Pray v. Gay:
The Effects of the Kansas Preservation and Protection of Religious Freedom Executive Order on LGBTQ Mental Health

A Difference-in-Difference Analysis

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Abstract

Relative to their peers, LGBTQ people are marginalized more often and experience worse mental health outcomes. This difference-in-difference analysis uses 2014-2020 data from the Behavioral Risk Factor Surveillance Survey (BRFSS) to examine the effect of the 2015 Kansas Preservation and Protection of Religious Freedom (PPRF) on LGBTQ people's mental health outcomes. We establish a causal relationship in which the passing of the PPRF increases LGBTQ Kansans' bad mental health days in the month prior to interview by approximately one additional day (p =0.002) on average but decreases the number of binge drinking sessions by 0.216 (p=0.001). The primary limitation is a lack of available data on sexual and gender minorities. Further study might explore the effect of other similar laws and effect heterogeneity by race.

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1. Introduction

Numerous health disparities exist between lesbian, gay, bisexual, transgender, and queer (LGBTQ) people and cisgender heterosexual people. The American Psychiatric Association reports incidence of mental health disorders to be twice as prevalent among LGBTQ individuals who are more than twice as likely to experience depression, anxiety, and substance misuse than their cis-heterosexual counterparts. Johns et al. (2020) find that sexual minority (LGBQ) youth experience twice as much bullying, nearly three times as much sexual dating violence, and more than four times as many suicide attempts as their peers. LGBTQ social and political equality is precarious; many hard-won protections codified during President Obama's administration were restricted, diminished, or repealed by President Trump's administration. Because of insufficient data collection efforts to capture LGBTQ status and significant limitations in traditional quantitative analysis, few opportunities exist to analyze the causal effects of laws that potentiate LGBTQ discrimination.

Our study models the causal effects of the passage of the 2015 Kansas Preservation and Protection of Religious Freedom (PPRF) law on the number of self-reported bad mental health days and level of excessive alcohol consumption for the LGBTQ population (n = 1,808). To conduct this analysis, we use household-level data from the Behavioral Risk Factor Surveillance System (BRFSS) and state-level demographic and election data from the National Historical Geographic Information System (NHGIS) and FiveThirtyEight, respectively. We examine this relationship through linear probability and logistic models using two-way fixed effects as well as reweighting pioneered by DiNardo, Fortin, and Lemieux (1996). We find that the Kansas PPRF increases the number of bad mental health days and decreases the incidence of binge drinking among LGBTQ+ people in Kansas (statistically significant to the 5% level across various model specifications). We also find that marriage is highly correlated with better mental health and less binge drinking.

These results confirm that laws which potentiate discrimination in marriage services based on religious beliefs disproportionately impact LGBTQ people.[1] That is to say, the Kansas PPRF negatively affected the mental health of LGBTQ people, and we believe our findings may be generalizable to other marriage targeted religious freedom laws (see *Table 2A* in the Appendix). Our findings are a novel contribution to the field; few studies have explored the heterogenous effects of laws designed to potentiate LGBTQ discrimination while obviating challenges to such laws. Critics of these and similar laws lambasted their passage, arguing that fundamentally unequal social conditions impact the lives of LGBTQ citizens. Testing the hypothesis that laws potentiating LGBTQ discrimination have a demonstrable negative effect on health outcomes, we confirm that the PPRF had negative effects on LGBTQ Kansans. The decision to enact this law was neither informed by data nor a concern for the mental welfare of LGBTQ Kansans. While we hope these findings can be of use to future bills considering the same restrictions of marriage equality, these results do not necessarily apply to other types of

[1] "Marriage services" refers to private businesses, clergy, and religious organizations. The law specifies that the state will "not take discriminatory action against any individual clergy," religious leader, or religious organization "to decline to perform, solemnize, or faciliate any marriage or to provide services, accommodations, facilities, goods, or privileges for a purpose related to the solemnization, formation, celebration or recognition of any marriage, based upon or consistent with a sincerely held religious belief or moral conviction."

existing targeted religious freedom laws that permit denial of services based on religious belief in medical or child welfare (i.e., adoption and family placement) settings.

Other limitations include small sample sizes, unbalanced panel data missing many sets of state/year observations (see *Table 1A* in the Appendix), and unanswered questions regarding the reason the PPRF caused a reduction in binge drinking among LGBTQ Kansans. Similar to missing or incomplete data capturing LGBTQ identities and experiences, religious beliefs are not captured by government surveys because of the separation of church and state. This dimension of religiosity might have indicated how the law was received by non-LGBTQ Kansans, for whom this law was intended to protect. Due to the lack of data availability, we do not examine effect heterogeneity based on race, which we believe to be abundantly important. Further research is needed to understand the differing impacts among non-marriage religious freedom laws, make use of future datasets that include more LGBTQ data, explore effect heterogeneity among racial lines, and more thoroughly examine the relationship between marriage-related religious freedom laws and LGBTQ binge drinking.

2. Background

The first Religious Freedom Restoration Act (RFRA) in the United States was a 1993 federal law – sponsored by two Congressional Democrats, Chuck Schumer of New York and Ted Kennedy of Massachusetts – enacted by Congress with the approval of President Bill Clinton. The original federal RFRA proposed that "governments should not substantially burden religious exercise without compelling justification." The law extends First Amendment protections for many religious groups to ensure continued, unburdened spiritual practices; for example, it legally sanctions the spiritual consumption of *peyote* for many Indigenous tribes, which is otherwise a Schedule 1 substance as defined by the Controlled Substances Act. In 1997, a Supreme Court decision challenged the constitutionality of the federal law as it applied to states, which then limited the jurisdictional influence of the RFRA to matters of federal government.

