Another shortcoming of data regarding the LGBT population is that most of the existing research conflates the differences between sexual orientation (lesbian, gay, bisexual, or queer) and gender identity (transgender, gender non-conforming or cis-gender). In most major administrative datasets these identities are measured as one. A growing interest in these populations has led to discussions about the differences between sexual orientation and gender identity and contributed to debates about how to best measure these identities. Slowly large administrative datasets have started to integrate these questions into their surveys to foster more research in this arena.

The final component to the data limitations that plague the study of the LGBT community is the underreporting of this sensitive information; including sexual orientation, gender identity, gender expression, and couple status. There are several

factors that influence an individual and/or couple's decision to disclose. Furthermore, individuals who do disclose this information may be systematically different, which can bias analyses. Acceptance of homosexuality has been increasing over time. The Pew Research Center (2015) released findings from a survey that found the acceptance of homosexuality across several religious factions had increased substantially from 2007. An earlier survey conducted by the Pew Research Center (2011) found that more than fifty percent of Americans believed that "homosexuality should be accepted by society"; with acceptance rates being much higher among younger groups. However, sexual minorities still face discrimination and acts of violence that can inhibit them from disclosing this information. The ability to conceal LGBT status also complicates the reporting of this information as many factors shape the decision to "come out".

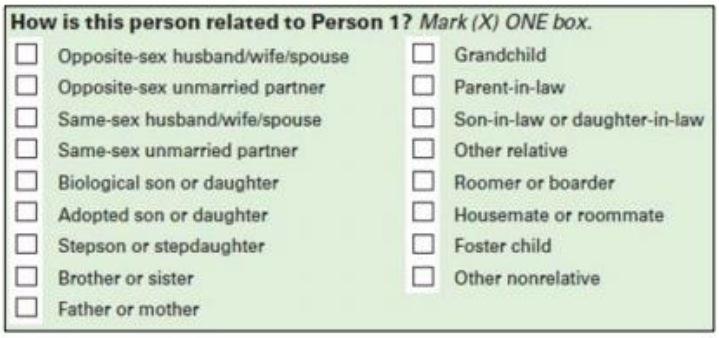
The Shortcomings of Census Data

I used same sex household data from the American Community Survey to measure the power and presence of the LGBT community. As self-reported data it is likely that same sex households are underreported, leading to a conservative estimate. Bias may be introduced into the sample because of systematic differences between couples who identify and those who do not. In addition to these complications changes were made by the ACS to the methods used in the estimation of same sex households in 2008. These changes led to a decline in the number of same sex households from 2007 to 2008.

Prior to 2008 the ACS same sex household measure edited same sex spouse responses to indicate the presence of a husband and wife of opposite sex. In 2008 the Census Bureau changed how opposite sex and same sex couples were recorded. The

changes in measurement led to a drop of about 25% from 2007 to 2008 (Gates, 2009). The Census Bureau (2013) claims that the new measurement created a more reliable estimate of same sex couple households. The new question introduced in the 2008 ACS distinguished between opposite and same sex couples, as well as married and unmarried partners. The new question introduced in 2008 can be seen in Figure 15 below.

Figure 15: 2008 ACS Question for relationship status

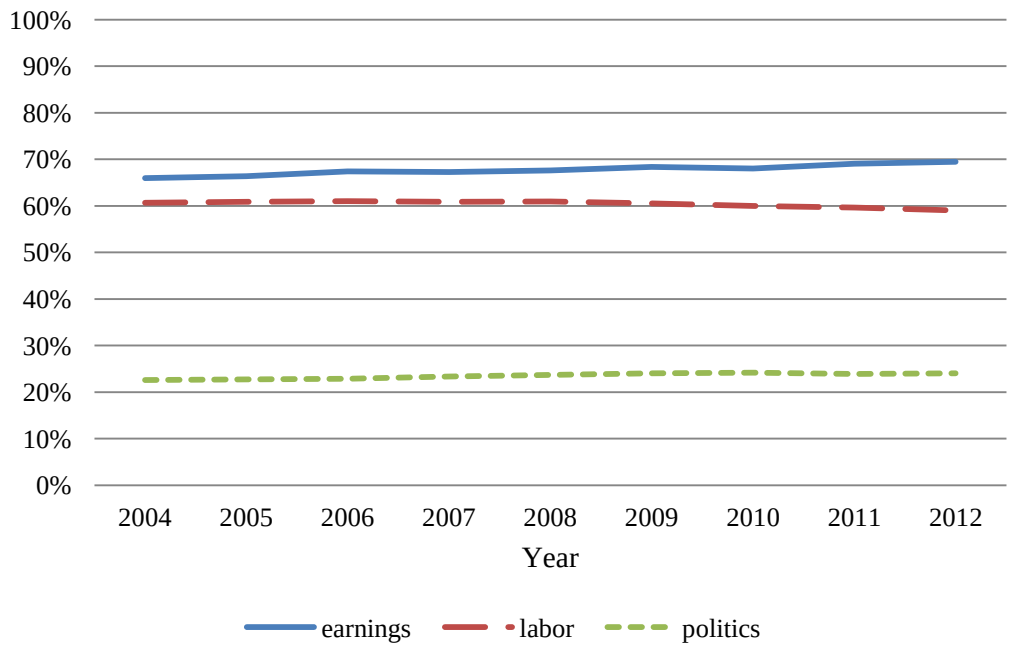


To address the changes in the measurement of this variable, I averaged the annual estimates of same sex households across the nine years of the observation period. This is problematic because the measurement error is systematic, not random. Averaging this variable reduce the systematic measurement error. I calculated the average estimates of same sex households by year for 2004 to 2007 and 2008 to 2012. Then I ran a correlation test to examine how similar they were – the results indicated a perfect correlation removing concerns that the estimates for years 2004 to 2007 were no substantially different than estimates for years 2008 to 2012. I argue that these problems are not powerful enough to prevent me from designing a rigorous analytical strategy that produced important findings. The information gleaned from my dissertation contributes to the body of knowledge in a meaningful way despite the measurement error in the same sex household variable.

Why So Slow – In the Words of Virginia Valian

The gender equality variables did not fluctuate very much over time, limiting the variation that was captured with the panel data; most of the variation occurred between states, not within states. Extending the observation period may have captured greater variation within states over time, better measuring changes to gender equality. Valian (1999) provides an in-depth discussion of the stagnation of gender equality in the US, discussing the role of entrenched gender schemas and the accumulation of advantage that contributes to persistent disparities that are difficult to expunge (Valian 1999). The data for the three key independent variables for gender equality in economic, political, and social facets are plotted from 2004 to 2012 in Figure 16 and illustrate little to no variation over the nine year observation period.[24] Observing changes to gender equality over a longer period of time would have captured greater variation between years.

Figure 16: Changes in gender equality from 2004 to 2012



[24] Averages across years are plotted. Variation in these measures occurs mainly between states.

Generalizability

The results from my analysis only extend to same sex marriage policies but, the findings are relevant to states across the US. I contend that my argument for the inclusion of gender related variables in this study does create a theoretical premise that if expanded upon can be applied to analyses of other public policies and areas of inequality. The innovation and diffusion of same sex marriage policies provided a unique opportunity for examining the relationship between gender, sexual minorities' rights, and marriage policies.

Theoretical Implications

My theoretical argument for studying gender equality and reproductive technology expands the scholarly discussion of LGBT politics and policies. Through my research I draw attention to key variables that that reshape norms around marriage, children, and family that serve as powerful influences in the debate about modernizing the institution of marriage. Using an interdisciplinary approach I am able to incorporate findings from the sociological literature into the framework applied to study policy innovation and diffusion. Blending the research of two disciplines allows me to develop a comprehensive theoretical argument that recognizes how sociological shifts within society create space for political change.

