

# Tolerance and Gay-Straight Differences in Education, Occupation, and Migration

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## Abstract

I examine the relationship between gay-straight demographic differences and societal attitudes towards homosexuality. Using the American Community Survey (2005-2014), I find that gay-straight differences in education, occupation and internal migration are lower among men born in more tolerant states. I propose two complementary explanations for the results: first, intolerance may cause gay men to make different decisions about their education, occupation, and migration. Second, living in a more tolerant state, having higher education, or working in a certain profession may make a man more likely to live in an open same-sex partnership. Under either of these explanations, the results suggest that intolerance imposes significant costs on gay men that are not captured in previous economic analyses of discrimination. The results also suggest that intolerance can reinforce stereotypical views of individuals within self-identified categories.

**JEL codes:** J1, J11, J15.

**Keywords:** Homosexuality; social tolerance; education; occupational choice; migration.

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# 1 Introduction

Gay and heterosexual men in the United States differ across a number of demographic characteristics: gay men are more likely to have a university degree, work in particular occupations, and live outside their birth state (Black et al., 2002). However, there has been relatively little research examining the causes of these differences. One explanation is that gay and heterosexual men simply have different preferences, which lead them to make different choices. Alternatively, these differences may result from social intolerance towards homosexuality.

In this article, I use data from the American Community Survey (2005-2014) to show that demographic differences are, in fact, associated with tolerance of homosexuality (where tolerance is measured using responses to General Social Survey (GSS)). In particular, I show that gay-straight differences in education, occupation, and internal migration are smaller for individuals who were born in more tolerant states.

There are two broad explanations for the relationship between tolerance and gay-straight demographic differences. One explanation is that intolerance may cause gay men to make different decisions about their education, occupation, and migration. A competing explanation is that living in a more tolerant state, having higher education, or working in certain professions may make a man more likely to live in an open same-sex partnership (which is how sexual orientation is defined in the data).

Regardless of the causal mechanism, the results imply that intolerance imposes significant costs on gay men. Intolerance either forces gay men to make different choices about education, occupation, and migration than they would otherwise make, or it prevents men from living in an open same-sex partnership. These costs have not been considered in previous economic analyses of discrimination (Badgett, 1995; Antecol et al., 2008; Baumle and Poston, 2011).

A handful of existing papers have examined the effect of social attitudes on the demographics of the gay and lesbian population. Badgett and King (1997) consider how the proportion of lesbian and gay workers in an occupation is affected by tolerance within that occupation. They find that gay men are more likely to be employed in tolerant occupations, but the opposite is true for lesbian women. Given the strong correlation between tolerance and sex, this may simply reflect the fact that gay men are more likely than straight men to work in female-dominated professions and lesbian women are more likely than straight woman to work in male-dominated professions.

Tilcsik et al. (2015) find that gay and lesbian individuals gravitate to occupations that offer greater task independence (i.e., the autonomy to perform one's work without depending on others) and require greater social perceptiveness (i.e., the ability to anticipate and read the reactions of others). The authors relate this finding to social attitudes regarding homosexuality, explaining that intolerance forces many gay and les-

bian workers to consciously manage information about their sexuality. Jobs with high levels of task independence allow these worker greater control over the disclosure of this information. Furthermore, the lifelong concern with managing others' perceptions of their sexuality endows gay and lesbian workers with greater social perceptivity.

Numerous articles have examined gay-straight wage differences, with the majority finding a significant gay wage penalty (Ahmed and Hammarstedt, 2010; Antecol et al., 2008; Badgett, 1995; Carpenter, 2007; Clain and Leppel, 2001; Cushing-Daniels and Yeung, 2009). A smaller number of papers have found no wage penalty (Carpenter, 2005) or a wage penalty that is decreasing over time (Clarke and Sevak, 2013). Wage disparities could be caused by discrimination based on social intolerance, but could also be attributed to gay-straight differences in household specialization or unobserved productivity differences. A few of these papers have directly investigated the relationship between wage differences and social attitudes about homosexuality. Baumle and Poston (2011) find that wages of gay men are higher in US states with larger gay populations (a proxy for social tolerance), however, the wages of gay men are also higher in states with more Southern Baptists (a proxy for social intolerance). Hammarstedt et al. (2015) estimate a positive relationship between social tolerance and gay wages in Swedish counties.

Tilcsik (2011) analyzes the relationship between social tolerance and workplace discrimination by sending résumés in response to job advertisements in seven states. Résumés that highlighted experience in a gay and lesbian campus organization were significantly less likely to receive a callback. The differences in callback rates varied by state, with more tolerant states having smaller or nonexistent differences. Differences in callback rates were also greater for advertisements that stressed masculine job traits such as assertiveness or aggressiveness.

Black et al. (2002) examine why gay men concentrate in certain urban centres. According to conventional wisdom, these agglomeration patterns are a function of social attitudes – gay men live in San Francisco because San Francisco is a liberal city. However, Black et al. (2002) conclude that the clustering of gay men is actually driven by costly urban amenities. These amenities are more appealing to gay men who are more likely to be childless, which reduces housing costs and might increase demand for urban amenities. After controlling for the presence of amenities, Black et al. (2002) find that attitudes towards homosexuality do not have a significant impact on the size of the gay population in a city.

Finally, Francis and Mialon (2010) find that HIV rates among gay men are higher in less tolerant states. They suggest two causal mechanisms for this result. First, liberal social attitudes encourage more “low-risk” men to enter the pool of gay partners. Second, living in a more tolerant environment allows men to engage in less anonymous,

and less risky, sexual behaviour.

The results I present in this paper are consistent with the popular notion that gay culture is being amalgamated into mainstream society as tolerance increases (Sullivan, 2005). Previous academic research also supports this idea: Seidman et al. (1999) and Seidman (2002) document the normalization of homosexual life through a series of primary interviews. Similarly, Ghaziani (2014) finds that younger gay men and lesbian women are more ambivalent about living in predominately gay neighbourhoods, leading to the disappearance of gay enclaves within large cities.

It should also be noted that similar demographic differences exist between lesbian and straight women: lesbian women have greater educational attainment, are more likely to work in male-dominated occupations, and are more likely to have moved from their home state. However, the relationship between tolerance and lesbian-straight differences is more complex, as there is a correlation between attitudes about homosexuality and attitudes towards gender equality.<sup>1</sup> As attitudes towards gender roles have liberalized, women have increased their education (Goldin et al., 2006) and workforce participation (Blau and Kahn, 2013; Juhn and Potter, 2006). It is, therefore, difficult to disentangle the extent to which changes in lesbian-straight differences are affected by evolving views on gender versus greater tolerance of homosexuality.

The rest of this paper unfolds as follows: in section two, I consider various theories of homosexual identity formation and consider how social tolerance moderates the interaction between identity formation and decisions about education, occupation, and migration. In section three, I discuss the data. In the subsequent sections, I examine gay-straight differences in education, occupation, and migration, respectively. In each of these sections, I show that gay-straight differences are moderated by state-level measures of tolerance and relate these findings to the prior theoretical discussion, while considering alternative explanations for the results. I then conclude.

## 2 Tolerance, sexual identity and life decisions

### 2.1 Tolerance of homosexuality

While the causes of sexual orientation are still debated, there is increasing agreement that sexual orientation is, at least partially, biologically determined (Jannini et al.,

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<sup>1</sup>The relationship between attitudes towards homosexuality and gender equality can be seen in responses to questions on the General Social Survey (GSS). Between 1973 and 2014, the GSS asked respondents whether they thought that sexual relations between same-sex partners is (1) as always wrong, (2) almost always wrong, (3) wrong only sometimes, or (4) not wrong at all?, it also asked whether respondents agreed that “Most men are better suited emotionally for politics than are most women” (with agreement coded as 0 and disagreement coded as 1). The statewide yearly averages on these two questions have a correlation of 0.43.

2010). Evidence of a biological basis for sexual orientation comes from twin studies (Bailey and Pillard, 1991), birth order effects,<sup>2</sup> animal behavior (Bagemihl, 1999), and a recent genome-wide association study (Ganna et al., 2019). However, even if sexual preferences were completely biologically determined, individuals are not born with an innate awareness of their orientation. Instead, they come to recognize their sexual identity over the course of their life.

