The LGBTQ+ Gap:

Recent Estimates for Young Adults in the United States*

Marc Folch†

University of Chicago

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Abstract

This article provides recent estimates of earnings and mental health for sexual and gender minority young adults in the United States. Using data from a nationally representative sample of bachelor's degree recipients, I find a significant earnings and mental health gap between self-identified LGBTQ+ and comparable heterosexual cisgender graduates. On average, sexual and gender minorities experience 22% lower earnings ten years after graduation. About half of this gap can be attributed to LGBTQ+ graduates being less likely to complete a high-paying major and work in a high-paying occupation (e.g., STEM and business). In addition, LGBTQ+ graduates are more than twice more likely to report having a mental illness. I then analyze the role of sexual orientation concealment and find a more pronounced earnings and mental health gap for closeted graduates.

JEL codes: I14, J15, J16, J31, J71

Keywords: LGBTQ+, Labor Market Discrimination, Mental Health

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†: Department of Economics, University of Chicago. 1126 E. 59th Street, Chicago, Illinois 60637, United States of America. E-mail: mfolch@uchicago.edu

1. Introduction

Attitudes and opinions about sexual and gender minorities have rapidly improved in the United States in the last decades. For instance, the Gallup corporation found that the percentage of adults who favored same-sex marriage increased from 27% to 70% from 1996 to 2021 (McCarthy (2021)). In parallel with this sociocultural shift, there have been several policy changes toward inclusion and rights for lesbian, gay, bisexual, transgender, queer, and others (LGBTQ+) individuals. Most notably, on June 26, 2015, the U.S. Supreme Court granted nationwide legal access to same-sex marriage. It is then natural to assume that the socioeconomic status and health of this minority, particularly for the youth, have also improved. In this article, I provide recent estimates of earnings and mental health for LGBTQ+ young adults in the US.

A growing body of research has provided evidence of differences between the earnings for LGBTQ+ and comparable non-LGBTQ+ workers in the United States and other advanced economies. In a review of these studies, Klawitter (2015) and Valfort (2017) showed that on average gay men earn less than their heterosexual counterparts, while earnings for lesbians are often higher than for heterosexual women. This evidence is consistent with a negative labor market discrimination story for gay men, but not for lesbians. Most studies published since then have found a similar pattern: Aksoy et al. (2018), Burn (2019), Badgett et al. (2021), Drydakis (2022), and Jepsen and Jepsen (2022) continued to find a gay penalty and a lesbian premium (with some of these studies showing a decreasing trend), while Carpenter and Eppink (2017) showed both a gay and lesbian earnings premium, and Martell (2019) found an earnings penalty for young lesbians. Recent studies have also shown a significant negative gap for bisexuals (Drydakis (2022)) and transgender individuals (Geijtenbeek and Plug (2018), Carpenter et al. (2020), Campbell et al. (2021), and Shannon (2021)).

In terms of health, extensive research has documented poorer physical (e.g., cardiovascular diseases and cancers) and mental health (low self-esteem, anxiety, depression, substance abuse, and suicidal thoughts and attempts) for sexual and gender minorities (see Valfort (2017) for a review of these studies). This health penalty might stem from minority-related stressors (Meyer (2003)), discrimination in health care settings, and disparities in health insurance coverage. Indeed, recent studies have found significant improvements in LGB health after same-sex marriage legalization (Hatzenbuehler et al. (2012), Wight et al. (2013), Raifman et al. (2017), Carpenter et al. (2021*b*), and Chen and van Ours (2022)) and higher LGB insurance coverage rates after the 2010 U.S. Affordable Care Act (Carpenter et al. (2021*a*)).

I contribute to this burgeoning literature by using new and recent data from the Baccalaureate and Beyond Longitudinal Study (B&B), a US nationally representative survey of students who completed the requirements for a bachelor's degree in a given academic year and were followed up to 10 years after graduation. I focus on the two most recently available cohorts (those that graduated in 2008 and 2016), given that both surveys included a direct question about sexual orientation and gender.

Compared to the previous databases used in the literature, the B&B data provide a unique way to analyze the LGBTQ+ earnings and mental health gap. First, the survey provides a national representative sample of more than 10,000 respondents with the same level of education, and it includes a rich set of additional individual and family characteristics. Second, the sample covers the full spectrum of self-identified LGBTQ+ individuals, often identified through indirect methods (e.g., cohabitating same-sex partner or same-sex behavior) and rarely including gender minority individuals. Third, for the first time in the literature, the panel component allows to analyze the LGBTQ+ earnings gap at different horizons after labor market entry. Fourth, the survey includes information about sexual orientation concealment in different settings (workplace, immediate family, and social environment). To my knowledge, no existing study has analyzed the relationship between sexual orientation disclosure and earnings in the United States.

Using regression analysis, I compare the earnings and mental health of sexual and gender minorities to straight cisgender college graduates, controlling for other observable characteristics. The estimated coefficients show a significant earnings penalty: on average, LGBTQ+ graduates experienced 21.7% lower earnings ten years after graduation. The penalty was similar for both LGBTQ+ males and females. About half of this gap can be attributed to differential sorting in the major studied in college and the primary job occupation. The remaining 10% wage penalty could be indicative of labor market discrimination: 48% of LGBTQ+ respondents reported to have experienced workplace discrimination due to sexual orientation, sex, or gender identity during the first ten years after graduation, and one-third of graduates did not find their current employer very accepting of LGBT employees. In addition, LGBTQ+ graduates were more than twice more likely to report having a mental illness. Finally, I show that self-reporting sexual orientation in the survey does not necessarily imply disclosing it in other settings and find a more pronounced earnings and mental health gap for closeted LGBTQ+ graduates.

The remaining of the paper is organized as follows. Section 2 describes the data. Section 3 explains the methodology used. Section 4 presents the results. Section 5 concludes.

2. Data

2.1. Baccalaureate and Beyond Longitudinal Study

The Baccalaureate and Beyond Longitudinal Study (B&B) is a survey of students who completed the requirements for a bachelor's degree in a given academic year[1]. The survey is conducted by the National Center for Education Statistics (NCES), within the U.S. Department of Education. The B&B draws its cohorts from the National Postsecondary Student Aid Study (NPSAS), which collects data from large, nationally representative samples of postsecondary students and institutions to examine how students pay for postsecondary education.

Hence, the B&B samples are representative of graduating seniors in all majors and colleges[2]. The first cohort was identified in NPSAS:93 and followed up in 1994, 1997, and 2003. The second cohort was identified in NPSAS:00 and followed up in 2001. The third cohort was identified in NPSAS:08 and was followed up in 2009, 2012, and 2018. The last cohort was identified in NPSAS:16 and was followed up in 2017 and in 2020 (forthcoming)[3].

The B&B connects multiple data sources including student interviews, institution records, government databases, and other administrative sources. Thus, the data contain rich information about students' demographic characteristics, family background, and labor market experiences, among many other variables. In the most recently available cohort (B&B:16/17), respondents were asked about their sexual orientation, gender identity and expression, and main disability condition one year after graduation. Respondents in the last B&B:08/18 follow-up survey were also asked about their sexual orientation and gender (in 2018, ten years after graduation).

2.2. Identification of LGBTQ+ Graduates

In both the B&B:16/17 and B&B:08/18 surveys, respondents were asked to indicate their sexual orientation, defined as someone's emotional or physical attraction to the same and opposite sex. The categories included in the question were: "*lesbian*

[1] Eligible students are those who (1) enrolled at a college participating in federal student aid programs and (2) completed their requirements for their first bachelor's degree during that year.

[2] The use of weights is essential to produce estimates that are representative of the target population of baccalaureate recipients. An analysis weight is used to produce all survey estimates and variances are estimated using the balanced repeated replication method.

[3] Among more than 100,000 students who were sampled for the NPSAS:16, about 20% were determined to be eligible for the B&B:16/17. These students are a representative sample of approximately 2 million students who obtained their bachelor's degree during that academic year.

or gay, that is, homosexual", "*straight, that is, heterosexual*", "*bisexual*", "*another sexual orientation*", and "*questioning or unsure*[4]". This information improves on a major part of the literature, which has relied on less direct methods for identifying LGB individuals, such as the presence of a cohabiting same-sex partner[5].

The surveys also asked a question related to gender identity and expression. Gender identity refers to one's internal sense of gender, while gender expression is how a person publicly expresses their gender (e.g., through dress or speech patterns). While cisgender is used to describe a person whose gender identity matches the sex assigned at birth, people who do not identify with their assigned sex may refer to themselves as transgender, nonbinary, or genderqueer. Gender nonconforming usually refers to people whose gender expression falls outside society's gender norms.