I develop a strong theoretical argument, drawing on the literature, to substantiate my decision to focus on gender equality and its relevance as a unique internal state characteristic. I theorize that the climate within a state, regarding the equal treatment of its citizens, may have a significant impact on the adoption of public policies that extend and/or prohibit access to marriage based on a defining individual characteristic. My

theory articulates a causal relationship between existing discrimination between two groups of people (women and men) and whether that fosters the discrimination between two other groups of people (homosexual and heterosexual couples). I posit that the equal incorporation of women in all spheres of society produces a more equal state climate, which in turn promotes political decisions that further the equal treatment of all people. Conversely, greater gender inequality engenders political action that is more oppressive and inhibits progress towards the equal treatment of all people.

My theoretical discussion regarding levels of gender equality within a state and how it shapes the policy context contributes to existing theoretical claims and findings that connect LGBT politics and policies to the gender related variables (Frank and McEaney, 1999; McVeigh and Diaz, 2009; Gaines and Garand 2010). My results indicate that equal pay between women and men impact adoption decisions about same sex marriage policies in the hypothesized direction; more equal pay ratios increase the likelihood of adoption of marriage equality policies. This finding confirms previous scholarship that more progressive and gender equal political climates are linked to more liberalized LGBT policies (Frank and McEaney, 1999; McVeigh and Diaz, 2009; Gaines and Garand 2010). Although I found limited support that all aspects of gender equality significantly impact the adoption of marriage equality policies, other policy areas may provide greater insight; including state public accommodations, housing, healthcare, and employment laws.

In further developing my theory, I also recognize the role that family planning, fertility, and childbearing has on the norms regarding marriage and family. These factors have powerful implications for the institution of marriage, especially for the traditional

interpretation of marriage. Recent technological advancements have expanded opportunities for individuals and couples in their fertility decisions, thereby reshaping the norms around marriage, reproduction, and family. These shifts have changed the policy context and are uniquely relevant to the study of same sex marriage policies.

I theorize that the increasing access and utilization of reproductive technologies has shifted the paradigm around childbearing in a fundamental way. The normalization of these tools for reproduction has powerful implications on society and within families. I argue that ART can have a distinctive impact on the adoption of marriage policies by reshaping opportunities and norms around childbearing. Opportunities for reproduction have been expanded to individuals and same sex couples, reducing the power and importance of marriage for procreation. Furthermore, increased flexibility for women regarding childbearing decisions enables them to participate in society differently. I present a theoretical argument for the relevance of ART to the study of same sex marriage policies and include a measure for in vitro fertilization in my analysis to analyze the effect this technology has on creating pressure for political change.

A general review of the ART variable illuminates how people in different states rely on these tools for fertility and family planning at different rates. There is little research on how technological advancements regarding fertility impact the creation and adoption of public policies at the state level, as especially as it relates to marriage, couples, families, and children. I find robust and consistent support that ART does impact the adoption of state same sex marriage policies. Increasing utilization of in vitro fertilization within a state increases the likelihood of adopting a marriage equality policy. This finding provides theoretical grounds and evidence for including ART in the

examination of internal state characteristics that drive the adoption of same sex marriage policies; and possibly for the theory of other related public policies.

My study demonstrates that technologies that improve fertility options for individuals and families can create pressure for policy makers to adopt new public policies that govern familial arrangements. The use and prevalence of assistive reproductive technologies implicitly suggests a growing acceptance of nontraditional families, shifts to traditional gender roles, and new norms around marriage, family, and children. The introduction of reproductive technologies, led to new norms around childbearing because these technologies allowed individuals and same sex couples to pursue biological reproduction that was otherwise impossible. My study highlights the quiet integration and normalizing of technologies that facilitate reproduction, as scholars and policy makers have failed to recognize the ramifications of these scientific advancements on society and policy making activities. The sociological shifts impacted by technology that changes fertility options will most likely continue to impact policy making into the future.

In my research I focus on variables that are relevant and important to different facets of marriage to better understand the causal forces that led to dynamic political change in the adoption of marriage equality policies. My interdisciplinary approach allowed me to take a more broad view of the issue to address the multifaceted institution that marriage has become – embedded in social, political, and economic domains of society. The conceptual framework that I introduce in my study can provide insights about the policy making process and the factors that inspire political change in today's society. My study contributes to the understanding of LGBT politics and policy, which is

crucial during a time when issues are salient, the public is actively involved, and policy makers take drastic action on both sides of the debate.

Policy Implications

Public problems have become complex in modern times, requiring that that a multifaceted lens and keen problem solving skills be used to develop effective solutions. As policy makers and politicians rely on evidence based policies, the need for an interdisciplinary approach to problem solving increases. In recognition of the trend towards evidence based policy making, I examine the adoption of same sex marriage policies drawing on my interdisciplinary background. The findings from my research yield unique insights that increase the understanding of LGBT politics and policy, and identify ramifications of changing gender inequality and the increased use of reproductive technology.

I analyze the role of gender equality to determine to what extent the unequal treatment of a single group may relate to the unequal treatment of other groups. Furthermore, including variables for gender equality provides a measure for examining broad sociological shifts related to marriage and family and how that influences policy adoption decisions in this domain. Examining these factors sheds light on how the actions, norms, and desires of the public has changed and provides insights to policy makers about how to craft policies that are more reflective of the people living in their state. Growing gender equality has shifted the needs and wants of individuals, couples, and families. Policy makers could use information about gender equality to understand these trends, learn about the direction they are moving, and create policies that address the new demands of a modern society. This information is especially useful in regards to

public policies that govern domestic and family relations. The findings from my research indicate that the economic equality of women (in regards to compensation) increases the likelihood of adopting public policies that support more gender equal domestic relations.

To better understand domestic relations and family arrangements policy makers need to consider factors that shape related decisions – like reproductive technology and how it is integrated into society. The general public and policy makers alike are aware that technology has a powerful effect on everyday life in America. So, it is important to recognize and study the role that reproductive technologies have played in fertility and family planning decisions when making public policies that relate to these areas (domestic relations, childbearing, child care, etc.). I find robust and significant support that increased use of in vitro fertilization procedures increases the likelihood of adopting a marriage equality policy. This provides evidence to law makers that these technologies matter and create pressure on policy decisions regarding marriage and family. I assert that considering the norms around this type of technology is key to making informed policy decisions, especially as it becomes more and more normalized within society as a tool for childbearing. Like other technology, ART will continue to impact the norms around modern couples and families.

It is important for policy makers to be aware of the policy context and look more fully at how public policies more accurately champion the values of society. As technology and changing social norms drive us towards a more equal society, policy makers should gather information to understand the direction of these trends. With the insights gained from the analysis of these factors political officials can craft more effective public policies that are relevant to the changing needs of the public.

There are several proposed policies that could lead to greater equality in our society. This includes the amendment of policies to extend benefits and protections to sexual minorities in other areas of public life. States, as well as the federal government have been slow to adopt protective policies that safeguard the LGBT community and promote their inclusion. Testing and applying my theoretical framework to these public policies could provide additional information about whether existing inequalities slow the progress towards the inclusion of sexual minorities in employment, housing, and public accommodations. The information from these inquiries providing policy makers with important insights that leads to more effective policy making.

