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Does It Get Better? Recent Estimates of Sexual Orientation and Earnings in the United States

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Using 2013–2015 National Health Interview Survey data, we reproduce a well-documented finding that self-identified lesbians earn significantly more than comparable heterosexual women. These data also show—for the first time in the literature—that self-identified gay men also earn significantly more than comparable heterosexual men, a difference on the order of 10% of annual earnings. We discuss several possible explanations for the new finding of a gay male earnings premium and suggest that reduced discrimination and changing patterns of household specialization are unlikely to be the primary mechanisms.

1. Introduction

Improved attitudes toward the lesbian, gay, bisexual, and transgender (LGBT) communities have been some of the most striking and rapid social changes in the United States in the past several decades. These improved attitudes are perhaps most evident in the well-documented shift in public attitudes regarding same-sex marriage: The proportion of adults in the United States who favored same-sex marriage increased from 35 to 55% from 2001 to 2016, the year after the U.S. Supreme Court granted nationwide legal access to same-sex marriage in *Obergefell v. Hodges* in 2015 (Pew Research Center 2016). And historical data from the General Social Survey suggest that these shifts in attitudes began in the early 1990s: while in 1991 fully 72% of adults considered homosexual behavior "always wrong," the associated share reporting this view in 2010 fell to 44%. The share of adults saying homosexual behavior was 'not wrong at all' increased over this same period from 14 to 41% (Smith 2011).

A natural question in the presence of these major changes in public attitudes toward sexual minorities is whether their socioeconomic position has improved at the same time.[1] For example, it is natural to ask if labor market discrimination against sexual minorities has fallen with the advancement of LGBT rights and public attitudes. A large body of research has addressed the question of whether gay men, lesbians, and bisexuals have different earnings than heterosexual individuals,

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[1] Our article's title references a viral media campaign started by LGBT rights activist Dan Savage whose 2010 "It Gets Better" project prompted a wide variety of individuals (including LGBT and non-LGBT celebrities, politicians, and others) to post YouTube videos encouraging young LGBT people that "it gets better." The project was started in response to the epidemic of LGBT youth suicide.

controlling for observable characteristics such as education, experience, and other demographic and job characteristics. Most of these studies find that gay men in the United States have lower employment rates than comparable heterosexual men while lesbians have higher employment rates than comparable heterosexual women. Among full-time workers, most studies find that gay men earn less than otherwise similar heterosexual men, while lesbians earn more than otherwise similar heterosexual women (see, for example: Badgett 1995; Klawitter and Flatt 1998; Allegretto and Arthur 2000; Black et al. 2003; Antecol, Jong, and Steinberger, 2008; Jepsen and Jepsen 2017; and Klawitter 2015).

Few of these studies have provided information about whether these differentials have changed over time as attitudes have improved, with some notable exceptions. First, Clarke and Sevak (2013) use the National Health and Nutrition Examination Surveys (NHANES) from 1988 to 2007 and find that while men who reported same-sex sexual behavior had lower household incomes than comparable men who reported different-sex sexual behavior at the start of their sample period, this penalty changed into a significant income *premium* by the end of the sample period. They suggest that improved attitudes toward sexual minorities may explain this pattern. Second, Klawitter (2015) performs a meta-analysis of all published studies on sexual orientation and income that use data through 2012. Her results suggest that lesbian premia and gay male penalties in older data have become smaller and closer to zero in studies using more recent data.

Third, patterns of evidence from well-designed correspondence studies point to the possibility that bias against LGBT individuals in the job search process has gone down. Tilscik (2011) performed an audit study in which he sent over 1,700 resumes to job advertisements in 2005. He found that randomly assigned "gay" resumes (as signaled through participation in an LGBT organization) received significantly fewer callbacks than otherwise similar resumes without such treatment; the magnitude of the difference was about as large as the black/white callback difference documented in Bertrand and Mullainathan (2004). More recently, however, two other audit studies that manipulated sexual orientation in different ways—one with participation in an LGBT student organization and another via a Facebook profile—found no significant differences in callback rates for gay candidates compared to other candidates in 2010 or 2013, respectively (Bailey, Wallace, and Wright 2013; Acquisti and Fong 2016). Acquisti and Fong (2016) explicitly note that improved attitudes toward LGBT individuals might explain differences in the results of Tilscik (2011) and the more recent audit studies.

In this article, we contribute to this growing literature by using data from the 2013–2015 National Health Interview Surveys (NHIS). These data are—to our knowledge—the only large, recent, nationally representative sample with information on both sexual orientation and earnings at the individual level. Prior studies have used similar data restricted to individual states such as California as opposed to national samples (e.g., Carpenter 2005), have relied on samples of same-sex couples as opposed to individuals (e.g., Antecol, Jong, and Steinberger 2008), or have examined household income as opposed to earnings (e.g., Clarke and Sevak 2013). Moreover, the vast majority of published work in the United States—including all the work cited above—relies on data from the 1990s and 2000s. Although our data do not permit us direct tests of how earnings differences related to a minority sexual orientation have changed over a long period of time (as the NHIS did not ask about sexual orientation in earlier years), they do provide a new and very recent estimate from a high quality, national sample to this burgeoning literature.

Our NHIS samples yield over 1,300 self-identified sexual minorities. These data also include detailed information on annual earnings, individual demographic characteristics, and job characteristics such as industry, occupation, job tenure, and firm size. We first replicate the literature's most common findings that gay men have lower employment rates and lesbians have higher employment rates than similarly situated heterosexual men and women, respectively. Next, we

show that the 2013–2015 NHIS data reproduce the literature's other consistent finding that among full-time workers, lesbians have significantly higher earnings than similarly situated heterosexual women. Finally, we show that in these data self-identified gay men are also estimated to earn significantly *more* than similarly situated heterosexual men—a difference on the order of 10% of annual earnings. Our finding of a significant gay male earnings premium is—to our knowledge—the first such estimate in the literature, and we discuss and investigate several possible explanations for this finding. We argue that although there has likely been a reduction in the extent of labor market discrimination against gay men, this is unlikely to explain the overall patterns observed in the NHIS. We also discuss whether changes in household specialization or peculiarities of the NHIS data are likely to explain the gay male earnings premium.