Several papers have offered stage-theories of homosexual identity formation (Cass, 1979; Chapman and Brannock, 1987; McCarn and Fassinger, 1996; Ponse, 1978; Rust, 1992; Troiden, 1988). One commonly cited model, proposed by Troiden (1988), contains four different stages: (1) sensitization, (2) identity confusion, (3) identity assumption, and (4) commitment.<sup>3</sup> In the first stage of the model, individuals are sensitized to the fact that they are, in some sense, different than their peers. This sensitization is not necessarily sexual, but manifests in a general feeling of otherness (e.g., feeling different than others of the same sex). In the second stage, individuals begin to recognize themselves as likely to be homosexual, which provokes a variety of responses. Some individuals seek to deny these feelings or somehow accommodate them while still self-defining as heterosexual. For others, this stage is one of self-discovery without any negative response. The third stage of the model involves individuals self-defining as homosexual, though Troiden notes that individuals may come to tolerate more than accept this self-definition. In the fourth stage, individuals commit to and become comfortable with their sexual identity.

Those who have proposed models of sexual identity formation are quick to point out that these are highly generalized models and do not represent a universal experience. Progression through stages is often non-linear – individuals may move back and forth between stages, inhabit two stages at the same time, or jump across stages. Furthermore, many individuals do not traverse all the stages in the model – as Cass (1979) notes, “identity foreclosure” can occur at any stage in the process. Even with these cautions, stage models have been criticized for homogenizing an experience that may differ by ethnicity, race, sex, orientation (i.e., bisexual versus homosexual), age, and class (Eliason, 1996). Furthermore, Kaufman and Johnson (2004) argue that identity formation models tend to discount socio-cultural factors (such as tolerance), which are constantly evolving.

These caveats notwithstanding, Troiden’s model serves as a useful narrative when considering how educational, occupational, and migratory decisions interact with the

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<sup>2</sup>Blanchard (1997) and Blanchard and Klassen (1997) find that younger siblings are more likely to be homosexual.

<sup>3</sup>The six-stage model of Cass (1979) is perhaps better known and more widely cited. However, after empirical testing, Cass finds that her model can be collapsed into four stages (Cass, 1984), making it similar in many respects to Troiden (1988).

process of sexual identity formation. These decisions are generally made in early adulthood, precisely at the moment when many gay men become aware of their sexuality. Troiden (1988) suggests that most gay men experience the first stage of identity formation – sensitization – in early adolescence, possibly even before puberty. The second stage, in which a man begins to suspect himself of being gay, occurs in middle to late adolescence. The final stages generally play out when an individual is in their late teenage years or in their twenties. Troiden does, however, take pains to note that these ages are mere averages and disguise a heterogeneity of experience. Floyd and Stein (2002) show further evidence of the multiplicity of experience, finding that some individuals are “fully out” in their adolescence, while others remain in earlier stages of identity formation well into their adult life.<sup>4</sup>

Tolerance plays a crucial role in an individual’s identification with a stigmatized minority group (Goffman, 1963; Corrigan and Matthews, 2003; Kaufman and Johnson, 2004). Most models of identity formation allow that social pressure can foreclose identity formation at any stage (Cass, 1979; Troiden, 1988). Goffman (1963) notes that individuals may pursue various strategies to cope with the stigma of being in a minority group, including correcting the stigma (i.e., living as a heterosexual), passing as the majority group, and seeking out spaces in which their stigma is minimized. Similarly, Cass (1979) and Troiden (1988) argue that minimizing the stigma one faces is often integral to moving through the stages of homosexual identity.

Gay men are not able to avoid all the stigma associated with their sexual orientation – they may be born into families, attend secondary schools, or live in communities with intolerant views. However, they can make certain choices in their adult lives that minimize the stigma they face, for example by choosing to live, work, or study in more tolerant environments.

## **2.2 A theoretical model of sexual identity, tolerance, and life choices**

The process of identity formation and the desire to avoid stigma, suggest two causal reasons why intolerance may moderate the educational, occupational, and migratory decisions of gay men. First, men who are in some stage of homosexual identity formation may construct their environment to minimize the intolerance that they face. Strategies to minimize intolerance include pursuing higher education, working in more

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<sup>4</sup>Floyd and Bakeman (2006) conduct a detailed survey of 414 gay men, examining the age when individuals first experienced certain life events. The results are broadly supportive of Troiden’s narrative: on average, gay men were first aware of same-sex attraction before they were 12, had their first same-sex sexual experience in their 18th year, and self-defined as gay soon after. They also present evidence that the age of homosexual awareness, first homosexual experience, and self-identification, are declining over time.

tolerant fields, and moving to more tolerant places. Second, identity foreclosure is more likely to occur in less tolerant environments, meaning that men who find themselves in such environments may be less likely to identify as gay. In this section, I outline a stylized model that formalizes the discussion in the previous section. The model focuses on an individual with a two-dimensional type who simultaneously chooses both their orientation ( $O$ ) and their environment ( $E$ ) and points the to welfare loss caused by social intolerance.

The individual's orientation can either be gay or straight:  $O \in \{g, s\}$ . To be clear, I am not assuming that the individual chooses their preference, only that they choose how they will publicly identify. Admittedly, this characterization of orientation is a simplification. Some individuals identify as neither gay nor straight (e.g., bisexual or asexual), while others might identify with different orientations depending on their audience (Ragins, 2008). One could accommodate these complexities by defining  $g$  as any non-heterosexual orientation with which an individual publicly identifies.

The individual's environment,  $E \in \{e_1, e_2\}$ , could be interpreted as their level of education, their occupation, or their place of residence. The first environment,  $e_1$ , is assumed to be more tolerant than the second.

The first dimension of the individual's type,  $\beta \in (-0.5, 0.5)$ , captures their preference over their orientation, with a larger value of  $\beta$  denoting an intrinsic preference for identifying as gay. This scale is consistent with research demonstrating that sexual orientation is continuous as opposed to discrete (Sell, 1997; Epstein et al., 2012; Vrangalova and Savin-Williams, 2012).

Admittedly, a one dimensional scale simplifies the complex nature of sexual orientation. Klein et al. (1985) define seven dimensions of sexual orientation: sexual attraction, sexual behavior, sexual fantasies, emotional preference, social preference, self-identification, and lifestyle. However, most empirical research finds a high degree of correlation across individuals' scores on these dimensions (Weinrich et al., 1993; Vrangalova and Savin-Williams, 2012), suggesting that a one-dimensional scale provides a realistic approximation of sexual orientation. Storms (1980) measures sexual orientation on two dimensions, one capturing the strength of heterosexual feelings, the other capturing the strength of homosexual feelings. This two-dimensional scale explicitly allows for asexuality and bisexuality. Again, one could accommodate other sexual orientations in the model by defining  $g$  as any non-heterosexual orientation and  $\beta$  as the strength of the individual's preference for heterosexuality.

The second dimension of the individual's type,  $\theta \in (-0.5, 0.5)$ , captures their preference over their environment. A larger value of  $\theta$  denotes a stronger intrinsic preference for the first environment. For example, if the individual's environment was interpreted as their level of education, then a positive value of  $\theta$  would represent an intrinsic

preference for higher education.

The two dimensions of the individual's type,  $\beta$  and  $\theta$ , are independently and continuously distributed. This implies that having an intrinsic preference to identify as gay does not make the individual any more or less likely to prefer a specific environment.

Societal tolerance of homosexuality is defined by  $\tau$ , which is continuously distributed over a bounded interval. Societies that are more tolerant have a higher value of  $\tau$ . The tolerance the individual faces is defined as  $T$  and is a function of societal tolerance and their chosen environment:  $T(E, \tau) \in [-1, 0]$ . The tolerance the individual faces is increasing in  $\tau$  and is greater in the first environment than the second when society is not perfectly tolerant:  $T(e_1, x) > T(e_2, x) \forall x < \sup(\tau)$ . The difference in the tolerance in each of the two environments is decreasing in  $\tau$ ,

$$\frac{\partial}{\partial \tau} (T(e_1, \tau) - T(e_2, \tau)) < 0. \quad (1)$$

When society is perfectly tolerant there is no difference in the tolerance of the two environments:  $T(e_1, \sup(\tau)) = T(e_2, \sup(\tau)) = 0$ .