In the years since, many states have enacted *broad* RFRAs ($n = 21$) or *targeted* RFRAs ($n = 15$) with differing legal purposes than the 1993 federal RFRA. The various categories of targeted RFRAs permit businesses, medical professionals, or government employees to withhold services on the basis that doing so would violate their religious beliefs about personhood, sexuality, marriage, and family. In other words, these targeted RFRAs differ greatly from the 1993 federal RFRA in that targeted, state-based RFRAs potentiate discrimination and differential treatment toward LGBTQ people, among others. While there are three major types of targeted RFRAs – marriage, child welfare services, and medical care – we analyze the effect the Kansas marriage RFRA had on two health outcomes: bad mental health days and days of binge drinking (see *Table 2A* in the Appendix). We investigate the causal effects this RFRA, titled the Preservation and Protection of Religious Freedom (PPRF), had on the number of self-reported bad mental health days and days of excessive drinking in the month preceding the interview. We focus on the 2015 Kansas RFRA amendment for three major reasons: 1) of all states that passed any RFRAs, only three (Indiana, Illinois, and Kansas) are available for difference-in-difference (DD) and other causal models due to incomplete, unbalanced, and missing data in pre- and post-RFRA periods; 2) each of the three above-mentioned states passed different types of RFRAs necessitating different analytic approaches (see *Table 2A* in the Appendix); and 3) the governor

enacted the Kansas PPRF largely as an executive reaction to growing political support and judicial gains protecting marriage equality.

The legislative and judicial antecedents to the 2015 Kansas executive order reveal concerted efforts to embolden and sanction LGBTQ discrimination. On August 31st, 2007 Kansas became the fourth state in the union to legislate anti-discrimination laws for LGBTQ employees when Governor Kathleen Sebelius signed executive order 07-24. However, Governor Sam Brownback's election in 2011 turned the course of legislative trajectory. In April 2013, the State of Kansas enacted a broad RFRA, stating that the government would not impose excessive burdens on the free exercise of religious beliefs.[2] In early 2014, Kansas House Bill 2543 – the Religious Freedom Act – was introduced, and it proposed that any business or state official could refuse marriage-related services to same sex couples on the basis that doing so would violate their religious beliefs. It ultimately did not pass the Kansas Senate. Amid growing national attention to an appeal to the Supreme Court of the United States (SCOTUS), *Obergefell v. Hodges,* Governor Sam Brownback repealed in February 2015 the aforementioned 2007 nondiscrimination law shortly after HB 2543 died in the Senate. On June 26th, 2015 the SCOTUS ruled affirmatively on *Obergefell v. Hodges*, stating that the right to due process and the equal protection clause of the Fourteenth Amendment extended to and protected same sex couples seeking marriage. Just eleven days later, Governor Brownback issued executive order 15-05, the Preservation and Protection of Religious Freedom (PPRF). The law cited the 2013 broad RFRA and "the recent imposition of same sex marriage by the United States Supreme Court [which] poses potential infringements on the civil right of religious liberty." In early 2020, another landmark SCOTUS ruling, *Bostock v. Clayton County*, upheld the application the Title VII of the Civil Rights Act of 1964 in discrimination against LGBTQ employees, which supersedes the 2015 PPRF law. Presently, Kansas – by federal ruling – interprets existing nondiscrimination statutes as applicable to LGBTQ employees but has not passed specific legislation to that effect.

We investigate the effect the passage of the 2015 Kansas PPRF had on number of bad mental health days and the number of binge drinking sessions in a month to analyze LGBTQ people's coping behaviors and fears about how the PPRE would *de facto* permit discrimination that *Obergefell v. Hodges* prohibited *de jure*. Our study follows similar investigations about how other policies affect the same population (LGBTQ people) by measuring health outcome disparities. Studies that have used DD analyses, for example, have reviewed how mental health outcomes of sexual and gender minorities have been affected by: the 2016 general election outcomes (Grzenda et al., 2021), the passage of Indiana's broad RFRA (Blosnich et al., 2019), the existence of same-sex marriage polices or bans and adolescent suicide attempts (Raifman et al., 2017), and the passage of laws permitting denial of services to same-sex couples (Raifman et al., 2018). While these studies have differing scopes and slightly different target populations, all investigate the (negative) relationship that discriminatory policies have on health outcomes for sexuality and/or gender minorities. Moreover, each of these studies use the precious resource of sexual orientation and gender identity (SOGI) modules of the Behavioral Risk Factor Surveillance System (BRFSS). To our knowledge, no study using a causal model has researched

[2] More specifically, the law reads: "Government shall not substantially burden a person's civil right to exercise of religion even if the burden results from a rule of general applicability, unless such government demonstrates, by clear and convincing evidence, that application of the burden to the person: (1) Is in furtherance of a compelling governmental interest; and (2) is the least restrictive means of furthering that compelling governmental interest."

the effect the 2015 Kansas PPRF had on health outcomes. We seek to address this gap in knowledge with our work.

3. Conceptual Framework

A few contemporaneous laws to the 2015 Kansas RFRA amendment include: the 2015 broad RFRA in Indiana and the 2015 North Carolina targeted RFRA permitting state and local officials to deny marriage to objectionable couples. Arkansas, Michigan, and Mississippi, also saw the passage of RFRAs in the same (or previous) year as the Kansas law. Each of these laws was decried for potentiating discrimination, several receiving scathing indictments from major news media publications and advocacy/policy organizations. Situated within this context, as well as the history of religious freedom laws in Kansas, we hypothesize that the passage of the Kansas RFRA in 2015 changed the number of individuals self-reporting the number of bad mental health days for the month preceding their survey interview. We also hypothesize that passage affected the number of times in the month preceding the interview that individuals drank more than four or five drinks at a time (or binge drinking sessions).