Lastly, the growing body of research around the LGBT population commonly addresses the dearth of information that exists about this population. Large administrative datasets are useful for studying relevant social science issues, but they fail to incorporate the growing LGBT community. While discussion about including sexual orientation and gender identity questions into large administrative datasets have increased exponentially recently, they have yet to be implemented widely. The disparate introduction and inclusion of these questions can lead to data shortcomings that stifle much needed research in this arena. Thoughtful considerations and careful measurement is needed to accurately develop questions that properly measure these personal characteristics before being widely applied to large scale data collection efforts. Once consensus is reached however, I recommend widespread implementation of sexual orientation and gender identity questions across large administrative datasets to improve the understanding of this group. Better quality research and a growing body of information can lead to more evidence based policy solutions that foster greater equality within society.

REFERENCES

Albelda, R., Ash, M., & Badgett, M. V. (2005). Now That We Do: Same-sex Couples and Marriage in Massachusetts, a Demographic and Economic Perspective. *MassBenchmarks, 7(2), 16-24.*

Allison, P. (2010). Survival analysis. In *The Reviewer's Guide to Quantitative Methods in the Social Sciences*, Gregory R. Hancock and Ralph O. Mueller,(Eds) 413-425. New York: Routledge, 2010.

Allison, P. D. (2014). *Event history and survival analysis*. Sage. California: Sage.

Alm, J., Badgett, M. L., & Whittington, L. A. (2000). Wedding bell blues: The income tax consequences of legalizing same-sex marriage. *National Tax Journal*, 201-214.

Almeida, J., Johnson, R. M., Corliss, H. L., Molnar, B. E., & Azrael, D. (2009). Emotional distress among LGBT youth: The influence of perceived discrimination based on sexual orientation. *Journal of youth and adolescence, 38*(7), 1001-1014.

Allport, G. W. (1954). *The nature of prejudice*. New York: Perseus Publishing.

Amato, P. R. (2004). Tension between institutional and individual views of marriage. *Journal of Marriage and Family*, *66*(4), 959-965.

Andrews, F. M., Abbey, A., & Halman, L. J. (1991). Stress from infertility, marriage factors, and subjective well-being of wives and husbands. *Journal of health and social behavior, 32*(3), 238-253.

Ash, M. A., & Badgett, M. V. (2006). Separate and unequal: the effect of unequal access to employment-based health insurance on same-sex and unmarried different-sex couples. *Contemporary Economic Policy*, *24*(4), 582-599.

Badgett, M. L. (1995). The wage effects of sexual orientation discrimination. *Industrial & Labor Relations Review*, *48*(4), 726-739.

Badgett, M. L. (1996). Employment and sexual orientation: Disclosure and discrimination in the workplace. *Journal of Gay & Lesbian Social Services, 4*(4), 29-52.

Badgett, L., & Frank, J. (Eds.). (2007). *Sexual orientation discrimination: An international perspective*. New York: Routledge.

Badgett, M. L., Gates, G. J., & Maisel, N. C. (2008). Registered domestic partnerships among gay men and lesbians: the role of economic factors. *Review of Economics of the Household*, *6*(4), 327-346.

Badgett, M. V. (2009). Economic Value of Marriage for Same-Sex Couples, The. *Drake Law Review* 58, 1081-1115.

Badgett, M. L. (2009). *When gay people get married: What happens when societies legalize same-sex marriage*. New York: New York University Press.

Badgett, M. V. (2011). Social inclusion and the value of marriage equality in Massachusetts and the Netherlands. *Journal of Social Issues*, *67*(2), 316-334.

Balsam, K. F., Beauchaine, T. P., Rothblum, E. D., & Solomon, S. E. (2008). Three-year follow-up of same-sex couples who had civil unions in Vermont, same-sex couples not in civil unions, and heterosexual married couples. *Developmental psychology*, *44*(1), 102-116.

Baltagi, B. (2015). *Econometric analysis of panel data*. John Wiley & Sons.

Barclay, S., & Fisher, S. (2003). The States and the Differing Impetus for Divergent Paths on Same-Sex Marriage, 1990–2001. *Policy Studies Journal*, *31*(3), 331-352.

Barlow, A., & Probert, R. (2004). Regulating marriage and cohabitation: Changing family values and policies in Europe and North America—an introductory critique. *Law & Policy*, *26*(1), 1-11.

Barnett, R. C., & Hyde, J. S. (2001). Women, men, work, and family. *American psychologist*, *56*(10), 781-796.

Baxter, J., & Kane, E. W. (1995). Dependence and Independence: A Cross-National Analysis of Gender Inequality and Gender Attitudes. *Gender & Society*, *9*(2), 193-215.

Bem, S. L. (1993). *The lenses of gender: Transforming the debate on sexual inequality*. Connecticut: Yale University Press.

Berry, F. S., & Berry, W. D. (1990). State lottery adoptions as policy innovations: An event history analysis. *American political science review*, *84*(02), 395-415.

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

Black, D., Gates, G., Sanders, S., & Taylor, L. (2007). The measurement of same-sex unmarried partner couples in the 2000 US Census.*California Center for Population Research*..

Blank, R. H. (1990). *Regulating reproduction*. New York: Columbia University Press.

Blau, F. D., Brinton, M. C., & Grusky, D. B. (Eds.). (2006). *The declining significance of gender?*. Russell Sage Foundation.

Blau, F. D., & Kahn, L. M. (2006). The gender pay gap: Going, going... but not gone. *The declining significance of gender*, 37-66.

Blau, F. D., & Kahn, L. M. (2013). Female Labor Supply: Why Is the United States Falling Behind?. *The American Economic Review*, *103*(3), 251-256.

Boeckmann, I., Misra, J., & Budig, M. J. (2014). Cultural and institutional factors shaping mothers' employment and working hours in postindustrial countries. *Social Forces*, sou119.

Boehmke, F. J. (2009). Approaches to Modeling the Adoption and Diffusion of Policies with Multiple Components. *State Politics & Policy Quarterly*, *9*(2), 229-252.

Box-Steffensmeier, J. M., & Jones, B. S. (2004). *Event history modeling: A guide for social scientists*. Cambridge University Press.

Bratton, K. A., & Haynie, K. L. (1999). Agenda setting and legislative success in state legislatures: The effects of gender and race. *Journal of Politics*, *61*(3), 658-679.

Bratton, K. A. (2005). Critical mass theory revisited: The behavior and success of token women in state legislatures. *Politics & Gender*, *1*(01), 97-125.

Brewer, P. R. (2003). Values, political knowledge, and public opinion about gay rights: A framing-based account. *Public Opinion Quarterly*, *67*(2), 173-201.

Brewer, P. R., & Wilcox, C. (2005). Same-sex marriage and civil unions. *Public Opinion Quarterly*, *69*(4), 599-616.

Brewer, P. R. (2014). Public opinion about gay rights and gay marriage. *International Journal of Public Opinion Research*, *26*(3), 279-282.

Buchmann, C., & DiPrete, T. A. (2006). The growing female advantage in college completion: The role of family background and academic achievement. *American sociological review*, *71*(4), 515-541.

Buchmueller, T., & Carpenter, C. S. (2010). Disparities in health insurance coverage, access, and outcomes for individuals in same-sex versus different-sex relationships, 2000-2007. *American journal of public health*, *100*(3), 489-495.

Buckley, J., & Westerland, C. (2004). Duration dependence, functional form, and corrected standard errors: Improving EHA models of state policy diffusion. *State Politics & Policy Quarterly*, *4*(1), 94-113.

Budig, M. J., & England, P. (2001). The wage penalty for motherhood. *American sociological review*, *66*(2), 204-225.