The individual's utility is a function of their type, their orientation, their environment, and the level of social tolerance (if they choose to identify as gay),

$$u(O, E; \theta, \beta, \tau) = \beta(2g_i - 1) + \theta(2e_{1,i} - 1) + g_i T(E, \tau), \quad (2)$$

where  $g_i$  is an indicator value equal to one if the individual chooses to identify as gay and  $e_{1,i}$  is an indicator value equal to one if the individual chooses the first environment.

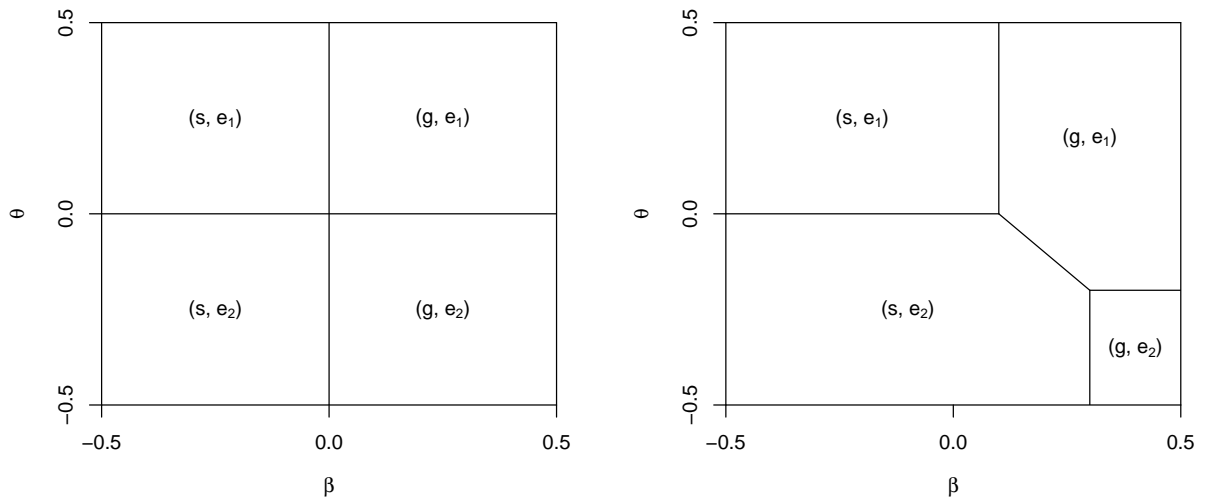
If society is perfectly tolerant, then the individual chooses to identify as gay if, and only if,  $\beta > 0$ , and chooses the first environment if, and only if,  $\theta > 0$ . Panel a of Figure 1 illustrates the choice the individual will make conditional on their type when there is perfect tolerance.

Adding intolerance to the model has two effects. First, it shrinks the set of types for which the individual chooses to publicly identify as gay. Second, conditional on the individual choosing to identify as gay, it reduces the set of types for which they choose the second environment. These effects are illustrated in panel b of Figure 1.

Intolerance imposes three different costs, which are illustrated in panel c of Figure 1. First, when the individual identifies as gay they incur a direct cost of intolerance,  $-T$ . Second, there are types for which the individual identifies as gay when society is perfectly tolerant, but identifies as straight in the face of intolerance. For these types, the individual incurs a psychic cost of  $2\beta$  from identifying with an orientation that is not their intrinsic preference. Finally, there are types for which the individual chooses  $(g, e_2)$  when there is perfect tolerance, but chooses  $(g, e_1)$  when there is intolerance. In this type space, the individual's loss from not being in their preferred environment is

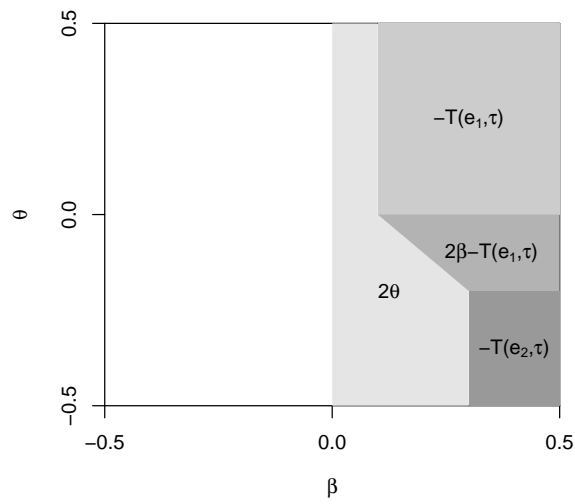


Fig. 1: Optimal actions in type space and the cost of intolerance



(a) No intolerance

(b) Intolerance



(c) Costs of intolerance

$2\theta$ .

Figure 1 also makes clear that intolerance creates gay-straight differences in the likelihood of being in the two environments, despite the fact that preferences over environments are independent of preferences over orientation. As tolerance in society increases, the set of types for which the individual chooses  $(g, e_2)$  increases relative to the set of types for which the individual chooses  $(g, e_1)$ . We can formalize this logic by using the common assumption that the distribution of  $\beta$  has a monotone hazard rate.

**Proposition 1.** *The individual is weakly more likely to choose the first environment conditional on choosing a gay orientation. Furthermore, if the distribution of  $\beta$  has a monotone hazard rate, the probability the individual chooses the first environment conditional on choosing a gay orientation is decreasing in tolerance.*

The proof of the proposition is in the appendix. Theoretically, intolerance also affects the probability the individual chooses the first environment conditional on choosing a straight orientation. In Figure 1, intolerance increases the set of types for which the individual chooses  $(s, e_1)$  relative to the set of types for which they choose  $(s, e_2)$ . However, this is not a general result. For example, when intolerance is extremely high the individual plays  $s$  regardless of  $\beta$ , and, therefore, plays  $e_1$  if, and only if,  $\theta > 0$  (as tolerance has no effect on utility when  $s$  is chosen). In this case, the relative probability of playing  $(s, e_1)$  and  $(s, e_2)$  is the same as when there is perfect tolerance. Hence, the probability of playing  $e_1$  conditional on choosing  $s$  is not generally monotonic in tolerance.

Empirically, the distribution of  $\beta$  is found to have a strong left-skewness (Epstein et al., 2012; Vrangalova and Savin-Williams, 2012), which is to say that most men identify as having a strong preference for a straight orientation. Since tolerance has no effect on the choice of environment when  $\beta < 0$ , the skewness in the distribution of  $\beta$  implies that tolerance is unlikely to have a significant effect on the proportion of straight men in the two environments. Therefore, if proposition 1 holds then demographic differences between straight and gay men will decline as social tolerance increases.

### 3 Data

The primary data source I use in this paper is the 2005-2014 American Community Survey (ACS) public use microdata sample. The ACS is an annual survey conducted by the US census bureau that covers approximately 1% of US households. The ACS and similar household censuses have frequently been used to study the demographics of the American lesbian and gay population (Antecol et al., 2008; Black et al., 2000, 2002; Tilcsik et al., 2015). Following these previous papers, I identify gay men as those

who are in an unmarried partnership with another man. The obvious drawback of this definition is that it does not capture unpartnered gay men. Other datasets, such as the General Social Survey (GSS) or the National Health and Nutrition Examination Survey, allow sexual orientation to be defined based on an individual’s sexual history.

Black et al. (2007) find that partnered gay men in the census tend to be more educated, less white and, by definition, more likely to be partnered than behaviourally gay men in the GSS. However, one advantage of the household definition of sexual orientation is that gay men in an unmarried partnership may be more likely to publicly identify as gay. Social attitudes are likely to have a different impact on men who are behaviorally gay, but do not publicly identify as such. Furthermore, datasets that allow for a behavioral definition of sexual orientation have substantially smaller samples of gay men, precluding state-level analysis.