Our empirical analysis reflects a natural experiment testing the theory of social conditions as fundamental causes of disease (Link & Phelan, 1995). For decades, epidemiological studies have uncovered through causal models many associations between poor social conditions and elevated propensities for disease. The underlying epistemological beliefs of fundamental cause theory and epidemiology posit that when social conditions – the relationships between people – are poor, they increase the incidence of and propensity for disease and poor health conditions because these relationships define social positionality.[3] With these paradigms in mind, we hypothesize that the 2015 Kansas PPRF increased the number of bad mental health days and number of binge drinking sessions because it impacted the interactions and relationships among LGBTQ individuals as well as between LGBTQ and non-LGBTQ citizens.

4. Data

We use data from the Behavioral Risk Factor Surveillance Survey (BRFSS) collected from 2014 to 2020. These data are collected by each state (and some territories) and centralized into a dataset by the federal Center for Disease Control (CDC). Given our target population – the LGBTQ community – only those states that offered the optional Sexual Orientation and Gender Identity (SOGI) module of the BRFSS are included in this analysis. We choose to analyze all available BRFSS data (the first SOGI module was implemented in 2014 and 2020 is the most recently available year). Within this seven year span, seven states never offered the SOGI module: Alabama, Maine, Nebraska, New Hampshire, North Dakota, Oregon, and South Dakota. Only six states offered the SOGI module in all seven years: Hawaii, Minnesota, New York, Ohio, Virginia, and Wisconsin. The other thirty-seven states offered SOGI modules between one and six years (see *Table 1A* in the Appendix).[4] Because not all states in all available time periods

[3] Conceiving of social conditions as health determinants is not unlike feminist perspectives in that each emphasize and investigate the effects that unequal distribution of social privileges (power) have on disadvantaged communities and individuals.

[4] On average, SOGI modules were offered for 3.8 of the available seven years for these thirty-seven states.

offered the SOGI module, our sample is an unbalanced panel of respondents (n = 1,313,665) for those state and year combinations in which the SOGI module was administered.

We construct our sample on the contingency that the respondent encountered and answered the question, *do you consider yourself to be transgender, and if yes, are you male-to-female, female-to-male, or gender nonconforming?* We choose to restrict our sample to those who offered any answer to this question (including "don't know" and "refused to answer") for two reasons: 1) answers to this question are necessary for categorizing which respondents identify as part of the LGBTQ community, and 2) in order to be asked this question, the respondent had to be administered the optional SOGI module. This question also immediately follows a question about sexual orientation, which means that by restricting observations to those with responses to the transgender status question, we are able to ensure that respondents were posed questions about both their sexual orientation and gender identity.

We find considerable inconsistencies between the numerous sex variables in the BRFSS. Transgender individuals' responses to questions of sex were inconsistent and frequently missing (e.g., some trans women responded "male" for some sex-based questions, others responded "female," and still others chose to not answer). Moreover, in some cases, a respondent chose "male" for one question then "female" for another (or chose not to respond).[5] These discrepancies and nonresponses potentially reflect confusion or interviewee mistrust and necessitated that our gender identity assignment protocol be cognizant and respectful of self-determined gender.[6]

This study focuses on two key outcome variables: 1) the number of self-reported bad mental health days (out of thirty) for the month preceding the BRFSS interview; and 2) the number of times in the month preceding the BRFSS interview that the respondent consumed four or more drinks (if categorized as female) or five or more drinks (if categorized as male). Key dependent variables and controls used in our analysis were primarily demographic data that tend to affect the mental health status of an individual (see *Table 1*). We identify and use the following in our analysis:

- *Sexual Orientation* – whether the respondent is gay/lesbian, straight, bisexual, or something else
- *Gender Identity* – whether the respondent is a trans woman, trans man, cis woman, cis man or gender nonconforming
- *Age* – the age of the respondent (minimum 18, maximum 80)
- *Race* – the race and ethnicity of the respondent as defined by the BRFSS

[5] For example, when posed the question *what was your sex at birth? Was it male or female?* 89.46% of transgender respondents chose not to answer. Though it is not the scope of this analysis, adding the modifier "assigned" – i.e., *what was your sex* assigned *at birth?* – might elicit higher response rates since it uses the commonplace expression *sex assigned at birth* or SAAB used among transgender people.

[6] In other words, irrespective of answers to sex-based questions, trans women were identified as those respondents who answered affirmatively to the question about transgender status and disclosed that they are male-to-female. Likewise, trans men were identified as those respondents who indicated they are female-to-male, while gender nonconforming transgender respondents were identified by their indication as gender nonconforming. Assignment of cisgender women and men, differently, required that they indicate that they are not transgender and answered consistently "male" or "female" to questions about their sex. For the sake of this analysis, we proceed on the assumption of deterministic sexuality and relatively static gender identity. In reality, sexuality and gender identity are often dynamic.

    - Options include: White only, Black only, American Indian or Alaskan Native only, Asian only, Native Hawaiian or other Pacific Islander only, Other race only, Multiracial, or Hispanic
- *Household Income* – respondent's households income, divided into eight discrete categories (see *Table 1*)
- *Health Insurance Status* – whether or not a respondent has health insurance coverage
- *Highest Level of Educational Attainment* – the respondents' highest educational attainment. Options include whether the respondent never attended school, attended grades one through eight, attended some high school (grades nine through eleven), graduated high school, attended some college or technical school, or graduated college
- *Marital Status* – whether or not a respondent is married, divorced, widowed, separated, a member of an unmarried couple, or never married

We compile sexual orientation and gender identity responses to construct a binary variable for LGBTQ respondents. This means that LGBTQ respondents are those who identified either as transgender or not transgender but answered affirmatively to any of the following sexual orientation categories: lesbian, gay, bisexual, or something else (not heterosexual).