Budig, M. J., & Hodges, M. J. (2010). Differences in disadvantage variation in the motherhood penalty across white women's earnings distribution. *American Sociological Review, 75*(5), 705-728.

Bumpass, L. L., & Sweet, J. A. (1989). National estimates of cohabitation. *Demography, 26*(4), 615-625.

Burgess, E. W., & Locke, H. J. (1945). The family: from institution to companionship. England: American Book Company.

Burns, N., Schlozman, K. L., & Verba, S. (2001). *The private roots of public action*. Harvard University Press. Massachusetts: Harvard University Press.

Button, J. W., Rienzo, B. A., & Wald, K. D. (1997). *Private lives, public conflicts: Battles over gay rights in American communities*. New York: Wiley.

Carroll, S. J. (Ed.). (2001). *The impact of women in public office*. Indiana: Indiana University Press.

Center for Women in Politics. (2015). Statewide Elective Executive Offices. New Brunswick: New Jersey.

Cesari, J. (2004). The Secularization of Individual Islamic Practice. In *When Islam and Democracy Meet: Muslims in Europe and in the United States* (pp. 43-63). New York: Palgrave Macmillan.

Chambers, D. L. (1996). What if? The legal consequences of marriage and the legal needs of lesbian and gay male couples. *Michigan Law Review, 95*(2), 447-491.

Cherlin, A. (1980). Postponing marriage: The influence of young women's work expectations. *Journal of Marriage and the* Family,42(2), 355-365.

Cherlin, A. J. (2000). Toward a new home socioeconomics of union formation. *The ties that bind: Perspectives on marriage and cohabitation*, 126-144.

Cherlin, A. J. (2004). The deinstitutionalization of American marriage. *Journal of Marriage and Family, 66*(4), 848-861.

Cherlin, A. J. (2005). American marriage in the early twenty-first century. *The Future of Children,15(*2), 33-55.

Chesley, N. (2011). Stay-at-home fathers and breadwinning mothers gender, couple dynamics, and social change. *Gender & Society, 25*(5), 642-664.

Chodorow, N. J. (1999). *The reproduction of mothering: Psychoanalysis and the sociology of gender*. California: University of California Press.

Cleves, M. A. (2010). *An introduction to survival analysis using Stata*. Texas: Stata Press.

Cochran, B. N., Stewart, A. J., Ginzler, J. A., & Cauce, A. M. (2002). Challenges faced by homeless sexual minorities: Comparison of gay, lesbian, bisexual, and transgender homeless adolescents with their heterosexual counterparts. *American Journal of Public Health*, *92*(5), 773-777.

Coffman, K. B., Coffman, L. C., & Ericson, K. M. M. (2013). *The size of the LGBT population and the magnitude of anti-gay sentiment are substantially underestimated. (NBER Working Paper* No. w19508). Massachusetts: National Bureau of Economic Research.

Coleman, E. (1987). Assessment of sexual orientation. *Journal of Homosexuality*, *14*(1-2), 9-24.

Collett, D. (2015). *Modelling survival data in medical research*. England: CRC press.

Colpin, H., & Soenen, S. (2002). Parenting and psychosocial development of IVF children: a follow-up study. *Human Reproduction*, *17*(4), 1116-1123.

Comstock, G. D. (1992). *Violence against lesbians and gay men*. New York: Columbia University Press.

Coontz, S. (2005). *Marriage, a history: How love conquered marriage*. New York: Penguin.

Cott, N. F. (2009). *Public vows: A history of marriage and the nation*. Massachusetts: Harvard University Press.

Daily, C. M., Certo, S. T., & Dalton, D. R. (1999). Research notes and communications a decade of corporate women: Some progress in the boardroom, none in the executive suite. *Strategic Management Journal*, *20*(1), 93-99.

Daniluk, J. C., Koert, E., & Cheung, A. (2012). Childless women's knowledge of fertility and assisted human reproduction: identifying the gaps. *Fertility and sterility*, *97*(2), 420-426.

d'Emilio, J. (2015). *Sexual politics, sexual communities*. Illinois: University of Chicago Press.

DiPrete, T. A., & Buchmann, C. (2013). *The rise of women: The growing gender gap in education and what it means for American schools*. Russell Sage Foundation.

Dunteman, G. H. (1989). Principal component analysis (Quantitative applications in the social sciences). Sage Publications.

Dutney, A. (2007). Religion, infertility and assisted reproductive technology. *Best Practice & Research Clinical Obstetrics & Gynaecology*, *21*(1), 169-180.

Eagly, A. H., & Carli, L. L. (2007). Women and the labyrinth of leadership. *Harvard business review*, *85*(9), 62.

Elazar, D. J. (1984). American federalism: A view from the states.

Emmert, C. F., & Traut, C. A. (2003). Bans on executing the mentally retarded: An event history analysis of state policy adoption. *State & Local Government Review*, *35*(2), 112-122.

Engel, S. M. (2001). *The unfinished revolution: Social movement theory and the gay and lesbian movement*. United Kingdom: Cambridge University Press.

Eskridge Jr, W. N. (1993). A history of same-sex marriage. *Virginia Law Review*, *79*(7), 1419-1513.

Eskridge, W. N. (1996). *The case for same-sex marriage: From sexual liberty to civilized commitment*. Massachusetts: Free Press.

Eskridge, W. N., & Spedale, D. R. (2006). *Gay marriage: for better or for worse?: what we've learned from the evidence*. New York: Oxford University Press.

Eskridge Jr, W. N. (2013). *Equality practice: Civil unions and the future of gay rights*. New York: Routledge.

Ford, L. (2010). *Women and politics: The pursuit of equality*. Cengage Learning.

Fiorina, M. P. (2004, Jul 14). What culture wars? *Wall Street Journal* Retrieved from http://search.proquest.com.librarylink.uncc.edu/docview/398885486?accountid=14605

Frank, D. J., & McEneaney, E. H. (1999). The individualization of society and the liberalization of state policies on same-sex sexual relations, 1984–1995. *Social Forces*, *77*(3), 911-943.

Gaines, N. S., & Garand, J. C. (2010). Morality, equality, or locality: Analyzing the determinants of support for same-sex marriage. *Political Research Quarterly*, *63*(3), 553-567.

Galinsky, E., Aumann, K., & Bond, J. T. (2009). *Times are changing: Gender and generation at work and at home*. Families and Work Institute.

Gates, G. J., & Ost, J. (2004). *The gay & lesbian atlas*. Washington, D.C.: The Urban Institute.

Gates, G. J. (2009). Same-sex spouses and unmarried partners in the American Community Survey, 2008. California: The Williams Institute.

Gates, G. J. (2011) How many people are lesbian, gay, bisexual, and transgender? California: The Williams Institute.

Gates, G.J. (2015). Demographics of Married and Unmarried Same-Sex Couples: Analyses of the 2013 American Community Survey. The Williams Institute. heLos Angeles, California.

Golombok, S., Cook, R., Bish, A., & Murray, C. (1995). Families created by the new reproductive technologies: quality of parenting and social and emotional development of the children. *Child development*, *66*(2), 285-298.

Greil, A. L. (1997). Infertility and psychological distress: a critical review of the literature. *Social science & medicine*, *45*(11), 1679-1704.

Golombok, S., Brewaeys, A., Giavazzi, M. T., Guerra, D., MacCallum, F., & Rust, J. (2002). The European study of assisted reproduction families: the transition to adolescence. *Human Reproduction*, *17*(3), 830-840.