This article is organized as follows: Section 2 describes the NHIS data and the estimation framework. Section 3 presents the results, and section 4 offers a discussion and concludes.[2]

2. Data Description and Empirical Approach

Our data come from the 2013–2015 National Health Interview Surveys (NHIS). The NHIS is an annual survey of about 35,000 households in the United States. For our purposes, a key feature of these data is that the NHIS asked a sample adult in each household a direct question about sexual orientation. This improves on most prior work in the literature which has relied on less direct methods for identifying sexual minorities, such as same-sex sexual behavior (as in some public health surveys) or, more commonly, the presence of a cohabiting same-sex partner. Since people who do not engage in sexual relations can still identify as sexual minorities, and since nonpartnered sexual minorities may have different outcomes than cohabiting partnered sexual minorities, our individual level data on self-reported sexual orientation offer a more comprehensive sample of the overall population of LGB individuals.

In the NHIS a sample adult in each household is asked: "Which of the following best represents how you think of yourself?" Response options for women include: (i) Lesbian or gay, (ii) Straight, that is, not lesbian or gay, (iii) Bisexual, (iv) Something else, (v) I don't know the answer, and (vi) Refused.[3] Approximately 2–3% of individuals 18 and older self-identified as gay, lesbian, or bisexual in each wave of the NHIS (Ward et al. 2014). This is similar to other large population-based surveys in the UK, US, and Canada (Joloza et al. 2010).

Individuals are also asked about their employment status, including whether they work full-time (defined as 35 hours or more per week). We also observe total earnings before taxes and deductions from all jobs and businesses in the prior calendar year which we define as annual

[2] We do not provide a detailed literature review, as several previous studies have described existing work in great detail (see, for example, Aksoy et al. in press; and Klawitter 2015).

[3] Response options for men were similar except they did not refer to "lesbian." Note that individuals who responded "something else" or "don't know" were further probed about the nature of those responses. These responses are not included in the NHIS public use file, however, so we do not make use of them. The NHIS is a face-to-face survey with computer-aided personal interviewing (CAPI). Pilot testing by the National Center for Health Statistics showed no significant difference in sexual orientation responses by whether individuals were surveyed using CAPI or audio computer-assisted self-interviewing (ACASI). The sexual orientation question is asked in an "Adult Selected Items" module that contains other questions deemed to be sensitive.

earnings.[4] In addition to the critical questions on sexual orientation and earnings, the NHIS includes standard demographic characteristics such as sex, age, race/ethnicity, educational attainment, partnership/marital status, and the presence of children in the household. We restrict attention to individuals ages 25 to 64 to focus on individuals most likely to have completed their education.[5]

We first estimate the relationship between sexual orientation and employment by estimating linear probability models separately by sex.[6] These models take the form:

$$1.\quad \text{EMPLOYED}_i = \alpha + \beta_1 X_i + \beta_2(\text{GAY/LESBIAN})_i + \beta_3(\text{BISEXUAL})_i + \varepsilon_i$$

where EMPLOYED is an indicator variable for having any employment or having full-time employment, depending on the model. X is a vector of demographic and job variables that (depending on the model) include: age and its square; education dummies (bachelor's degree or more, associate degree, some college, less than high school, do not know education, and refused education, with high school degree as the excluded category); race dummies (black only, American Indian or Alaskan Native only, Asian only, race group not releasable, and multiple race, with white as the excluded category);[7] a dummy variable for Hispanic ethnicity; relationship status dummies (widowed, divorced, separated, partnered, and marital status missing, with never married as the excluded category)[8]; region dummies (Midwest, South, and Northeast, with West as the excluded category); and the presence of children in the household (indicators for the presence of children ages zero to five years old and children ages six to seventeen years old). We also include survey wave dummies and month of interview dummies in all models. Note that in this model the relevant excluded category for sexual orientation is composed of individuals who report a heterosexual orientation.[9] We estimate standard errors robust to heteroscedasticity.

To assess the relationship between sexual orientation and annual earnings we estimate earnings models separately for males and females among the sample of full-time workers, following the prior literature. These models take the form:

$$2.\quad \text{LOG EARNINGS}_i = \alpha + \beta_1 X_i + \beta_2(\text{GAY/LESBIAN})_i + \beta_3(\text{BISEXUAL})_i + \varepsilon_i$$

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[4] Approximately 16% of individuals who are employed full time have missing data on earnings, which is fairly standard in surveys of this type. The NHIS imputes income for these individuals, but we restrict attention to individuals who gave a nonimputed response to the earnings question.

[5] In results not reported here but available on request, we find that lowering our minimum age in the sample to 18 returns similar results.

[6] We drop a small share of observations that did not provide a valid employment status response.

[7] The race of NHIS respondents may be withheld due to respondent confidentiality or other reasons.

[8] Partnership is based on a dummy variable indicating the person is in any type of partnership (married or living with a partner). This accounts for the fact that legal access to same-sex marriage for sexual minorities in our sample was not universal throughout the sample period under study. Of course, individuals can still describe themselves as "married" even if they are not legally married, though we have no way of identifying these individuals, regardless of the sexual orientation of the respondent.

