

# Pride, Prejudice, and Wages: An Empirical Assessment of Models of Taste-Based Discrimination for Gay Men

Ian Burn\*

Ph.D. Candidate

Department of Economics

University of California-Irvine

October 26, 2016

## Abstract

There is a well-documented wage penalty for gay men in the United States. Data from the U.S. Census Bureau shows that gay men earn between 11% and 15% less than straight men. In this paper, I test whether models of taste-based discrimination can explain the gay wage penalty in the United States. I combine restricted access data from the General Social Survey with estimated wage penalties from the Census data to estimate the empirical relationship between prejudice and wage penalties. I find no evidence the Becker model of discrimination explains the presence of a gay wage penalty. I show there is strong evidence that search models of discrimination are able to explain the gay wage penalty. Wage penalties in the United States are positively correlated with the share of the population that is prejudiced against homosexuals. The size of the gay population is negatively correlated with the wage penalty. The results suggest that changes in prejudice between 1990 and 2014 can explain up to 25% of the decline in the gay wage penalty over that period.

---

\*Email: [iburn@uci.edu](mailto:iburn@uci.edu). I would like to thank Damon Clark, John Duffy, and David Neumark for their advice and feedback. I am grateful for the feedback I have received from seminar participants at CSU-Long Beach and the University of California, Irvine. Data files and do-files for STATA are available from the author upon request. All errors are my own.

# 1 Introduction

For the past 20 years, economists have documented differences in the labor market outcomes of gay men and straight men in the United States. Beginning with Badgett (1995), studies have consistently found evidence of significant wage penalties for gay men (Klawitter 2015).

<sup>1</sup> Data from the U.S. Census show that gay men earn between 11% and 15% less than straight men after controlling for differences in observable characteristics (Allegretto and Arthur 2001, Antecol, Jong and Steinberger 2008, Clain and Leppel 2001, Klawitter 2015).<sup>2</sup> In addition to the well-documented wage penalty, there is evidence of prejudice towards gay men (Badgett, Lau, Sears and Ho 2007, Pew Research Center 2013). When surveyed, 27% of gay men reported experiencing harassment or discrimination in the workplace due to their sexual orientation (Sears and Mallory 2011).

The existence of both an unexplained wage penalty and sizable prejudice would seem to imply prejudice leads to discrimination, which can generate the observed wage penalty. Previous work testing the empirical relationship between prejudice and wages has focused on African Americans (Bond and Lehmann 2015, Charles and Guryan 2008). The Becker model of discrimination presents the most well-known mechanism by which prejudicial attitudes lead to differences in labor market outcomes that are interpreted as discriminatory (Becker 1971). Charles and Guryan (2008) showed the Becker model was consistent with the relationship between racial prejudice and the black wage penalty found in the data. Their estimates suggest that taste-based discrimination as described in the Becker model can explain up to a quarter of the unconditional black wage penalty in the United States.

---

<sup>1</sup>Klawitter (2015) provides a comprehensive list of studies in her meta-analysis of the average wage differential for gay men and lesbians.

<sup>2</sup>There is little evidence of wage discrimination against lesbians (Klawitter 2015). U.S. Census data shows there is a positive wage differential between 7% and 8% for lesbians (Antecol et al. 2008, Clain and Leppel 2001, Klawitter 2015). Research has shown the lesbian wage premium is due in large part to differences in labor supply (Antecol and Steinberger 2013, Jepsen 2007, Jepsen and Jepsen 2015). Therefore, the main focus of this paper is on the wage penalty between gay men and straight men. Results for lesbians are reported in the Appendix Table A1.

Given the ability of the Becker model to explain part of the black wage penalty, we might expect the Becker model to explain part of the gay wage penalty. However, data from the General Social Survey suggests the Becker model cannot explain the lower wages earned by gay men. In the Becker model, it is possible for there to be no wage penalty if the marginal employer is unprejudiced. Gay and bisexual men are 3% of male respondents in the General Social Survey and a similar number in other sources (Gates, Gary J. and Newton, Frank 2013).<sup>3</sup> Even if 97% of the employers would never hire a gay worker, there should be no wage penalty so long as 3% of the employers were unprejudiced towards gay men. Responses from the General Social Survey suggest that 16% of Americans are unprejudiced towards homosexuals.<sup>4</sup> Therefore, the marginal employer in the United States is likely to be unprejudiced.

If prejudice is the underlying cause of the wage penalty, the wages of gay men must respond to the prejudice of both infra-marginal employers and the employers who do not hire gay men. Search models of discrimination, such as Black (1995) and Bowlus and Eckstein (2002), exhibit this relationship. To date, there has been no published work empirically testing the ability of the search model to explain wage penalties using survey data on prejudicial attitudes.<sup>5</sup>

In this paper, I present evidence that a search model of discrimination is consistent with the empirical relationship between prejudice and wage penalties found in the data. Earlier work used structural techniques to estimate the share of employers that are biased against minorities (Flabbi and Tejada 2015, Rosen 2003). In contrast, I use the actual

---

<sup>3</sup>One-third of gay respondents in the General Social Survey are cohabiting. Straight men are more likely to cohabit. Approximately 60% of straight men in the General Social Survey are cohabiting. The large difference in cohabitation rates explains the difference in the gay share between sources that identify only cohabitating gay men (such as the Census data) and sources that identify all gay men (such as the General Social Survey).

<sup>4</sup>See Table 1 for these numbers by Census division.

<sup>5</sup>A recent working paper by Bond and Lehmann (2015) uses General Social Survey data to test a search model of discrimination for African Americans in the United States. The authors find evidence that the share of prejudiced employers is correlated with wage penalties and lower match quality.

bias of individuals to test whether the predictions of the model are consistent with the data. I show that gay wage penalties are positively correlated with the prejudiced share of the population and the size of the gay population is negatively correlated with the wage penalty.

## 2 Prejudice against Gay Men in the United States

The General Social Survey began tracking prejudice towards homosexuals in the 1970s. It is a nationally representative survey administered every two years.<sup>6</sup> Table 2 lists the questions asked in the General Social Survey about homosexuals. The first four questions in Table 2 are asked in every wave of the survey. The last two questions were recently added to the General Social Survey.

The first question, SEX, asks whether respondents think sexual relations between two adults of the same sex is wrong. The next two questions, BOOK and SPEAK, touch on support for speech in favor of homosexuality. BOOK asks respondents if they would support removing books in favor of homosexuality from their public library. SPEAK asks respondents if an admitted homosexual should be allowed to make a speech in public. COLLEGE asks respondents if homosexuals should be allowed to teach in colleges. MARRIAGE was added in 2006 and asks about views of same-sex marriage. CHILD was added in 2012 and asks respondents if a same-sex male couple can raise a child as well as a straight couple.

There has been a steady decline in prejudiced responses since 1990. Figure 1 highlights how prejudiced responses to the above questions have changed. Sexual relations and marriage between same-sex adults attract the highest disapproval in the General Social Survey. In 1990, 73% of respondents felt that sexual relations between two adults of the same sex

---

<sup>6</sup>Between 1977 and 1994, the General Social Survey was administered every year with a few exceptions. In 1994 it switched to being every two years. See <https://www.gssdataexplorer.norc.org> for publicly available data and documentation from the General Social Survey.

was always wrong. Over the next 25 years, the number of respondents that felt that way fell to 39%. In 2006, 51% of respondents disapproved of same-sex marriage. By 2014, only 31% of respondents disapproved. There has always been less support for banning books about homosexuals from public libraries, banning gay men from speaking in public, and banning gay men from teaching in colleges. In 1990, approximately a third of respondents supported these positions, but fewer than 20% of respondents supported them in 2014.

### **3 Evidence of a Gay Wage Penalty**

The most common sources of data used to identify the gay wage penalty in the United States are the General Social Survey, the U.S. Decennial Census, and the Current Population Survey. The General Social Survey is the most detailed source of sexual orientation available to researchers because it reports sexual orientation based on sexual behavior and based on identity. The main drawback of the General Social Survey is that the sample sizes are very small. Between 1990 and 2014, there were 368 gay or bisexual men identified in the data. The Decennial Census and the Current Population Survey provide larger sample sizes for gay men. These sources do not ask about sexual orientation. In these sources, respondents list the relationship of every household member to the householder. Same-sex couples are identified if they are listed as unmarried cohabitating partners with a member of the same sex. Same-sex couples who indicate that they are married are recoded as unmarried partners. Data from the General Social Survey suggests that about 30% of gay men are cohabitating, meaning the Census definition will not capture 70% of the gay population.