The categories included in the question were: "*male*", "*female*", "*transgender, male-to-female*", "*transgender, female-to-male*", "*genderqueer or gender nonconforming*", "*a different gender identity*", "*questioning or unsure*", and "*more than one gender*". In addition, respondents in the B&B:08/18 interview were also asked about their sex assigned at birth. For this cohort, I classify college graduates as a gender minority if their gender was not the same as the sex assigned at birth. For the B&B:16/17 cohort, I classify college graduates as a gender minority if their gender was not the same as the previously reported binary student gender[6].

With this rich information about sexual orientation and gender identity and expression, I classify respondents based on whether they self-identified as LGBTQ+ or straight cisgender[7]. However, one may worry that the willingness to self-report as LGBTQ+ might be correlated with some unobserved characteristics, inducing reporting bias. In this regard, Badgett et al. (2021) provides evidence suggesting that sexual minorities are becoming more willing to disclose their status on surveys over time and that sexual orientation and gender identity questions perform reasonably well in US surveys.

In the case of the B&B survey, the sample members were encouraged to complete the survey independently on the Web (or alternatively via telephone) and privacy was

[4] In the B&B:08/18 survey, the category was "*don't know*" instead of "*questioning or unsure*".

[5] See Martell and Hansen (2017), Aksoy et al. (2018), and Martell (2021) for estimates of the bias induced by inferring sexual orientation via indirect methods.

[6] Student's binary gender (male or female) was first obtained based on the student NPSAS:16 interview; if not available, then the federal financial aid application (FAFSA:16) was used. If both were not available, then the student records were used (NPSAS:16 Student Records).

[7] It is important to note that sexual minorities and gender minorities are non-mutually exclusive categories: 51% and 58% of gender minorities did not self-identify as heterosexual in the B&B:16/17 and B&B:08/18 surveys, respectively.

assured throughout the whole interview process[8]. In addition, as I show in Section 4.3, the B&B:16/17 survey was able to capture a substantial fraction of closeted graduates (those expected to be more reluctant to self-report their sexual orientation).

2.3. **Earnings and Mental Health**

College graduates were also asked about their employment status, including hours worked and earnings. In the B&B:16/17 survey, respondents were asked to provide the salary and hours worked for their most recently started job (within 12 months after BA completion)[9]. In the B&B:08/18 survey, respondents were asked to report the total hours worked and the total salary for all current jobs as well as the salary for their current primary job. If the respondents had more than one current job as of the B&B:08/18 interview, then the job with the longest duration of employment was selected as the primary job.

The B&B:16/17 survey also included two questions about disabilities. Firstly, it contained the NPSAS:16 interview question: "*What is the main type of condition or impairment you have?*". The categories included were: "*hearing impairment*", "*blindness or visual impairment*", "*speech or language impairment*", "*orthopedic or mobility impairment*", "*specific learning disability or dyslexia*", "*attention deficit disorder (ADD or ADHD)*", "*anxiety*", "*autism, Asperger's syndrome, or other developmental disab.*", "*depression*", "*traumatic brain injury (TBI)*", and "*other*".

Secondly, college graduates were also asked to indicate their main disability condition or impairment one year after graduation (in 2017). The categories included in the B&B:16/17 survey were: "*blindness or visual impairment*", "*hearing impairment*", "*orthopedic or mobility impairment*", "*speech or language impairment*", "*learning, mental, emotional or psychiatric condition*", and "*other health impairment or problem"*. These disability categories differed from the former classification, especially as they did not include "*anxiety*" and "*depression*" separately.

Due to these differences, the estimates for disabilities are not comparable between the two surveys. The B&B:08/18 survey also included the responses from the NPSAS:08 disability question. However, the included categories differed from both the NPSAS:16 and B&B:16/17 survey questions, making also difficult a comparison across both cohorts of college graduates.

[8] See Wine et al. (2019) and Cominole et al. (2020) for more information about the B&B data collection and sample design.

[9] Graduates that were employed for pay reported their salary at yearly, monthly, or hourly rate. Yearly salary rates were calculated for respondents who reported their rate at a frequency other than yearly.

2.4. **Descriptive Statistics**

Given that the distribution of age for college graduates in the B&B sample is strongly skewed to the right[10], I restrict the sample to US citizen and permanent resident students who obtained their bachelor's degree between age 21-30. Another reason to focus on young graduates is that the relationship between LGBTQ+ and the outcomes of interest (i.e., earnings and mental health) is likely to be different for older graduates, given that attitudes toward sexual and gender minorities have rapidly improved over the recent decades. For this same reason, older graduates might also be more reluctant to report a more stigmatized characteristic for them[11].

Table 1 provides the main descriptive statistics for the B&B:16/17 and B&B:08/18 restricted sample. In the B&B:16/17 survey, 10.3% of college graduates aged 21-30 self-identified as LGBTQ+, with the percentage being higher for females (11.8%) than for males (8.4%). These estimates are similar to those computed using the National Health Interview Survey[12] (Table A1.1). In addition, the percentage of self-identified LGBTQ+ graduates in the B&B:16/17 survey was higher than in the B&B:08/18 survey. This pattern is consistent with recent studies showing that self-reporting LGBTQ+ rates have been rising over recent years, especially for younger generations (Badgett et al. (2021) and Jones (2022)).

Looking at LGBTQ+ subgroups, there were significant differences in the responses by sex, common to both cohorts of college graduates: males were more likely to answer gay than bisexual, while females were more likely to answer bisexual than lesbian. In addition, females were also more likely to respond another sexual orientation than males. The percentage of LGBTQ+ graduates that were questioning their sexual orientation or did not identify as cisgender was similar for both sexes.

The average salary from the primary job one year after graduation in 2017 was $38,205 for straight cisgender males. For those surveyed ten years after graduation in 2018, the average salary was $87,154. Compared to straight cisgender males, straight cisgender females, on average, had 14% and 26% lower earnings one and ten years after graduation, respectively. In addition, LGBTQ+ females (males), on average, earned 8% (11%) and 15% (22%) less than straight cisgender females (males) one and ten years after graduation, respectively.

[10] Figure A1.1 shows the distribution of age. College graduates aged 21-30 represent 85% of graduates in both the B&B:16/17 and B&B:08/18 samples.

[11] In tables not reported here but available on request, I find that reducing/increasing the maximum age in the sample to 25 or 35 yields similar results.

[12] The National Health Interview Survey (NHIS) is an annual survey of 35,000 households in the United States that includes a sexual orientation question since 2013.

Table 1: LGBTQ+, Earnings and Mental Health

	Males		Females	
	Straight Cis.	**LGBTQ+**	**Straight Cis.**	**LGBTQ+**
	(1)	(2)	(3)	(4)
B&B:16/17				
LGBTQ+	91.6%	8.4%	88.2%	11.8%
Gay/Lesbian	-	50.5%	-	19.5%
Bisexual	-	24.2%	-	48.1%
Another Sexual Orientation	-	7.3%	-	16.4%
Questioning or unsure	-	9.6%	-	9%
Non-cisgender or non-conforming	-	14.8%	-	15.6%
Earnings and Mental Health				
Earnings from Primary Job (2017)	$ 38,205 [21,586]	$ 34,100 [19,841]	$ 32,995 [17,747]	$ 30,346 [18,274]
Anxiety (2016)	2%	4.3%	4.1%	8.8%
Depression (2016)	2.5%	5.8%	3.4%	9.4%
Learning or Mental Condition (2017)	8.3%	16.9%	10.6%	26.0%
Observations	5,000	500	7,500	900
B&B:08/18				
LGBTQ+	93.9%	6.1%	93.1%	6.9%
Gay/Lesbian	-	61.4%	-	22.3%
Bisexual	-	19.0%	-	50.2%
Another Sexual Orientation	-	4.6%	-	15.1%
Don't know	-	8.3%	-	6.1%
Non-cisgender or non-conforming	-	18.6%	-	13.6%
Earnings and Mental Health				
Earnings from Primary Job (2018)	$ 87,154 [61,616]	$ 68,342 [43,743]	$ 64,506 [42,860]	$ 55,037 [35,181]
Depression (2008)	1.1%	1.7%	1.4%	4.3%
Observations	4,600	300	6,300	500

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17 and B&B:08/18). Sample: bachelor's degree recipients who graduated before age 31. Balanced repeated replication standard errors in brackets.