[9] In all models, we separately include dummy variables for people who refused to provide a response to the sexual orientation question, or who reported "something else" or "I don't know." Demographic characteristics for these respondents are reported in Table A1 and reveal that both males and females across these groups tend to be less educated, are less likely to be partnered, and are less likely to have children compared to self-identified heterosexuals. The coefficients on these indicators in the earnings regressions are reported in Table A2.

where all variables are as described above. In these models, we also add to the X vector: the number of years of job tenure at the current firm (and its square); a series of 26 occupation and 24 industry dummy variables; firm size categories; and dummy variables for the sector of employment. The earnings models also include a dummy variable for whether the respondent's personal earnings or job tenure responses were topcoded.[10]

3. Results

Table 1 presents descriptive statistics for demographic and employment characteristics from the NHIS data broken down by self-reported sexual orientation and gender.[11] Self-identified lesbians are significantly more likely to have a bachelor's degree, less likely to have children in the household, more likely to be full time workers, and have higher average annual earnings than heterosexual women. Bisexual women are significantly younger, less likely to be partnered, less likely to live in the Northeast, and less likely to have children in the household than heterosexual women. Self-identified gay men are significantly more likely to have a bachelor's degree, more likely to be white, less likely to be partnered, less likely to have any children in the household, more likely to live in the West, and less likely to live in the Midwest than heterosexual men.[12] Self-identified bisexual men are significantly younger, less likely to be partnered, less likely to have children in the household, and less likely to be full-time workers than heterosexual men.

In Table 2, we examine the relationship between sexual orientation, employment, and earnings. Columns 1 and 2 examine the likelihood of any employment, columns 3 and 4 examine the likelihood of full-time employment, and columns 5 and 6 examine log annual earnings among full-time workers. Odd numbered columns include only the controls for sexual orientation, month dummies, and survey wave dummies; even numbered columns add the demographic characteristics (age, education, race/ethnicity, relationship status, region, and the presence of children in the household), and in column 6 we also add job characteristics (job tenure, firm size, occupation, and industry controls). We estimate models separately for females in the top panel and for males in the bottom panel.

In the top panel of columns 1 and 2 of Table 2 we find that lesbians are significantly more likely to have any employment than similarly situated heterosexual women, a difference on the order of 4.2 percentage points in the fully saturated model of the top panel of column 2. Estimates for bisexual women are not statistically significant. Turning to full time employment in the top panel of columns 3 and 4 of Table 2 we find qualitatively identical patterns to those for any

[10] The NHIS top coded earnings at $150,000, $200,000, and $250,000 in 2013, 2014, and 2015, respectively. A model predicting the likelihood the individual's earnings response was top coded showed that sexual orientation was not significantly related to the likelihood of being top coded for women, although gay men were 3 percentage points more likely to have a top coded earnings response. In all earnings models individuals with top coded earnings were recoded to the median of the US earned income distribution above the top code cutoff for their respective year. US earned income distributions for each year were constructed using IPUMS ACS data.

[11] We use the subsample of the NHIS respondents ages 25–64 for which we have earnings information.

[12] These broad patterns of demographic characteristics replicate most of the patterns from credible population datasets (see, e.g., Black et al. 2000). Note that Table 1 shows that a larger proportion of lesbians reports being partnered compared to gay men (66% of lesbians vs. 47% of gay men). This pattern—that the lesbian partnership rate is similar to the partnership rate of heterosexual women and that the gay male partnership rate is substantially lower than the partnership rate of heterosexual men—has been replicated in several datasets (see, e.g., Carpenter and Gates 2008; Aksoy et al. in press).

Table 1. Descriptive Statistics (Among those with Earnings Information); 2013–2015 National Health Interview Surveys, Adults Ages 25–64

Variables	Heterosexual Women	Bisexual Women	Lesbians	Heterosexual Men	Bisexual Men	Gay Men
Age	43.5 (11.1)	36.7[a] (10.6)	43.1 (10.5)	43.2 (11.1)	38.7[b] (13.1)	42.0 (12.1)
BA or more	0.409 (0.491)	0.468 (0.528)	0.518[a] (0.505)	0.364 (0.481)	0.436 (0.573)	0.495[b] (0.567)
Associate degree	0.144 (0.351)	0.107 (0.328)	0.143 (0.353)	0.122 (0.327)	0.130 (0.389)	0.086[b] (0.318)
Some college	0.182 (0.386)	0.260 (0.464)	0.154 (0.365)	0.167 (0.373)	0.218 (0.476)	0.206 (0.458)
High school degree	0.191 (0.393)	0.114[a] (0.336)	0.161 (0.371)	0.241 (0.428)	0.138[b] (0.399)	0.177[b] (0.433)
Less than high school degree	0.059 (0.236)	0.036 (0.197)	0.017[a] (0.130)	0.084 (0.277)	0.028[b] (0.190)	0.031[b] (0.197)
White	0.784 (0.411)	0.829 (0.398)	0.812 (0.395)	0.812 (0.390)	0.837 (0.427)	0.855[b] (0.399)
Partnered (living with a partner or married)	0.668 (0.471)	0.462[a] (0.528)	0.661 (0.479)	0.744 (0.436)	0.406[b] (0.567)	0.474[b] (0.566)
Any children in household	0.471 (0.499)	0.339[a] (0.501)	0.275[a] (0.451)	0.443 (0.496)	0.302[b] (0.530)	0.078[b] (0.304)
Northeast	0.174 (0.379)	0.113[a] (0.336)	0.184 (0.391)	0.164 (0.370)	0.126 (0.384)	0.189 (0.444)
Midwest	0.230 (0.421)	0.235 (0.448)	0.202 (0.406)	0.237 (0.425)	0.247 (0.498)	0.152[b] (0.407)
South	0.369 (0.482)	0.399 (0.518)	0.352 (0.483)	0.362 (0.480)	0.310 (0.534)	0.367 (0.547)
West	0.227 (0.419)	0.253 (0.460)	0.262 (0.445)	0.237 (0.425)	0.317 (0.537)	0.292[b] (0.516)
Avg. annual earnings	39,902.80 (32,871.67)	38,802.90 (38,528.90)	47,026.12[a] (36,827.92)	57,032.58 (42,814.36)	49,766.34 (49,043.15)	59,618.16 (51,042.92)
Full-time worker	0.732 (0.443)	0.737 (0.465)	0.812[a] (0.394)	0.871 (0.334)	0.731[b] (0.512)	0.843 (0.412)
Sample Size	22,337	252	426	21,444	118	540

Weighted means (standard deviations). Not reported here (but included in the earnings models) are 721 females and 639 males, who when asked about sexual orientation, responded "something else" or "don't know," refused a response, or otherwise have missing data on sexual orientation.