Across all previous studies, the gay wage penalty averages 11%, but individual estimates range from 0% to as high as 30% (Klawitter 2015). The estimated wage penalty has declined since 1990 (Cushing-Daniels and Yeung 2009, Elmslie and Tebaldi 2014, Klawitter 2015). Wage penalties in the General Social Survey have declined from 30% in the early 1990s to

11% in the mid-2000s (Badgett 1995, Cushing-Daniels and Yeung 2009). The estimated penalties in the Census data have fallen from 15% in the 1990 Census to approximately 6% in the American Community Survey.<sup>7</sup> Wage penalties in the Current Population Survey have fallen from 8% in 1995 to 4% in 2011 (Elmslie and Tebaldi 2014).

Non-discriminatory explanations of the wage penalty are not consistent with the data. Differences in preferences for time spent on leisure could explain the wage penalty, but this theory is not consistent with the evidence that the wage penalty exists even after researchers correct for selection (Berg and Lien 2002, Elmslie and Tebaldi 2014). Estimates of the wage penalty increase in magnitude after controlling for selection into the labor market (Klawitter 2015). Research has also shown that occupational segregation is not the cause of the wage penalty (Klawitter 2015). If gay men had the same distribution across occupations as straight men, there would still be a significant wage penalty (Antecol et al. 2008).

The presence of a gay wage penalty could also be explained by statistical discrimination. Research has suggested that employers may reward more masculine workers with higher wages (Klawitter 2015).<sup>8</sup> The higher returns to masculinity could result in statistical discrimination towards gay men if employers believe that gay men are less masculine than straight men. The returns to masculinity theory does not appear to explain the wage penalty because the wage penalty is robust to including controls for the gender composition of the occupation (Antecol et al. 2008) and personality characteristics (Sabia 2014). Many researchers, therefore, attribute the unexplained wage penalty to taste-based discrimination (Badgett 1995, Antecol et al. 2008, Martell 2013a).

---

<sup>7</sup>See Table 9 for how the wage penalty changes in the U.S. Census Bureau data have changed.

<sup>8</sup>Other work has put forth the theory that employers believe that gay men may be costlier to hire due to the high rate of individuals infected with HIV in the gay community (Elmslie and Tebaldi 2007).

## 4 Models of Taste-Based Discrimination

There are two models in economics often used to explain how the prejudice observed in the General Social Survey lead to a wage penalty for gay men. First is the neoclassical model described by Becker (1971). The other is the search model of discrimination described by Black (1995).

### 4.1 The Becker Model of Discrimination

In the Becker model of discrimination, firms operate in a perfectly competitive environment. There are two sets of agents in the model: employers and workers. Workers can either be gay or straight. We assume that employers have perfect information about the sexual orientation of workers.

An employer's utility ( $u_e$ ) depends on both their profits and the number of gay workers they hire. Their utility depends positively on profits ( $\pi$ ) and negatively on the number of gay workers ( $L_g$ ).<sup>9</sup> There is a distribution of prejudice, with  $d_e$  representing the employer's specific level of disutility. Employers who are more prejudiced experience more disutility when hiring a gay worker.

$$u_e = \pi - d_e L_g \tag{1}$$

---

<sup>9</sup>This utility function is more restrictive, but the general results hold if we use a more general form. Neumark (1988) shows the Becker model can be extended to the case where employers do not care about the absolute number of minorities they hire but care only about the relative share of minorities. When the disutility is a result of the relative share ( $\frac{L_g}{L_g+L_s}$ ), there is no longer perfect segregation. The relationship between the prejudice of the marginal employer and the wage penalty is no longer as simple as in the Becker model. The lack of search frictions still results in gay workers sorting towards the least prejudiced employers first. So the prejudice in the lower tail of the prejudice distribution should matter more for the wage penalty than prejudice in the upper tail of the distribution. The relationship between wage penalties and the size of the gay population should still be negative. When there are no search frictions, minority workers will always take jobs from the least prejudiced employers first. So increasing the number of minority workers should increase the wage penalty as they are forced to take jobs from increasingly prejudiced employers.

Gay and straight workers have equal marginal productivity. Therefore, the profit function can be expressed as

$$\pi = f(L_s + L_g) - w_s L_s - w_g L_g \quad (2)$$

where  $w_s$  and  $w_g$  are the wages of straight workers and gay workers, and  $f$  is a production function with constant returns to scale. Employers choose the number of straight workers,  $L_s$ , and the number of gay workers,  $L_g$ , that maximize Equation 1. These choices,  $L_s^*$  and  $L_g^*$ , satisfy the following first-order conditions:

$$\begin{aligned} f'(L_s^* + L_g^*) - w_s &= 0 \quad \text{if } L_s^* > 0 \\ f'(L_s^* + L_g^*) - w_g - d_e &= 0 \quad \text{if } L_g^* > 0 \end{aligned} \quad (3)$$

The first-order conditions state that each employer will hire a particular type of labor until the point where its marginal product is equal to the marginal cost. For straight workers, this marginal cost is simply the wage,  $w_s$ . For gay workers, the marginal cost is the wage,  $w_g$ , and the disutility from hiring a gay worker,  $d_e$ .

Since the marginal productivity of the two groups is identical, employers will hire only straight workers if  $w_s < w_g + d_e$ . Employers hire only gay workers if  $w_s \geq w_g + d_e$ . This means that gay workers tend to sort towards the least prejudiced employers, while straight workers sort towards the more prejudiced employers.

In equilibrium, the market clears at wages  $w_g^*$  and  $w_s^*$ . If the distribution of prejudice is smooth enough, there will be an employer who is perfectly indifferent between hiring a straight worker and a gay worker. The prejudice of the marginal discriminator,  $d_e^*$ , is equal to the gay wage penalty in equilibrium because their indifference between hiring straight workers and gay workers implies that

$$w_s^* = w_g^* + d_e^* \quad (4)$$

Any employer with prejudice greater than  $d_e^*$  will hire only straight workers and employers with prejudice less than  $d_e^*$  will hire only gay workers.

Charles and Guryan (2008) show the Becker model has two testable predictions. First, the prejudice of the marginal discriminator varies positively with the wage penalty for gay men. The more prejudiced the marginal employer is, the larger the wage penalties will be. The second prediction is that the size of the gay population is positively correlated with the wage penalty for gay men. This is because the marginal employer will have higher values of  $d_e$  as the gay population grows.

## 4.2 Search Model of Discrimination

The predictions of the Becker model depend on the lack of search frictions. The fact that searching for a job is costless in the Becker model allows gay workers to find jobs from the least prejudiced employers. If search frictions make searching for a job costly, gay men may accept lower wages to avoid longer unemployment spells. The result is that the wage penalty in a search model can be influenced by infra-marginal employers and employers who would never hire a gay worker. In this paper, I consider the model of discrimination using sequential search described in Black (1995).

In the search model, there are two types of employers: prejudiced and unprejudiced. Prejudiced firms only hire straight workers and are  $\theta$  percent of all firms. Unprejudiced firms are willing to hire both gay and straight workers. We first consider the behavior of the workers, then turn our attention to the behavior of the firms.

### 4.2.1 Worker Behavior

When a worker becomes unemployed, they search sequentially for a job. Searching for a job costs  $\kappa$  each period. After a worker is matched with a firm, they are offered a wage,  $w_i^j$ , and learn about their satisfaction for the match,  $\alpha$ . The type of worker is denoted with the

subscript  $i$ . Workers can either be gay ( $g$ ) or straight ( $s$ ). The type of employer is denoted with the superscript  $j$ ,  $u$  is used to denote unprejudiced employers and  $p$  is used to denote prejudiced employers. The worker's utility for the job is given by:

$$u_i = w_i^j + \alpha \text{ for } i = \{s, g\} \text{ and } j = \{u, p\} \quad (5)$$

We denote the distribution of  $\alpha$  as  $F(\alpha)$  and the density function as  $f(\alpha)$ . The distribution of  $\alpha$  is strictly log-concave, implying that the inverse hazard function is strictly decreasing. This assumption ensures that firms are monopsonistic competitors and that they are facing an upward-sloping labor supply function.