Grossback, L. J., Nicholson-Crotty, S., & Peterson, D. A. (2004). Ideology and learning in policy diffusion. *American Politics Research*, *32*(5), 521-545.

Goldstein, J. R., & Kenney, C. T. (2001). Marriage delayed or marriage forgone? New cohort forecasts of first marriage for US women. *American Sociological Review*, *66*(4), 506-519.

Gormley Jr, W. T. (1986). Regulatory issue networks in a federal system. *Polity*, 18(4), 595-620.

Grattet, R., Jenness, V., & Curry, T. R. (1998). The homogenization and differentiation of hate crime law in the United States, 1978 to 1995: Innovation and diffusion in the criminalization of bigotry. *American Sociological Review*, 286-307.

Gray, V. (1973). Innovation in the states: A diffusion study. *American political science review*, *67*(4), 1174-1185.

Gray, V. (1994). Competition, emulation, and policy innovation.In *New perspectives on American politics*, 230-248.

Gusfield, J. R. (1986). *Symbolic crusade: Status politics and the American temperance movement*. Illinios: University of Illinois Press.

Haider-Markel, D. P., & Meier, K. J. (1996). The politics of gay and lesbian rights: Expanding the scope of the conflict. *The Journal of Politics*, *58*(02), 332-349.

Haider-Markel, D. P. (2001). Policy diffusion as a geographical expansion of the scope of political conflict: Same-sex marriage bans in the 1990s. *State Politics & Policy Quarterly, 1*(1), 5-26.

Haider-Markel, D. P., & Meier, K. J. (2003). Legislative victory, electoral uncertainty: Explaining outcomes in the battles over lesbian and gay civil rights. *Review of Policy Research*, *20*(4), 671-690.

Hanushek, E. A., & Woessmann, L. (2008). The role of cognitive skills in economic development. *Journal of economic literature*, *46*(3), 607-668.

Harper, G. W., & Schneider, M. (2003). Oppression and discrimination among lesbian, gay, bisexual, and transgendered people and communities: A challenge for community psychology. *American journal of community psychology*, *31*(3-4), 243-252.

Herek, G. M., & Berrill, K. T. (1992). *Hate crimes: Confronting violence against lesbians and gay men*. California: Sage.

Herek, G. M., Gillis, J. R., Cogan, J. C., & Glunt, E. K. (1997). Hate Crime Victimization Among Lesbian, Gay, and Bisexual Adults Prevalence, Psychological Correlates, and Methodological Issues. *Journal of interpersonal violence*, *12*(2), 195-215.

Herek, G. M., Gillis, J. R., & Cogan, J. C. (1999). Psychological sequelae of hate-crime victimization among lesbian, gay, and bisexual adults. *Journal of consulting and clinical psychology*, *67*(6), 945.

Herek, G. M. (2006). Legal recognition of same-sex relationships in the United States: a social science perspective. *American Psychologist*, *61*(6), 607.

Hertzog, M. (1996). *The lavender vote: Lesbians, gay men, and bisexuals in American electoral politics*. New York: New York University Press.

Holter, H., Anderheim, L., Bergh, C., & Möller, A. (2006). First IVF treatment—short-term impact on psychological well-being and the marital relationship. *Human reproduction*, *21*(12), 3295-3302.

Hout, M. (2012). Social and economic returns to college education in the United States. *Annual Review of Sociology*, *38*, 379-400.

Hsiao, C. (2014). *Analysis of panel data*. Massachusetts: Cambridge University Press.

Hull, K. E. (2003). The Cultural Power of Law and the Cultural Enactment of Legality: The Case of Same-Sex Marriage. *Law & Social Inquiry*, *28*(3), 629-657.

Hull, K. (2006). *Same-sex marriage: The cultural politics of love and law*. New York: Cambridge University Press.

Inglehart, R. (1990). *Culture shift in advanced industrial society*. New Jersey: Princeton University Press.

Inglehart, R., & Norris, P. (2003). *Rising tide: Gender equality and cultural change around the world*. Cambridge University Press.

Jenness, V., & Grattet, R. (2001). *Making hate a crime: From social movement to law enforcement*. Russell Sage Foundation.

Jolliffe, I. T. (2002). Principal Components Analysis. New York: Springer.

Jones, B. S., & Branton, R. P. (2005). Beyond logit and probit: Cox duration models of single, repeating, and competing events for state policy adoption. *State Politics & Policy Quarterly*, *5*(4), 420-443.

Kalbfleisch, J. D., & Prentice, R. L. (2011). *The statistical analysis of failure time data*. New Jersey: John Wiley & Sons.

Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Sloan, S. (1948). Sexual behavior in the human male.

Kruks, G. (1991). Gay and lesbian homeless/street youth: Special issues and concerns. *Journal of Adolescent Health*, *12*(7), 515-518.

Lancaster, T. (1990). *The econometric analysis of transition data*. New York: Cambridge university press.

Lewin, E. (1998). *Recognizing ourselves: Ceremonies of lesbian and gay commitment*. New York: Columbia University Press.

Lewin, E. (2001). Weddings without marriage: Making sense of lesbian and gay commitment rituals. In Mary Bernstein, Renate Reimann *(Eds.), Queer families, queer politics: Challenging culture and the state* (44-52), New York: Columbia University Press.

Lieske, J. (1993). Regional subcultures of the United States. *The Journal of Politics*, *55*(04), 888-913.

Lieske, J. (2010). The changing regional subcultures of the American states and the utility of a new cultural measure. *Political Research Quarterly*, *63*(3), 538-552.

Livingston, G. (2014). *Growing number of dads home with the kids: Biggest increase among those caring for family*. Pew Research Center, Social & Demographic Trends Project.

Parker, K. & Livingston, G. “6 facts about American fathers” Pew Research Center, June 2016. http://www.pewresearch.org/fact-tank/2016/06/16/fathers-day-facts/
Maheshwari, A., Porter, M., Shetty, A., & Bhattacharya, S. (2008). Women's awareness and perceptions of delay in childbearing. *Fertility and sterility*, *90*(4), 1036-1042.

Manning, W. D. (1993). Marriage and cohabitation following premarital conception. *Journal of Marriage and the Family*, *55*(4), 839-850.

Manning, W. D., & Landale, N. S. (1996). Racial and ethnic differences in the role of cohabitation in premarital childbearing. *Journal of Marriage and the Family*, *58*(1), 63-77.

McVeigh, R., & Maria-Elena, D. D. (2009). Voting to ban same-sex marriage: Interests, values, and communities. *American Sociological Review*, *74*(6), 891-915.

Meier, K. J. (1994). *The politics of sin: Drugs, alcohol and public policy*. ME Sharpe.

Meier, K. J. (1999). Drugs, sex, rock, and roll: A theory of morality politics. *Policy Studies Journal*, *27*(4), 681.

Meyer, I. H. (1995). Minority stress and mental health in gay men. *Journal of health and social behavior*, 38-56.

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychological bulletin*, *129*(5), 674.

Meyer, D. (2008). Interpreting and experiencing anti-queer violence: Race, class, and gender differences among LGBT hate crime victims. *Race, Gender & Class*, 262-282.

Misra, J., Budig, M., & Boeckmann, I. (2011). Work-family policies and the effects of children on women's employment hours and wages. *Community, Work & Family*, *14*(2), 139-157.

Mooney, C. Z., & Lee, M. H. (1995). Legislative morality in the American states: The case of pre-Roe abortion regulation reform. *American Journal of Political Science* , *39*(3), 599-627.

