

Effect of Same-Sex Marriage Laws on Health Care Use and Expenditures in Sexual Minority Men: A Quasi-Natural Experiment

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Since the federal Defense of Marriage Act¹ was passed in 1996, 29 states have passed constitutional amendments banning same-sex marriage, with an additional 12 states instituting laws restricting marriage to heterosexual couples. A countervailing trend to these amendments has been a recent increase in the number of states extending marriage benefits to same-sex couples. Six states and the District of Columbia currently offer same-sex marriages, with several states actively considering such legislation. Additionally, on August 4, 2010, a US District Court in California ruled in *Perry v Schwarzenegger* that Proposition 8—the referendum restricting marriage to heterosexual couples—was unconstitutional.²

Accumulating evidence indicates that policy-level interventions can improve the health of populations,^{3–6} but only recently have researchers begun to evaluate the health consequences of same-sex marriage policies for lesbian, gay, and bisexual individuals. A prospective study that used data from a nationally representative survey of US adults found that lesbian, gay, and bisexual respondents living in states that passed constitutional amendments banning same-sex marriage during the 2004 elections had significant increases in mood, anxiety, and substance disorders. In contrast, lesbian, gay, and bisexual individuals living in states without these amendments did not experience an increase in psychiatric disorders.⁷ It also appears that pro-gay marriage policies may exert protective effects on the mental health of lesbian, gay, and bisexual individuals. For example, lesbian, gay, and bisexual participants residing in Arizona, the only state with an antigay marriage amendment on the ballot in 2006 that did not pass, had significantly fewer depressive symptoms than did those living in states that passed the amendments.⁸

If policies that extend marriage to same-sex couples improve the health of lesbian, gay, and

Objectives. We sought to determine whether health care use and expenditures among gay and bisexual men were reduced following the enactment of same-sex marriage laws in Massachusetts in 2003.

Methods. We used quasi-experimental, prospective data from 1211 sexual minority male patients in a community-based health center in Massachusetts.

Results. In the 12 months after the legalization of same-sex marriage, sexual minority men had a statistically significant decrease in medical care visits (mean=5.00 vs mean=4.67; $P=.05$; Cohen’s $d=0.17$), mental health care visits (mean=24.72 vs mean=22.20; $P=.03$; Cohen’s $d=0.35$), and mental health care costs (mean=\$2442.28 vs mean=\$2137.38; $P=.01$; Cohen’s $d=0.41$), compared with the 12 months before the law change. These effects were not modified by partnership status, indicating that the health effect of same-sex marriage laws was similar for partnered and nonpartnered men.

Conclusions. Policies that confer protections to same-sex couples may be effective in reducing health care use and costs among sexual minority men. (*Am J Public Health.* 2012;102:285–291. doi:10.2105/AJPH.2011.300382)

bisexual individuals, it seems reasonable to consider that such policies also may have important implications for their health care use and, by extension, health care expenditures. Lesbian, gay, and bisexual populations have higher rates of mental and physical health problems compared with heterosexual populations,^{9,10} which may partially explain findings from recent population-based studies showing generally higher levels of medical and mental health care use among sexual minorities.^{11–13} Discrimination is one hypothesized mechanism underlying these group differences.⁹ To the extent that pro-gay marriage laws reduce structural forms of discrimination against sexual minorities¹⁴ such policy-level changes likely would improve health, thereby leading to reductions in health care use by lesbian, gay, and bisexual individuals. No studies, however, have examined whether pro-gay marriage policies influence patterns of health care use or expenditures among lesbian, gay, and bisexual individuals. This paucity of research is due, in part, to the practical and empirical challenges

of evaluating the health consequences of policies. Practically, it can take considerable time for policy-level changes to occur; thus, there are few opportunities to examine the effect of such changes on health. In addition, submitting policies to careful empirical testing is often hampered by ethical concerns (e.g., creating appropriate comparison groups) and by the difficulty of obtaining measures of the outcome before the policy was implemented, which is necessary to examine within-individual changes.