Each firm chooses a wage offer that maximizes their profit. Given that straight workers do not care if they work for a prejudiced or unprejudiced firm, the labor supply of straight workers is independent of firm type. If we assume a constant returns to scale production function, then unprejudiced and prejudiced firms offer straight workers the same wage ( $w_s^p = w_s^u = w_s$ ).

We can write the expected value of search for straight workers as

$$V_s = Emax\{w_s + \alpha, V_s\} - \kappa \quad (6)$$

and the expected value of search for gay workers as

$$V_g = (1 - \theta)Emax\{w_g^u + \alpha, V_g\} - \kappa. \quad (7)$$

The expected value of search for gay workers is dependent on unprejudiced firms only, so the probability that they receive an offer is  $1 - \theta$ . Equations 6 and 7 can be rearranged

using the distributions of  $\alpha$  to obtain

$$\kappa = \int_{V_s - w_s}^{\infty} (w_s + \alpha - V_s) f(\alpha) d\alpha \quad (8)$$

for straight workers and

$$\frac{\kappa}{1 - \theta} = \int_{V_g - w_g}^{\infty} (w_g + \alpha - V_g) f(\alpha) d\alpha \quad (9)$$

for gay workers. The left-hand sides of these equations represent the expected cost of searching another period for a job, and the right-hand sides represent the expected benefit of waiting an extra period for a new job offer. A worker searches for a job until their expected cost of search is equal to their reservation utility ( $V$ ). Because prejudiced firms never hire gay workers, the relative cost of a job search is higher for gay workers. The comparative statics for gay workers yield

$$\begin{aligned} \frac{dV_g}{dw_g} &= 1 \\ \frac{dV_g}{d\theta} &< 0. \end{aligned} \quad (10)$$

We see that when the wages for gay men increase the reservation utility of gay men increases at the same rate. We also find that an increase in the number of prejudiced employers decreases the reservation utility of gay workers because the greater number of prejudiced employers increases the expected cost of searching for gay workers. If a gay worker does not accept the current offer, they have to wait more periods on average for the next job offer to arrive.

### 4.2.2 Employer Behavior

Unprejudiced employers are the only employers to hire gay men. Therefore, we focus our attention on them. If a worker accepts a job offer, the employer earns a profit of  $MPL - w_i^u$ , where  $MPL$  is the marginal product of the worker. The employer receives no profit if the worker rejects their wage offer and they fail to hire someone that period. The goal of the employers is to maximize their per applicant profit ( $\pi^u$ ).

$$\pi_i^u = [1 - F(V_i - w_i^u)](MPL - w_i^u) \quad (11)$$

The necessary condition for profit maximization is

$$MPL - w_i^u - m(V_i - w_i^u) = 0 \quad (12)$$

where  $m(V_i - w_i^u)$  is the inverse hazard function. The comparative statics for the wages are

$$\begin{aligned} 0 < \frac{dw_g}{dV_g} < 1 \\ 0 < \frac{dw_s}{dV_s} < 1 \end{aligned} \quad (13)$$

The comparative statics show that unprejudiced firms set wages in response to the reservation utility of workers. This leads to two testable predictions. First, the share of prejudiced employers is negatively correlated with the wages of gay men. Second, the share of the population that is gay ( $\gamma$ ) is positively correlated with the wages of gay men.

Using the comparative statics, it is easy to show that  $\frac{dw_g}{d\theta} < 0$ . When the number of prejudiced employers in the market increases, the reservation utility of gay workers decreases ( $\frac{dV_g}{d\theta} < 0$ ). The decrease in the reservation of utility lowers the wages unprejudiced employers pay gay workers ( $\frac{dw_g}{dV_g} < 1$ ). This decline in the wages paid to gay workers

increases the wage penalty.

$$\frac{dw_g}{d\theta} = \frac{dw_g}{dV_g} \frac{V_g}{d\theta} < 0 \quad (14)$$

Using the comparative statics, in Equation 16, we can see that  $\frac{dw_g}{d\gamma} > 0$ . When the proportion of gay men increases, prejudiced employers are matched with gay workers at a higher rate. This results in more periods of zero profit because the prejudiced employers do not hire gay men. The decline in profit drives the least profitable prejudiced firms from the market. The result is fewer prejudiced employers as the fraction of gay men increases ( $\frac{d\theta}{d\gamma} < 0$ ). As the share of prejudiced employers falls, the reservation utility of the gay workers increases ( $\frac{dV_g}{d\theta} < 0$ ). The increase in reservation utility forces unprejudiced firms to pay higher wages ( $\frac{dw_g}{dV_g} = 1$ ). The net effect is that increases in the gay population increase the wages for gay men.

$$\frac{dw_g}{d\gamma} = \frac{dw_g}{dV_g} \frac{V_g}{d\theta} \frac{d\theta}{d\gamma} > 0 \quad (15)$$

### 4.3 Comparing the Predictions of the Models

Using data on prejudice and wage penalties, we can test whether there is a relationship between prejudice and wage penalties. We are able to differentiate between the Becker model and the search model by comparing how different parts of the prejudice distribution are correlated with the wage penalties. In the Becker model, a single point in the lower tail of the prejudice distribution is driving the wage penalty. The smaller size of the minority group means the marginal employer comes from the low end of the prejudice distribution. However, search models predict the upper tail of the distribution, where employers would not hire a gay man, drives the wage penalty. The infra-marginal employers are reacting to the number of highly prejudiced employers when they determine the wages to pay gay men. Both models predict a positive correlation between the wage penalty and prejudice.

The models differ in the predicted relationship between the wage penalties and the size of the gay population. Without search frictions, gay workers sort towards the least prejudiced employers. Increasing the number of gay men in the labor market forces gay men to accept jobs with more prejudiced employers. As the disutility of the marginal employer increases, so does the wage penalty experienced by gay men. In the search model, increases in the number of gay men increase the reservation utility of gay men. This forces unprejudiced employers to pay gay workers more, decreasing the wage penalty. Therefore, if there is a positive correlation between the size of the gay population and the wage penalty for gay men, this is evidence the Becker model is accurate. If, however, there is a negative correlation between the size of the gay population and the wage penalty, then this is evidence in favor of the search model.

## 5 Testing the Competing Models

In order to test the relationship between prejudice and wage penalties, I use a methodology similar to Charles and Guryan (2008).<sup>10</sup> I restrict the analysis to adults who are currently employed. I exclude observations from states with fewer than 50 respondents in the General Social Survey.<sup>11</sup>

Because the prejudice data is only available at the state level, I calculate the time-invariant wage penalty for each state. I begin by estimating the gay wage penalty in log hourly wages for each state-year observation in the sample. I then regress these wage penalties on state and year fixed effects to calculate the time-invariant wage penalty in each state. These time-invariant wage penalties are used as the dependent variable in the final regression, which tests the relationship between prejudice and the wage penalty.

---

<sup>10</sup>Appendix Table A5 estimates the results using the exact same estimation strategy as Charles and Guryan (2008). The results are nearly identical to using this three-step procedure.

<sup>11</sup>This excludes three states from the sample.

I use a two-step process to estimate the wage penalties, rather than pooling the data to estimate the wage penalties in a single equation as done in Charles and Guryan (2008). Some states had relatively more observations in earlier years than later years because of the switch from Decennial Census data to the American Community Survey. If I simply pooled the data, the state fixed effects in this regression would be biased because the year fixed effects would not capture the changes in the wage penalty due to compositional changes in the sample.

The first step, Equation 16, calculates the wage penalty for each state-year observation using the Census data. In Equation 16, the dependent variable is log hourly wages ( $LnY$ ).

$$LnY_{i,s,t} = \alpha_0 + \delta_{s,t}(G_{i,s,t} \times I_s \times I_t) + \beta_1 Schooling_{i,s,t} + \beta_2 Exp_{i,s,t} + \beta_3 Exp_{i,s,t}^2 + \beta_4 Black_{i,s,t} + \beta_5 Kids_{i,s,t} + \beta_6 Urb_{i,s,t} + \beta_o O_{i,s,t} + \theta_{s,t}(I_s \times I_t) + \epsilon_{i,s,t} \quad (16)$$

I control for the quadratic of potential experience ( $Exp$  and  $Exp^2$ ), schooling ( $S$ ), being black ( $Black$ ), two-digit occupation codes ( $O$ ), the presence of children in the household ( $Kids$ ), and living in a city ( $Urb$ ). I include state-by-year fixed effects ( $I_s \times I_t$ ).