There are several observations in the data where two men are identified as married spouses. However, a significant number of these observations are actually opposite-sex couples in which the female’s sex is misspecified. Because there are significantly more opposite-sex married couples than same-sex couples, if a small proportion of opposite-sex married couples misreport their sex it will materially bias the sample of same-sex couples. Further, misreports of sex are non-random – individuals who err in filling out their census forms are demographically different than those who complete their forms correctly.<sup>5</sup>

I follow the typical procedure in the literature and remove same-sex married couples from the data (Antecol et al., 2008; Black et al., 2002, 2007). This may introduce some bias, especially given that over the course of the sample gay marriage was legalized in certain states. Massachusetts was the first state to legalize gay marriage in 2004, and between 2004 and 2015, when gay marriage was recognized nationwide, 34 more states legalized gay marriage. In the supplementary appendix, I verify that all the results in the paper are robust to using data from the 2000 US census, which was taken prior to the legalization of same-sex marriage.

The outcomes for gay men are compared to outcomes for partnered heterosexual

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<sup>5</sup>Two reports from the US Census Bureau find that sex misreporting substantially affects the sample of same-sex married couples. O’Connell and Feliz (2011) examine the first names of reported same-sex couples in the 2010 census. They define a first name as being associated with a particular sex if 95% of individuals who share that name in the census also share the same sex. They find that 62% of same-sex married couples in the census have first names that suggest they are actually opposite-sex couples. In contrast, only 7% of same-sex unmarried partners have first names that suggest they are opposite-sex couples.

Kreider and Lofquist (2015) match data from the 2010 American Community Survey (ACS) to social security records, where sex reporting is more accurate. They find that 57.3% of same-sex couples in the ACS are actually opposite-sex couples when using sex in the social security data. Conversely, only 7% of same-sex unmarried partners are opposite-sex couples. Furthermore, Kreider and Lofquist (2015) show that individuals who were wrongly identified as same-sex couples are significantly older, less educated, and have lower incomes than either correctly identified same-sex married couples or opposite-sex married couples.

Table 1: Descriptive statistics

	Gay	Heterosexual
<b>Education</b>		
Less than high school	0.045	0.073***
High school	0.172	0.281***
Some post-secondary	0.228	0.225
Associate degree	0.085	0.085
Undergraduate degree	0.279	0.209***
Graduate degree	0.191	0.128***
<b>Occupation</b>		
Men in occupation (%)	50.6 (25.0)	70.4 (23.1)***
Gay men in occupation (% of men)	2.43 (3.70)	0.996 (1.08)***
Moved from birth state	0.543	0.395***
Age	45.8 (10.3)	47.2 (11.0)***
White	0.919 (0.273)	0.904 (0.295)***
Child in household	0.148 (0.355)	0.492 (0.500)***
Observations	50,274	4,338,346

Mean values with standard deviations in parentheses. \*, \*\*, and \*\*\* represent statistically significant differences between the two group means at the 10%, 5%, and 1% levels.

men – these men are either married or in an unmarried partnership. I remove all observations where sex, age, or relationship status was imputed and confine my analysis to individuals between 25 and 65 years of age. As the analysis centres on an individual’s state of birth, I remove those born outside the United States and those with no place of birth recorded.

Descriptive statistics of the ACS data are contained in Table 1. Gay men comprise 1.2% of the sample of partnered men, which is broadly in line with estimates from other population surveys taken at the time. Gates (2011) provides an overview of these surveys, finding that the percentage of individuals identified as gay and lesbian ranges from 0.7% to 3.4%, while the percentage identified as gay, lesbian, or bisexual ranges from 1.7% to 5.6%. Coffman et al. (2016) show that there is significant response bias to survey questions regarding sexual orientation, hence, these surveys likely understate the size of the gay and lesbian population.

The descriptive statistics reveal substantial differences between gay and straight men in education, occupation, and migration. Educational attainment in the ACS is measured using 16 different categories, which I further aggregate into six categories: less than high school, high school, some post-secondary, associate degree, undergraduate degree, and graduate degree. Consistent with previous research, gay men are more likely to hold an undergraduate or post-graduate degree.

Table 1 reports the percentage of men and the number of gay men (as a percentage of all male workers) in an individual’s occupation. These percentages are tabulated using Standard Occupational Classification (SOC) codes.<sup>6</sup> The percentage of men in an occupation is calculated using the entire universe of ACS responses, while the percentage of gay workers in an occupation is calculated using data on partnered men (recall that the sexual orientation of unpartnered men cannot be ascertained). Consistent with previous research, gay men tend to work in occupations with substantially greater numbers of female and gay workers.

To measure tolerance towards homosexuality in each state, I use the General Social Survey (GSS). The GSS is a survey of social attitudes that was initiated in 1972. The GSS was conducted annually until 1994, and biannually thereafter. Beginning in 1973, the GSS has asked respondents whether they believe that sexual relations between two adults of the same-sex is: “always wrong”, “almost always wrong”, “wrong only sometimes”, or “not wrong at all”. This question has been used by several previous papers to measure tolerance towards homosexuality (Black et al., 2002; Francis and Mialon, 2010; Martell, 2013). I map responses to this question to a four-point scale, with higher values indicating greater tolerance. Figure 2 plots the cumulative distribution of state-level tolerance in the periods 1975-1984, 1985-1994, 1995-2004, and 2005-2014. As one would expect, tolerance is increasing over time, with significant variance across states in each period.

The primary measure of tolerance used in the analysis is the state-level average of responses within five years of an individual’s eighteenth birthday, at which point it is assumed that individuals begin to make decisions related to education, occupation, and migration. Given that the GSS began in 1972, for all individuals born prior to 1954 I measure tolerance using GSS responses between 1972 and 1977 (the results are robust to removing these individuals). In some years, the GSS has no observations for certain states, as a result 7% of the ACS observations cannot be linked to the GSS data and are, therefore, dropped from the sample. To make the results more interpretable, in the subsequent analysis I standardize the state-level measure of tolerance to have a mean of zero and a standard deviation of one.

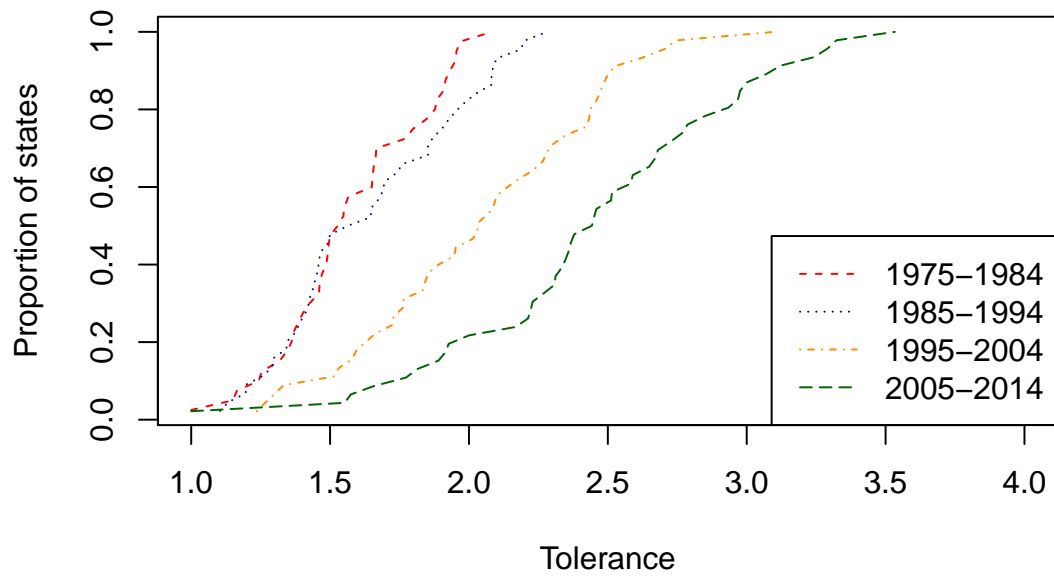
In the supplementary appendix, I show the results are robust to two other measures of tolerance: the percentage of evangelical Christians in a state in the year 2000 and support for same-sex marriage taken from Pew Research surveys between 2004 and 2015.<sup>7</sup> Both these measures capture tolerance at a particular point in time and, therefore, rely on cross-sectional variance in tolerance between states, rather than changes

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<sup>6</sup>Some SOC codes changed across survey years. I use the Bureau of Labour Statistics crosswalk to create consistent categories across time.