[a]Statistically significant difference ($p < 0.05$) between the groups of lesbians and bisexual women in contrast to the heterosexual women.

[b]Statistically significant difference ($p < 0.05$) between the groups of gay men and bisexual men in contrast to the heterosexual men.

Table 2. Sexual Orientation, Employment, and Earnings NHIS; 2013–2015, Adults Ages 25–64

	(1)	(2)	(3)	(4)	(5)	(6)
	Any Employment	Any Employment	Full Time Employment	Full Time Employment	Log Annual Earnings, Among FT Employed	Log Annual Earnings, Among FT Employed
Females						
Lesbian	0.091*** (0.024)	0.042* (0.022)	0.113*** (0.027)	0.059** (0.025)	0.140*** (0.047)	0.086** (0.043)
Bisexual	0.013 (0.031)	−0.024 (0.030)	0.001 (0.035)	−0.035 (0.034)	−0.081 (0.109)	−0.031 (0.092)
R-squared	0.00	0.10	0.00	0.03	0.10	0.35
N	38,353	38,353	38,081	38,081	17,016	17,016
Males						
Gay	−0.051** (0.022)	−0.047** (0.022)	−0.065*** (0.024)	−0.054** (0.023)	0.077* (0.042)	0.097** (0.038)
Bisexual	−0.104** (0.051)	−0.084* (0.048)	−0.150*** (0.053)	−0.119** (0.050)	−0.062 (0.094)	−0.021 (0.068)
R-squared	0.00	0.13	0.00	0.14	0.18	0.35
N	32,247	32,247	31,975	31,975	18,981	18,981
Controls:						
Sexual orientation dummies	Yes	Yes	Yes	Yes	Yes	Yes
Month & year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Demographics		Yes		Yes		Yes
Job characteristics						Yes

*Significant at 10%.
**Significant at 5%.
***Significant at 1%.
Models in columns 1, 3, and 5 controls for: sexual orientation dummies (gay, bisexual, other sexual orientation, do not know sexual orientation, refused sexual orientation, and missing sexual orientation, with heterosexual as the excluded category); month of interview dummies; and survey wave dummies. Models in columns 2, 4, and 6 additionally control for: age and its square; race dummies (indicators for black only, American Indian or Alaskan Native only, Asian only, race group not releasable, and multiple race, with white as the excluded category); Hispanic ethnicity; education dummies (less than high school degree, some college, associate's degree, BA or more, do not know educational attainment, and refused to provide educational attainment, with high school degree as the excluded category); relationship/marital status (widowed, divorced, separated, partnered [married or living with a partner], and missing marital status, with never married as the excluded category); a dummy variable for any children 0–5 in the household; a dummy variable for any children 6–17 in the household; and region dummy variables (Northeast, Midwest, and South, with West as the excluded category). Additional controls in column 6 include: number of years of job tenure and its square; dummy variables for firm size (10–24, 25–49, 50–99, 100–249, 250–499, 500–999, 1000 or more, do not know firm size, refused to provide firm size, and missing firm size, with less than 10 workers as the excluded category); sector of employment (indicators for public sector, do not know sector, refused to provide sector, and missing sector, with private sector as the excluded category); 24 industry dummies; and 26 occupation dummies. All estimates are from OLS models with NHIS sample weights, and standard errors in parentheses are robust to heteroscedasticity.

employment in columns 1 and 2: Lesbians are 5.9 percentage points more likely than otherwise similar heterosexual women to be in full-time work after controlling for detailed observable characteristics, while differences for bisexual women are smaller and not statistically significant. For women's annual earnings among full-time workers in columns 5 and 6 of the top panel of Table 2 we confirm another of the literature's most consistent findings: lesbians have significantly higher annual earnings than similarly situated heterosexual women, conditional on full-time work. In the fully saturated model we estimate the lesbian earnings difference to be about 9%. Bisexual women are estimated to have slightly lower annual earnings than comparable heterosexual women, though the estimate is not statistically significant. Overall, the results in the top panel of Table 2 concur with a large body of prior work showing that lesbians supply more labor than heterosexual women and have higher annual earnings conditional on full-time work (see, for example, Tebaldi and Elmslie 2006 and Antecol and Steinberger 2013).

For males in the bottom panel of Table 2 we find that both gay and bisexual men are significantly less likely to be in any employment (columns 1 and 2), and full-time employment (columns 3 and 4) than otherwise similar heterosexual men. Moreover, these differences are large: gay men are estimated to be 5.4 percentage points less likely than comparable heterosexual men to be in full-time work in the fully saturated model of the bottom panel of column 4 of Table 2, while bisexual men are 11.9 percentage points less likely to be in full-time work. Both estimates are statistically significant at conventional levels. Turning to earnings among men in full-time work in columns 5 and 6, we find that gay men are estimated to have significantly *higher* annual earnings than comparable heterosexual men, a difference on the order of 10% in the fully saturated model of column 6.[13] The associated estimate for bisexual men is smaller and statistically insignificant.[14] While some prior work has also found that sexual minority men have lower employment than heterosexual men, to our knowledge the finding in the bottom panel of column 6 of Table 2 is the first in the literature to find that gay men have significantly *higher* annual earnings than comparable heterosexual men.

In Table 3, we investigate heterogeneity in the earnings differences shown in column 6 of Table 2 for lesbians and gay men compared to otherwise similar heterosexual women and men, respectively. Each entry in Table 3 is the coefficient on the GAY/LESBIAN indicator from a separate regression restricted to the sample described in each row (the models also include the other sexual orientation, demographic, and job controls as well, although they are not reported). The results in Table 3 for women indicate larger lesbian earnings premia in samples of white women, women in the Midwest, women working at smaller firms, and women in the private sector. For men, we estimate larger gay male earnings premia in samples of older men, whites, non-partnered men, men in the private sector, and men working at the largest firms. Few of the differences across groups are statistically significant, however, owing to small samples. We note that the bottom set of estimates in Table 3 shows that the lesbian earnings premium is largest in 2014, while the gay male earnings premium is largest in 2013, though these across-year differences again are not statistically different from each other. These patterns clarify that gay men (and lesbians) have not improved their economic position relative to heterosexuals in a year-by-year sense, but rather that they have had significantly higher earnings over the pooled 2013–2015 period.