This first step results in  $s \times t$  observations of the gay wage penalty ( $G_{i,s,t} \times I_s \times I_t$ ). The second step, Equation 17, regresses these wage penalties on state fixed effects ( $I_s$ ) and year fixed effects ( $I_t$ ). The coefficients on the time fixed effects will be the composition-corrected time trend in the gay wage penalty. The state fixed effects will be the time-invariant wage penalty in each state.

$$\delta_{s,t} = \mu_0 + \mu_s I_s + \mu_t I_t + \chi_s \quad (17)$$

The estimated average wage penalties ( $\mu_s$ ) are used as the dependent variable in the

third step.<sup>12</sup> For the independent variables, I use the measures of prejudice that each model predicts to be significant and the gay population. I include the prejudice of the marginal employer ( $Marginal_s$ ), the share of individuals in a state that give prejudiced answers to all the questions in the General Social Survey questions ( $Prejudiced_s$ ), and the gay share of each state in the sample ( $Gay_s$ ). I include robust standard errors in the estimation ( $\xi_s$ ).

To estimate the correlations predicted by the Becker model, I regress the wage penalty ( $\mu$ ) on the prejudice of the marginal employer ( $Marginal_s$ ) and the size of the gay population ( $Gay_s$ ).

$$\mu_s = \alpha + \nu Marginal_s + \gamma Gay_s + \xi_s \quad (18)$$

The Becker model predicts that  $\nu$  will be negative. The size of the wage penalty should increase as the marginal employer grows more prejudiced. In the Becker model,  $\gamma$  should be positive. If the share of the population that is gay increases, the wage penalty should grow.

To estimate the correlations predicted by the search model, I regress the wage penalty ( $\mu$ ) on the share of prejudiced individuals in a state ( $Prejudiced_s$ ) and the size of the gay population ( $Gay_s$ ).

$$\mu_s = \alpha + \pi Prejudiced_s + \gamma Gay_s + \xi_s \quad (19)$$

The search model predicts  $\pi$  should be positive. Increases in the share of the population that are prejudiced should increase the wage penalty. The two models have different predictions for  $\gamma$ . In a search model, the coefficient should be negative. Increases in the share of the population that is gay will decrease the wage penalty.

---

<sup>12</sup>When I estimate the time-invariant wage penalties using Equations 16 and 17, there is a large and significant wage penalty between gay men and straight men. The average wage penalty is 7.8%. The state with the largest wage penalty is Wyoming (28.6%). Three states show no wage penalty and instead gay men experience a wage premium in these states: Delaware, New York, and the District of Columbia. The map in Figure 2 highlights the geographic differences in the wage penalty. Penalties have been recoded as positive numbers for ease of interpretation.

## 6 Data

The methodology described in the previous sections requires data on wages for gay men and straight men and data on prejudice against gay men in the United States. The data on social attitudes come from the General Social Survey. Because the General Social Survey only reports the Census division of residence in the publicly available data, I obtain restricted access data that allows me to match each respondent to their state of residence. The data on wages of gay men and straight men come from the Census Bureau. The Census began collecting data on cohabitating homosexuals in 1990. To match the availability of data on homosexuals in the two data sources, I pool state-level data from the 1990 to 2014 General Social Surveys and merge it with the wage penalties calculated using the 1990 Census, the 2000 Census, and the 2008 through 2014 American Community Surveys.

In the pooled sample of General Social Surveys between 1990 and 2014, there are 34,706 respondents. Appendix Table A2 presents the demographics of General Social Survey respondents. By combining the 1990 Census 5% Public Use Micro Sample, the 2000 Census 5% Public Use Micro Sample, and the 1% Public Use Micro Samples of the 2008 through 2014 American Community Surveys, I construct a sample of 72,239 cohabitating gay men and 10,635,623 cohabitating heterosexual men (Ruggles, Alexander, Gendadek, Goeken, Schroeder and Sobek 2010). Appendix Table A3 highlights the differences between cohabitating heterosexual men and gay men in the Census data. The Census data is restricted to individuals age 18 to 64.

The prejudice data combines data across individuals and states. Because the purpose of the data is to create a distribution of prejudice, each respondent's responses are aggregated into a single index. To create an index that is a proxy for prejudice, it needs to contain the same number of questions in each year. If there are differences in the number of questions used to construct the index, then the tails of the distribution will be drawn

disproportionately from observations with fewer questions due to the higher variance of the indexes. Therefore, I limit the data to four questions asked in every survey (i.e. SEX, BOOK, SPEAK, and COLLEGE). This excludes MARRIAGE and CHILD.

When constructing the distribution of prejudice, I use the same methodology as Charles and Guryan (2008). Because the questions are coded on different scales, I normalize the responses for question  $k$  to have a mean of zero and a standard deviation of one in 1990. These normalized responses can be written as

$$\tilde{d}_{i,t,k} = \frac{d_{i,t,k} - E[d_{1990,k}]}{\sqrt{Var d_{1990,k}}} \quad (20)$$

Individual responses are aggregated to create a single index for individual  $i$ . These indexes are weighted by the total number of questions a respondent answered.

$$D_{i,t} = \frac{\sum_K \tilde{d}_{i,t,k}}{K} \quad (21)$$

These individual responses are regressed on a full set of year dummies to capture the time-invariant prejudice ( $\tilde{D}_{i,t}$ ). The time-invariant prejudice is aggregated to the state-level to create a distribution of prejudice for each state. From these distributions, I determine the average prejudice, percentiles of the prejudice distribution ( $10^{th}$ ,  $25^{th}$ ,  $75^{th}$ , and  $90^{th}$ ), the share of respondents who gave prejudiced responses to all questions, and the prejudice of the marginal individual. The marginal individual can be proxied for by using the percentile of the prejudice distribution equal to the share of the gay population in the sample (Charles and Guryan 2008).

## 7 Results

In this section, I compare the predictions of the models with the empirical relationships found in the data. I regress the time-invariant wage penalties on the measures of prejudice and the gay share of the cohabitating men in a state. Table 3 summarizes the predicted relationships in each model.

Earlier, I showed that based on national level data, there is little reason to expect the Becker model of discrimination would explain the gay wage penalty. Averaging the data at the national or regional level smooths over the large state-level variation in the gay share and the unprejudiced share. Therefore, as a starting point, I begin by presenting the state-level evidence for the Becker model of discrimination.

Column 1 of Table 4 shows the coefficient on the prejudice of the marginal employers is positive, but not significant. The fact that there is no significant relationship between the marginal employer and the wage penalty is not unexpected given the gay share is less than the unprejudiced share in the population. If the Becker model was correct, there should be a positive relationship between the wage penalty and the gay share. However, I find the effect of the gay share of cohabitating men on wage penalties is negative and significant. Increases in the share gay of the cohabitating male population decrease the wage penalty. Overall, the results show that if the wage penalty is discriminatory, the Becker model is not the model driving the wage penalty.

If prejudice is driving the wage penalty, the prejudice responsible must come from a part of the prejudice distribution not accounted for in the Becker model. In column 2, I test the predictions of the search model of discrimination. I find a positive relationship between the share of individuals in a state who are prejudiced and the wage penalty. A 1% increase in the share of individuals who are prejudiced increases the wage penalty for gay men by 0.28 percentage points. There is a negative correlation between the gay share

of the cohabitating male and wage penalties. A 1% increase in the gay share decreases the wage penalty by 5.66 percentage points. These results show that the search model is able to predict the relationships found in the data correctly.

Columns 1 and 2 tested the models individually. By ignoring the prejudice measure from the other model, I am potentially biasing the results with an omitted variable. Therefore, in Column 3, I test a nested version of the model controlling for both measures of prejudice. I combine Equations 18 and 19, controlling for both the prejudice of the marginal employer and the share of individuals in a state who are prejudiced against gay men. Here, we see only small changes in the magnitude of the effects and their significance. There is still no relationship between the prejudice of the marginal individual and the wage penalty. The share prejudiced in a state is positively correlated with the wage penalty. The gay share of cohabitating males is negatively correlated with the wage penalty.