Fortuitously, we were able to take advantage of a recent policy change that enabled us to overcome some of these complications. On November 18, 2003, Massachusetts became the first state to legally recognize same-sex marriage.¹⁵ This event provided a quasi-natural experiment¹⁶ that enabled us to examine changes in health care use and expenditures among sexual minority men who had been followed up prospectively during the 12 months before and after the change in the law. Because this was a fateful event that occurred outside the control of the individual, it was not confounded with

individual-level factors, such as health status, that may be associated with health care use. Consequently, this quasi-natural experiment allowed for a relatively strong empirical test of the influence of policy-level changes on health care use and expenditures among sexual minority men.

On the basis of previous research indicating that constitutional amendments banning same-sex marriage have deleterious health consequences,^{7,8,17} we hypothesized that the legalization of same-sex marriage would reduce environmental risk factors, such as discrimination, that contribute to health disparities among sexual minorities.^{9,10} In turn, it was expected that the policy change would lower rates of medical and mental health care use among sexual minority men, thereby decreasing health care costs. Given that same-sex marriage policies are highly relevant for lesbian, gay, and bisexual individuals in relationships, the health effects of these policies may be most strongly observed among partnered sexual minority men. However, previous studies on the mental health effect of same-sex marriage laws have not examined whether relationship status modified the association between policies and mental health.^{7,17} Thus, in our current study, we evaluated whether the effects of same-sex marriage policies on health care use and costs differed as a function of relationship status.

One potential pathway through which policies may affect the frequency of both medical and mental health care use among sexual minority men is via decreased exposure to status-based stressors, a well-documented risk factor for poor physical and mental health among members of socially disadvantaged groups,¹⁸⁻²¹ including sexual minorities.⁹ For instance, lesbian, gay, and bisexual individuals who lived in Colorado when the state passed Amendment 2, which denied legal protections to gay and lesbian individuals, reported multiple stressors, including negative media portrayals; antigay graffiti, comments, and jokes; and a lost sense of safety.²² Stress disrupts physiological pathways that increase disease risk²³⁻²⁵ and also contributes to the development of psychopathology.^{26,27} If the legalization of same-sex marriage reduces stress levels among sexual minority men, as the extant literature suggests, then one would expect lower rates of physical and mental health problems and a concomitant

reduction in the use of medical and mental health services.

If we found support for the hypothesis that the legalization of same-sex marriage would lower rates of health care use and costs among sexual minority men, then the results would suggest both health and economic benefits of pro-gay marriage policies. In addition, health care debates in the United States have focused on the importance of lowering health care costs. Health policy scholars recently have proposed that one potential solution is to develop social policies that address environmental risk factors contributing to higher disease rates and therefore to greater medical use and associated costs.²⁸ Consequently, if we found that targeted social policies reduce the necessity of health care use through improving the health of certain vulnerable populations, these results also might have implications for current public policy debates regarding how to most effectively

reduce the substantial societal burden of health care costs in the United States.

METHODS

Participants were patients from a large, community-based health clinic in Massachusetts that focuses on serving sexual minorities. The sociodemographic characteristics of the male patients are shown in Table 1.

Procedures

For a 12-month period ending in 2002, all clinic patients were offered an opportunity at intake to complete a brief survey that assessed standard sociodemographic information, including sexual orientation. A total of 1309 male patients completed the survey. Comparison of these participants with the clinic's electronic medical record system showed that this volunteer sample was representative of all

TABLE 1—Demographic Characteristics of Sexual Minority Male Clinic Patients, by Partnership Status: Massachusetts, 2003