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[13] Table A2 provides an expanded set of coefficient estimates from the fully saturated model (column 6 of Table 2). It shows that annual earnings are positively associated with age, education, white race, being partnered, residing in the Northeast, longer job tenure and working for larger firms. There is a wage penalty associated with having children in the household for women but not for men. These patterns are consistent with a large body of prior work.

[14] The estimated annual earnings premia for lesbians and gay men were qualitatively similar when we included 18–24 year olds, or included individuals whose earnings had been imputed. These results are available on request.

Table 3. Heterogeneity in Log Annual Earnings Gaps; Coefficient on Gay/Lesbian for various Subsamples; NHIS 2013–2015, Fully Saturated Specification, Adults Ages 25–64, Full Time Workers

	(1)	(2)
	Females (Coefficient on Lesbian)	Males (Coefficient on Gay)
Baseline – Table 2, Col 6 ($N_{lesbian}$=340; N_{gay}=434)	0.086** (0.043)	0.097** (0.038)
25–44 year olds ($N_{lesbian}$=174; N_{gay}=254)	0.088 (0.054)	0.038 (0.054)
45+ year olds ($N_{lesbian}$=166; N_{gay}=180)	0.076 (0.066)	0.182*** (0.053)
Whites ($N_{lesbian}$=268; N_{gay}=358)	0.116** (0.046)	0.111*** (0.040)
Nonwhites ($N_{lesbian}$=72; N_{gay}=76)	−0.047 (0.100)	−0.014 (0.117)
At least a BA ($N_{lesbian}$=178; N_{gay}=236)	0.062 (0.058)	0.101* (0.053)
Less than a BA ($N_{lesbian}$=162; N_{gay}=198)	0.096 (0.062)	0.106* (0.061)
Partnered ($N_{lesbian}$=182; N_{gay}=146)	0.086 (0.055)	0.053 (0.049)
Not partnered ($N_{lesbian}$=158; N_{gay}=288)	0.073 (0.065)	0.146*** (0.056)
Northeast ($N_{lesbian}$=71; N_{gay}=82)	–0.092 (0.144)	0.111 (0.068)
Midwest ($N_{lesbian}$=62; N_{gay}=54)	0.203*** (0.058)	0.090 (0.090)
South ($N_{lesbian}$=112; N_{gay}=168)	0.086 (0.056)	0.105* (0.057)
West ($N_{lesbian}$=95; N_{gay}=130)	0.079 (0.073)	0.092 (0.089)
Public sector ($N_{lesbian}$=79; N_{gay}=65)	0.020 (0.114)	0.091* (0.054)
Private sector ($N_{lesbian}$=261; N_{gay}=368)	0.111*** (0.042)	0.103** (0.043)
At least 500 workers at firm ($N_{lesbian}$=61; N_{gay}=105)	0.021 (0.056)	0.154*** (0.052)
Fewer than 500 workers at firm ($N_{lesbian}$=271; N_{gay}=322)	0.104** (0.051)	0.077 (0.049)
2013 ($N_{lesbian}$=116; N_{gay}=158)	0.012 (0.082)	0.209*** (0.056)
2014 ($N_{lesbian}$=110; N_{gay}=140)	0.178*** (0.059)	0.064 (0.065)
2015 ($N_{lesbian}$=114; N_{gay}=136)	0.074 (0.062)	−0.000 (0.081)

See notes to Table 2.
*Significant at 10%.
**Significant at 5%.
***Significant at 1%.

4. Discussion and Conclusion

Our main objective in this article was to provide a new and recent estimate of the association between sexual orientation and earnings using high quality, nationally representative data with individual level information on sexual orientation and earnings from the 2013–2015 National Health Interview Surveys. These data have not been used previously in the growing literature on sexual orientation and economic outcomes. We first documented that these data reproduce the literature's most consistent findings that lesbians have higher employment rates and higher earnings than comparable heterosexual women, while gay men have lower employment rates than comparable heterosexual men. The NHIS data also indicate, however, that gay men earn significantly higher wages than comparable heterosexual men, a difference on the order of 10% of annual earnings. To our knowledge, this is the first estimate in the literature that finds a significant gay male earnings premium using population representative data on self-reported sexual orientation and earnings.

What might explain the patterns observed in the NHIS, particularly with respect to the fact that these data are the first to uncover a robust gay male earnings premium? One possibility is

simply that the NHIS data on sexual orientation and/or earnings are incorrect or otherwise idiosyncratic. This explanation is unlikely given that the data return estimates of the proportion of self-identified gay men, lesbians, and bisexuals—approximately 2–3% of the population—that are well in line with other credible population-based survey datasets that have been used extensively in the literature and that have returned the usual pattern of results (i.e., lesbian earnings premia and gay male earnings penalties) such as the U.K. Integrated Household Surveys (Aksoy, Carpenter, and Frank, in press), the Household, Income and Labour Dynamics in Australia (HILDA) study (Sabia, Wooden, and Nguyen, 2017, forthcoming), and the Canadian Community Health Surveys (Carpenter 2008). Moreover, the sexual orientation data in the NHIS has already been used for numerous publications in public health and medicine (see, e.g., Ward et al. 2014 and Jackson et al. 2016) and has been the subject of several technical reports establishing the integrity of the sexual orientation data (see, e.g., Dahlhamer et al. 2014). Further evidence that the data are internally valid comes from Table A2, which shows the expanded set of coefficient estimates from the fully saturated earnings model of column 6 of Table 2. Table A2 shows that the NHIS data return reasonable and sensible estimates of the associations of education, age, race/ethnicity, and other characteristics with annual earnings; these estimates are in line with those from datasets that are more commonly used to estimate earnings models such as the Current Population Surveys or the American Community Surveys.