Charles and Guryan (2008) argue that the Becker model predicted the left-hand tail of the prejudice distribution should matter for wage penalties, while higher percentiles should not. The search model predicts that the prejudice driving the wage penalty is from the right-hand tail of the prejudice distribution. If the search model is correct, there should be a significant relationship between percentiles higher in the prejudice distribution and the wage penalty. Table 5 shows that as higher percentiles of the prejudice distribution are used as the measure of prejudice, the results become more significant. At the 10<sup>th</sup> and 25<sup>th</sup> percentiles, there is no significant relationship between prejudice and wages. The prejudice of the average individual, the 75<sup>th</sup> percentile, and the 90<sup>th</sup> percentile all show significant and positive correlations with the wage penalties. These results provide more evidence that the search model is correctly predicting the empirical relationships between wage penalties and prejudice.

## 8 Robustness Checks

So far, the search model has been shown to explain the average wage penalty between cohabitating gay men and cohabitating heterosexuals. In this section, I test how robust the results are to potential errors in calculating the prejudice and wage penalties.

The prejudice used in the baseline estimation could be biased because the measures were calculated using all of the General Social Survey respondents. These responses may not reflect the prejudice of those making the hiring decisions. I can refine the method used to calculate the prejudice measures by restricting the General Social Survey sample to include only respondents employed as managers. When I calculate the share of prejudiced managers in each state, I have a better measure of the prejudice. The problem is that managers only make up 8.6% of General Social Survey respondents. Shrinking the sample size potentially increases the measurement error in the prejudice measures. The measurement error may result in attenuation bias, which would bias the results towards not finding a relationship between prejudice and the wage penalties. If we assume the prejudice of non-managers does not determine the wage penalty, we can correct the measurement error by instrumenting for the share of prejudiced managers in a state using the share of prejudiced non-managers in a state.

Table 6 reports the results when I instrument for the share of prejudiced managers using the share of prejudiced non-managers in a state.<sup>13</sup> Here, we see that the effect of prejudice on the wage penalty has increased. A 1% increase in the number of prejudiced managers increases the wage penalty by 0.33 percentage points. The effect of the gay share remains the same.

The average wage penalty calculated in the baseline estimation assumed that the time-

---

<sup>13</sup>If I instead use OLS to estimate the effect of managers' prejudice on the wage penalty, the magnitudes are smaller and less significant. A 1% increase in the share of managers who are prejudiced is correlated with an increase the wage penalty by 0.19 percentage points. This relationship is significant only at the 10% level. These results suggest that the attenuation bias was significant.

varying factors in each state influenced the wages of gay men and straight men equally. The passage of gay rights laws could potentially increase the wages for gay men without changing the wages for straight men. If the passage of the laws is correlated with the share of prejudiced employers in a state, then the relationship between prejudice and wages in the baseline estimates will suffer from omitted variable bias. The coefficients would contain both the effect of the laws and the effect of the prejudice.

In Table 8, I test the robustness of the results to the passage of employment nondiscrimination laws and legal recognition of same-sex couples. Table 7 details the states with each law and the years they passed it. Earlier work has found that nondiscrimination laws and legal recognition of same-sex couples can increase the wage of gay men (Burn 2016, Burn and Jackson 2014, Klawitter 2011, Martell 2013b). To control for these laws, I modify the three-step estimation process used earlier. The first step is identical to Equation 16. In the second step, Equation 17, I control for changes in each state’s laws. I include dummies for whether a state had an employment nondiscrimination act and whether a state had legal recognition of same-sex couples.

$$\delta_{s,t} = \mu_0 + \mu_1 \text{Enda}_{s,t} + \mu_2 \text{Recognition}_{s,t} + \mu_s I_s + \mu_t I_t + \chi_s \quad (22)$$

I then estimate the nested model of Equations 18 and 19 in the same manner as before using the wage penalties from Equation 22 as the dependent variable.

We see in Table 8 that the results are still the same. The coefficient on the share of the population that is prejudiced remain the same, but the standard errors have increased. A 1% increase in the share of the population that is prejudiced increases the wage penalty by 0.29%. Without controlling for the laws, the effect was 0.29%. Where the baseline results had been significant at the 5% level, now the effect of the share who are prejudiced is only significant at the 10% level. The point estimates for the effect of the size of the gay

population remain significant at the 1% level.

## 9 Discussion

The results have shown the search model correctly predicts the relationship between prejudice and wages found in the data. Given these results it is important to consider why it matters that the search model appears to explain the wage penalty and the Becker model does not. For policymakers trying to reduce the wage penalty, the search model has important implications for how they should view the changes in the wage penalty over the past 25 years and for designing policy to reduce it further.

Table 9 shows how the wage penalty, the prejudiced share of the population, and the gay share of the population have changed between 1990 and 2014. The wage penalty has declined by 7.7 percentage points between 1990 and 2014. If we assume that the cross-sectional effects in Table 4 are true, we can use these estimates to decompose how much of the change in the wage penalty is due to changes in prejudice. A 1 percentage point decline in the share of the population that is prejudiced reduces the wage penalty by 0.3 percentage points. According to the model, the changes in prejudice shown in Table 9 would reduce the wage penalty by 1.9 percentage points. Declining prejudice was responsible for up to 25% of the decline in the wage penalty.

While Table 9 shows that prejudice in the upper tail of the distribution does change, it also suggests that this process can be slow. A better understanding of the model of discrimination helps policymakers craft more effective policies to reduce the wage penalty. Burn (2016) showed that employment nondiscrimination laws with stronger provisions for damages were more effective at reducing the wage penalty for gay men. Weaker provisions may work when the wage penalty is being driven by the lower tail of the prejudice distribution, but in the search model, weaker provisions may not have enough bite to change

the behavior of employers in the upper tail of the prejudice distribution.

The search model also has important guidance for enforcing the nondiscrimination laws. If the mechanisms behind the wage penalty are similar to the Becker model, enforcement should focus on pay discrimination. However, if the search model is accurate, enforcement needs to focus on hiring discrimination. The enforcement of nondiscrimination laws relies in large part on potential damages awarded to the plaintiffs, which are used to pay the plaintiffs' attorneys. This skews the enforcement towards cases with large damages. This results in more focus on discrimination in pay and termination cases, rather than hiring discrimination. The damages awarded for not being hired can be low because the actions of the discriminatory employer often extend the unemployment spell of the plaintiff by a small amount.

To get around the problem of low incentives for pursuing these cases, policymakers should design the nondiscrimination laws with stronger punitive damages, which are designed to punish employers for discrimination. The damage provisions should focus less on compensatory damages, which only compensates the worker for the damage they suffered. Burn (2016) showed that when a nondiscrimination law allows for punitive damages, the passage of the law increased the probability that gay men would be working full time. Only allowing for compensatory damages did not increase the probability gay men worked full time.

## 10 Conclusion

The results of this paper provide evidence that taste-based discrimination plays a role in the wage penalty for gay men. The evidence suggests the Becker model of taste-based discrimination does not explain the wage penalty. A search model, such as that described by Black (1995), correctly predicts the relationships between prejudice and wage penalties

found in the United States. It also correctly predicts the relationship between the size of the gay population and wage penalty. The results suggest that declining prejudice towards gay men can explain up to 25% of the decline in the gay wage penalty since 1990.

Using restricted access data from the General Social Survey, I constructed state-level distributions of prejudice towards homosexuals. I estimated the relationship between various measures of the prejudice and the wage penalties for gay men observed in the United States. I found there was no significant relationship between the prejudice of the marginal employer in a state and the wage penalties. There was a positive relationship between the gay wage penalties and prejudice in the top half of the prejudice distribution. As the share of prejudiced individuals in a state increases, so do the observed gay wage penalties. A 1% increase in the share of prejudiced individuals is correlated with a 0.3 percentage point increase in the wage penalty for gay men. This effect is even larger when I compare the wage penalties to the share of prejudiced managers in a state.

The relationship between prejudice and wage penalties are not driven by the passage of gay rights laws. I test that the results hold when I control for the presence of employment nondiscrimination acts and the legal recognition of same-sex couples. After controlling for the passage of these laws when estimating the wage penalties, there is still a positive and significant relationship between the prejudiced and the wage penalty.

The results described in this paper suggest that there is still a lot that researchers do not understand about the economics of discrimination. The fact that the Becker model of discrimination appears to explain the black versus white wage penalty and a search model explains the gay-straight wage penalty suggests that search frictions may have heterogeneous effects for different minority groups. The role of labor market networks may hold the clue for why search frictions appear to matter less for black workers than gay workers. Job referrals may increase the ability of minority workers to sort towards unprejudiced employers. Research into how gay men utilize job referrals when searching for jobs may

help reconcile the results in this paper to the results in Charles and Guryan (2008).