<sup>7</sup>Altemeyer and Hunsberger (1992) and Fulton et al. (1999) show that evangelicals typically have less tolerant views of homosexuality.

Fig. 2: Cumulative distribution of state-level tolerance



in tolerance over time within a state.

State-level averages are a noisy proxy for the intolerance that gay men experience. One reason for the noisiness of this measure is that tolerance can vary widely within a state. Furthermore, some individuals would have moved away from their birth state at the time they made the decisions that I analyze. This measurement error causes an attenuation bias that underestimates the relationship between tolerance and demographic differences. One should, therefore, treat the sign and significance of the estimates as indicative of the nature of the relationship between tolerance and gay-straight differences, while allowing that the true impact of intolerance may be greater.

## 4 Education

The descriptive statistics in Table 1 reveal that 47% of partnered gay men have obtained an undergraduate or graduate degree compared to 33% of partnered straight men. One potential explanation for the high educational attainment of gay men is that universities are relatively welcoming places for gay and lesbian students. There is a voluminous literature examining the campus climate for gay students; while much of this research points to continued discrimination on college campuses (Rankin, 2003; Hong et al., 2016), the level of tolerance on campuses appears to be considerably higher than in society at large (Brown et al., 2004; Hinrichs and Rosenberg, 2002; Yost and Gilmore, 2011). Qualitative studies have highlighted that gay men consider the campus climate when making decisions about their post-secondary education (Epstein et al., 2003; Taulke-Johnson, 2010).

Gay men may also obtain higher levels of education in order to gain entry into a more educated and tolerant social environment. In the GSS, individuals with a university education were 14% less likely to say that homosexuality was always or almost always wrong. Given the degree of occupational sorting and homophily in social networks (McPherson et al., 2001), a gay man who obtains higher education is more likely to work and interact with others who are more educated and tolerant.

### 4.1 Model

To test whether the gay-straight education gap correlates with tolerance of homosexuality, I use an ordered probit model with six different categories for the highest level of education achieved: (1) less than high school, (2) high school, (3) some post-secondary education, (4) associate degree, (5) undergraduate degree, and (6) graduate degree.<sup>8</sup>

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<sup>8</sup>The ordered probit model assumes that an individual's utility over education is  $u = XB + e$  where  $e$  has a standard normal distribution. Given that there are six educational categories, five different thresholds are estimated:  $\xi_1 < \xi_2 < \dots < \xi_5$ . The probability an individual is in the  $i$ th category is equal to  $P(XB + e \in$

I regress this categorical variable on sexual orientation, and the interaction of sexual orientation and tolerance.

The regression includes several other controls including the marital status of heterosexual men (i.e., whether they are married or in a common-law partnership) and race/ethnicity (white, black, hispanic and other). I include linear variables for individuals age and year of birth – these variables differ as surveys are taken across ten years. Controlling for these temporal effects using yearly dummy variables, as opposed to the linear specification, does not significantly alter the main results. One potentially confounding factor is that social tolerance is generally increasing over time, hence, the coefficient on the interaction of tolerance and sexual orientation may simply capture differential age effects. The interaction of age and sexual orientation is included to mitigate this issue (the results are robust to excluding this term).

Finally, I include dummy variables for individuals state of birth. The state-level controls in the regression ensure that the coefficient on the interaction of sexuality and tolerance is not simply an artefact of individuals in more tolerant states having greater education. I also include state-level tolerance as a separate variable in the model, though the coefficient on this variable lacks a straightforward interpretation, as it is identified only by changes in tolerance over time – the state-level controls pick up the time-invariant differences in tolerance between states.

Richer econometric models of educational decisions have been estimated by Jackson (1978), Fuller et al. (1982), and Perna (2000). Hossler et al. (1989) summarize this literature, finding that academic ability, parental expectations, and individuals' aspirations have the greatest impact on educational decisions. Unfortunately, the ACS provides no reasonable proxies for these measures.

To account for measurement error in state-level measures of tolerance I use a bootstrap, clustered on birth state, for statistical inference (1,000 bootstrap iterations are used for each model). In each bootstrap iteration, I first draw observations (with replacement) from the GSS data and calculate state-year measures of tolerance using responses to the GSS within five years of the individual's eighteenth birthday. I then draw states (with replacement) from the ACS data.

## 4.2 Results and discussion

The regression results are contained in Table 2. The table reports both the regression coefficients and the marginal effect of the variables on the probability of obtaining a post-secondary degree (associate degree or higher) calculated at the mean of the data. In the first model, being in a gay partnership is associated with a 12 percentage

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$(\xi_{i-1}, \xi_i)$ , where  $\xi_0 = -\infty$  and  $\xi_6 = \infty$ . The individual likelihood is the probability the individual is in the category observed in the data.



Table 2: Educational attainment (ordered probit regression results)

	Model 1	Model 2	Model 3
<b>Coefficients</b>			
Gay	0.289 (0.008)***	0.240 (0.013)***	0.294 (0.008)***
Gay x tolerance (birth state)	-0.051 (0.007)***	-0.076 (0.011)***	-0.051 (0.007)***
Gay x tolerance (current state)	–	0.114 (0.014)**	–
Tolerance (birth state)	0.016 (0.008)*	0.008 (0.014)***	0.117 (0.015)***
Tolerance (current state)	–	-0.015 (0.013)	–
Unmarried heterosexual	-0.417 (0.006)***	-0.414 (0.008)***	-0.429 (0.007)***
Gay x age	0.028 (0.007)***	0.059 (0.019)**	0.033 (0.007)***
White	0.115 (0.042)***	0.058 (0.012)***	0.118 (0.043)***
Hispanic	-0.407 (0.064)***	-0.398 (0.010)***	-0.371 (0.062)***
Black	-0.176 (0.042)***	-0.302 (0.013)***	-0.188 (0.043)***
Age	0.095 (0.004)***	0.076 (0.016)***	0.085 (0.004)***
Year of birth	0.129 (0.008)***	0.134 (0.018)***	0.093 (0.011)***
<b>Thresholds</b>			
Less than high school	-1.30 (0.008)***	-1.52 (0.013)***	-1.45 (0.008)***
High school	-0.193 (0.007)***	-0.511 (0.011)***	-0.348 (0.007)***
Some college	0.395 (0.007)***	0.066 (0.014)**	0.237 (0.007)***
Associates degree	0.623 (0.006)***	0.315 (0.019)**	0.464 (0.007)***
Undergraduate degree	1.36 (0.042)***	1.04 (0.008)***	1.20 (0.043)***
<b>Marginal effects on obtaining a University degree</b>			
Gay	0.115 (0.003)***	0.095 (0.005)***	0.117 (0.003)***
Gay x tolerance (birth state)	-0.020 (0.003)***	-0.030 (0.004)***	-0.020 (0.003)***
Gay x tolerance (current state)	-0.154 (0.003)***	0.045 (0.005)**	-0.159 (0.003)***
Unmarried heterosexual	0.006 (0.003)*	0.023 (0.008)**	0.046 (0.006)***
Tolerance (birth state)	–	0.003 (0.006)***	–
Tolerance (current state)	–	-0.006 (0.005)	–
<b>Model information</b>			
State fixed effects	Y	Y	N
Pseudo R <sup>2</sup>	0.046	0.043	0.038
Observations	4,076,633	4,022,988	4,076,633

Bootstrapped standard errors, clustered on the state of birth, are in parentheses (use 1,000 iterations). \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively. State fixed effects control for birth state and (in model 2) current state.

point increase in the likelihood of holding a post-secondary degree. The coefficient on common law heterosexual partnerships is negative, implying that the educational attainment of gay men is even greater compared to heterosexual men in an unmarried partnership.