Somewhat related to the issue of data quality are the possibilities that our data and specification choices are related to the gay male earning premium. Recall that most prior work finding large gay male earnings penalties—in addition to using older data—also generally relied on individual information about same-sex sexual behavior or restricted attention to individuals in same-sex relationships due to data limitations. Studies using individual level reports of self-reported sexual orientation have generally found smaller earnings differences for gay men compared to heterosexual men (Carpenter 2005), and there is also evidence that partnership-based samples overstate the gay male earnings penalty found in prior work (Carpenter 2008). Our finding in Table 3 that the gay male earnings premium is larger in samples of non-partnered men supports this general pattern, although it remains true that no prior work has found evidence of a gay male earnings *premium*.

Regarding sample and specification choices, we focus on annual earnings among full-time workers as our main outcome. While the large majority of prior work also focuses on full-time workers, outcomes in the literature have ranged from annual personal income to hourly earnings, with studies focusing on labor market discrimination tending to focus on the latter when it is available. Our choice of annual earnings reflects the fact that hours information is missing for a large number of NHIS respondents. More research is needed from datasets with multiple earnings and income measures as well as information on labor effort to determine whether the literature's pattern of earnings estimates is systematically related to the type of outcome studied, though the remarkable stability of the lesbian earnings premium across different measures in the literature is suggestive that these measurement choices are unlikely to explain our finding of a gay male premium.

Another candidate explanation for the first estimate of a gay male earnings premium is the rapid improvement in attitudes toward the LGBT community over the past decade which has been coupled with major changes in public policies toward sexual minorities such as same-sex marriage legalization and increasing prevalence of non-discrimination policies in employment. In fact, Clarke and Sevak (2013) suggest these changing attitudes as a possible reason for their findings in the NHANES data of a statistically significant increasing trend in relative household incomes for

men reporting same-sex sexual behavior compared to men not reporting same-sex sexual behavior from the 1990s into the 2000s.

But while this explanation of improving attitudes has intuitive appeal, there are several challenges with it as well. First, it is not clear why improving attitudes toward LGBT people would produce a gay male earnings *premium*. While we might have expected that the well-documented gay male earnings penalty would be reduced or even eliminated as compliance with nondiscrimination policies increased and attitudes toward LGBT people improved, it is not clear how these factors would result in gay men earning significantly *more* than comparable heterosexual men. Second, and related to the first point, the NHIS data continue to indicate that gay men have significantly lower employment rates than comparable heterosexual men. To the extent that the lower employment partly reflects discrimination against gay men, it is hard to imagine earnings improving substantially but not employment. Third, the explanation of improving attitudes toward LGBT people is hard to square with the fact that our estimated lesbian earnings premium is right in line with prior estimates from different and older datasets in the United States (i.e., it is not substantially larger). That is, it seems unlikely that the LGBT civil rights movement would have substantially improved labor market outcomes for gay men but not for lesbians. Fourth, the pattern of progress for gay rights has not been universally positive for sexual minorities. As in many civil rights movements, there has been some backlash to the speed with which sexual minorities have achieved equality in the eyes of the law. For example, there were substantial increases in LGBT-related harassment reported to governments and police agencies in the wake of major policy rulings on same-sex marriage, and there is still pervasive anti-LGBT sentiment throughout the United States. Fifth, recent estimates of the association between sexual orientation and earnings using high quality data from other countries that have experienced similar improvements in attitudes toward the LGBT community do not show a similar pattern of a gay male premium. Aksoy, Carpenter, and Frank, (in press), for example, find that self-identified gay men earn very similar wages to comparable heterosexual men in the United Kingdom from 2012 to 2014 (i.e., no earnings penalty and no earnings premium) despite that lesbians command a statistically significant 5.5% premium. These patterns are difficult to square with the simple hypothesis of reduced discrimination against sexual minorities.[15]

A related set of hypotheses pertains to selection into who identifies as a sexual minority to surveys. This is related to changing and improving attitudes toward the LGBT community, as it would increase the likelihood that some individuals would be willing to "come out" to a survey interviewer about their sexuality. If these individuals are also increasingly likely to come out to family, friends, coworkers, and employers, this could also cause earnings patterns to vary, particularly if the unobserved characteristics associated with the changing nature of selection are systematically related to earnings potential.

It is, of course, nearly impossible to know the nature of selection into "coming out" to a survey interviewer. Some researchers have argued that the only people who can afford to be out about their sexuality are people with high education and earnings (and other unobservable characteristics positively associated with earnings potential). If so, the

[15] A variant of the "improved attitudes" hypothesis is that the emergence of a gay male premium in these recent data could reflect across-cohort differences in experiences of discriminatory attitudes across the lifecycle. The fact that we estimate a larger gay male earnings premium in samples of older men compared to younger men (Table 3) is largely inconsistent with this hypothesis, however, since the older gay men would have experienced more discrimination in their early adulthood than the more recent cohorts.

changing nature of selection would be inconsistent with relative improvements in gay male earnings compared to heterosexual male earnings. It is also possible, however, that high earning sexual minorities have the "most to lose" by coming out about their sexual orientation to survey administrators and/or to employers. If so, changing selection based on improving attitudes could produce the patterns observed above for gay men. A remaining challenge with the "changing nature of selection" hypothesis, however, is that—like the changing attitudes hypothesis more generally—it is generally inconsistent with the fact that our estimated lesbian earnings premium is right in line with prior estimates based on much older data. Finally, we note that there are key patterns that are strongly inconsistent with the selectivity hypothesis, most notably that the share of adults identifying as gay, lesbian, or bisexual in the 2013–2015 NHIS is not noticeably higher than in other, older surveys. As increased willingness to identify as a sexual minority individual to a survey interviewer would have predicted a noticeable increase in the share self-identifying as LGB, this explanation seems unsatisfying.