In terms of mental health, 7.1% of college graduates reported having anxiety or depression in 2016 and 11% indicated having a learning, mental or emotional condition in 2017. These percentages were also significantly heterogeneous by sex, gender, and sexual orientation. While 4.5% of straight cisgender males indicated having anxiety or depression, the percentage was more than twice higher for LGBTQ+ males (10.1%). Straight cisgender females, on average, were more likely to report having anxiety or depression (7.5%) than straight cisgender males, with the percentage being

dramatically high for LGBTQ+ females (18.2%). Importantly, the percentage of college graduates reporting having depression in 2016 more than doubled compared to those who graduated eight years earlier (in 2008).

These earnings and mental health disparities might be partially capturing differences in demographics and other students' characteristics (Tables A1.2 and A1.3). For example, self-identified LGBTQ+ graduates were more likely to be single and more likely to study in a college out of the state of legal residence[13]. In the next section, I estimate the LGBTQ+ earnings and mental health gap after controlling for these observable differences.

3. **Empirical Strategy**

The relationship between LGBTQ+ and the outcomes of interest (i.e., logarithm of earnings and mental health) can be expressed as follows:

$$Y_i = \alpha + \beta LGBTQ_i + \gamma F_i + \Gamma X_i + \epsilon_i \tag{1}$$

Where Y_i represents the outcome of student i observed in a given year, $LGBTQ_i$ is equal to one if the student self-identified as LGBTQ+ and F_i is equal to one if the student sex assignment at birth (or previously reported binary student's gender) was female. Note that in this model the excluded category (α) is composed of male graduates who self-identified as heterosexual and cisgender. The equation also contains a rich set of student demographics and observable characteristics (X_i) that are likely to be correlated with both Y_i and $LGBTQ_i$.

Firstly, the vector X_i includes students and college characteristics observed at the time they graduate from college: student's age, race/ethnicity (White, Black or African American, Hispanic or Latino, Asian, and other), parents' total income (for dependent students) or student's income (for independent students[14]), the cumulative grade point average (GPA) and the college selectivity admittance policy (minimally, moderately, or very selective). The selectivity measure is computed based on the number of applicants and students admitted and the 25th/75th percentiles of college entrance test scores.

[13] For broader patterns of demographic characteristics of LGBTQ+ individuals, see Carpenter and Eppink (2017) and Badgett et al. (2021).

[14] Students are considered independent if they meet one of the following criteria: age 24 or older, enrolled in a graduate or professional degree, married, orphan or ward of the court, have legal dependents other than a spouse, a veteran of the U.S. Armed Forces, U.S. Armed Forces active duty. Students under 24 who do not meet any of these conditions but are receiving no parental support may also be classified as independent.

Secondly, the vector X_i includes college graduates' characteristics observed at the time of the interview. It includes graduates' current marital status (single never married, married, separated, divorced, or widowed), cohabitating status (living with a spouse or domestic partner[15]), the presence of dependent children[16], whether the respondent moved from the initial legal state of residence, and the region of residence at the time of the interview (Northeast, Midwest, South, and West)[17].

I estimate Equation 1 separately for both cohorts of college graduates (those that graduated in 2016 and were interviewed in 2017 and those that graduated in 2008 and were interviewed in 2018). I use Ordinary Least Squares (OLS) for the logarithm of earnings and a Probit model for both mental health variables. I also estimate the regressions separately by the sex assigned at birth (or previously reported binary student's gender).

4. Results

4.1. Labor Market

Earnings gap

The top panel of Table 2 shows the results from the OLS regression of the logarithm of annualized earnings from the primary job for workers that graduated from college in 2016 and were employed for pay within 12 months after completing their degree. Based on previously reported binary student's gender, females earned, on average, 14.6% less than males one year after graduation. In addition, LGBTQ+ graduates earned, on average, 12.1% less than straight cisgender graduates. The LGBTQ+ penalty was similar for both males and females and remains unchanged after including demographic and other observable characteristics[18].

The bottom panel of Table 2 shows the estimated coefficients for workers that graduated from college in 2008 and were employed for pay in 2018. Ten years after graduation, assigned females at birth earned, on average, 30.2% less than assigned males at birth. In addition, LGBTQ+ graduates earned 22.9% less than straight cisgender graduates[19].

[15] The survey does not contain information about the sex or gender of the spouse or partner.

[16] Dependent children include any children for whom the respondent provided 50 percent or more of financial support or was considered to be the primary caregiver.

[17] The states are classified in four different regions using the U.S. Bureau of Economic Analysis (BEA) classification. Students living in outlying areas or not living in the US at the time of the interview were excluded.

[18] Table A1.4 show the coefficients for all control variables.

[19] Table A1.5 shows the estimated coefficients using instead earnings from all jobs in 2018.

Table 2: Log. Earnings from Primary Job

	All		Males		Females	
	(1)	(2)	(3)	(4)	(5)	(6)
B&B:16/17						
LGBTQ+	-0.121***	-0.118***	-0.122***	-0.098**	-0.121***	-0.120***
	[0.030]	[0.031]	[0.046]	[0.046]	[0.040]	[0.041]
Female	-0.146***	-0.144***				
	[0.018]	[0.018]				
Observations	11,200	11,200	4,400	4,400	6,800	6,800
B&B:08/18						
LGBTQ+	-0.229***	-0.217***	-0.287***	-0.194**	-0.188***	-0.218***
	[0.052]	[0.051]	[0.093]	[0.091]	[0.065]	[0.065]
Female	-0.302***	-0.314***				
	[0.021]	[0.022]				
Observations	10,300	10,300	4,500	4,500	5,800	5,800
Controls		✓		✓		✓

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17 and B&B:08/18). Sample: employed bachelor's degree recipients who graduated before age 31.

The average LGBTQ+ penalty ten years after graduation also remains unchanged after including demographic and other observable characteristics. However, this arises from two opposite effects offsetting each other: while the LGBTQ+ male penalty decreases by 9.3 percentage points, the penalty for LGBTQ+ females increases by 3 percentage points. The main driver for the substantial decrease in the gap for LGBTQ+ males comes from significant differences in their household structure (on average, married male graduates earned more than single male graduates)[20].

Table A1.7 shows the estimated earnings gaps by LGBTQ+ subgroups (gay/lesbian, bisexual, another sexual orientation, questioning/unsure, and non-cisgender). In 2017, one year after graduation, the earnings penalty was statistically significant for those who self-identified as bisexual, another sexual orientation, or questioning/unsure. In 2018, ten years after graduation, the negative gap was statistically significant for gays/lesbians, bisexuals, and non-cisgender, with bisexuals and non-cisgender graduates having the largest penalty.

[20] Table A1.6 shows the estimated coefficients for males when including/excluding household structure controls.

Table A1.8 presents the estimated LGBTQ+ gaps by race/ethnicity groups (White and other) and across regions (Northeast, Midwest, South, and West). The earnings penalties one and ten years after graduation were statistically significant for both race/ethnicity groups and were not significantly different from zero only in the West region.

Employment and Career

One important driver of the LGBTQ+ earnings penalty could be attributed to differences in employment and hours worked. For example, Tebaldi and Elmslie (2006), Antecol and Steinberger (2013), and Carpenter and Eppink (2017) find that lesbian women supply more labor than heterosexual women, while Tebaldi and Elmslie (2006), Elmslie and Tebaldi (2007), Klawitter (2011), and Carpenter and Eppink (2017) show that gay and bisexual men have lower employment rates and are less likely to be full-time employed.

In the case of recent college graduates, I find a statistically significant gap in labor market participation and hours worked between males and females ten years after graduation (Tables A1.9 and A1.10). However, I find no significant differences in employment rates between LGBTQ+ and comparable heterosexual cisgender graduates. In terms of hours worked, LGBTQ+ graduates were less likely to be full-time employed one year after graduation, although these differences become statistically insignificant ten years after graduation[21].

Apart from differences in employment and hours worked, the average earnings penalty for LGBTQ+ graduates could also arise from different career sorting. For example, Sansone and Carpenter (2013) show that sexual minority students are less likely to complete a bachelor's degree in a STEM field (science, technology, engineering, and math-related), while Burn and Martell (2020) find that gay/lesbian students are more likely to choose majors with lower levels of prejudice and higher future levels of workplace independence.

In addition, LGB individuals tend to work in different occupations. This differential sorting has been associated with gender stereotypes (Tilcsik (2011), Drydakis (2015), and Del Río and Alonso-Villar (2019)), heterogeneity in tolerance levels across occupations (Plug et al. (2014)), lower likelihood of achieving upper-level managerial jobs (Aksoy et al. (2019)) and a propensity to concentrate in occupations that provide a high degree of task independence and/or require social perceptiveness (Tilcsik et al. (2015), Martell (2018), and Burn and Martell (2020)).