Table 1: Summary statistics for the analysis sample

Vector of Characteristics X_i	**μ (σ)**
Age	55.25 (16.68)
Income	
Less than $10,000	49,766
$10,000-$15,000	56,437
$15,000-$20,000	81,837
$20,000-$25,000	103,783
$25,000-$35,000	122,890
$35,000-$50,000	164,804
$50,000-$75,000	190,652
More than $75,000	190,652
Refused or Missing	404,896
Gender Identity	
Transgender women	2,138
Transgender men	1,622
Gender Nonconforming	1,081
Cisgender women	637,181
Cisgender men	524,226
Refused or Missing	8,817
Sexual Orientation	
Gay / lesbian	19,126
Heterosexual	1,096,986
Bisexual	22,169
Something else	8,421
Refused or Missing	28,182
Race	
White	917,314
Black / African American	91,475
American Indian or Alaskan Native	14,731

Asian	31,210
Native Hawaiian or other Pacific Islander	4,407
Other	6,731
Multiracial	28,136
Hispanic	81,061
Highest Education Level Attained	
No School	1,226
Elementary	22,592
Some High School	52,067
High School or GED	310,962
Some College	325,422
Bachelor's Degree or Higher	462,796
Health Insurance Coverage	
No Insurance	85,544
Has Insurance	1,087,010
Refused or Missing	2,511
Marital Status	
Married	624,273
Divorced	167,430
Widowed	134,502
Separated	24,603
Never Married	182,483
In a domestic partnership (unmarried)	38,345
Refused or Missing	3,429

Table 1: The total sample consists of the forty three states that collected SOGI data during the 2014-2020 time period. There should be a "note" at the bottom of every table that enables the reader to understand everything that's going on with the table without referring to the main text. How are the standard errors clustered (by state), are the statistics weighted, and so forth. Note also that you don't need to report the standard deviation of a sample proportion.

5. Methods

We research the question, "What is the impact (if any) of the Kansas Preservation and Protection of Religious Freedom law on the mental health and binge drinking habits of LGBTQ people?" We use the following regression to model this question for both health outcomes:

$$M.\ HEALTH_{ist} = \alpha_s + \alpha_t + \beta_1 POL_{st} + \beta_2 LGBTQ_{st} + \beta_3 (POL_{st} * LGBTQ_{st}) + \beta_4 X_i + \varepsilon_{ist}$$

Where α_s and α_t are fixed effects for each state and time, respectively. *POL* is a binary variable denoting whether or not the policy was implemented in state *s* at time *t*. *LGBTQ* is a binary variable denoting whether or not the respondent is defined as LGBTQ. The coefficient on the interaction term (β_3) will capture the effect of the policy on the number of self-reported "bad" mental health days experienced by LGBTQ respondents in the month preceding their interview. *X* represents a vector of demographic control variables (i.e., age, race, household income, health insurance coverage, educational attainment, and marital status) for each *i*, individual observation, and ε is the error term.

Treatment observations (n = 1,808) are those Kansas respondents who identified as LGBTQ during the BRFSS interview for this period (see *Table 2*). Control observations are those respondents in states that did not pass a marriage RFRA (see *Table 2A* in the Appendix).

Table 2: Full Sample of Forty-Three States				
Characteristics	**Kansas Only**		**No Marriage RFRA**	
Age, μ (σ)	54.93	(16.81)	55.29	(16.67)
Income, *n* (%)				
Less than $10,000	1,597	(3.15%)	46,302	(4.22%)
$10,000-15,000	2,016	(3.97%)	52,468	(4.79%)
$15,000-$20,000	2,981	(5.88%)	76,030	(6.94%)
$20,000-$25,000	4,343	(8.56%)	96,368	(8.79%)
$25,000-$35,000	5,603	(11.04%)	114,012	(10.40%)
$35,000-$50,000	8,087	(15.94%)	152,729	(13.93%)
$50,000-$75,000	9,416	(18.56%)	177,213	(16.17%)
More than $75,000	16,691	(32.90%)	380,956	(34.76%)
Gender Identity n (%)				
Transgender women	88	(0.17%)	1,988	(0.18%)
Transgender men	82	(0.16%)	1,466	(0.13%)
Gender Nonconforming	39	(0.08%)	1,013	(0.09%)
Cisgender women	27,135	(53.48%)	594,134	(54.22%)
Cisgender men	23,130	(45.59%)	489,080	(44.63%)
Refused or Missing	260	(0.51%)	8,053	(0.73%)
Sexual Orientation n (%)				
Gay / lesbian	570	(1.12%)	18,250	(1.69%)
Heterosexual	48,280	(95.17%)	1,023,614	(94.98%)
Bisexual	793	(1.56%)	21,023	(1.95%)
Other	284	(0.56%)	8,016	(0.74%)
Refused or Missing	801	(1.58%)	25,008	(2.32%)
Race n (%)				
White	44,421	(87.56%)	855,153	(78.02%)
Black / African American	1,825	(3.60%)	81,427	(7.43%)
American Indian or Alaskan Native	499	(0.98%)	13,714	(1.25%)
Asian	453	(0.89%)	30,604	(2.79%)
Native Hawaiian or other Pacific Islander	41	(0.08%)	4,332	(0.40%)
Other	83	(0.16%)	6,503	(0.59%)
Multiracial	862	(1.70%)	26,935	(2.46%)
Hispanic	2,550	(5.03%)	77,410	(7.06%)
Highest Education Level Attained n (%)				
No School	24	(0.05%)	1,157	(0.11%)
Elementary	638	(1.26%)	21,115	(1.93%)
Some High School	1,696	(3.34%)	48,274	(4.40%)
High School or GED	12,700	(25.03%)	290,670	(26.52%)
Some College	15,119	(29.80%)	302,038	(27.56%)

Bachelor's Degree or Higher	20,557	(40.52%)	432,824	(39.49%)
Health Insurance Coverage n (%)				
No Insurance	4,144	(8.17%)	77,983	(7.11%)
Has Insurance	46,470	(91.60%)	1,015,750	(92.67%)
Refused or Missing	120	(0.24%)	2,345	(0.21%)
Marital Status n (%)				
Married	29,561	(58.27%)	580,630	(52.97%)
Divorced	6,894	(13.59%)	156,455	(14.27%)
Widowed	5,613	(11.06%)	125,383	(11.44%)
Separated	679	(1.34%)	22,848	(2.08%)
Never Married	6,545	(12.90%)	171,111	(15.61%)
In a domestic partnership (unmarried)	1,356	(2.67%)	36,345	(3.32%)
Refused or Missing	86	(0.17)	3,306	(0.30%)

***Table 2*:** depicts the characteristics of the forty-three states that for at least one year collected SOGI data between 2014 and 2020 and did not pass a marriage-targeted RFRA. The seven states excluded from this analysis due to having never administered the SOGI module are: Alabama, Maine, Nebraska, New Hampshire, North Dakota, Oregon, and South Dakota. The Marriage RFRA States column details the distribution of these characteristics across three states that ever passed marriage-RFRAs: Kansas, North Carolina, and Mississippi.