It is clear that any hypothesis for the patterns we observe has to rationalize why the improvement in outcomes is observed much more strongly for gay men than for lesbians.[16] One such explanation that fits with some of these patterns is the changing nature of market-based specialization within households. Increasing access to same-sex marriage has given same-sex couples the same legal rights and responsibilities as different-sex couples. It is plausible that these legal changes differentially affected gay men compared to lesbians. Prior work shows that even in the absence of same-sex marriage, lesbians were more likely to be in same-sex partnerships than gay men, and among those in partnerships, lesbians were much more likely to formalize their partnership by registering with the government than gay men (Carpenter and Gates 2008). This could partly reflect the fact that lesbians had more to gain from official recognition because their households were much more likely to contain children (including children from prior heterosexual relationships) than gay men in same-sex relationships. Evidence on take-up of legal marriage among same-sex couples is very limited; Carpenter (2016) finds that when the Massachusetts Supreme Court legalized same-sex marriage in 2004 it induced large increases in marriage for lesbians and modest increases for gay men. We are not aware of any published evidence on more recent legalizations of same-sex marriage in other states or from federal Supreme Court decisions in *Windsor* and *Obergefell*. But it is possible that increased legal access to marriage induced greater changes in gay coupling behavior than in lesbian coupling behavior, and moreover among couples it is plausible that recent legal changes induced more substantive changes to gay male couples' households than to lesbian households to the extent that lesbian households already functioned effectively as a "married" unit. These Becker-based dynamics make it possible that changing legal access to gay marriage which occurred in our sample period would have induced larger changes in home versus

[16] We should note that even if discriminatory attitudes were reduced for both gay men and lesbians, this need not necessarily imply that the relative earnings position of those groups should have improved over time compared to their same-gender heterosexual counterparts. If, for example, part of the historically large gay male earnings penalty is due to a unique distaste for gay men (as opposed to a distaste for sexual minorities in general), then it could be that reductions in discrimination would be observed in a relative improvement in earnings for gay men compared to straight men but not for lesbians compared to straight women. Put differently, it could be that lesbians are somewhat immune from the large gender-based labor market penalty experienced by heterosexual women and that sexual orientation does not play a strong role in determining lesbian earnings differentials. Thus, the seemingly differential nature of the evolution of the gay male earnings differential compared to the lesbian earnings differential need not be entirely inconsistent with a role for changing attitudes and discrimination. Of course, why such dynamics would produce significant premia (as opposed to simply reducing penalties) remains unclear.

market-based specialization within gay male households than the associated change in lesbian households.

The data produce some patterns consistent with this hypothesis. First, recall that gay men have significantly lower employment rates than otherwise similar heterosexual men. This would be expected if gay men are specializing more in the wake of legal access to same-sex marriage, as half of the gay male partners could be specializing relatively in-home production. Second, the rate of gay male partnership in the NHIS (approximately 45%) is somewhat higher than in other datasets. This is consistent with increasing legal access to same-sex marriage increasing partnership among gay men.[17] Notably, the estimated rate of lesbian partnership in the NHIS (about 66%) is in line with prior published estimates from credible datasets. Of course, the one pattern that is entirely inconsistent with a hypothesis about the changing nature of household specialization is that the gay male premium is observed primarily in samples of nonpartnered men (see Table 3). As household specialization-based theories for the emergence of a gay male premium rely on the presence of a partner (or, in its most generous interpretation, on the expectation of a partner), however, this finding is broadly inconsistent with the household specialization hypothesis.

Our article calls for more research and data collection on sexual orientation in high quality data sets that also include information on economic outcomes. As of the time of this writing, the NHIS is to our knowledge the only ongoing large federal survey available to researchers to include both a direct question about sexual orientation and information on earnings. Adding a sexual orientation question to large datasets such as the Current Population Surveys, the National Longitudinal Surveys of Youth, the Panel Study of Income Dynamics, the Health and Retirement Study, and others could yield fundamental insights into the basic structure of economic relationships. And understanding whether a gay male premium in adult earnings can be replicated across other recent datasets—and what might be causing it—should be important priorities for future work.

[17] The public use NHIS data do not identify individual states, so we cannot directly test for how marriage equality affected partnership or marriage in these data, as the policy came into effect in different states at different times.

Appendix

Table A1. Descriptive Statistics for the Other Sexual Orientation Response Categories (Among those with Earnings Information) 2013–2015 National Health Interview Surveys, Adults Ages 25–64