[21] Full-time employment is defined as working 35 or more hours per week in the primary job.

Table 3: Log. Earnings from Primary Job
(including additional controls)

	B&B:16/17			B&B:08/18		
	(1)	(2)	(3)	(4)	(5)	(6)
LGBTQ+	-0.074***	-0.032	-0.024	-0.179***	-0.107**	-0.103***
	[0.025]	[0.028]	[0.025]	[0.039]	[0.050]	[0.039]
Female	-0.104***	-0.050***	-0.039***	-0.194***	-0.178***	-0.097***
	[0.015]	[0.016]	[0.014]	[0.018]	[0.022]	[0.018]
Controls	✓	✓	✓	✓	✓	✓
Full-time Empl.	✓		✓	✓		✓
Major and Occ.		✓	✓		✓	✓
Career						✓
Observations	11,200	11,200	11,200	10,300	10,300	10,300

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17 and B&B:08/18). Sample: employed bachelor's degree recipients who graduated before age 31.

To control for all these differences, I include in Equation (1) categorical variables for full-time employment, the major field of study (23 categories), and the occupation of graduates' primary job (33 categories). For the B&B:08/18 cohort, I also add whether the respondent considered the job to be part of a career, the total number of years in the career (and a squared term), and graduate school attainment.

Table 3 shows the estimated gap one and ten years after graduation. On average and after controlling for differences in hours worked, career sorting and experience, females earned 3.9% and 9.7% less than males one and ten years after graduation, respectively. The LGBTQ+ earnings gap one year after graduation becomes statistically insignificant and close to zero. However, ten years after graduation, LGBTQ+ graduates experienced, on average, 10.3% lower earnings compared to heterosexual cisgender graduates.

The significant reduction in the earnings gap after accounting for occupation and major choices suggests that the percentage of females and self-identified LGBTQ+ graduates that studied or worked in a high-paying major or occupation was lower than for males and straight cisgender graduates. To illustrate this career sorting, I classify majors and occupations in three groups based on the terciles of the distribution of median earnings of employed graduates 10 years after graduation (Tables A1.11 and A1.12).

In general, high-paying majors and occupations are characterized by STEM (mathematics, engineering, computer/information, and physical sciences), social sciences, business, health care, and legal professionals. Consistent with the results from Table 3, the estimates from a Probit regression show that both females and LGBTQ+ graduates were significantly less likely to graduate from a high-paying major and work in a high-paying occupation (Tables A1.13 and A1.14). Hence, LGBTQ+ graduates were, on average, more likely to complete a major and work in an occupation where there were also a higher percentage of females.

Labor Market Discrimination

The remaining 10.3% LGBTQ+ wage penalty could be indicative of discrimination in the labor market. However, the pay gap could also be partially capturing differences in other characteristics (unrelated to labor market discrimination) not included in Equation (1). For example, using an experiment on a Dutch online survey panel, Buser et al. (2018) show that, on average, gay men compete less than straight men.

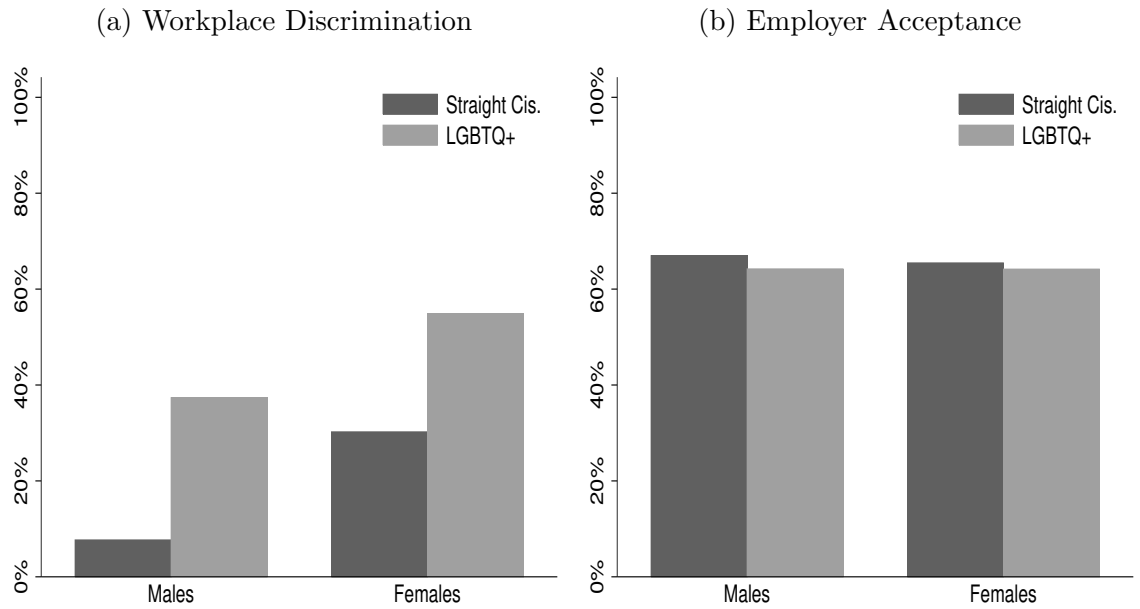
A growing body of research has used experimental methods to examine discrimination against LGBTQ+ workers in the job search process (Valfort (2017), Neumark (2018), and Badgett et al. (2021)). For instance, Tilcsik (2011) find that males resumes of new college graduates with participation in LGBT organizations had fewer callbacks than similar resumes without it. However, more recent studies have found no significant differences in callback rates (Bailey et al. (2013) and Acquisti and Fong (2020)). The experimental evidence for discrimination against lesbians is also mixed (Weichselbaumer (2003), Bailey et al. (2013), Baert (2014), and Mishel (2016)). In a recent study, Granberg et al. (2020) provided evidence of negative outcomes for transgender applicants in Sweden.

Apart from discrimination in the hiring process, disparities can also arise in the workplace environment (e.g., loss of job promotions and termination). Indeed, research has shown that LGBT-supportive policies and workplace climates are strongly linked to lower concealment, greater job commitment, improved workplace relationships, increased job satisfaction and productivity, and improved health outcomes among LGBT employees (Badgett et al. (2013), Wax et al. (2017), HRC (2018), OECD (2020), and Mumford et al. (2021)).

In this regard, the B&B:08/18 survey is able to provide suggestive evidence of the workplace discrimination channel. In the ten-year follow-up survey, respondents were asked to indicate whether they ever experienced workplace discrimination due to sexual orientation, sex, or gender identity since college graduation[22]. Among those

[22] 11.5% of respondents who indicated being employed since the 2007–08 bachelor's degree

Figure 1: Discrimination and Acceptance



Source: Baccalaureate and Beyond Longitudinal Study (B&B:08/18). Sample: bachelor's degree recipients who graduated before age 31.

who answered, 48% of LGBTQ+ graduates reported having experienced workplace discrimination while being employed during 2008-2018 (Figure 1a). The percentage was higher for LGBTQ+ females (55%) than for LGBTQ+ males (37%).

In addition, the B&B:08/18 survey also asked the respondents' opinion about their employer acceptance of LGBT employees[23]. Among those who answered this question, one-third of graduates found their current employer was not very accepting of LGBT employees in 2018, without significant differences by sex, gender, or sexual orientation (Figure 1b).

It is important to note that labor market discrimination based on sexual orientation and gender identity is now nationwide illegal as a result of the 2020 U.S. Supreme Court ruling in Bostock v. Clayton County in which the Court found that discrimination against LGBTQ+ people is prohibited under the Title VII of the Civil Rights Act of 1964. However, using a survey of LGBT adults conducted in May of 2021, Sears et al. (2021) found that workplace discrimination against LGBT people continues to be persistent in the US: one in ten LGBT workers reported that they experienced discrimination at work during the last year.

completion have missing observations for these questions. The percentage of missing observations is similar for straight cisgender (11.5%) and LGBTQ+ (11.6%) respondents.

[23] 11.8% of college graduates who indicated being employed in 2018 have missing observations for this question. The percentage of missing observations is similar for straight cisgender (11.8%) and LGBTQ+ (11.5%) respondents.

Gap over Time

Table A1.15 shows the estimated earnings gap one and four years after graduation for respondents who graduated in 2008 (B&B:08/09/12). The earnings penalty one year after graduation (in 2009) was 15% for both female and LGBTQ+ graduates. This penalty was similar to the gap one year after graduation for those who graduated in 2016 (Table 2), suggesting no signs of improvement in terms of earnings across the two cohorts of college graduates[24].