We perform regression analyses with the DiNardo, Fortin, and Lemieux (1996) re-weighting scheme in order to weight all available states as controls based on similarity to the treatment state, Kansas.[7] The DFL reweighting was performed using 2010 data from the National Historical Geographic Information System (NHGIS) and 2007-2010 governor election data from FiveThirtyEight. We choose 2010 as our baseline year for the reweighting because it provides current baseline data that was amply available from both the NHGIS and FiveThirtyEight. To estimate these DFL weights, we specifically use the following probit model:

$$P_s = \beta_1 REP_s + \beta_2 RURAL_s + \beta_3 WHITE_s + \varepsilon_s$$

Where *REP* is whether state *s* had a Republican governor in office in 2010, *RURAL* is the percent of the state's population that was rural in 2010, and *WHITE* is the percent of the state's population that was white in 2010. *Table 3* shows the results of this probit model which were used to construct the DFL weights. These weights were used in conjunction with the provided BRFSS weights for the final analysis.

This analysis used two-way fixed effects models (with standard errors clustered by state) to predict the impact of the Kansas RFRA on LGBTQ mental health and binge drinking. Both ordinary least squares and logistic models were used to analyze each outcome, the results of which will be discussed in the next section.[8]

[7] We do not use a common support region because the number of observations available given the shortcomings of LGBTQ data collection was already limited for a causal analysis. Further restrictions were not feasible.

[8] Based on the high number of self-reported zero "not good" mental health days, we investigate these results using a zero-inflated negative binomial model. This model ultimately shows inconsistent and highly sensitive results because distribution of the right wing (twenty-five to thirty "not good" mental health days) did not taper. Instead, there were two large spikes: those reporting zero and those reporting thirty bad mental health days; for these reasons we exclude them for brevity.

Table 3: Predicting the Likelihood that a State Adopts a Marriage RFRA	
State-level Characteristic	***Coefficient***
Republican governor in 2010	0.76* (0.444)
Percent of population that is rural	4.26** (1.771)
Percent of population that is white	-3.81** (1.837)
N	50
R^2	0.1872

Table 3: A probit model predicting the likelihood that a state will adopt a marriage Religious Freedom Restoration Act based on several state-level characteristics.

Note: Standard errors (clustered by state) in parentheses.
*** Denotes a coefficient significant at the 1% level; ** the 5% level; * the 10% level.

6. Results

We believe the logistic regression with controls to be the most accurate model because of the nature of the data (high number of responses that were either "zero" or "thirty" for bad mental health days or binge drinking in the past month, respectively). We find that the passage of the PPRF increased the number of reported bad mental health days for LGBTQ Kansans by 0.94 days ($p = 0.002$). This result is robust across models and insensitive regardless of inclusion or exclusion of controls: *Table 4* shows the consistent result that the PPRF increased the number of bad mental health days for all Kansans, with even more pronounced effects for Kansans who identify as LGBTQ. In fact, after the passage of the PPRF, cisgender heterosexual Kansans were 8% and LGBTQ Kansans were 21.9% more likely to report experiencing non-zero bad mental health days ($p = 0.021$ and $p < 0.001$, respectively). We find that in the absence of any marriage-targeted RFRA, LGBTQ individuals report a significantly higher number of bad mental health days ($p < 0.001$). In Kansas, the PPRF exacerbates this pre-existing higher number of bad mental health days relative to non-LGBTQ people. This holds true for the likelihood of experiencing a non-zero number of bad mental health days as well ($p = 0.004$).

Table 4: Number of "Not Good" Mental Health Days in the Month Preceding Interview				
	OLS	***OLS + X_i***	***Logit***	***Logit + X_i***
RFRA	0.274** (0.107)	0.245** (0.095)	0.071** (0.033)	0.077** (0.033)
LGBTQ	3.408*** (0.261)	2.480*** (0.205)	0.825*** (0.031)	0.573** (0.021)
Interaction	0.811** (0.340)	0.693** (0.281)	0.189*** (0.047)	0.121** (0.041)
Married	—	*(referent)*	—	*(referent)*
Divorced	—	1.165*** (0.075)	—	0.326*** (0.009)
Widowed	—	0.526*** (0.058)	—	0.255*** (0.021)
Separated	—	2.272*** (0.215)	—	0.523*** (0.043)

Never Married	—	0.149	(0.160)	—	0.155***	(0.036)
Domestic Partnership	—	0.461***	(0.114)	—	0.208***	(0.052)

Table 4:
Standard errors (clustered by state) in parentheses
Interaction row refers to the interaction term (product) between the LGBTQ variable and the marriage RFRA

***OLS*:** OLS two-way fixed effect with no controls
***OLS* + X_i:** OLS two-way fixed effect with controls for age, race, household income, health insurance coverage, educational attainment, and marital status
***Logit*:** Logit two-way fixed effect with no controls
***Logit* + X_i:** Logit two-way fixed effect with controls for age, race, household income, health insurance coverage, educational attainment, and marital status

*** denotes a coefficient significant at the 1% level; ** the 5% level; * the 10% level.

Figure 1 visualizes the relationship the law had on the average number of bad mental health days.[9] We find that between the pre-law period (2014 and 2015 through July 10th) and the post-law period (in 2015 but after July 11th), the average number of bad mental health days reported by LGBTQ respondents increased by roughly one day ($p = 0.002$). Comparatively, the number of non-zero bad mental health days reported by cisgender heterosexual Kansans appear unaffected by the passage of the law.