The level of tolerance in an individual's birth state substantially weakens the re-

lationship between education and sexuality. A two standard deviation increase in tolerance around the mean is associated with a 30% reduction in the gay-straight difference in obtaining a post-secondary degree (holding all other variables constant at their means). It is not unrealistic to imagine that state-level tolerance could increase by even more than two standard deviations; the mean level of tolerance across all observations in the sample is 1.72 on a four-point scale, with a standard deviation of 0.31. Hence, a seven standard deviation increase would be necessary to achieve perfect tolerance (though the regression coefficients are not likely to be useful for prediction that far from the sample mean).

The interaction of tolerance and sexual orientation is interpreted in relation to the base group of all heterosexual men, whether married or not. I prefer this specification as it is not clear whether partnered gay men would be married if same-sex marriage had been legal throughout the entirety of the sample. The results are, however, robust to including the interaction of tolerance and unmarried heterosexuals, in which case the base group becomes married heterosexuals (results from this model are in the supplementary appendix).

One potential explanation for the effect of social tolerance is that gay men without a degree find it more difficult to find a partner in states that are intolerant (recall that only partnered gay men are identified in the data). According to this explanation, educated and uneducated gay men in Vermont (a state with high tolerance) may partner at similar rates, but in Alabama (a state with low tolerance), educated gay men may be more likely to be partnered than uneducated gay men.

To examine this possibility, I run a model that includes tolerance in an individual's current state of residence at the time the data was collected – it is likely that partnership status is a function of an individual's state of residence, rather than their state of birth. The results of this regression (model 2 in Table 2) show that living in a tolerant state is actually associated with greater educational attainment for gay men, which might be explained by educated gay men being relatively more likely to move to more tolerant states. (Note that the difference in sample size across models is because tolerance measures are missing for some individuals' state of residence.)

State-level tolerance also has a strong relationship with the education of heterosexuals. In the third model of Table 2, I remove the state-level controls, which account for time-invariant differences in tolerance. In this model, a one-standard deviation increase in tolerance correlates to a 9% increase in the likelihood of obtaining a degree. Notably, this coefficient is larger than the coefficient on the interaction of sexuality and tolerance, implying that both gay and heterosexual men obtain greater education if they are born in more tolerant states, though the gradient is much steeper for heterosexuals. Of course, it is unlikely that tolerance of homosexuality has any direct

impact on the educational decisions of heterosexuals. Instead, other factors (such as the percentage of adults in the state who hold a post-secondary degree) likely impact both social tolerance and the probability of obtaining a post-secondary degree.

In the supplementary appendix, I show the results are robust across alternative empirical specifications and state-level measures of tolerance. In the first alternative model, I use ordinary least squares as opposed to an ordered probit. In the next two models, I measure tolerance using the percentage of evangelicals in a state and statewide attitudes towards same-sex marriage. In the fourth model, I use data from the 2000 US census instead of the ACS. In the fifth model, I include the interaction of unmarried heterosexual and social tolerance.

The results are consistent with the theoretical prediction that men who publicly identify as gay are more likely to be found in tolerant environments when social intolerance is high. As society becomes more tolerant there is less need for gay men to invest in education in order to access a more tolerant milieu. As discussed in section 2, this effect can occur both because gay men are more likely to seek out tolerant environments and because men who choose more tolerant environments are more likely to identify as gay. While I do not attempt to parse these two explanations, there is evidence that the first explanation exerts a stronger effect. Black et al. (2000) show that parents of gay men have the same educational attainment as the parents of heterosexual men. Given that parental education is strongly correlated with one's own education, this suggests that individuals who are predisposed to enrolling in education are no more likely to identify as gay.

## 5 Occupational choice

The careers of gay men differ from those of straight men in many respects (Baumle et al., 2009; Morrow et al., 1996; Rose Ragins, 2004). One of the chief differences is occupational choice. Research has consistently found that gay men are more likely to be found in female-dominated workplaces, including skilled professions, such as nursing, and semi-skilled or unskilled professions, such as cosmetology (Badgett, 2001; Blandford, 2003; Baumle et al., 2009). Similarly, lesbian women are more likely than straight women to be found in male-dominated workplaces.

Aside from sorting into occupations that are associated with the opposite sex, both gay men and lesbian women cluster in particular occupations. Baumle et al. (2009) find that same-sex partners are more likely to work in occupations that are computer-intensive, involve creative expression or the arts, concern physical or psychological disability (e.g., psychologists and special education teachers), or could be seen as working towards social change (e.g., lawyers and social workers). Tilcsik et al. (2015) offer a

more unified theory of gay and lesbian occupational choice, demonstrating that there are higher numbers of gay and lesbian workers in occupations that offer greater task independence (i.e., the ability to perform one’s work independent of others) and require greater social perceptiveness (i.e., the ability to anticipate and read the reactions of others).

Social intolerance can offer a partial explanation for differences in occupational choice. Gay, lesbian, and bisexual workers have faced decades of workplace discrimination: it was once commonplace for workers to be fired based on their sexual orientation and in many states this remains a legal basis for dismissal.<sup>9</sup> However, workplace discrimination is not limited to termination and can include harassment, unequal pay, and inequities in promotion and evaluation (Badgett et al., 2007; Carpenter, 2008). Estimates of workplace discrimination vary widely: in one literature review, Croteau (1996) found that the percentage of gay, lesbian, and bisexual workers who reported workplace discrimination ranged from 14% to 66%. In a survey of more recent literature, Badgett (2009) found this percentage varied from 10% to 43%. Experimental evidence also supports the notion that gay and lesbian workers face formal and informal discrimination (Hebl et al., 2002; Weichselbaumer, 2003; Tilcsik, 2011).

In terms of occupational choice, actual discrimination may be less important than the fear of discrimination (Rose Ragins, 2004). This fear has made many gay and lesbian individuals reticent about coming out at work (Rose Ragins et al., 2007). It is, therefore, reasonable to suspect that discrimination, both actual and anticipated, informs the occupational choices of gay men.<sup>10</sup>

Given that women are generally more tolerant of homosexuality, one might explain the preponderance of gay men in female-dominated occupations as a strategy to avoid intolerance. However, this does not explain the propensity of lesbian women to enter male-dominated fields. An alternative explanation is that intolerance manifests in the view that gay men are more feminine and, likewise, lesbians are more masculine (Kite and Whitley, 1996; LaMar and Kite, 1998; Madon, 1997). In places where these stereotypes are strongest, gay men may find it difficult to advance in masculine occupations. Consistent with this view, Ahmed et al. (2013) find that gay male applicants faced greater discrimination in male-dominated occupations, just as lesbian applicants experienced greater discrimination in female-dominated occupations. As stereotypes

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<sup>9</sup>The Equal Employment Opportunity Commission has ruled that sexual orientation discrimination is tantamount to sex discrimination and is, therefore, banned under Title VII of the civil rights act. However, this ruling is not binding in federal courts (Clarke, 2016).

<sup>10</sup>Schneider and Dimito’s (2010) survey of LGBT students validates the idea that sexual orientation affects occupational choice – 65% of students state that being LGBT has influenced their career choices. However, somewhat counterintuitively, 66% of these students say the impact was positive. Schneider and Dimito suggest that the positive effect may, in part, be due to openly LGBT individuals feeling less pressure to follow traditional career paths.

weaken, masculine occupations may become less hostile to gay men. A complementary explanation is that men who work in masculine occupations may be more reticent about publicly coming out in relatively intolerant states.

As mentioned in the introduction, Tilcsik et al. (2015) theorize that the clustering of gay and lesbian workers in professions with greater task independence and social perceptiveness is a response to social intolerance. Central to this explanation is the fact that sexual orientation is not visible and is often selectively disclosed in a workplace (Rose Ragins et al., 2007). Gay and lesbian workers might, therefore, prefer occupations with greater task independence in order to manage the disclosure of information about their sexuality. Furthermore, gay and lesbian workers' lifelong concern with managing perceptions of their sexuality builds their social perceptiveness. Tilcsik et al. (2015) further suggest that the de-stigmatization of homosexuality could weaken the relationship between sexual orientation and these occupational characteristics.