	Nonpartnered (n = 713), No. (%)	Partnered (n = 492), No. (%)	χ^2 Test; P
Age, y			$\chi^2_4 = 15.11; P = .002$
≤ 25	66 (9.3)	20 (4.1)	
26-45	481 (67.5)	367 (74.6)	
46-65	154 (21.6)	98 (19.9)	
≥ 65	2 (0.3)	4 (0.8)	
Race/ethnicity			$\chi^2_5 = 9.11; P = .25$
White	584 (81.9)	430 (87.4)	
Black	41 (5.8)	14 (2.8)	
Asian	22 (3.1)	9 (1.8)	
Hispanic	46 (6.5)	28 (5.7)	
Other	17 (2.4)	10 (2.0)	
Education			$\chi^2_4 = 6.86; P = .14$
< high school	6 (0.8)	1 (0.2)	
High school	261 (36.6)	156 (31.7)	
College graduate	256 (35.9)	206 (41.9)	
Postgraduate	189 (26.5)	128 (26.0)	
Income, \$			$\chi^2_4 = 52.69; P < .001$
0-19999	142 (19.9)	68 (13.8)	
20000-34999	171 (24.0)	69 (14.0)	
35000-49999	161 (22.6)	91 (18.5)	
≥ 50000	217 (30.4)	247 (50.2)	

Note. The total sample size was 1211 men, but six people did not answer the question on partnership status, so the number of patients is only 1205. Individuals with missing data or who chose not to respond were: age (n = 13), race/ethnicity (n = 4), education (n = 2), and income (n = 39).

clinic patients seen during the same period with respect to a wide range of demographic variables.

We linked patients' survey responses to their outpatient billing records for medical and mental health visits at the clinic. We extracted our outcome data for the 12-month period before and after the Massachusetts Supreme Court legalized same-sex marriage on November 18, 2003. This enabled us to examine changes in health care use and expenditures during this time. This research was approved by the clinic's institutional review board.

Measures

Sexual orientation classification. The sexual orientation question was embedded in a brief sociodemographics questionnaire. The phrase *sexual orientation* was followed by 4 response categories: homosexual (gay), bisexual, not sure/undecided, and prefer not to say. Of the 1309 male participants, 1139 (87.0%) identified as gay and 72 (5.5%) identified as bisexual; 98 (7.5%) participants were excluded from analyses because they indicated that they were either "not sure/undecided" about their sexual orientation or "preferred not to say." Thus, the final sample size was 1211.

Partnership status. Respondents were asked whether they were single, partnered (not living together), or living with spouse or partner. We created a dichotomous variable, comparing partnered with nonpartnered men. Of the 1211 men, 492 (40.6%) were in partnered relationships. No differences were found in race/ethnicity or education between partnered and nonpartnered men. Partnered men had greater income than did nonpartnered men and were overrepresented in the 26 to 45 year age category and underrepresented in the 25 or younger age category.

Health care use and costs. The 4 outcome variables were (1) medical care visits, (2) medical care costs, (3) mental health care visits, and (4) mental health care costs. Medical care visits were provided by licensed medical doctors, physician assistants, nurse practitioners, or registered nurses and included primary medical care, routine physical examinations, episodic care, chronic care management, diagnostic procedures and screenings, minor office procedures (e.g., wart removal), and vaccinations. Laboratory tests were performed off-site

and therefore were not included. We excluded acupuncture and hospital and nursing visits from the medical care visits because of small sample sizes; complementary visits (including massage, chiropractor, and nutrition) also were excluded because they were not reimbursed by most insurance policies at the clinic.

Mental health care visits were provided by independently licensed social workers, psychologists, and mental health counselors and included 50-minute visits for individual therapy and 75- to 90-minute group therapy visits for a variety of psychological problems, such as depression, anxiety, and adjustment issues. Psychopharmacology visits were provided by psychiatrists.

Medical and mental health care expenditures were determined by summing the cost of each visit that was billed to the patients or their insurance company.

We examined the distribution of all 4 outcome variables, including skewness and kurtosis values. All distributions approached normality; consequently, no correction was made to adjust for outliers.