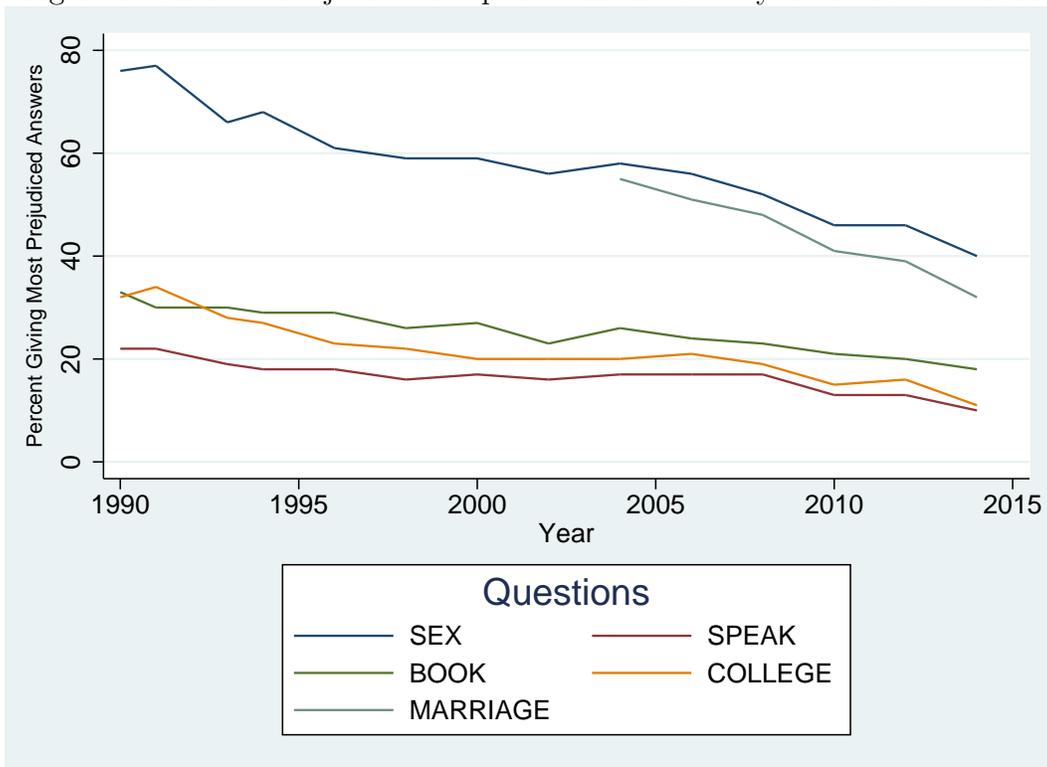
## References

- Allegretto, Sylvia A. and Michelle M. Arthur**, “An Empirical Analysis of Homosexual/Heterosexual Male Earnings Differentials: Unmarried and Unequal?,” *Industrial and Labor Relations Review*, April 2001, 54 (3), 631.
- Antecol, Heather and Michael D. Steinberger**, “Labor Supply Differences Between Married Heterosexual Women and Partnered Lesbiabs: A Semi-Parametric Decomposition Approach,” *Economic Inquiry*, 2013, 51 (1), 783–805.
- , **Anneke Jong, and Michael Steinberger**, “The Sexual Orientation Wage Gap: The Role of Occupational Sorting and Human Capital,” *Industrial and Labor Relations Review*, 2008, 61 (4), 518–543.
- Badgett, M V Lee**, “The Wage Effects of Sexual Orientation Discrimination,” *Industrial and Labor Relations Review*, June 1995, 48 (4), 726–739.
- , **Holning Lau, Brad Sears, and Deborah Ho**, “Bias in the Workplace : Consistent Evidence of Sexual Orientation and Gender Identity Discrimination,” *UC Los Angeles: The Williams Institute*, 2007, (June), 1–8.
- Becker, Gary**, *The Economics of Discrimination*, Vol. 2, The University of Chicago Press, 1971.
- Berg, Nathan and Donald Lien**, “Measureing the Effect of Sexual Orientation on Income: Evidence of Discrimination?,” *Contemporary Economic Policy*, 2002, 20 (4), 394–414.
- Black, Dan**, “Discrimination in an Equilibrium Search Model,” *Journal of Labor Economics*, 1995, 13 (2), 309–334.
- Bond, Timothy N. and Jee-Yeon K. Lehmann**, “Prejudice and Racial Matches in Employment,” *Working Paper*, 2015.
- Bowlus, Audra J. and Zvi Eckstein**, “Discrimination and Skill Differences in an Equilibrium Search Model,” *International Economic Review*, 2002, 43 (4), 1309–1345.
- Burn, Ian**, “Legal Differences in State Non-Discrimination Laws and the Effect of Employment Protections for Gays and Lesbians,” *Working Paper*, October 2016.
- and **Osborne Jackson**, “Valuable Vows: An Examination of the Marriage Premium Using Same-Sex Marriage Legalization,” *Working Paper*, 2014.
- Charles, Kerwin and Jonathan Guryan**, “Prejudice and Wages: An Empirical Assessment of Beckers The Economics of Discrimination,” *Journal of Political Economy*, 2008, 116 (5), 773–808.

- Clain, Suzanne H. and Karen Leppel**, “An Investigation into Sexual Orientation Discrimination as an Explanation for Wage Differences,” *Applied economics*, 2001, *33*, 37–47.
- Cushing-Daniels, Brendan and Tsz-Ying Yeung**, “Wage Penalties and Sexual Orientation: an Update Using the General Social Survey,” *Contemporary Economic Policy*, April 2009, *27* (2), 164–175.
- Elmslie, Bruce and Edinaldo Tebaldi**, “Sexual Orientation and Labor Market Discrimination,” *Journal of Labor Research*, July 2007, *28* (3), 436–453.
- and —, “The Wage Gap against Gay Men: The Leveling of the Playing Field,” *Kyklos*, 2014, *67* (3), 330–345.
- Flabbi, Luca and Mauricio Tejada**, *Gender Gaps in Wages and Employment: The Role of Employers’ Prejudice*, Oxford University Press, 5 2015.
- Gates, Gary J. and Newton, Frank**, “LGBT Percentage Highest in D.C., Lowest in North Dakota,” February 2013. <http://www.gallup.com/poll/160517/lgbt-percentage-highest-lowest-north-dakota>.
- Human Rights Campaign**, “Municipality Equality Index 2012,” 2012. [www.hrc.org/mei](http://www.hrc.org/mei).
- , “Marriage Equality and Other Relationship Recognition Laws,” December 2013. [www.hrc.org/state\\_maps](http://www.hrc.org/state_maps).
- Jepsen, Christopher and Lisa K. Jepsen**, “Labor-Market Specialization within Same-Sex and Difference-Sex Couples,” *Industrial Relations: A Journal of Economy and Society*, 2015, *54* (1), 109–130.
- Jepsen, Lisa K.**, “Comparing the Earnings of Cohabiting Lesbians, Cohabiting Heterosexual Women, and Married Women: Evidence from the 2000 Census,” *Industrial Relations: A Journal of Economy and Society*, 2007, *46* (4), 699–727.
- Klawitter, Marieka**, “Multilevel Analysis of the Effects of Antidiscrimination Policies on Earnings by Sexual Orientation,” *Journal of Policy Analysis and Management*, 2011, *30* (2), 334–358.
- Klawitter, Marieka M.**, “Meta-Analysis of the Effects of Sexual Orientation on Earnings,” *Industrial Relations*, 2015, *54* (1), 4–32.
- Martell, E. Michael**, “Differences Do Not Matter: Exploring the Wage Gap for Same-Sex Behaving Men,” *Eastern Economic Journal*, 2013, *39* (1), 45–71.
- Martell, Michael E.**, “Do ENDAs End Discrimination for Behaviorally Gay Men?,” *Journal of Labor Research*, November 2013, *34*, 147–169.