	Women	Women	Women	Women	Men	Men	Men	Men
How the Sexual Orientation Question was Answered →	Something Else	Do not Know	Refused	No Response	Something Else	Do not Know	Refused	No Response
Age	42.7 (12.5)	45.6 (14.4)	48.4[a] (11.3)	43.7 (11.2)	40.7 (12.3)	43.0 (13.8)	45.3 (12.7)	41.8 (10.3)
BA or more	0.376 (0.544)	0.320 (0.532)	0.446 (0.524)	0.341[a] (0.470)	0.315 (0.516)	0.181[b] (0.432)	0.480 (0.580)	0.312 (0.440)
Associate degree	0.121 (0.367)	0.057[a] (0.264)	0.144 (0.355)	0.135 (0.338)	0.110 (0.348)	0.152 (0.403)	0.192 (0.457)	0.104 (0.289)
Some college	0.247 (0.484)	0.169 (0.427)	0.158 (0.385)	0.209 (0.403)	0.348 (0.529)	0.065[b] (0.278)	0.101 (0.350)	0.176 (0.361)
High school degree	0.151 (0.402)	0.225 (0.477)	0.208 (0.428)	0.239 (0.423)	0.161 (0.408)	0.153 (0.404)	0.124[b] (0.383)	0.319[b] (0.442)
Less than high school degree	0.103 (0.342)	0.216[a] (0.469)	0.034 (0.191)	0.048 (0.212)	0.045 (0.231)	0.387[b] (0.547)	0.081 (0.317)	0.073 (0.247)
White	0.750 (0.487)	0.711 (0.517)	0.832 (0.394)	0.729[a] (0.441)	0.828 (0.420)	0.764 (0.477)	0.732 (0.514)	0.786 (0.390)
Partnered (living with a partner or married)	0.424[a] (0.555)	0.444[a] (0.567)	0.373[a] (0.510)	0.570[a] (0.491)	0.543[b] (0.554)	0.474[b] (0.561)	0.493[b] (0.580)	0.719 (0.426)
Any children in household	0.123[a] (0.369)	0.343 (0.542)	0.212[a] (0.431)	0.410[a] (0.488)	0.147[b] (0.393)	0.439 (0.558)	0.310 (0.537)	0.422 (0.469)
Northeast	0.207 (0.455)	0.201 (0.457)	0.292 (0.479)	0.160 (0.364)	0.133 (0.378)	0.063[b] (0.272)	0.247 (0.500)	0.210 (0.386)
Midwest	0.185 (0.436)	0.170 (0.428)	0.146[a] (0.372)	0.236 (0.421)	0.284 (0.501)	0.192 (0.443)	0.238 (0.495)	0.261 (0.417)
South	0.333 (0.530)	0.397 (0.558)	0.314 (0.490)	0.409 (0.487)	0.177[b] (0.424)	0.333 (0.530)	0.245 (0.499)	0.393 (0.464)
West	0.275 (0.502)	0.233 (0.482)	0.248 (0.455)	0.195 (0.393)	0.406 (0.546)	0.412[b] (0.553)	0.269 (0.515)	0.137[b] (0.326)
Avg. annual earnings	37,707.60 (27,591.28)	30,335.45[a] (24,922.17)	35,816.32 (29,525.85)	40,512.85 (33,244.90)	37,529.93[b] (27,681.97)	30,654.61[b] (34,248.06)	53,517.14 (39,152.12)	58,189.27 (40,155.29)
Full-time worker	0.804 (0.446)	0.755 (0.490)	0.714 (0.474)	0.732 (0.439)	0.690[b] (0.510)	0.781 (0.465)	0.818 (0.447)	0.892 (0.294)
Sample Size	52	88	88	493	49	88	80	422

Weighted means (standard deviations).
[a]Statistically significant difference ($p < 0.05$) between the group of women identified in the column header and the self-identified heterosexual women from Table 1.
[b]Statistically significant difference ($p < 0.05$) between the group of men identified in the column header and the self-identified heterosexual men from Table 1.

Table A2. Expanded set of Coefficient Estimates for Log Annual Earnings, Fully Saturated Model (i.e., Column 6 of Table 2) NHIS 2013–2015, Adults Ages 25–64, Full Time Workers

	(1)	(2)
	Females	Males
Gay/lesbian	0.086** (0.043)	0.097** (0.038)
Bisexual	−0.031 (0.092)	−0.021 (0.068)
S.O. Something else	0.149 (0.105)	−0.032 (0.106)
S.O. Don't know	−0.126** (0.058)	−1.576 (1.345)
S.O. Refused	−0.207 (0.156)	0.155* (0.085)
S.O. Nonresponse	0.088** (0.039)	0.002 (0.099)
Age	0.042*** (0.006)	0.046*** (0.007)
Age-squared	−0.000*** (0.000)	−0.001*** (0.000)
Black/African American	−0.044** (0.020)	−0.173*** (0.021)
American Indian, Alaska Native	0.020 (0.058)	−0.221*** (0.076)
Asian	−0.004 (0.030)	−0.138*** (0.040)
Race group not releasable	0.260*** (0.098)	−0.127 (0.127)
Multiple race groups	−0.037 (0.064)	−0.072 (0.057)
Hispanic	−0.058*** (0.021)	−0.154*** (0.023)
Less than high school degree	−0.139*** (0.034)	−0.212*** (0.038)
Some college	0.057** (0.023)	0.022 (0.026)
Associate degree	0.088*** (0.027)	0.101*** (0.023)
Bachelor's degree or more	0.381*** (0.027)	0.254*** (0.023)
Partnered	0.055*** (0.019)	0.134*** (0.023)
Widowed	0.022 (0.045)	0.128*** (0.044)
Divorced	0.078*** (0.022)	0.129*** (0.028)
Separated	−0.005 (0.035)	0.022 (0.045)
Marital Nonresponse	−0.133 (0.110)	−0.676 (0.426)
Presence of children ages 0 to 5	−0.045* (0.024)	0.040** (0.019)
Presence of children ages 6 to 17	−0.050*** (0.017)	−0.009 (0.016)
Northeast	0.008 (0.027)	0.073*** (0.025)
Midwest	−0.097*** (0.027)	0.009 (0.022)
South	−0.090*** (0.023)	−0.038 (0.027)
2014 survey wave	0.015 (0.016)	0.060*** (0.018)
2015 survey wave	0.035** (0.018)	0.089*** (0.018)
Job tenure	0.045*** (0.003)	0.042*** (0.003)
Job tenure squared	−0.001*** (0.000)	−0.001*** (0.000)
Firm size 10 to 24	0.110*** (0.030)	0.197*** (0.027)
Firm size 25 to 49	0.185*** (0.033)	0.170*** (0.041)
Firm size 50 to 99	0.189*** (0.033)	0.262*** (0.027)
Firm size 100 to 249	0.225*** (0.033)	0.281*** (0.029)
Firm size 250 to 499	0.226*** (0.036)	0.270*** (0.033)
Firm size 500 to 999	0.265*** (0.038)	0.332*** (0.031)
Firm size 1000 or more	0.293*** (0.032)	0.324*** (0.029)
Employed in public sector	0.005 (0.021)	0.008 (0.024)
R-squared	0.35	0.35
N	17,016	18,981

*Significant at 10%.
**Significant at 5%.
***Significant at 1%.
See notes to Table 2. The model also includes other control variables not listed here, including: occupation dummies, industry dummies, and others.

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