Statistical Analysis

Analyses for the primary study aims proceeded in 2 steps. First, we calculated the total number of medical and mental health care visits and associated costs in the 12 months before and after the legalization of same-sex marriage among the entire sample of sexual minority men ($n=1211$). We used paired samples *t* tests to determine whether a significant mean difference existed between the 2 time points. We also stratified analyses by partnership status to determine whether the mean differences were similar for partnered and nonpartnered men.

Because any difference between the 2 periods may be a result of potential confounders (e.g., sicker patients drop out of treatment), a stronger test of the effect of the marriage policy on health care use and costs would be to examine changes within individuals over time. Thus, in the second set of analyses, we conducted repeated measures analysis of variance (ANOVA) among only individuals with data at both time points (i.e., those patients with at least 1 health care visit in the 12 months before and after same-sex marriage was legalized). During this time, 537 sexual minority

men had at least 1 medical care visit, and 149 had at least 1 mental health care visit. In these analyses, the independent variables were time as the 2-level within-subjects measure (time 1 and time 2) and relationship status of the participant as the 2-level between-subjects factor (partnered vs nonpartnered).

A final, exploratory aim was to examine which medical and mental health outcomes may have been driving the reduction in health care use and expenditures in order to identify potential mechanisms. We examined billing records to identify the *International Classification of Diseases, Ninth Revision (ICD-9)*,²⁹ codes that medical and mental health care providers charged after each visit, which were summed for each patient who visited the clinic at least once during the 12 months before and after same-sex marriage was legalized. We present the total number of medical and mental health care visits and costs associated with the 3 most frequently billed ICD-9 codes during this time. Because these were exploratory aims, statistical tests were not conducted for these analyses.

We used SPSS, Version 17.0 (SPSS Inc, Chicago, Ill), for all analyses. Statistical significance was evaluated by using 2-sided, .05-level tests.

RESULTS

In the full sample, a significant reduction in medical care visits (mean=2.61 vs mean=2.26; $P<.001$; Cohen's $d=0.09$) and costs (mean=\$259.32 vs mean=\$233.09; $P<.01$; Cohen's $d=0.07$) occurred in the 12 months following the legalization of same-sex marriage (Table 2). Similarly, a significant decrease in mental health care visits (mean=3.35 vs mean=2.93; $P=.01$; Cohen's $d=0.04$) and costs (mean=\$331.08 vs mean=\$283.59; $P<.01$; Cohen's $d=0.05$) occurred in the 12 months following the same-sex marriage law. Independent samples *t* tests for each of the 4 outcomes indicated that these reductions were the same for both partnered and nonpartnered men.

In the analyses subset by respondents with data at both time points, repeated measures ANOVAs identified a significant effect of time for 3 of the 4 outcomes (Table 3). In the 12 months following the legalization of same-sex marriage, a statistically significant decrease

TABLE 2—Changes in Health Care Use and Costs Following the Legalization of Same-Sex Marriage Among 1211 Male Patients in a Community-Based Health Clinic in Massachusetts

	Mean Difference (SE)	95% Confidence Interval	t Test	P
Medical visits				
Total sample	-0.35 (0.09)	-0.52, -0.18	$t_{1210} = -4.11$	<.001
Partnered vs nonpartnered	-0.33 (0.18)	-0.66, 0.18	$t_{1203} = -1.86$.06
Medical costs				
Total sample	-26.24 (8.74)	-43.38, -9.10	$t_{1210} = -3.00$	<.01
Partnered vs nonpartnered	-31.79 (17.81)	-66.73, 3.15	$t_{1203} = -1.79$.07
Mental health visits				
Total sample	-0.42 (0.17)	-0.75, -0.09	$t_{1210} = -2.47$.01
Partnered vs nonpartnered	-0.04 (0.35)	-0.72, 0.64	$t_{1203} = -0.12$.9
Mental health costs				
Total sample	-47.49 (17.52)	-81.86, -13.11	$t_{1210} = -2.71$	<.01
Partnered vs nonpartnered	-4.16 (35.84)	-74.48, 66.15	$t_{1203} = -0.12$.91