## 5.1 Model

To examine the effect of tolerance on the occupational choices of gay men, I run regressions that examine both the number gay workers in an individual's occupation (as a percentage of all partnered male workers) and the percentage of male workers in an individual's occupation. Given the previous discussion in section 2, I hypothesize that as social tolerance increases, gay men will be relatively less likely to work in occupations with a large percentage of gay workers (which according to Tilcsik et al. (2015) could be seen as a proxy for occupational characteristics such as task independence and social perceptiveness) and relatively more likely to work in occupations that have a greater number of men.

The explanatory variables include sexual orientation, tolerance (and its interaction with sexual orientation), age (and its interaction with sexual orientation), race/ethnicity, a control for a child in the household, years of work experience, state of residence, and state of birth. Given that individuals often change occupations throughout their life, tolerance in their current state of residence may be just as important as tolerance in their state of birth. I, therefore, run models that include tolerance in individuals' current state of residence.

As the dependent variable is a proportion bounded by zero and one, I use a fractional probit model.<sup>11</sup> The results are robust to using a linear model or a log-odds transformation.

Previous models of occupational choice have regressed the college major decision on

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<sup>11</sup>In a fractional probit model  $E(Y|X) = \Phi(XB)$ , where  $\Phi$  is the standard normal cumulative distribution. This results in the predicted values being bounded by 0 and 1. The model is estimated through maximum likelihood, with the likelihood for the  $i$ th individual defined as,  $l_i = y_i \ln(\Phi(X_i B)) + (1 - y_i)(1 - \Phi(X_i B))$ .

explanatory variables including the expected income in an occupation and individual tastes or preferences. Arcidiacono (2004), Arcidiacono et al. (2012), and Beffy et al. (2012) find that expected income and other quantifiable aspects of professions explain very little of the college major choice. Zafar (2013) shows similar results, but also demonstrates that idiosyncratic preferences, such as the expected enjoyment of work, parental approval, and social status, are statistically significant predictors of college majors. As in the previous section, the ACS data does not contain reasonable proxies for these variables.

## 5.2 Results and discussion

Table 3 contains the results of regressions examining the percentage of gay workers in an individual’s occupation (as a percentage of all partnered men in that occupation). The marginal effects reported in the table are the percentage point increase in the percentage of gay workers in an occupation associated with an increase in the listed variable, calculated at the means of the data. The sample size in Table 3 is somewhat reduced compared to Table 1 as occupational data is missing for some respondents. In the first model, homosexuality corresponds to working in an occupation with 1.17 percentage points more gay workers (as a percentage of all male workers) – a sizeable difference as gay men comprise just 1.2% of the sample.

As theorized, tolerance moderates the relationship between sexual orientation and the percentage of gay men in an individual’s occupation. A two standard deviation increase in tolerance around the mean is associated with an 11% reduction in the gay-straight difference in the average percentage of gay men in an individual’s occupation (holding all other variables constant at their means).

The second model includes both tolerance in an individual’s birth state and tolerance in their current state of residence. Both these measures moderate the effect of sexual orientation, though only tolerance in an individual’s state of birth is statistically significant. A two standard deviation increase in tolerance around the mean in both an individual’s birth state and current state of residence is associated with a 21% reduction in the gay-straight difference in the average percentage of gay men in an individual’s occupation.

In the third model, which does not include state-level fixed effects, tolerance is associated with a higher propensity for heterosexual men to work in professions with a larger number of gay men. The interpretation of the coefficient is, however, more muddled without the state-level fixed effects. One explanation is that the occupational mix is different in more tolerant states. Given that gay men are more likely to reside in more tolerant states, heterosexual men in these states would be more likely to work in occupations with more gay workers. The coefficient on the interaction of sexual

Table 3: Percentage of gay workers in occupation (fractional probit regression results)

	Model 1	Model 2	Model 3
<b>Marginal effects (x 100)</b>			
Gay	1.17 (0.028)***	1.17 (0.027)***	1.20 (0.027)***
Gay x tolerance (birth state)	-0.069 (0.024)***	-0.060 (0.027)**	-0.064 (0.024)***
Gay x tolerance (current state)	–	-0.027 (0.023)	–
Tolerance (birth state)	0.022 (0.005)***	0.022 (0.005)***	0.033 (0.007)***
Tolerance (current state)	–	-0.000 (0.003)	–
Unmarried heterosexual	0.067 (0.004)***	0.067 (0.004)***	0.072 (0.004)***
<b>Model information</b>			
State fixed effects	Y	Y	N
Pseudo R <sup>2</sup>	0.076	0.076	0.074
Observations	3,843,779	3,792,233	3,843,779

Bootstrapped standard errors, clustered on the state of birth, are in parentheses. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively. Marginal effects represent the percentage point increase in the percentage of gay workers in an individual’s occupation calculated at the means of the data. The model also includes race/ethnicity (white, hispanic, and black), year of birth, age, the interaction of sexual orientation and age, the presence of a child in the household, years of work experience, and education (using the categories in Table 1). State fixed effects control for birth state and current state.

orientation and tolerance is not substantially changed by the exclusion of the state fixed effects.

Table 4 contains the results of regressions examining the percentage of men in an individual’s occupation (as a proportion of all workers in that occupation). Consistent with the descriptive statistics, gay men are predicted to work in an occupation that has 16.3 percentage points fewer male workers. Once again, tolerance has a moderating effect – a two standard deviation increase in tolerance around the mean results in an 8% reduction in the gay-straight difference in the percentage of men in an individual’s occupation.

In the second model of Table 4, tolerance in an individual’s current state of residence is found to have an even stronger association with the percentage of men in an individual’s occupation: a two standard deviation increase in tolerance in both an individual’s birth state and state of residence is associated with a 23% reduction in the gay-straight difference in the average percentage of men in an occupation.

The results related to sexual orientation are robust to removing the state fixed effects in the third model of Table 4. Furthermore, across all models tolerance in an individual’s state of birth is associated with heterosexual men working in occupations with fewer men, which might be due to attitudes about gender roles being correlated with attitudes about homosexuality. Further robustness checks, which employ differ-

Table 4: Percentage of male workers in occupation (fractional probit regression results)

	Model 1	Model 2	Model 3
<b>Marginal effects (x 100)</b>			
Gay	-16.3 (0.199)***	-16.3 (0.205)***	-16.4 (0.202)***
Gay x tolerance (birth state)	0.693 (0.190)***	0.405 (0.227)*	0.760 (0.200)***
Gay x tolerance (current state)	–	0.784 (0.235)***	–
Tolerance (birth state)	-0.844 (0.172)***	-0.850 (0.173)***	-0.655 (0.170)***
Tolerance (current state)	–	0.067 (0.090)	–
Unmarried heterosexual	-0.739 (0.084)***	-0.729 (0.086)***	-0.827 (0.085)***
<b>Model information</b>			
State fixed effects	Y	Y	N
Pseudo R <sup>2</sup>	0.140	0.140	0.139
Observations	3,843,779	3,792,233	3,843,779

Bootstrapped standard errors, clustered on the state of birth, are in parentheses. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively. Marginal effects represent the percentage point increase in the percentage of male workers in an individual’s occupation calculated at the means of the data. The model also includes race/ethnicity (white, hispanic, and black), year of birth, age, interaction of gay and age, the presence of a child in the household, years of work experience and education (using the categories in Table 1). State fixed effects control for birth state and current state.

ent measures of tolerance and functional forms, are available in the supplementary appendix.

The results are consistent with the supposition that intolerance, at least partially, underlies demographic differences between gay and straight men. Occupations with greater numbers of gay workers are, almost definitionally, more welcoming to gay men. Furthermore, in states with greater intolerance, masculine occupations are likely to be less welcoming for gay men – both because women are generally more tolerant and because gay men are stereotyped as more feminine. As tolerance increases in both a gay man’s state of birth and state of residence, their propensity to choose more tolerant occupations decreases.