Mooney, C. Z. (2001). *The public clash of private values: The politics of morality policy*. CQ Press.

Mooney, C. Z., & Schuldt, R. G. (2008). Does morality policy exist? Testing a basic assumption. *Policy Studies Journal*, *36*(2), 199-218.

Mooney, C. Z., & Lee, M. H. (1999). The temporal diffusion of morality policy: The case of death penalty legislation in the American states. *Policy Studies Journal*, *27*(4), 766-780.

Mucciaroni, G. (2011). Are debates about "morality policy" really about morality? Framing opposition to gay and lesbian rights. *Policy Studies Journal*, *39*(2), 187-216.

Nicholson-Crotty, S. (2009). The politics of diffusion: Public policy in the American states. *The Journal of Politics*, *71*(01), 192-205.

Noell, J. W., & Ochs, L. M. (2001). Relationship of sexual orientation to substance use, suicidal ideation, suicide attempts, and other factors in a population of homeless adolescents. *Journal of Adolescent Health*, *29*(1), 31-36.

Norris, P. (2002). *Democratic phoenix: Reinventing political activism*. Massachusetts: Cambridge University Press.

O'Connell, M., & Feliz, S. (2011). Same-sex couple household statistics from the 2010 census. *Social, economic and housing statistics division working paper*,]2011-26.

Olson, L. R., & Green, J. C. (2006a). The religion gap. *PS: Political Science & Politics*, *39*(03), 455-459.

Olson, L. R., Cadge, W., & Harrison, J. T. (2006b). Religion and public opinion about same-sex marriage. *Social Science Quarterly*, *87*(2), 340-360.

Oppenheimer, V. K. (1988). A theory of marriage timing. *American journal of sociology*, 94(3), 563-591.

Owen, L., & Golombok, S. (2009). Families created by assisted reproduction: Parent–child relationships in late adolescence. *Journal of adolescence*, *32*(4), 835-848.

Peterson, B. D., Newton, C. R., Rosen, K. H., & Skaggs, G. E. (2006). Gender differences in how men and women who are referred for IVF cope with infertility stress. *Human Reproduction*, *21*(9), 2443-2449.

Pew Research. (2011). Most say homosexuality should be accepted by society. Washington, DC. Retrieved from http://www.pewresearch.org/2011/05/13/most-say-homosexuality-should-be-accepted-by-society/.

Pew Research. (2015). U.S. Becoming Less Religious. Washington, DC.

Pew Research. (2013). A Survey of LGBT Americans Attitudes, Experiences and Values in Changing Times. Washington, DC.

Pierce, P. A., & Miller, D. E. (1999). Variations in the Diffusion of State Lottery Adoptions: How Revenue Dedication Changes Morality Politics1. *Policy Studies Journal*, *27*(4), 696-706.

Pizer, J. C., Sears, B., Mallory, C., & Hunter, N. D. (2011). Evidence of persistent and pervasive workplace discrimination against LGBT people: The need for federal legislation prohibiting discrimination and providing for equal employment benefits. *Loyola. Law Review*, *45*, 715.

Polikoff, N. D. (1993). We Will Get What We Ask For: Why Legalizing Gay and Lesbian Marriage Will Not" Dismantle the Legal Structure of Gender in Every Marriage". *Virginia Law Review*, 1535-1550.

Raley, R. K. (2001). Increasing fertility in cohabiting unions: Evidence for the second demographic transition in the United States?. *Demography*, *38*(1), 59-66.

Reskin, B. F., & Roos, P. A. (2009). *Job queues, gender queues: Explaining women's inroads into male occupations*. Pennsylvania: Temple University Press

Ridgeway, C. L. (2011). *Framed by gender: How gender inequality persists in the modern world*. New York: Oxford University Press.

Rimmerman, C. A., Wald, K. D., & Wilcox, C. (Eds.). (2000). *The politics of gay rights*. Illinois: University of Chicago Press.

Robinson, J., & Godbey, G. (2010). *Time for life: The surprising ways Americans use their time*. Pennsylvania: Penn State Press.

Rochlen, A. B., Suizzo, M. A., McKelley, R. A., & Scaringi, V. (2008). " I'm just providing for my family": A qualitative study of stay-at-home fathers. *Psychology of Men & Masculinity*, *9*(4), 193.

Rogers, E. M. (2010). *Diffusion of innovations*. New York: Free Press.

Sarkar, T. (2001). *Hindu wife, Hindu nation, community, religion, and cultural nationalism*. Indiana: Indiana University Press.

Sherkat, D. E., Powell-Williams, M., Maddox, G., & De Vries, K. M. (2011). Religion, politics, and support for same-sex marriage in the United States, 1988–2008. *Social Science Research*, *40*(1), 167-180.

Smith, T. A., & Tatalovich, R. (2003). *Cultures at war: moral conflicts in western democracies*. Broadview Press.

Smock, P. J. (2000). Cohabitation in the United States: An appraisal of research themes, findings, and implications. *Annual review of Sociology*, 1-20.

Soule, S. A. (2004). Going to the chapel? Same-sex marriage bans in the United States, 1973–2000. *Social Problems*, *51*(4), 453-477.

Stevenson, B., & Wolfers, J. (2007). Marriage and divorce: Changes and their driving forces. *The Journal of Economic Perspectives*, *21*(2), 27-52.

Stotzer, R. L. (2009). Violence against transgender people: A review of United States data. *Aggression and Violent Behavior*, *14*(3), 170-179.

Studlar, D. T. (2001). What constitutes morality policy? A cross-national analysis. *The public clash of private values: The politics of morality policy*, 37-51.

Sweeney, M. M. (2002). Two decades of family change: The shifting economic foundations of marriage. *American Sociological Review*, 67(1), 132-147.

Sydsjö, G., Ekholm, K., Wadsby, M., Kjellberg, S., & Sydsjö, A. (2005). Relationships in couples after failed IVF treatment: a prospective follow-up study. *Human reproduction*, *20*(7), 1952-1957.

Tatalovich, W. & Daynes, B. W. (2011). *Moral controversies in American politics*. New York: Routledge.

Taylor, J. K., Lewis, D. C., Jacobsmeier, M. L., & DiSarro, B. (2012). Content and Complexity in Policy Reinvention and Diffusion Gay and Transgender-Inclusive Laws against Discrimination. *State Politics & Policy Quarterly*, *12*(1), 75-98.

The Council of Economic Advisors. (2014). Nine Facts About American Families and Work. Washington, DC.

The Kinsey Scale. (2016). Retrieved from https://www.kinseyinstitute.org/research/publications/kinsey-scale.php.

The Williams Institute. (2009). Best Practices for Asking Questions about Sexual Orientation on Surveys. Los Angeles, California.

The Williams Institute. (2014). Best Practices for Asking Questions to Identify Transgender and Other Gender Minority Respondents on Population Based Surveys. Los Angeles, California.

Thomas, S. (1991). The impact of women on state legislative policies. *The Journal of Politics*, *53*(04), 958-976.

U.S. Census Bureau. (2013). Frequently Asked Questions About Same-Sex Couple Households. Washington, DC.

Vaid, U. (1996). *Virtual equality: The mainstreaming of gay and lesbian liberation*. New York: Anchor.

Valian, V. (1999). *Why so slow?: The advancement of women*. Massachusetts: MIT press.

Vermunt, J. K., & Moors, G. (2005). Event history analysis. *Encyclopedia of Statistics in Behavioral science*.