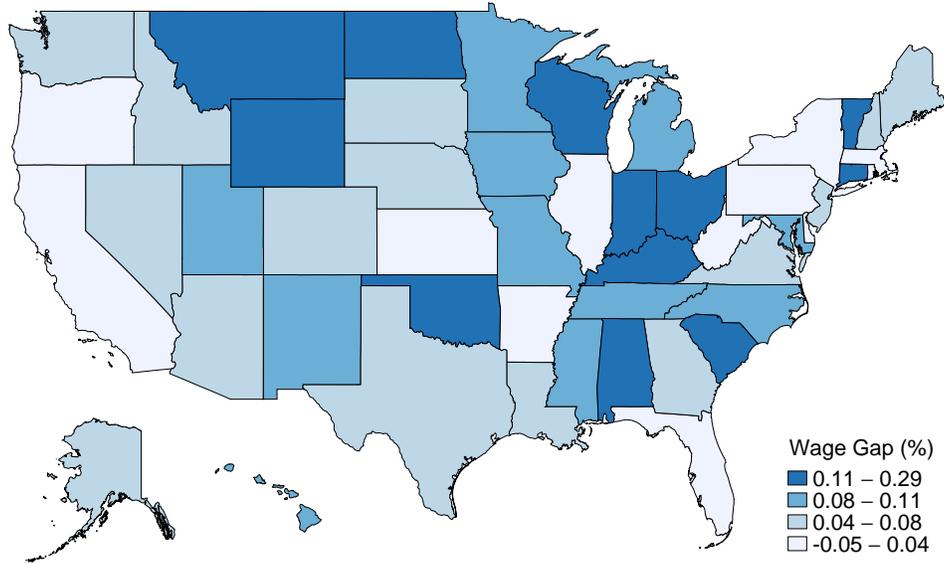
- Neumark, David**, “Employers’ Discriminatory Behavior and the Estimation of Wage Discrimination,” *Journal of Human Resources*, 1988, 23 (3), 279–295.
- Pew Research Center**, “A Survey of LGBT Americans: Attitudes, Experiences and Values in Changing Times,” June 2013.
- Rosen, Asa**, “Search, Bargaining, and Employer Discrimination,” *Journal of Labor Economics*, 2003, 21 (4), 807–829.
- Ruggles, Steven, J. Trent Alexander, Katie Gendadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek**, “Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database],” 2010. Minneapolis: University of Minnesota.
- Sabia, Joseph J.**, “Sexual Orientation and Wages in Young Adulthood: New Evidence from Add Health,” *Industrial Labor Relations Review*, 2014, 67 (1), 239–267.
- Sears, Brad and Christy Mallory**, “Documented Evidence of Employment Discrimination and Its Effects on LGBT People ,” *The Williams Institute*, 2011.
- , **Nan Hunter, and Christy Mallory**, “Analysis of Scope and Enforcement of State Laws and Executive Orders Prohibiting Employment Discrimination Against LGBT People,” *The Williams Institute*, September 2009.

Figure 1: Share of Prejudiced Responses in the GSS by Year: 1990 to 2014



*Note:* Data on prejudice come from the pooled General Social Survey, 1990 to 2014. CHILD is excluded because it was only asked in 2012. See Table 2 for the text of each question.

Figure 2: Gay Wage Penalty



*Note:* Data on wages come from the 1990 Decennial Census 5% PUMS, the 2000 Decennial Census 5% PUMS, and the 2008 through 2014 American Community Surveys. All respondents are cohabitating or married. Wage penalties are the time invariant wage penalties used as the dependent variables in Equations 18 and 19.

Table 1: Contradictory Evidence of Becker’s Model

	Unprejudiced Share	Gay Share	Wage Penalty
New England	25%	1.2%	7%
Mid Atlantic	18%	1.1%	0%
E.N. Central	16%	0.8%	9%
W.N. Central	16%	0.7%	6%
South Atlantic	12%	1.1%	3%
E.S. Central	7%	0.6%	10%
W.S. Central	9%	0.7%	4%
Mountain	20%	1.0%	7%
Pacific	21%	1.4%	1%
<b>U.S.</b>	16%	1.1%	8%

*Note:* Data on wage penalties and gay population come from the 1990 Decennial Census 5% PUMS, the 2000 Decennial Census 5% PUMS, and the 2008 through 2014 American Community Surveys. Census sample weights are used to weight the observations. Data on prejudice come from the 1990 through 2014 waves of the General Social Survey.

Table 2: Questions from the General Social Survey

Question	Question Text
SEX	<p>What about sexual relations between two adults of the same sex—do you think it is always wrong, almost always wrong, wrong only sometimes, or not wrong at all?</p> <p>Asked between 1990 and 2014 GSS Mnemonic: HOMOSEX</p>
BOOK	<p>If some people in your community suggested that a book he wrote in favor of homosexuality should be taken out of your public library, would you favor removing this book, or not?</p> <p>Asked between 1990 and 2014 GSS Mnemonic: LIBHOMO</p>
SPEAK	<p>Suppose this admitted homosexual wanted to make a speech in your community. Should he be allowed to speak, or not?</p> <p>Asked between 1990 and 2014 GSS Mnemonic: SPKHOMO</p>
COLLEGE	<p>And what about a man who admits that he is a homosexual? Should such a person be allowed to teach in a college or university, or not?</p> <p>Asked between 1990 and 2014 GSS Mnemonic: COLHOMO</p>
MARRIAGE	<p>Do you agree or disagree? Homosexual couples should have the right to marry one another.</p> <p>Asked between 2006 and 2014 GSS Mnemonic: MARHOMO</p>
CHILD	<p>To what extent do you agree or disagree with the following statements? A same-sex male couple can bring up a child as well as a male-female couple.</p> <p>GSS Mnemonic: SSMCHILD Asked in 2012</p>

---

Note: Questions come from the pooled General Social Survey, 1990 to 2014.

Table 3: Comparing Predictions of Taste-Based Discrimination Models

	<b>Becker 1971</b>	<b>Black 1995</b>
<b>Prejudice and Wage Penalties</b>		
Marginal Employer	Positive Correlation	
Average Employer	No Correlation	
Share Prejudiced		Positive Correlation
Share Unprejudiced	No Wage Penalty if Share Unprejudiced > Minority Pop	
<b>Population and Wage Penalties</b>		
Minority Share	Positive Correlation	Negative Correlation

Note: Testable predictions are drawn from Charles and Guryan (2008) for Becker's model and from Black (1995) for the search model.

Table 4: Testing the Predictions of Models of Taste-Based Discrimination

	(1)	(2)	(3)
	Becker	Search	Both
Marginal Prejudice	0.051 (0.203)		0.082 (0.196)
Share Prejudiced		0.282** (0.130)	0.286** (0.132)
Share Gay	-6.828*** (1.453)	-5.660*** (1.486)	-5.624*** (1.502)
adj. $R^2$	0.30	0.37	0.35
States	48	48	48

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

*Note:* The dependent variable average wage penalty for gay men in a state. On average gay men experience a wage penalty of 7.8% relative to cohabitating heterosexual men. Data on wage penalties come from the 1990 Decennial Census 5% PUMS, the 2000 Decennial Census 5% PUMS, and the 2008 through 2014 American Community Surveys. Data on prejudice come from the 1990 through 2014 waves of the GSS. Robust standard errors are reported in parentheses. Three states have been dropped from the sample because they have too few respondents in the General Social Survey.

Table 5: Testing Higher Percentiles of the Prejudice Distribution

	(1)	(2)	(3)	(4)	(5)	(6)
Share Prejudiced	0.282** (0.130)					
10 <sup>th</sup> Percentile		0.176 (0.111)				
25 <sup>th</sup> Percentile			0.054 (0.035)			
Mean Prejudiced				0.067* (0.037)		
75 <sup>th</sup> Percentile					0.047** (0.022)	
90 <sup>th</sup> Percentile						0.039* (0.022)
Share Gay	-5.660*** (1.486)	-6.309*** (1.462)	-6.434*** (1.450)	-5.939*** (1.491)	-5.713*** (1.484)	-5.934*** (1.499)
States	48	48	48	48	48	48

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Note:* The dependent variable average wage penalty for gay men in a state. On average gay men experience a wage penalty of 7.8% relative to cohabitating heterosexual men. Data on wage penalties come from the 1990 Decennial Census 5% PUMS, the 2000 Decennial Census 5% PUMS, and the 2008 through 2014 American Community Surveys. Data on prejudice come from the 1990 through 2014 waves of the GSS. Robust standard errors are reported in parentheses. Three states have been dropped from the sample because they have too few respondents in the General Social Survey.