Four years after graduation (in 2012), the earnings penalties were more pronounced. After including all controls, the female penalty drops in magnitude (7.8%) and remains statistically significant, while the LGBTQ+ gap is still not significantly different from zero. Thus, the LGBTQ+ earnings penalty developed over graduates' careers until becoming economically and statistically significant ten years after graduation.

4.2. **Mental Health**

The results from the Probit model of mental health are presented in Table 4. The top panel shows the average marginal effects on reporting having anxiety or depression in the last year of college (in 2016). Based on previously reported binary student's gender, female graduates were, on average, 3.5 p.p. more likely to indicate having anxiety or depression, compared to males. In addition, self-identified LGBTQ+ college graduates were 8.6 p.p. more likely to report having anxiety or depression, compared to self-identified heterosexual and cisgender graduates. The bottom panel also shows a significant gap in reporting having a learning, mental or emotional condition one year after graduation (in 2017). The gaps remain significant after including demographic and other observable characteristics[25].

Figures A1.2 and A1.3 show the predictive margins with the 95 percent confidence intervals. On average, self-identified LGBTQ+ college graduates were 2.4 more likely to report having anxiety or depression and 2.3 more likely to indicate having a learning, mental or emotional condition. This LGBTQ+ mental health penalty was also economically significant for both males and females, with a more pronounced differential for females. The penalty was also significant across all regions, race/ethnicity groups, and LGBTQ+ subgroups (Tables A1.8 and A1.16).

[24] It is important to note that the earnings gap one year after graduation is not fully comparable across the two cohorts: LGBTQ+ graduates in the B&B:16/17 survey represent respondents that self-identified as LGBTQ+ one year after graduation (2017), while those in the B&B:08/09 survey represent graduates that self-identified as LGBTQ+ ten years after graduation (in 2018).

[25] Columns (3) and (4) of Table A1.4 show the coefficients for all controls.

Table 4: Mental Health
(average marginal effect)

	All		Males		Females	
	(1)	(2)	(3)	(4)	(5)	(6)
Anxiety/Depression						
LGBTQ+	0.086***	0.084***	0.056***	0.056***	0.107***	0.102***
	[0.012]	[0.013]	[0.019]	[0.020]	[0.018]	[0.018]
Female	0.035***	0.041***				
	[0.005]	[0.005]				
Learning/Mental Cond.						
LGBTQ+	0.128***	0.119***	0.086***	0.086***	0.154***	0.139***
	[0.015]	[0.015]	[0.022]	[0.023]	[0.020]	[0.019]
Female	0.029***	0.040***				
	[0.006]	[0.007]				
Controls		✓		✓		✓
Observations	13,900	13,900	5,500	5,500	8,400	8,400

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

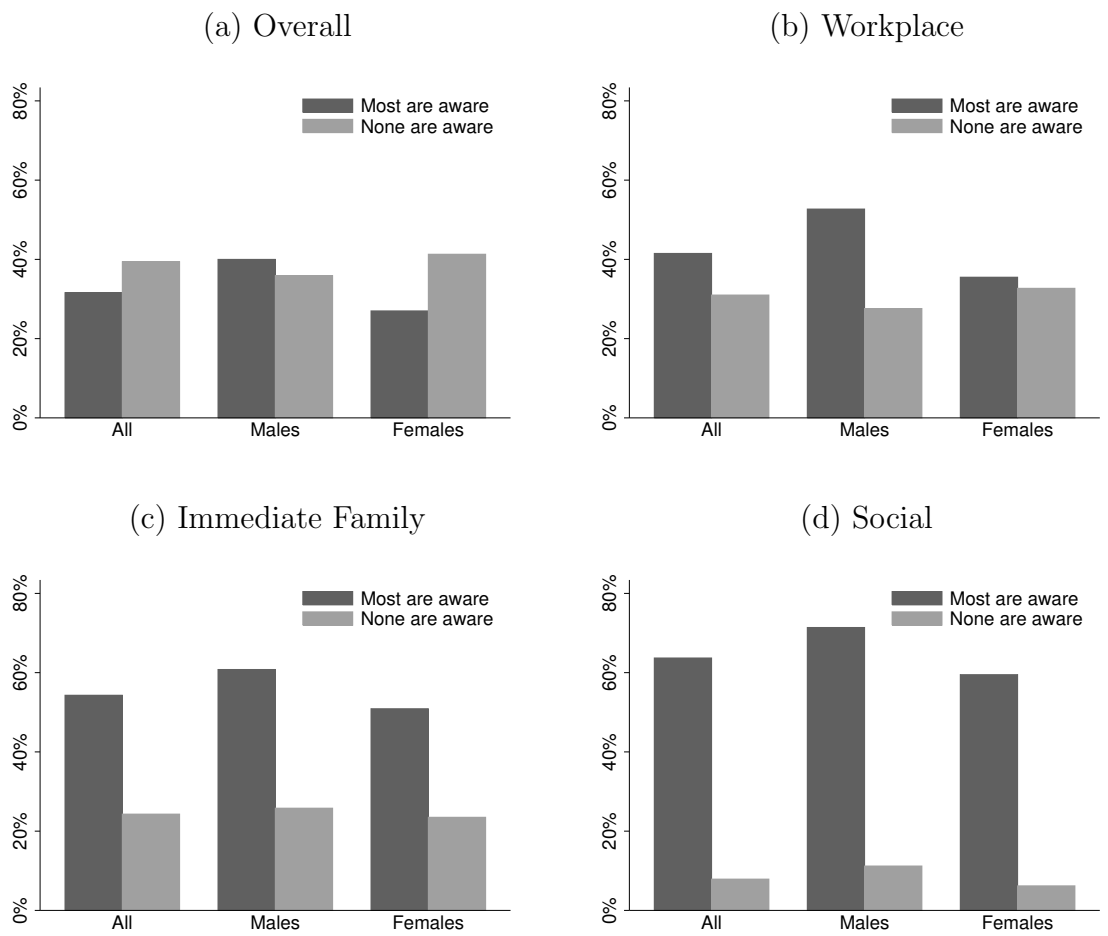
Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: bachelor's degree recipients who graduated before age 31.

A natural question in the presence of this evidence is whether poorer mental health contributed to the observed LGBTQ+ earnings penalty or vice versa (Ridley et al. (2020)). I explore this association in Table A1.17. While having a learning or mental condition was negatively correlated with earnings, the LGBTQ+ earnings penalty does not significantly change after including mental health as a control. Similarly, the LGBTQ+ mental health penalty remains significant after controlling for employment status and the logarithm of earnings.

4.3. **Sexual Orientation Concealment**

Relative to other minorities, sexual and gender minorities might be less noticeable unless they are open about their sexual orientation and gender identity. In the B&B:16/17 survey, respondents were asked to indicate the degree to which their immediate family and people they socialized or worked with were aware of their sexual orientation. One year after graduation, only 31.6% of self-identified LGBTQ+ graduates were out in all of the three settings and 39.4% were closeted in at least one of them, with the workplace being the setting with more closeted graduates (Figure 2).

Figure 2: Sexual Orientation Concealment



Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: LGBTQ+ bachelor's degree recipients who graduated before age 31.

The percentage of closeted graduates was higher for females than for males. A substantial part of this difference arises from a composition effect, as women were more likely to self-identify as bisexual or another sexual orientation, and these subgroups were less likely to disclose their sexual orientation (Figures A1.4, A1.5, and A1.6). However, even within sexual orientation subgroups, females were less likely to disclose their sexual orientation in the workplace. This result is consistent with the findings from Aksoy et al. (2021), who show using an online experiment, that females, but not males, are less likely to signal their sexual minority status when they are aware of potential payoff implications.

Understanding the role of sexual orientation concealment on earnings and mental health is complex, given that disclosure is an ongoing process that can generate both positive and negative outcomes. On the one hand, sexual orientation concealment can cause an increase in anxiety and stress associated with hiding, keep

one apart from community supports and reduce family, social, and work connections. On the other hand, sexual orientation disclosure can lead to experiences of family, social or work rejection, and discrimination. Yet, concealment might not fully protect against rejection and discrimination, as people can still infer sexual orientation (even incorrectly) based on physical appearance and gender expectations.

Recent empirical studies have found a significant positive association between sexual orientation disclosure and LGBTQ+ outcomes. In a meta-analysis study, Sabat et al. (2020) find that sexual orientation disclosure is more likely to lead to beneficial outcomes in the interpersonal, workplace, and non-workplace domains. In terms of earnings, using data from the English National Health Service, Mumford et al. (2021) find that, amongst LGB employees, disclosure is associated with 13% more pay. Meta-analysis has also established a positive association between internalizing mental health problems (i.e., depression, anxiety, distress, problematic eating) and sexual orientation concealment (Pachankis et al. (2020)).