Note. Mean difference is calculated as time 2 - time 1. In the full sample, analyses examining whether the time 1 (2002-2003) mean is different from the time 2 (2003-2004) mean were calculated using paired sample *t* tests. Analyses examining whether the mean difference between time 1 (2002-2003) and time 2 (2003-2004) is similar for partnered and nonpartnered men were calculated using independent samples *t* tests. Analyses were run using the full sample (*n*=1211).

for medical care visits (mean=5.00 vs mean=4.67; *P*=.05, Cohen's *d*=0.17), mental health care visits (mean=24.72 vs mean=22.20;

P=.03; Cohen's *d*=0.35), and mental health care costs (mean=\$2442.28 vs mean=\$2137.38; *P*=.01; Cohen's *d*=0.41) occurred.

The cost of medical care visits was lower in the 12 months following the legalization of same-sex marriage (mean=\$500.94 vs mean=\$486.04), but this was not a statistically significant difference (*P*>.05). None of the time×relationship status interactions were significant (*P*>.05), indicating that the effect of the same-sex marriage law on health care use and costs was similar for partnered and nonpartnered men.

Finally, billing records were examined to determine which of the 3 most frequently billed ICD-9 categories decreased following the legalization of same-sex marriage among sexual minority men with data at both time points (Table 4). For medical care, the total number of visits for general medical care, hypertension, and sexually transmitted infections decreased. For mental health care, the diagnoses of depressive disorders, anxiety disorders, and adjustment disorders decreased.

DISCUSSION

Our results suggested that policy-level changes can influence patterns of health care

TABLE 3—Within-Individual Changes in Health Care Use and Costs 12 Months Following the Legalization of Same-Sex Marriage in Massachusetts

	Sample Size, No.	12 Months Premarriage Law, Mean (SE)	12 Months Postmarriage Law, Mean (SE)	Main Effect of Time, F Statistic; P	Time×Relationship Status Interaction, F Statistic, P
Medical visits					
Partnered men	231	4.71 (3.25)	4.48 (3.59)	$F_{1, 535} = 3.87; P = .05$	$F_{1, 535} = 0.35; P = .55$
Nonpartnered men	306	5.22 (4.73)	4.80 (4.79)		
Total	537	5.00 (4.16)	4.67 (4.31)		
Medical costs					
Partnered men	231	\$500.94 (385.55)	\$495.60 (430.77)	$F_{1, 535} = 0.70; P = .40$	$F_{1, 535} = 0.26; P = .61$
Nonpartnered men	306	\$500.98 (398.80)	\$478.82 (435.95)		
Total	537	\$500.94 (385.54)	\$486.04 (433.40)		
Mental health visits					
Partnered men	49	24.49 (17.49)	21.39 (19.57)	$F_{1, 147} = 4.60; P = .03$	$F_{1, 147} = 0.12; P = .73$
Nonpartnered men	100	24.84 (18.14)	22.60 (18.76)		
Total	149	24.72 (17.65)	22.20 (18.98)		
Mental health costs					
Partnered men	49	\$2483.27 (2032.56)	\$2125.71 (2142.62)	$F_{1, 147} = 6.32; P = .01$	$F_{1, 147} = 0.10; P = .76$
Nonpartnered men	100	\$2422.20 (1826.22)	\$2143.10 (1750.42)		
Total	149	\$2442.28 (1889.87)	\$2137.38 (1881.10)		

Note. Analyses were conducted with repeated-measures analysis of variance. The independent variables were time as the 2-level within-subjects measure (time 1 and time 2) and relationship status of the participant as the 2-level between-subjects factor (partnered vs nonpartnered). The time×relationship status interaction tested whether the effect of the legalization of same-sex marriage on health care use and costs was different for partnered and nonpartnered men. Analyses were restricted to those respondents with at least 1 health care visit in the 12 months before and after the legalization of same-sex marriage (*n*=537 for medical visits and *n*=149 for mental health care visits).