Table 6: Robustness of Results Using Prejudice of Managers

	First Stage
Share of Prejudiced Non-Managers	0.851*** (0.141)
F-state	19.49
	2SLS
Share of Prejudiced Managers	0.329** (0.156)
Gay Share	-5.963*** (1.476)
States	48

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Note:* The dependent variable average wage penalty for gay men in a state. On average gay men experience a wage penalty of 7.8% relative to cohabitating heterosexual men. Data on wage penalties come from the 1990 Decennial Census 5% PUMS, the 2000 Decennial Census 5% PUMS, and the 2008 through 2014 American Community Surveys. Data on prejudice come from the 1990 through 2014 waves of the GSS. Robust standard errors are reported in parentheses. Three states have been dropped from the sample because they have too few respondents in the General Social Survey. In the 2SLS, the share of prejudiced managers in a state has been instrumented for using the share of prejudiced non-managers in a state as the instrument.

Table 7: Gay Rights Laws

State	ENDA	Legal Recognition
California	1992	1999
Colorado	2007	2009
Connecticut	1991	2008
Delaware	2009	2013
District of Columbia	1977	2010
Hawaii	1991	
Illinois	2006	
Iowa	2007	
Maine	2005	
Maryland	2001	2008
Massachusetts	1989	2004
Minnesota	1993	2013
Nevada	1999	2009
New Hampshire	1998	2008
New Jersey	1992	2007
New Mexico	2003	
New York	2003	2011
Oregon	2008	2008
Rhode Island	1995	2013
Vermont	1991	2000
Washington	2006	2007
Wisconsin	1982	2009

*Note:* See Human Rights Campaign (2013), Human Rights Campaign (2012), and Sears, Hunter and Mallory (2009) for more details on these laws.

Table 8: Robustness of Results Controlling for Changes in Laws

	Baseline (1)	Laws (2)
Marginal Prejudice	0.082 (0.208)	0.154 (0.227)
Share Prejudiced	0.286** (0.132)	0.285* (0.152)
Share Gay	-5.624*** (1.502)	-5.745*** (1.741)
$R^2$	0.35	0.29
States	48	48

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Note:* The dependent variable average wage penalty for gay men in a state. Data on wage penalties come from the 1990 Decennial Census 5% PUMS, the 2000 Decennial Census 5% PUMS, and the 2008 through 2014 American Community Surveys. Data on prejudice come from the 1990 through 2014 waves of the GSS. Robust standard errors are reported in parentheses. When calculating the wage penalties, the sample is restricted to cohabitating individuals who are currently in the labor-force. Controls for potential experience, schooling, race, and state and year fixed effects are included. Three states have been dropped from the sample because they had too few respondents in the General Social Survey.

Table 9: Changes in Factors Related to Taste-Based Discrimination: 1990 to 2014

Year	Prejudiced Share	Gay Share	Wage Penalty
1990	10.5%	0.4%	13.5%
2000	6.3%	1.2%	8.6%
2008	6.4%	1.0%	6.3%
2009	5.4%	1.1%	6.4%
2010	4.5%	1.1%	3.4%
2011	4.5%	1.1%	5.5%
2012	4.6%	1.2%	4.1%
2013	4.3%	0.9%	5.9%
2014	4.0%	0.9%	5.8%

---

*Note:* Data on wages come from the 1990 Decennial Census 5% PUMS, the 2000 Decennial Census 5% PUMS, and the 2008 through 2014 American Community Surveys. Sample is restricted to married men and gay men who are working full-time. Census sample weights are used to weight the observations. When calculating the wage penalty, controls for potential experience, schooling, race, occupation, urban residence, and children are included. State, year, and state by year fixed effects are also included in the regressions.

# Appendix

Table A1: Testing the Predictions of Models of Taste-Based Discrimination for Lesbians

	(1)	(2)	(3)
	Becker	Search	Both
Marginal Prejudice	0.150 (0.118)		0.179 (0.124)
Share Prejudiced		0.214* (0.110)	0.226** (0.109)
Share Lesbian	-0.748 (1.893)	-0.969 (2.030)	-1.223 (2.105)
adj. $R^2$	0.03	0.09	0.12
States	48	48	48
Average Wage Penalty	-0.029	-0.029	-0.029

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

*Note:* The dependent variable average wage premium for lesbian women in a state. On average lesbian women earn 2.9% more than cohabitating heterosexual women. Data on wage premiums come from the 1990 Decennial Census 5% PUMS, the 2000 Decennial Census 5% PUMS, and the 2008 through 2014 American Community Surveys. Data on prejudice come from the 1990 through 2014 waves of the GSS. Robust standard errors are reported in parentheses. When calculating the wage premiums, the sample is restricted to cohabitating individuals who are currently in the labor-force. Controls for potential experience, schooling, race, and state and year fixed effects are included. Three states are dropped from the sample because they had too few respondents in the GSS.

Table A2: Demographics of GSS Respondents: 1990 to 2014

White	78%
Black	14%
Other	8%
Years of Schooling	13.33
High School Diploma	52%
Bachelor's Degree	17%
Graduate Degree	9%
Age	45.57
Male	44%
Female	56%
New England	5%
Middle Atlantic	14%
E. N. Central	17%
W. N. Central	7%
South Atlantic	20%
E. S. Central	7%
W. S. Central	10%
Mountain	7%
Pacific	14%
N	34,706

---

Note: Data on GSS respondents come from the pooled General Social Survey, 1990 to 2014.

Table A3: Demographics of ACS/Census Respondents: 1990 to 2014

	Heterosexual Men	Gay Men
Annual Income (1999 dollars)	\$42,245	\$41,885
White	80%	83%
Black	10%	7%
Other	10%	10%
Years of Schooling	14.5	15.4
Age	44.3	42.7
Urban	48%	56%
Kids	54%	10%
New England	5%	6%
Middle Atlantic	13%	15%
E. N. Central	16%	13%
W. N. Central	7%	5%
South Atlantic	19%	21%
E. S. Central	6%	4%
W. S. Central	12%	9%
Mountain	7%	7%
Pacific	16%	22%
N	10,635,623	72,239

Note: Data on wages come from the 1990 Decennial Census 5% PUMS, the 2000 Decennial Census 5% PUMS, and the 2008 through 2014 American Community Surveys. All respondents are cohabitating or married.

Table A4: Prejudice in the GSS: 1990 to 2014

	COLHOMO	LIBHOMO	SPKHOMO	HOMOSEX
	(1)	(2)	(3)	(4)
Female	-0.078*** (0.015)	-0.026 (0.015)	-0.015 (0.013)	-0.160*** (0.011)
Age/10	0.107*** (0.010)	0.099*** (0.011)	0.075*** (0.008)	0.124*** (0.007)
Black	0.053*** (0.011)	0.164*** (0.028)	0.084*** (0.023)	0.293*** (0.030)
Other Race	0.168*** (0.034)	0.217*** (0.024)	0.179*** (0.028)	0.235*** (0.052)
Income >\$25k	-0.217*** (0.011)	-0.214*** (0.014)	-0.206*** (0.014)	-0.116*** (0.029)

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Note:* Dependent variable is the prejudice index for each question. See the text for how this index was constructed. Standard errors are clustered at the state-level and reported in parentheses. Fixed effects for state, year, and state by year are included.

Table A5: Using Two-Step Process as Done in Charles and Guryan (2008)

	Two-Step Procedure	Three-Step Procedure
	(1)	(2)
Marginal Prejudice	0.143 (0.212)	0.082 (0.196)
Share Prejudiced	0.291** (0.142)	0.286** (0.132)
Share Gay	-5.903*** (1.629)	-5.624*** (1.502)
adj. $R^2$	0.34	0.35
States	48	48

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

*Note:* The dependent variable average wage penalty for gay men in a state. Data on wage penalties come from the 1990 Decennial Census 5% PUMS, the 2000 Decennial Census 5% PUMS, and the 2008 through 2014 American Community Surveys. Data on prejudice come from the 1990 through 2014 waves of the GSS. Robust standard errors are reported in parentheses. When calculating the wage penalties, the sample is restricted to cohabitating individuals who are currently in the labor-force. Controls for potential experience, schooling, race, occupation, urban residence, children, and state by year fixed effects are included. The two step procedure is drawn from Charles and Guryan (2008). It omits the second step (Equation 17) when calculating the time-invariant, state-level wage penalties. Instead, the indicator for being gay is interacted with year fixed effects in the first step. Three states are dropped from the sample because they have too few respondents in the GSS.