To analyze the relationship between concealment and LGBTQ+ outcomes, I run separate regressions disaggregating the LGBTQ+ coefficient in Equation (1) by the degree of disclosure in each of the three settings (work, immediate family, and social) and by the overall degree of disclosure (most are aware in all the three settings, some are aware, none are aware in at least one of the three settings).

The estimation results show a significant additional LGBTQ+ earnings and mental health gap for closeted graduates one year after graduation (Table 5). On average, LGBTQ+ graduates closeted in any of the three settings experienced 18.2% lower earnings and were 14.9 p.p. more likely to report having a learning, mental or emotional condition than comparable heterosexual cisgender graduates. Interestingly, concealment in the family and social settings were also associated with a larger earnings penalty, suggesting that concealment outside the workplace could also be disadvantageous in the labor market.

It is important to note that this negative correlation between concealment and LGBTQ+ outcomes does not ascertain causality. In other words, it cannot be concluded from this analysis that coming out implies higher earnings and better mental health. For example, the estimated coefficients might be partially capturing the influences of omitted variables such as differences in personality traits, location characteristics, and LGBTQ+ acceptance levels within each setting. In addition, the link between concealment and earnings was only observed one year after graduation. Analyzing this relationship as LGBTQ+ workers advance in their careers would be more insightful in understanding the role of concealment on labor market outcomes.

Table 5: Concealment, Earnings and Mental Health

	Log. Earnings				Learning or Mental Condition (average marginal effect)			
Disclosure at:	Work	Family	Social	Overall	Work	Family	Social	Overall
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Most aware	-0.086*	-0.052	-0.066*	-0.051	0.073***	0.107***	0.105***	0.084***
	[0.049]	[0.043]	[0.035]	[0.048]	[0.021]	[0.021]	[0.018]	[0.024]
Some aware	-0.082*	-0.139***	-0.182***	-0.108*	0.146***	0.136***	0.162***	0.118***
	[0.045]	[0.054]	[0.062]	[0.062]	[0.029]	[0.032]	[0.030]	[0.029]
None aware	-0.197***	-0.249***	-0.295***	-0.182***	0.158***	0.133***	0.082	0.149***
	[0.054]	[0.054]	[0.116]	[0.046]	[0.028]	[0.030]	[0.065]	[0.026]
P-value:								
Most vs. some	0.957	0.203	0.101	0.465	0.040	0.452	0.099	0.357
Some vs. none	0.099	0.137	0.354	0.328	0.764	0.951	0.300	0.440
Most vs. none	0.118	0.002	0.065	0.048	0.021	0.483	0.747	0.096
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Observations	11,200	11,200	11,200	11,200	13,900	13,900	13,900	13,900

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: bachelor's degree recipients who graduated before age 31.

In this regard, research has found that a supportive workplace climate is strongly associated with the probability of disclosure (Wax et al. (2017) and Mumford et al. (2021)). A recent survey conducted by the Human Rights Campaign Foundation has also shown that LGBTQ+ workplace climate directly affects retention and turnover and that working in a not very LGBTQ+ accepting environment leads LGBTQ+ workers to conceal, feel distracted from work, avoid certain coworkers and work events, and feel unhappy or depressed at work (HRC (2018)). The study also highlights a significant double standard for LGBTQ+ workers in everyday conversations.

5. Conclusion

Attitudes and opinions about sexual and gender minorities have rapidly improved in the United States in the past decades. It is then natural to assume that the socioeconomic status and health of this minority, particularly for the youth, have also improved. In this article, I provide recent estimates of earnings and mental health for LGBTQ+ young adults in the United States.

Using regression analysis, I compare the earnings and mental health of LGBTQ+ to non-LGBTQ+ college graduates, controlling for other observable characteristics. The estimated coefficients show a significant earnings penalty: on average, LGBTQ+ graduates experienced 21.7% lower earnings ten years after graduation. The penalty was similar for both LGBTQ+ males and females. About half of this gap can be attributed to differential sorting in the major studied in college and the primary job occupation. The remaining 10% pay gap could be indicative of labor market discrimination and non-inclusive workplace environments: 48% of LGBTQ+ respondents reported to have experienced workplace discrimination due to sexual orientation, sex, or gender identity during the first ten years after graduation, and one-third of graduates did not find their current employer very accepting of LGBT employees. In addition, LGBTQ+ graduates were more than twice more likely to report having a mental disorder.

One year after graduation, only 31.6% of LGBTQ+ graduates disclosed their sexual orientation to most people in the workplace, immediate family, and social environment, with work being the setting with more closeted graduates. I then analyze the role of concealment and find a more pronounced earnings and mental health penalty for closeted graduates. These findings suggest that, despite significant progress in recent years, there are still substantial barriers to LGBTQ+ inclusion, not only in the workplace but also in other settings. Policies targeted to promote LGBTQ+ diversity and acceptance are likely to have a significant impact on reducing concealment and improving the socioeconomic status and mental health of LGBTQ+ individuals.

Finally, two important points need to be considered. First, differences in years of schooling between LGBTQ+ and heterosexual cisgender individuals could pose selection bias in this analysis (Burn and Martell (2020) and Badgett et al. (2021)). Even after controlling for a rich set of observable characteristics, unobservable differences between the two groups could still bias my results. Second, the LGBTQ+ gap might be different for non-college-educated and older workers. Looking further at this heterogeneity is an important avenue for future research with bigger nationally representative samples.

APPENDIX

A.1. **Additional Tables**

Table A1.1: Percentage of Self-identified LGBQ
(NHIS vs. B&B)

NHIS:2020				
Age:	18-85	21-30	21-30	32-41
Education:	All	All	BA	BA
All	4.8%	9.3%	9.1%	5.6%
Males	4.1%	6.8%	7.1%	4.6%
Females	5.5%	11.8%	10.8%	6.4%
B&B:16/17				
Age:	19-79	21-30	31-79	
All	9.3%	9.6%	6.8%	
Males	7.9%	7.8%	7.5%	
Females	10.3%	11%	6.4%	
B&B:08/18				
Age:	29-78	32-41	42-78	
All	6%	6.1%	4.7%	
Males	5.7%	5.6%	6.1%	
Females	6.2%	6.6%	3.8%	

Source: 2020 National Health Interview Survey (NHIS) and Baccalaureate and Beyond Longitudinal Study (B&B:16/17 and B&B:08/18). Estimates are survey weighted.

Table A1.2: College and Students Characteristics
(B&B:16/17)

	Males		Females	
	Straight Cis.	**LGBTQ+**	**Straight Cis.**	**LGBTQ+**
	(1)	(2)	(3)	(4)
College Characteristics:				
Out of state of legal residence	22.7%	27.3%	21.7%	29.4%
For-profit or Minimally Selective	9.1%	10.9%	11.2%	10.5%
Moderately Selective	62.1%	57%	63.2%	55.9%
Very Selective	28.8%	32.1%	25.6%	33.6%
Students Characteristics (2016)				
White	70.3%	62.7%	65.4%	64.8%
Age 21-23	73.2%	74.1%	77.3%	77.6%
GPA	3.2	3.3	3.3	3.3
Parental Income (dep. students)	$ 120,448 [113,339]	$ 107,618 [87,991]	$ 105,472 [99,470]	$ 108,173 [102,479]
Income (indep. students)	$ 18,087 [35,117]	$ 17,291 [20,386]	$ 21,060 [28,250]	$ 14,348 [18,889]
Students Characteristics (2017)				
Moved from region of legal residence	18.2%	19%	16.6%	17.5%
Single, never married	87%	91.3%	83.8%	90.0%
Living with partner	21.8%	18.1%	24.9%	23.9%
With dependent children	5.9%	2%	8.8%	5.2%
Region of residence:				
Northeast	26.1%	26%	24.6%	25.8%
Midwest	27.4%	27.5%	25.8%	22.4%
South	29.9%	29.3%	32.1%	32.2%
West	16.6%	17.3%	17.5%	19.6%
Observations	5,000	500	7,500	900

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: bachelor's degree recipients who graduated before age 31. Balanced repeated replication standard errors in brackets.