TABLE 4—Changes in Health Care Visits and Costs by ICD-9 Diagnostic Categories in Sexual Minority Male Clinic Patients: Massachusetts

Health Problem	ICD-9 Codes	Visits		Total Costs	
		Premarriage Law, No.	Postmarriage Law, No.	Prelaw, \$	Postlaw, \$
Mental health disorders					
Depressive disorders	296.21-296.35, 300.4	2287	1956	\$247 430.00	\$211 720.00
Anxiety disorders	300.00-300.23, 309.81	449	423	\$48 855.00	\$43 185.00
Adjustment disorders	309.0-309.9	293	244	\$33 025.00	\$26 370.00
Medical problems					
Complete physical examination, general medical examination	V70.0	165	136	\$24 229.00	\$20 720.00
Hypertension, unspecified	401.9	95	78	\$9385.00	\$7722.00
Sexually transmitted infections (viral warts, unspecified)	078.10, 078.19	85	57	\$11 582.00	\$8720.00

Note. ICD-9 = International Classification of Diseases, Ninth Revision. The number of medical and mental health care visits and total costs associated with the 3 most frequently billed ICD-9 codes during the 12 months before (2002–2003) and after (2003–2004) the legalization of same-sex marriage. Data are presented for sexual minority men with at least 1 health care visit during these 2 periods (n = 537 for medical visits and n = 149 for mental health care visits).

use and expenditures among sexual minority men. Following the legalization of same-sex marriage in Massachusetts in 2003, a significant decrease in medical care visits (13%) and costs (10%) and in mental health care visits (13%) and expenditures (14%) occurred. When analyses included only patients with data at both time points, the results were similar; only medical care expenditures were no longer significantly lower in the 12 months after the law was passed. HIV-positive men had no significant reduction in HIV-related visits (results not shown), suggesting that the observed reduction in health care visits did not affect routine and other HIV-related care. Importantly, we were able to confirm that our results were not restricted to sexual minority men who were in partnered relationships, indicating that same-sex marriage policies may have a broad public health effect. The magnitude of the overall effects, which corresponded to small and medium effect sizes,³⁰ were particularly striking given that policy-level changes are likely to be more distal determinants of health.

One mechanism that may explain these findings is a reduction in the amount and frequency of status-based stressors that sexual minority men experience when institutionalized forms of stigma are eliminated.¹⁴ An examination of ICD-9 codes showed reductions in several medical and mental health diagnoses that are associated with stress—including hypertension,³¹ depression,^{26,27} and adjustment disorders³²—which is consistent with the hypothesis that stress may be an intervening pathway. However, given the exploratory nature of these

results, our findings on potential mechanisms should be interpreted with caution and require replication in future studies.

Limitations of the study included the possibility of unmeasured confounding. For example, changes in other health care policies in Massachusetts during this time could have been responsible for the results. However, an examination of health care policies in the state found no significant changes during the study period (2002–2004). Massachusetts initiated a comprehensive health care reform law, which required all residents to purchase health insurance coverage, but this did not go into effect until 2006,³³ well outside the study period. Furthermore, trends in health care costs in Massachusetts increased during the study period,³⁴ whereas we found evidence for decreased expenditures. One policy change did occur during 2004 that likely affected health care use. In 2004, Massachusetts implemented significant cuts to their MassHealth insurance program for individuals with disabilities or living below the poverty line.³⁵ Although this may have prevented some individuals from using health care, only 3% of our sample had MassHealth. Removing this group from the analyses did not change the direction or magnitude of the results. Finally, although some same-sex couples lost their health care benefits if they chose not to marry³⁶ (which could have led to a decrease in health care use), many couples obtained new health care benefits through their employers.³⁷ This likely led to an increase in the use of care, which would have biased our results toward the null.

Second, we relied on a smaller sample of clinic participants who completed a survey that provided information on patients' sexual orientation. Although analyses indicated that this sample did not differ from other clinic attendees in terms of demographic variables, if this subsample differed in other respects (e.g., attitudes toward health care), this may have biased our results.