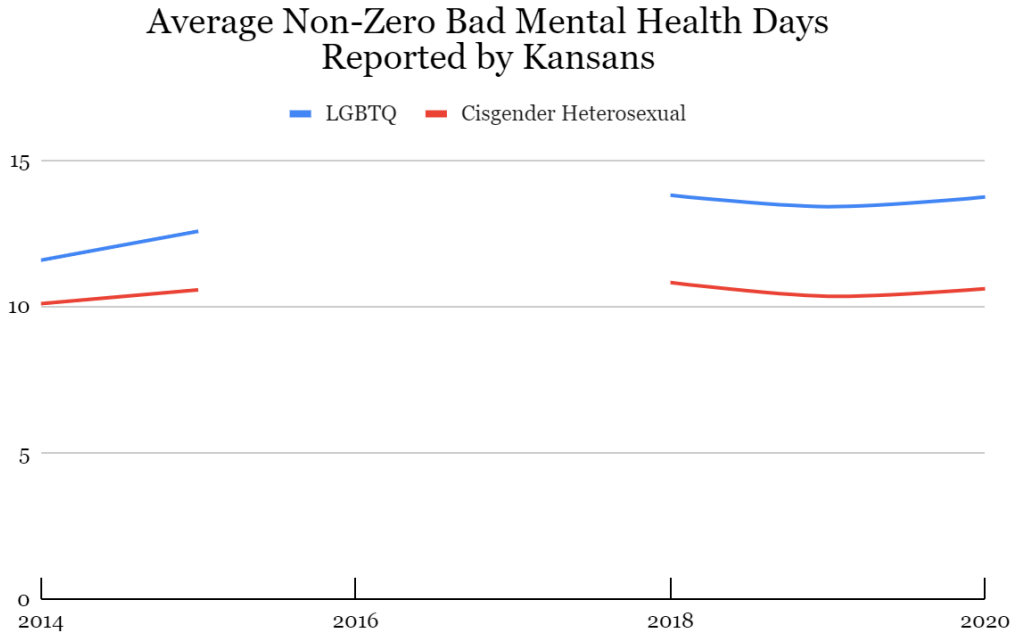

Figure 1: Time Period (Month and Year of Implementation: July 2015)

[9] Kansas did not collect SOGI data for 2016 or 2017 (for more information, see *Table 1A* in the Appendix)

Figure 2 displays the percentage of respondents reporting exactly "zero" bad mental health days. Prior to the passage of the PPRF, 57.54% of LGBTQ Kansans reported having zero bad mental health days in the month preceding their interview. After passage of the law, however, 52.2% of LGBTQ Kansans reported having zero bad mental health days. The results from the logistic model in *Table 4* reflect and predict this measured decrease in percent of reported zero bad days ($p < 0.001$).

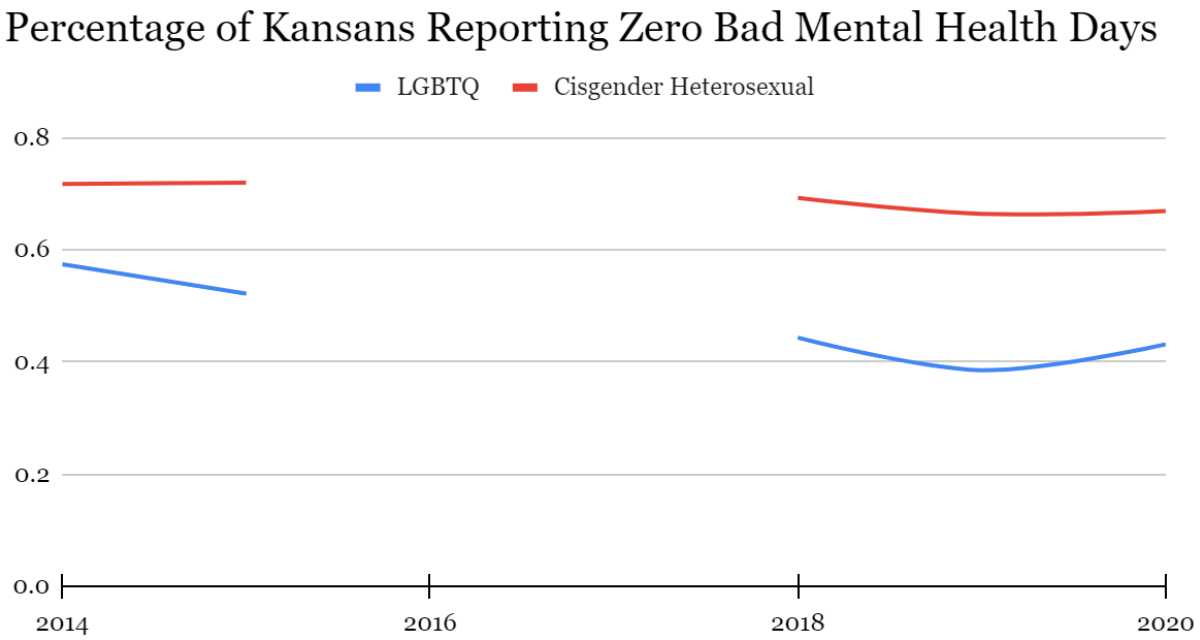

Figure 2: Time Period (Month and Year of Implementation: July 2015)

We find that the PPFR has a robust, negative effect on the number and likelihood of binge drinking sessions among LGBTQ Kansans. *Table 5* shows that, independent of the effect of marriage RFRAs, the LGBTQ community excessively drinks approximately 0.308 more times per month than non-LGBTQ people ($p < 0.001$). However, the passage of the PPFR appears to have decreased the incidence of binge drinking among the LGBTQ community by 0.216 sessions in the month preceding interview ($p = 0.001$). Simultaneously, the passage of the RFRA does not have a statistically significant effect on non-LGBTQ people. This lack of significance is also robust across model and control specifications.