Verhaak, C. M., Smeenk, J. M. J., Evers, A. W. M., Kremer, J. A. M., Kraaimaat, F. W., & Braat, D. D. M. (2007). Women's emotional adjustment to IVF: a systematic review of 25 years of research. *Human reproduction update*, *13*(1), 27-36.

Volden, C., Ting, M. M., & Carpenter, D. P. (2008). A formal model of learning and policy diffusion. *American Political Science Review*, *102*(03), 319-332.

Wald, K. D., Button, J. W., & Rienzo, B. A. (1996). The politics of gay rights in American communities: Explaining antidiscrimination ordinances and policies. *American Journal of Political Science*, 1152-1178.

Walker, J. L. (1969). The diffusion of innovations among the American states. *American political science review*, *63*(03), 880-899.

White, L. K., & Brinkerhoff, D. B. (1981). The sexual division of labor: Evidence from childhood. *Social Forces*, *60*(1), 170-181.

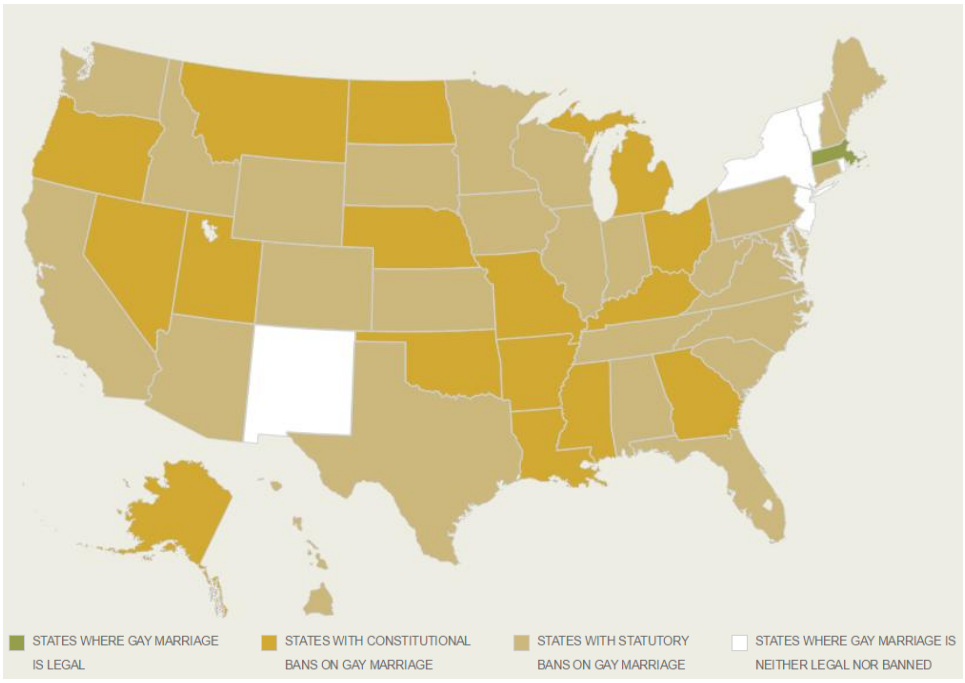
Wang, W., Parker, K., & Taylor, P. (2013). *Breadwinner moms*. Washington, DC: Pew Research Center.

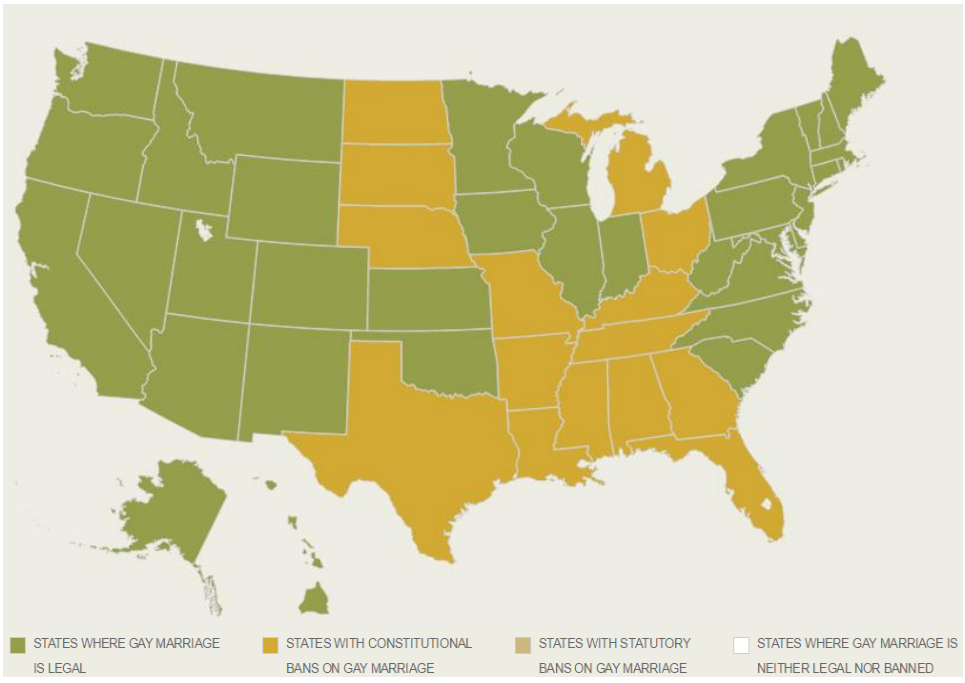
Williams Institute Report. Best Practices for Asking Questions to Identify Transgender and Other Gender Minority Respondents on Population-Based Surveys. September 2014. http://williamsinstitute.law.ucla.edu/wp-content/uploads/geniuss-report-sep-2014.pdf

Williams Institute Report. "Best Practices for Asking Questions about Sexual Orientation on Surveys" November 2009. http://williamsinstitute.law.ucla.edu/wp-content/uploads/SMART-FINAL-Nov-2009.pdf

Yamaguchi, K. (1991). *Event history analysis* (Vol. 28). Sage Publications.

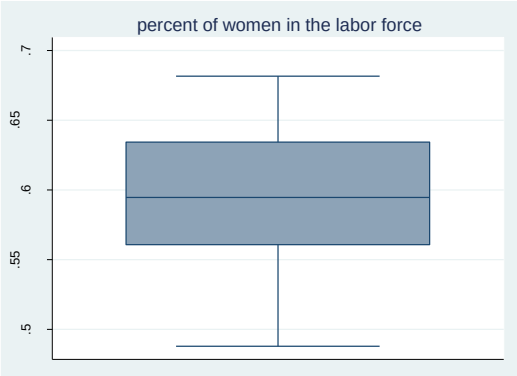
APPENDIX A: SAME SEX MARRIAGE POLICIES 2004 – 2012