Table A1.3: College and Students Characteristics
(B&B:08/18)

	Males		Females	
	Straight Cis.	**LGBTQ+**	**Straight Cis.**	**LGBTQ+**
	(1)	(2)	(3)	(4)
College Characteristics				
Out of state of legal residence	19.1%	25.2%	17.4%	22.8%
For-profit or Minimally Selective	14.9%	10.5%	16.5%	19.6%
Moderately Selective	50.6%	54.9%	53.9%	48.9%
Very Selective	34.4%	34.6%	29.7%	31.5%
Students Characteristics (2008)				
White	77.9%	73.6%	74.4%	76.2%
Age 21-23	73.6%	75.7%	79.5%	81.1%
GPA	3.2	3.2	3.3	3.4
Parental Income (dep. students)	$ 103,735	$ 90,828	$ 97,087	$ 98,015
	[69,727]	[64,182]	[66,199]	[79,151]
Income (indep. students)	$ 20,505	$ 16,159	$ 26.925	$ 24,554
	[20,902]	[15,032]	[26,594]	[25,546]
Students Characteristics (2018)				
Moved from state of legal residence	35%	47.6%	31.3%	45.6%
Single, never married	33.3%	65.3%	29.6%	46.8%
Living with partner	68.1%	49.1%	71.6%	61.8%
With dependent children	45.5%	10.7%	53.8%	30.6%
Region of residence:				
Northeast	23.7%	27.0%	23.8%	23.3%
Midwest	26.5%	29.0%	27.4%	22.1%
South	32.8%	25.5%	33.5%	31.7%
West	17%	18.4%	15.3%	23.0%
Observations	4,600	300	6,300	500

Source: Baccalaureate and Beyond Longitudinal Study (B&B:08/18). Sample: bachelor's degree recipients who graduated before age 31. Balanced repeated replication standard errors in brackets.

Table A1.4: Log. Earnings and Mental Health
(including all controls)

	Log. Earnings		**Anxiety or Depression**	**Learning or Mental Cond.**
	(B&B:16/17)	(B&B:08/18)	(B&B:16/17)	(B&B:16/17)
	(1)	(2)	(3)	(4)
LGBTQ+	-0.118***	-0.217***	0.497***	0.528***
	[0.031]	[0.051]	[0.062]	[0.057]
Female	-0.144***	-0.314***	0.326***	0.231***
	[0.018]	[0.022]	[0.048]	[0.040]
Black or African American	-0.074**	-0.049	-0.237**	-0.433***
	[0.037]	[0.047]	[0.107]	[0.096]
Hispanic or Latino	0.008	-0.007	-0.081	-0.148**
	[0.027]	[0.044]	[0.074]	[0.070]
Asian	0.101**	0.112**	-0.222**	-0.289***
	[0.047]	[0.056]	[0.104]	[0.109]
Other	-0.062	-0.034	-0.124	0.022
	[0.039]	[0.050]	[0.121]	[0.101]
Age 22	-0.019	-0.015	-0.013	-0.024
	[0.026]	[0.028]	[0.067]	[0.051]
Age 23	0.069**	-0.091***	0.097	0.126*
	[0.029]	[0.036]	[0.078]	[0.068]
Age 24-26	0.039	-0.085**	0.162**	0.188***
	[0.031]	[0.044]	[0.075]	[0.077]
Age 27-30	0.185***	-0.098**	0.109	0.160**
	[0.049]	[0.044]	[0.102]	[0.084]
Married	-0.033	0.116***	-0.068	-0.270***
	[0.039]	[0.041]	[0.137]	[0.084]
Separated/Divorced/Widowed	0.094	0.103**	-	-0.153
	[0.070]	[0.044]		[0.203]
Cohabitating with partner	0.086***	0.063*	-	-0.022
	[0.027]	[0.039]		[0.064]
With dependent children	0.043	-0.040	-0.090	-0.115
	[0.036]	[0.026]	[0.131]	[0.093]
Demeaned GPA	0.064***	0.088***	-0.179***	-0.199***
	[0.025]	[0.021]	[0.059]	[0.055]
Demeaned Income (dep. student)	0.003***	0.010***	-0.001	0.000
	[0.000]	[0.001]	[0.002]	[0.002]
Demeaned Income (indep. student)	0.022	0.044***	-0.016	-0.013
	[0.020]	[0.008]	[0.022]	[0.020]
Moved from region/state of residence	0.070***	0.079***	-0.038	0.032
	[0.024]	[0.023]	[0.056]	[0.060]
Midwest	0.029	-0.104***	0.007	-0.030
	[0.025]	[0.033]	[0.066]	[0.056]
South	-0.052**	-0.103***	0.015	-0.027
	[0.025]	[0.030]	[0.067]	[0.060]
West	0.007	0.051	0.006	-0.078
	[0.032]	[0.038]	[0.066]	[0.083]
For-profit or Minim. Selective	0.006	-0.061*	0.063	0.091
	[0.034]	[0.037]	[0.075]	[0.067]
Very Selective	0.044*	0.117***	0.145***	0.092*
	[0.023]	[0.027]	[0.058]	[0.049]
Constant	10.292***	11.097***	-1.789***	-1.402***
	[0.031]	[0.045]	[0.068]	[0.065]
Observations	11,200	10,300	13,900	13,900

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17 and B&B:08/18). Sample: bachelor's degree recipients who graduated before age 31.

Table A1.5: Log. Earnings from All Jobs
(B&B:08/18)

	All		**Males**		**Females**	
	(1)	(2)	(3)	(4)	(5)	(6)
LGBTQ+	-0.139***	-0.141***	-0.214***	-0.129*	-0.086*	-0.128***
	[0.046]	[0.043]	[0.078]	[0.071]	[0.047]	[0.045]
Female	-0.281***	-0.293***				
	[0.018]	[0.018]				
Controls		✓		✓		✓
Observations	10,300	10,300	4,500	4,500	5,800	5,800

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:08/18). Sample: employed bachelor's degree recipients who graduated before age 31.

Table A1.6: Log. Earnings from Primary Job
(B&B:08/18, males)

	(1)	(2)	(3)	(4)	(5)	(6)
LGBTQ+	-0.287***	-0.277***	-0.196***	-0.234***	-0.227***	-0.194**
	[0.093]	[0.088]	[0.089]	[0.088]	[0.091]	[0.091]
Controls (except HH)		✓	✓	✓	✓	✓
Marital Status			✓			✓
Cohabitation				✓		✓
Children					✓	✓
Observations	4,500	4,500	4,500	4,500	4,500	4,500

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:08/18). Sample: employed bachelor's degree recipients who graduated before age 31.

Table A1.7: Log. Earnings from Primary Job
(by LGBTQ+ Subgroups)

	B&B:16/17				B&B:08/18			
	All	All	Males	Females	All	All	Males	Females
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gay/Lesbian	-0.040	-0.032	-0.037	0.002	-0.122**	-0.104*	-0.069	-0.088
	[0.051]	[0.050]	[0.065]	[0.085]	[0.058]	[0.060]	[0.072]	[0.096]
Bisexual	-0.121***	-0.120***	-0.185*	-0.100**	-0.317***	-0.319***	-0.684**	-0.220**
	[0.044]	[0.043]	[0.098]	[0.050]	[0.106]	[0.102]	[0.340]	[0.088]
Another	-0.179**	-0.155**	-0.047	-0.188**	-0.241	-0.220	0.114	-0.338*
	[0.076]	[0.074]	[0.180]	[0.086]	[0.179]	[0.186]	[0.274]	[0.195]
Questioning	-0.246***	-0.242***	-0.218	-0.239*	-0.018	0.030	-0.181	0.182
	[0.098]	[0.093]	[0.149]	[0.145]	[0.147]	[0.139]	[0.271]	[0.136]
Non-cisgender	-0.083	-0.106	-0.133	-0.086	-0.324*	-0.316**	-0.189	-0.365*
	[0.127]	[0.129]	[0.117]	[0.177]	[0.173]	[0.157]	[0.279]	[0.214]
Female	-0.143***	-0.141***			-0.299***	-0.309***		
	[0.018]	[0.019]			[0.022]	[0.023]		
Controls		✓	✓	✓		✓	✓	✓
Observations	11,200	11,200	4,400	6,800	10,300	10,300	4,500	5,800

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17 and B&B:08/18). Sample: employed bachelor's degree recipients who graduated before age 31.