Table 5: Number of Binge Drinking Sessions in the Month Preceding Interview								
	OLS		***OLS + X_i***		***Logit***		***Logit + X_i***	
RFRA	0.004	(0.045)	-0.014	(0.046)	-0.010	(0.025)	-0.016	(0.027)
LGBTQ	0.668***	(0.041)	0.308***	(0.051)	0.393***	(0.027)	0.057**	(0.025)
Interaction	-0.152**	(0.052)	-0.202***	(0.045)	-0.133**	(0.054)	-0.201***	(0.043)
Married	—		*(referent)*		—		*(referent)*	
Divorced	—		0.603***	(0.072)	—		0.308***	(0.028)
Widowed	—		0.056	(0.052)	—		0.016	(0.032)
Separated	—		0.466***	(0.112)	—		0.288***	(0.077)
Never Married	—		0.476***	(0.042)	—		0.313***	(0.027)
Domestic Partnership	—		0.529***	(0.096)	—		0.349***	(0.032)

Table 5:

Standard errors (clustered by state) in parentheses
Interaction row refers to the interaction term (product) between the LGBTQ variable and the marriage RFRA

***OLS*:** OLS two-way fixed effect with no controls
***OLS + X_i*:** OLS two-way fixed effect with controls for age, race, household income, health insurance coverage, educational attainment, and marital status
***Logit*:** Logit two-way fixed effect with no controls
***Logit + X_i*:** Logit two-way fixed effect with controls for age, race, household income, health insurance coverage, educational attainment, and marital status

*** denotes a coefficient significant at the 1% level; ** the 5% level; * the 10% level.

Regarding the same health outcomes, *Tables 4* and *5* include estimations of the effect of non-LGBTQ people's marital status in the absence of a marriage-related RFRA. While we chose not to include several controls in the Tables above for brevity, we highlight marital status as a health determinant due to its connection with the examined policy (i.e., denial of marriage services). Among non-LGBTQ people, marital status consistently and powerfully predicts the number of bad mental health days and incidence of binge drinking. Those who are married report significantly fewer days of bad mental health and fewer days binge drinking than those who are divorced, separated, never married, and or in a domestic partnership at mostly high levels of statistical significance (see *Tables 4 & 5*).

7. Limitations

Possible violations of the parallel trends assumption may challenge the validity of our findings. Potential factors contemporaneous to the Kansas PPRF might include other legislative actions, policy decisions, or political discussions about LGBTQ rights; any of these other potential stressors may influence the measurements and correlations of our dependent and policy variables.

The unbalanced panel data used in this analysis was another limitation. Many states did not collect SOGI data as part of the BRFSS for some (or any) years in this analysis (see *Table 1A* in the Appendix). We recognize the limitations of the BRFSS in this regard and the resulting limitations in this study. The inconsistency of SOGI data collection by individual states also reduces the possible number of clusters ($n = 43$). In addition to the lack of data is the inherently small size of the LGBTQ community. Among all states and years, LGBTQ survey respondents make up less than 5% of the survey sample, which is consistent with estimations from the American Community Survey and US Decennial Census. Small sample size and lack of consistent data affect almost all studies related to the LGBTQ population, which limits the predictive power of LGBTQ-focused analyses.

Due to limited sample sizes, we were unable to explore if the PPRF had heterogenous effects between LGBTQ Kansans based on race. In accordance with fundamental cause theory, we affirm that race shapes social conditions and affects almost all aspects of life in America including mental health. Ideally we would have explored effect heterogeneity by race in this study. Unfortunately, the interactions between the policy and respondents' race, sexual orientation, and gender identity were statistically infeasible given the size and nature of the available data.

The results of this study suggest a contradiction to the frequently-held belief that people with worse mental health are more likely to cope by consuming alcohol more often. We were unable to provide an explanation as to why the PPRF *decreased* self-reporting of binge drinking among LGBTQ people despite *increasing* self-reported bad mental health days. We note concerns about the construct validity of self-reported number of binge drinking sessions. In other words, are LGBTQ people less likely to report an increase in binge drinking than an increase in bad mental health days? This is only one of many possible explanations, none of which could be fully explored in these data.

8. Conclusions

This study examines the causal relationship between the 2015 Kansas Preservation and Protection of Religious Freedom (PPRF) law and health outcomes of LGBTQ people. We conduct a difference-in-difference (DD) analysis using unbalanced 2014-2020 panel data from the Behavioral Risk Factor Surveillance System's (BRFSS). By comparing the changes in mental health outcomes between LGBTQ people in Kansas and LGBTQ people in other states that did not pass a similar law (i.e., a marriage-specific RFRA) between 2014 and 2020, we determine that *the passage of the PPRF had a statistically significant, negative causal impact on the mental health of LGBTQ people in Kansas*. We also determine that the PPRF led to a decrease in binge drinking among LGBTQ people in Kansas.

Insufficient data – both in terms of collection by states and number of LGBTQ respondents – limited the scope of this study. As a result, we were unable to explore heterogeneous effects on respondents' race. We suggest further casual studies focus on the intersection of race and sexual orientation/gender identity as more abundant data becomes available.