Third, because the clinic is housed in a large metropolitan city, these results may not be generalizable to sexual minority men living in rural communities. However, because rural sexual minority men confront additional stressors that are less common in urban environments,³⁸ the legalization of same-sex marriage may have a greater effect on their health, suggesting that our results could be interpreted as conservative estimates. The use of a clinic-based sample also may restrict generalizability. For instance, sexual minority men who attend a clinic that focuses specifically on lesbian, gay, and bisexual health issues likely differ from other sexual minority men (e.g., greater community support, greater comfort with a gay identity). A comparison of our sample with a general population sample of gay and bisexual men obtained from the Massachusetts Behavioral Risk Factor Surveillance (BRFS) surveys³⁹ identified no significant differences in racial/ethnic composition or employment status. However, men in our sample were higher educated (e.g., 34% of gay men had completed at least a high-school education, compared with 23% in the BRFS study) and younger (11% of gay men were in the 50–64 year age category, compared with 21%

in the BRFSS study). Consequently, these results may not be fully generalizable to the general population of sexual minority men in Massachusetts.

Finally, our measure of sexual orientation did not distinguish between same-sex attraction, behavior, and identity. These dimensions of sexual orientation are highly correlated⁴⁰ but have been shown to define different population groups.⁴¹ Our measure may therefore introduce some ambiguity in the definition of the study population, which makes it difficult to determine whether our results would be observed if different operationalizations of sexual orientation were used. Although most studies rely on measures similar to the one we used, researchers have noted the limitations of single-item measures of sexual orientation and have highlighted the importance of including multiple dimensions of this construct to more accurately define the study population.⁴²

Our study had several noteworthy methodological advantages for studying relations between policies and health care use and expenditures. The opportunity to take advantage of quasi-natural experiments is quite rare because these “natural” events are often unexpected, thereby precluding the ability to obtain pre-event measures.^{43,44} Fortunately, we had preexisting measures on health care use and expenditures among a large sample of sexual minority men that enabled us to examine changes in these outcomes over time. The prospective design also permitted a within-subjects approach, which affords a stronger test than do between-subjects designs,⁴⁵ particularly because subjects serve as their own controls, reducing the potential that factors other than the independent variable are responsible for group differences. The outcome measures were obtained via billing records, reducing the possibility for measurement error related to self-report. Finally, the central explanatory variable in our study, changes in a state-level policy, occurred outside the control of the individual. Consequently, changes in this policy could not be caused by individual-level factors that also could affect the dependent variables of interest, which helps to minimize endogeneity.

The ability of social policies to exert demonstrable effects on health has led to renewed interest in designing policy-level interventions to improve health at a population

level.^{3–6} Our results contribute to this literature by providing evidence suggesting that same-sex marriage policies may not only improve the mental health of sexual minorities¹⁵ but also reduce health care use among sexual minority men. Additionally, previous research has found substantial economic benefits of same-sex marriage policies that are accrued to businesses (e.g., increased revenues).⁴⁶ We extend these findings by documenting additional economic benefits of pro-gay marriage laws to sexual minority men through the reduction of their health care expenditures. Taken together, our study therefore makes an important contribution to an emerging body of research on the social, economic, and health benefits of same-sex marriage. ■

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Contributors

M.L. Hatzenbuehler originated the study idea, completed the analyses, and wrote the initial draft of the article. C. O’Cleirigh supervised the analyses. C. Grasso compiled the data sets and assisted in the analyses. J. Bradford initiated the initial survey of clinic patients. S. Safren and K. Mayer helped interpret findings. All authors edited drafts of the article. M.L. Hatzenbuehler had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Human Participant Protection

This research was approved by the clinic’s institutional review board.

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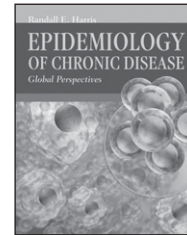
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