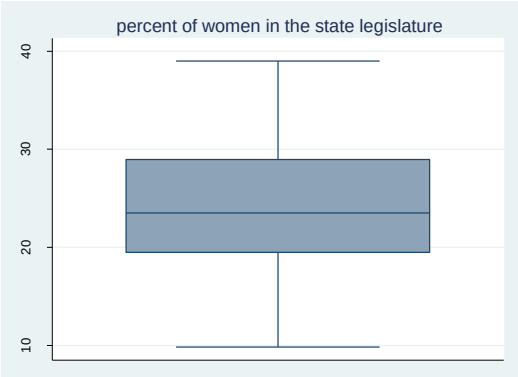


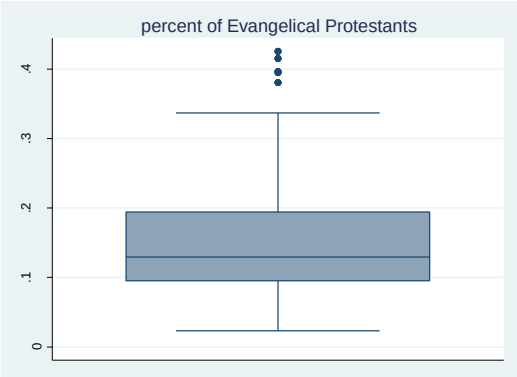
Source: Pew Research Center 2015

APPENDIX B: OUTLIERS

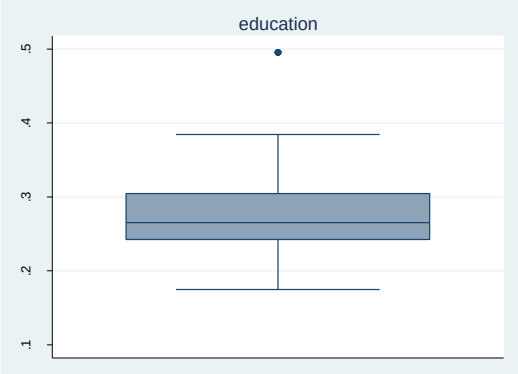


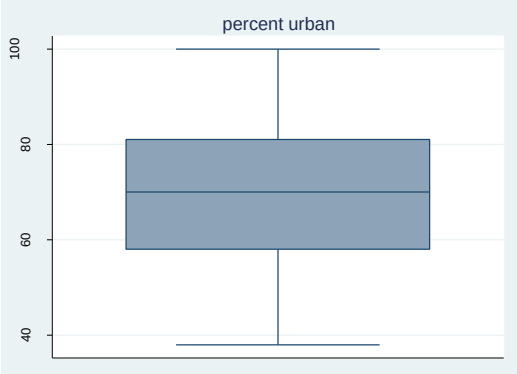
*outlier: Washington DC (highest magnitude)





*outliers: AL, OK, MS, AR



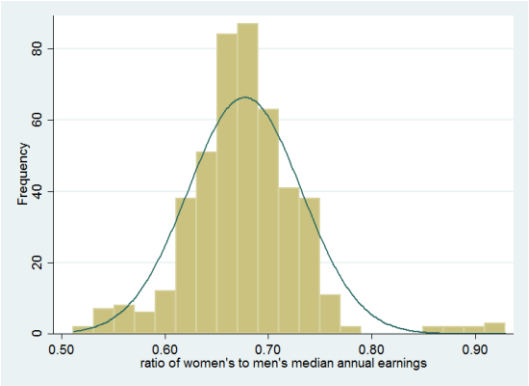


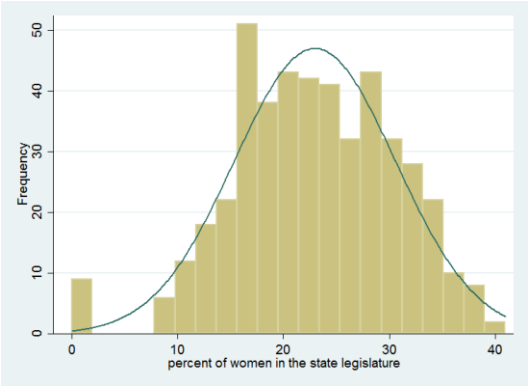
*outlier: Washington DC

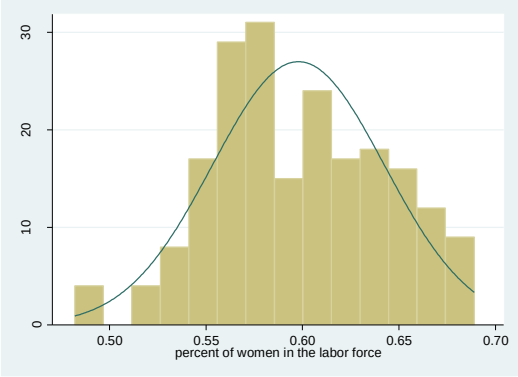
*outlier: Washington DC

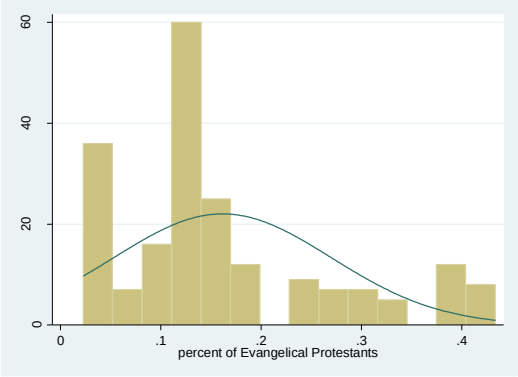
*outlier: Washington DC

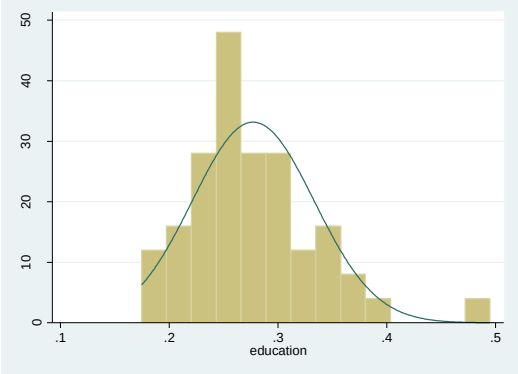
APPENDIX C: FREQUENCY DISTRIBUTIONS

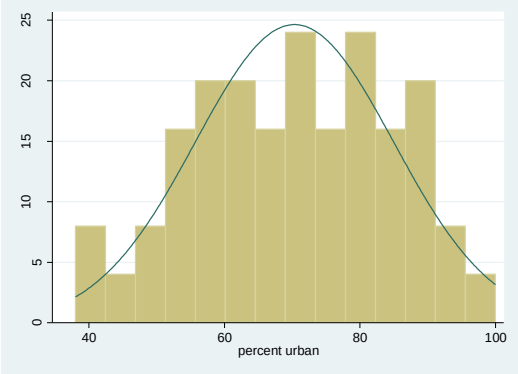


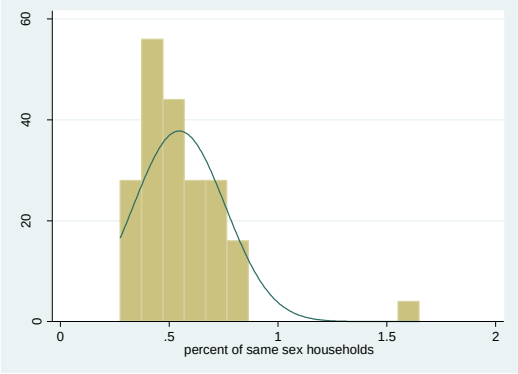


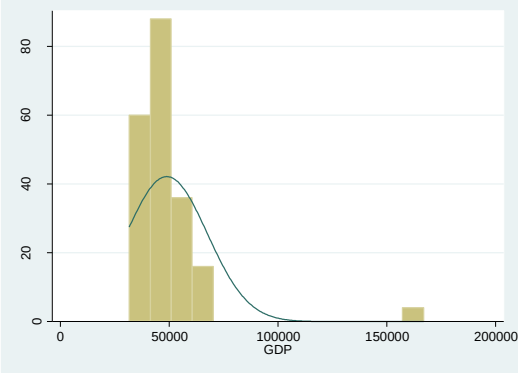












APPENDIX D: SMOOTHED BASELINE HAZARD FUNCTION