This study is also limited by potentially unexamined policies' effects on the mental health of LGBTQ people (i.e., omitted variable bias). However, we believe that widespread queer exuberance following the *Obergefell v. Hodges* decision in June 2015 likely overshadowed the effect of any extraneous policy on bad mental health days and reduces the potential for omitted variable bias. Due to the salience of the landmark decision, we hypothesize that LGBTQ self-reported bad mental health days might decrease nationally; however, LGBTQ people in Kansas – the only state to pass a marriage RFRA in 2015 and after the *Obergefell v. Hodges* ruling – reported more bad mental health days. We believe the effects of *Obergefell v. Hodges* felt broadly by LGBTQ Americans, followed by the July 2015 passage of the PPRF in Kansas may explain the robustness of our findings. In other words, while LGBTQ people throughout America basked in a landmark victory, LGBTQ Kansans experienced an almost immediate threat to that victory. We interpret this relationship to be an application of the parallel trends assumption. Further studies might explore the explicit effects of *Obergefell v. Hodges* on LGBTQ mental health.

Kansas policymakers should note that the passage of this marriage RFRA caused a decline in the mental health of their LGBTQ constituents. More broadly, policymakers should expect the same to happen elsewhere–legalizing the denial of marriage services for religious reasons will likely hurt LGBTQ people no matter the state. This is made more impactful by the insight that marriage confers statistically significant mental health benefits to individuals: Preventing LGBTQ people from getting married harms their mental health. Further research might explore the effect of the PPRF on additional health outcomes or the effect of other states' Religious Freedom Restoration Acts (e.g., medical RFRAs); however, we believe such analysis to be infeasible until more SOGI data has been collected.[10] We hope to see the BRFSS make the (currently optional) SOGI module part of the base survey in order to eliminate the many obstacles that might prevent future analysis.

[10] For example, adoption agencies and child-placement agencies in states with child welfare service RFRAs can deny placement to LGBTQ individuals, couples, or families if doing so is in conflict with their religious beliefs about family and sexuality. To date, eight states have passed these kinds of RFRAs, and none have collected sufficient data necessary to evaluate the effects these policies have on their LGBTQ citizens.

Appendix

Sexual Orientation & Gender Identity (SOGI) Module Offered by State and Year							
State	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Alabama	0	0	0	0	0	0	0
Alaska	0	0	0	0	0	1	1
Arizona	0	0	0	0	1	1	0
Arkansas	0	0	0	0	0	0	1
California	0	0	1	1	0	0	1
Colorado	0	1	0	0	0	1	1
Connecticut	0	1	1	1	1	1	1
Delaware	1	1	1	1	1	1	0
Florida	0	0	0	1	1	1	0
Georgia	0	1	1	1	0	1	1
Hawaii	1	1	1	1	1	1	1
Idaho	1	1	1	0	1	1	1
Illinois	0	1	1	1	1	0	1
Indiana	1	1	1	1	0	0	1
Iowa	1	1	1	1	0	1	1
Kansas	1	1	0	0	1	1	1
Kentucky	1	0	1	0	0	0	0
Louisiana	1	0	1	1	1	1	1
Maine	0	0	0	0	0	0	0
Maryland	1	1	0	0	1	1	0
Massachusetts	0	1	1	1	0	0	1
Michigan	0	0	0	0	0	0	1
Minnesota	1	1	1	1	1	1	1
Mississippi	0	0	1	1	1	1	0
Missouri	0	1	1	0	1	0	0
Montana	1	0	0	1	1	1	1
Nebraska	0	0	0	0	0	0	0
Nevada	1	1	1	1	1	0	0
New Hampshire	0	0	0	0	0	0	0
New Jersey	0	0	0	0	0	0	1
New Mexico	0	0	0	0	0	0	1
New York	1	1	1	1	1	1	1
North Carolina	0	0	0	1	1	1	1
North Dakota	0	0	0	0	0	0	0

Ohio	1	1	1	1	1	1	1
Oklahoma	0	0	0	1	1	1	1
Oregon	0	0	0	0	0	0	0
Pennsylvania	1	1	1	1	1	0	0
Rhode Island	0	0	1	1	1	1	1
South Carolina	0	0	0	1	1	1	1
South Dakota	0	0	0	0	0	0	0
Tennessee	0	0	0	0	1	1	0
Texas	0	1	1	1	1	1	1
Utah	0	0	0	0	0	1	1
Vermont	1	0	1	1	1	1	1
Virginia	1	1	1	1	1	1	1
Washington	0	0	1	1	1	1	1
West Virginia	0	1	0	0	1	1	1
Wisconsin	1	1	1	1	1	1	1
Wyoming	1	0	0	0	0	0	0

***Table 1A*:** depicts the unbalanced panel of states and years in which SOGI data was collected with the BRFSS.

State-Level Broad and Targeted RFRAs by State and Year of Passage			
States with broad RFRAs	**States with medical care RFRAs**	**States with child welfare RFRAs**	**States with marriage-related RFRAs**
Connecticut (1993) Rhode Island (1993) Florida (1998) Illinois (1998) Arizona (1999) South Carolina (1999) Texas (1999) Idaho (2000) New Mexico (2000) Oklahoma (2000) Pennsylvania (2002) Missouri (2004) Virginia (2007) Tennessee (2009) Louisiana (2010) Kansas (2013) Kentucky (2013) Mississippi (2014) Arkansas (2015) **Indiana (2015)** Montana (2021)*	Mississippi (2016) Tennessee (2016) **Illinois (2016)** Arkansas (2021)*	Virginia (2012) Michigan (2015) Mississippi (2016) Texas (2017) Kansas (2018) Oklahoma (2018) South Carolina (2018) Tennessee (2020)	**Kansas (2015)** North Carolina (2015) Mississippi (2016)

Table 2A: States that collected SOGI data for at least two consecutive years between 2014 and 2020 and also had at least one year of SOGI data collected prior to the implementation of their RFRA are bolded. Montana and Arkansas both passed in 2021 broad and targeted RFRAs, respectively, and both states collected SOGI data in 2020. Provided these states collected SOGI data in 2021, future research may be able to investigate the health outcomes those laws have had on their respective LGBTQ populations.

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