A competing explanation, which was discussed in the previous section, is that occupational choice is more likely to affect the probability of finding a partner in intolerant states. While this might explain the relationship between occupational choice and tolerance in an individual’s state of residence, it cannot explain the relationship between occupational choice and tolerance in an individual’s state of birth.

It should be noted that the tolerance explains a relatively small share of gay-straight differences in occupational choice. This may be, in part, due to the coarse measure of tolerance that I employ. It is also likely that other social forces drive occupational differences between gay and heterosexual men. For example, heterosexual men may



feel social or economic pressure to enter more masculine occupations (which tend to be higher paying), either because they are more likely to be the primary breadwinner in their household or because they feel the need to conform to male stereotypes. Partnered gay men are less likely to feel these pressures.

## 6 Internal migration

Gay men are generally found to be more mobile than straight men. Black et al. (2007) find that gay men are less likely live in their birth state or the birth state of their partner. There are various explanations for gay-straight differences in internal migration. One explanation is that gay men generally have smaller households, which reduces housing and moving costs, and alters preferences for certain amenities (i.e., the quality of neighbourhood schools is likely to be less important for childless families). Another explanation is that gay men have stronger preferences over geography because of differences in social tolerance across different localities.

The literature on the residential decisions of gay men has generally focussed on the evolution of gay neighbourhoods (Aldrich, 2004; Collins, 2004; Compton and Baumle, 2012; Ghaziani, 2014). Most of these papers propose the intuitive argument that cities with gay villages are a magnet for gay men because of their tolerance (Collins, 2004; Murray, 1996). Brown (2000) and Gorman-Murray (2009) use small-scale qualitative samples to understand the migration decisions of gay men, finding a link between internal migration and coming out decisions, with many gay men choosing to move to gay villages around the same time that they first publicly identify as gay. However, the link between tolerance and the size of the gay population in a city is disputed by Black et al. (2002) who find that tolerance (measured using the GSS) does not have a statistically significant impact on the percentage of gay men in a metropolitan area after taking into consideration urban amenities.

While Black et al. (2002) find that tolerance does not have a *pull* effect on the migration of gay men, in this section I explore a different question: whether tolerance in an individual's birth state exerts a *push* effect. That is to say, are gay men who were born in relatively intolerant states more likely to leave their birth state? This measure of migration has two significant drawbacks. First, it does not capture migration within a state. However, Molloy et al. (2011) show that this may not introduce a substantial bias as the factors that explain in-state migration also explain interstate migration. Second, the census provides no information on when an individual moved across state lines – an individual may well have moved from their birth state in childhood. While this introduces additional noise into the measure of migration, it is unlikely to bias the coefficients related to sexual orientation, as childhood migration is probably orthogonal

Table 5: Moved from birth state (probit regression results)

	Model 1	Model 2	Model 3
<b>Marginal effects</b>			
Gay	0.113 (0.015)***	0.147 (0.017)***	0.113 (0.015)***
Gay x tolerance (birth state)	-0.037 (0.016)**	-0.041 (0.016)***	-0.033 (0.016)**
Tolerance (birth state)	-0.005 (0.003)	-0.001 (0.003)	0.030 (0.010)***
Unmarried heterosexual	0.025 (0.007)***	-0.012 (0.007)*	0.020 (0.007)***
<b>Model information</b>			
Education and occupation	Y	N	Y
State fixed effects	Y	Y	N
Pseudo R <sup>2</sup>	0.094	0.094	0.094
Observations	4,076,633	4,076,633	4,076,633

Bootstrapped standard errors, clustered on the state of birth, are in parentheses. \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively. Marginal effects are calculated at the means of the data. The model also includes race/ethnicity (white, hispanic, and black), year of birth, age, and the interaction of gay and age. State fixed effects control for state of birth. Education and occupation control for the the six education categories in Table 1 and two-digit SOC codes.

to sexual orientation.

## 6.1 Model

I use a probit model to regress whether an individual lives outside their birth state on sexual orientation, tolerance (and its interaction with sexual orientation), age (and its interaction with sexual orientation), and race/ethnicity. I also control for an individual's birth state, which captures factors such as state size, population, and labour market conditions. Because the data does not contain any information on the timing of migration in relation to educational and occupational decisions, I run one model that controls for education and occupation and another that does not.

## 6.2 Results and discussion

The regression results are contained in Table 5. The first model finds that gay men are, on average, 11.3 percentage points more likely to live outside their birth state. However, an increase in tolerance of two standard deviations around the mean, reduces the gay-straight difference by 49% holding all other variables constant at their means). Removing the controls for education and occupation increases the relationship between sexual orientation and mobility, but tolerance maintains its moderating effect on this relationship.

The third model dispenses with the state level fixed effects. This has a minimal impact on the results related to sexual orientation, though it does reveal that heterosexuals born in more tolerant states are generally more likely to migrate than those born in intolerant states.

The supplementary appendix again contains a set of alternative models. In one of these models, which uses the number of conservative protestants as a proxy for tolerance, the interaction of sexual orientation and tolerance is of the expected sign, but not statistically significant (p-value=0.19). In all other alternative models, this coefficient is statistically significant at the 5% level.

The results are consistent with the discussion in section 2, which predicted that gay men would be more likely to have moved away from intolerant environments. Again, I am unable to parse the two different explanations that might underlie this finding: gay men may be more likely to move away from intolerant states in order to avoid stigma or gay men who have moved from intolerant states may be more likely to publicly identify as gay. One alternative explanation is that gay men who are born in intolerant states are more likely to find a partner if they move to a more tolerant state. To my knowledge, there is no evidence that can be used to gauge the validity of this explanation – it could also be the case that gay men are more likely to remain single in more tolerant states where the pool of potential mates is larger. Nonetheless, this explanation cannot be ruled out with the existing data.

## 7 Conclusion

In this paper, I show that gay men are more likely to pursue higher education, work in certain occupations, and move away from their birth state. I further demonstrate that these gay-straight differences are smaller for individuals born in states that have more tolerant attitudes towards homosexuality.

I offer two different explanations for the effect of tolerance on demographic decisions. First, it could be the case that gay men make decisions about education, occupation, and migration, in order to situate themselves in more tolerant environments. Alternatively, being in a more tolerant environment may increase the likelihood that a man publicly identifies as gay. While future research is needed to parse these two different explanations, the results show that intolerance imposes significant costs on gay men. Intolerance may induce gay men to alter their decisions about education, occupation, and migration. Or it may induce some men who would otherwise live in gay partnership not to do so.

Throughout the paper, I have made the caveat that state-based measures of tolerance are noisy proxies for the intolerance an individual gay man faces in his particular

environment. It is, therefore, difficult to ascertain the effect of intolerance on gay-straight differences with any precision or to predict whether gay-straight differences would persist if intolerance were completely eliminated. It is possible that gay-straight demographic disparities may endure in a perfectly tolerant society due to differences in family structure or differential conformance to gender norms

More broadly, the results suggest that intolerance may lie at the heart of demographic differences between stigmatized minorities and the rest of society. This point is particularly salient as group differences are often used to justify intolerance, making stereotypes a self-fulfilling prophecy (Merton, 1948). For example, intolerance towards homosexuality is often manifested in the stereotype of gay men as feminine (Kite and Whitley, 1996; LaMar and Kite, 1998). This stereotype has empirical support – gay men are indeed more likely to work in female-dominated professions. However, I show that the choice of profession is, at least partially, influenced by social attitudes themselves. Stereotypes about other self-selected groups, such as transsexuals (McKinnon, 2014), vegans (Earle and Hodson, 2017; MacInnis and Hodson, 2017) and evangelical Christians (McDermott, 2009; Patrikios, 2013), may be upheld by similar self-fulfilling prophecies.

The diminution of gay-straight differences fits with the popular notion of the LGBT community being amalgamated into mainstream culture. In a similar vein, Ghaziani (2014) documents the decline of gay neighbourhoods as younger gay men and lesbian women are less apt to live in such areas. Future research is needed to understand how the disappearance of demographic differences impacts the distinctiveness and vibrancy of gay culture.

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