Table A1.8: LGBTQ+ Gap
(by race/ethnicity and region)

	Log. Earnings		**Anxiety or Depression**	**Learning or Mental Condition**
	(B&B:16/17)	(B&B:08/18)	(B&B:16/17)	(B&B:16/17)
LGBTQ+ by:	(1)	(2)	(3)	(4)
Race/ethnicity				
White	-0.121***	-0.228***	0.092***	0.106***
	[0.040]	[0.058]	[0.015]	[0.018]
Other	-0.112**	-0.182*	0.068***	0.145***
	[0.056]	[0.106]	[0.025]	[0.033]
Region				
Northeast	-0.105*	-0.328***	0.077***	0.137***
	[0.055]	[0.113]	[0.025]	[0.031]
Midwest	-0.118**	-0.252**	0.082***	0.131***
	[0.050]	[0.104]	[0.031]	[0.033]
South	-0.140*	-0.234**	0.070***	0.099***
	[0.072]	[0.105]	[0.021]	[0.029]
West	-0.101	-0.018	0.120***	0.113***
	[0.083]	[0.074]	[0.039]	[0.045]
Controls	✓	✓	✓	✓
Observations	11,200	10,300	13,900	13,900

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17 and B&B:08/18). Sample: bachelor's degree recipients who graduated before age 31.

Table A1.9: Employment Status
(average marginal effect)

	B&B:16/17			**B&B:08/18**		
	All	Males	Females	All	Males	Females
	(1)	(2)	(3)	(4)	(5)	(6)
LGBTQ+	0.011 [0.016]	0.005 [0.028]	0.013 [0.019]	-0.001 [0.019]	-0.012 [0.027]	0.011 [0.029]
Female	0.009 [0.009]			-0.071*** [0.009]		
Controls	✓	✓	✓	✓	✓	✓
Observations	13,900	5,500	8,400	11,600	4,900	6,700

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17 and B&B:08/18). Sample: bachelor's degree recipients who graduated before age 31.

Table A1.10: Full-time Employment
(average marginal effect)

	B&B:16/17			**B&B:08/18**		
	All	Males	Females	All	Males	Females
	(1)	(2)	(3)	(4)	(5)	(6)
LGBTQ+	-0.049*** [0.018]	-0.022 [0.033]	-0.063*** [0.023]	-0.032 [0.021]	-0.036 [0.031]	-0.027 [0.030]
Female	-0.046*** [0.010]			-0.099*** [0.010]		
Controls	✓	✓	✓	✓	✓	✓
Observations	11,200	4,400	6,800	10,300	4,500	5,800

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17 and B&B:08/18). Sample: employed bachelor's degree recipients who graduated before age 31.

Table A1.11: Majors by Median Earnings 10 years after graduation

	Median Earnings	Dist. of Males		Dist. of Females	
		Straight Cis.	LGBTQ+	Straight Cis.	LGBTQ+
Low-pay (< p33)					
Theology and religious vocations	39,000	0.4%	-	0.2%	-
Personal and consumer services	48,450	1.4%	-	1.1%	0.9%
Education	49,000	3.8%	2.7%	12.4%	5.5%
Humanities	50,000	8.9%	21.8%	10.4%	27.3%
Law and legal studies	50,000	0.4%	-	0.6%	-
Public and human services	52,166	0.6%	2.3%	3.1%	1.8%
General studies and other	54,000	1.9%	2.9%	3.4%	4.9%
Medium-pay (p33-p66)					
Communications	55,000	4.7%	8.6%	6.2%	3.9%
Psychology	55,000	4%	6%	9.7%	12.6%
Design and app. arts	55,000	1.4%	1.4%	2.4%	4.2%
History	55,000	3.3%	2.2%	1.8%	0.8%
Military tech. and services	57,200	2.9%	1.5%	1.8%	3.8%
Agriculture and natural res.	60,000	1.6%	-	1%	1.2%
Architecture	65,000	0.9%	1.7%	0.4%	-
High-pay (≥ p66)					
Health care	66,000	1.6%	3%	10.4%	2.9%
Social Sciences	66,790	10%	12.4%	7.5%	10.2%
Biological or physical science	71,000	6.1%	5.5%	5.4%	5.2%
Mathematics	72,000	1.5%	0.9%	0.9%	0.4%
Business	74,880	26.8%	17.8%	18.1%	10.9%
Manuf./const./transp.	83,200	0.9%	-	0.2%	-
Computer/Inf. sciences	91,000	5.2%	2.3%	0.8%	0.2%
Engineering	98,000	11.6%	6.0%	2.4%	1.5%
Total	-	100%	100%	100%	100%

Source: Baccalaureate and Beyond Longitudinal Study (B&B:08/18). Sample: bachelor's degree recipients who graduated before age 31.

Table A1.12: Occupations by Median Earnings 10 years after graduation

	Median Earnings	Dist. of Males		Dist. of Females	
		Straight Cis.	LGBTQ+	Straight Cis.	LGBTQ+
Low-pay (< p33)					
Personal care	28,600	0.5%	-	1.5%	3.1%
Food service	30,000	1.2%	2.3%	1.5%	3.8%
Sports	38,000	0.7%	-	0.3%	-
Construction/mining	40,000	1.1%	-	-	-
Business/legal support	42,000	4.6%	10.1%	6.4%	8.9%
Secretaries/Administration	43,600	0.3%	-	2%	0.6%
Transportation support	45,000	1.2%	1.2%	0.5%	-
Information	45,282	0.1%	-	0.6%	1.2%
Artists and designers	46,560	2.7%	6.4%	4%	7.9%
Other educators	48,000	2.6%	3.3%	3.8%	4.2%
Medium-pay (p33-p66)					
Other healthcare	49,000	1.2%	1.2%	3.3%	1.1%
PK-12 educators	50,000	4.5%	4.5%	13.5%	12.5%
Social service	51,000	3.3%	7.4%	7.7%	9%
Agricultural	54,000	0.4%	-	-	-
Communication	54,392	1.9%	-	1.5%	1.5%
Fitters/tradesmen/mechanics	55,575	2.1%	0.1%	0.8%	1%
Post. educators	58,000	1.7%	4.5%	2.1%	7.3%
Life scientists	58,000	1.1%	0.8%	0.5%	1.4%
Sales	60,752	6.3%	4.9%	5.6%	4.8%
Protective service	65,000	1.9%	2.2%	0.8%	1.9%
Nurses	67,392	1.2%	3.4%	7%	2%
High-pay (≥ p66)					
Social Scientists	69,096	0.9%	3.9%	1.1%	1.3%
Engineering tech.	70,000	1.1%	-	0.4%	-
Business (non-management)	74,880	11.6%	11.2%	10%	5.8%
Military	75,252	0.9%	-	-	-
Physical scientists	78,000	0.8%	1.3%	0.4%	0.2%
Business managers	80,000	18%	9.7%	12%	10.6%
Healthcare (non-nurses)	81,120	3%	2.5%	4.4%	2.2%
Computer/inf. systems	88,000	12%	11%	3.1%	2.7%
Math-related	90,000	0.8%	-	0.5%	-
Engineers	95,000	5.7%	2.4%	2.1%	1.6%
Legal	100,000	3.7%	2.7%	2.1%	2.2%
Air transportation	120,000	0.7%	-	0.1%	-
Total	-	100%	100%	100%	100%

Source: Baccalaureate and Beyond Longitudinal Study (B&B:08/18). Sample: employed bachelor's degree recipients who graduated before age 31.

Table A1.13: High-Pay Undergraduate Major
(average marginal effect)

	B&B:08/18			**B&B:16/17**		
	All	Males	Females	All	Males	Females
	(1)	(2)	(3)	(4)	(5)	(6)
LGBTQ+	-0.141***	-0.147***	-0.140***	-0.095***	-0.142***	-0.065***
	[0.027]	[0.045]	[0.031]	[0.019]	[0.034]	[0.020]
Female	-0.183***			-0.111***		
	[0.013]			[0.012]		
Controls	✓	✓	✓	✓	✓	✓
Observations	11,600	4,900	6,700	13,900	5,500	8,400

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:08/18 and B&B:16/17). Sample: bachelor's degree recipients who graduated before age 31.

Table A1.14: High-Pay Primary Job Occupation
(average marginal effect)

	B&B:08/18		
	All	Males	Females
	(1)	(2)	(3)
LGBTQ+	-0.102***	-0.092*	-0.103***
	[0.031]	[0.050]	[0.036]
Female	-0.230***		
	[0.014]		
Controls	✓	✓	✓
Observations	10,300	4,500	5,800

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:08/18). Sample: employed bachelor's degree recipients who graduated before age 31.

Table A1.15: Log. Earnings from Primary Job
(B&B:08/09/12)

	B&B:08/09			**B&B:08/12**		
	(1)	(2)	(3)	(4)	(5)	(6)
LGBTQ+	-0.153***	-0.149***	0.005	-0.223***	-0.199***	-0.021
	[0.039]	[0.040]	[0.027]	[0.050]	[0.050]	[0.032]
Female	-0.154***	-0.134***	-0.029*	-0.210***	-0.216***	-0.078***
	[0.020]	[0.021]	[0.016]	[0.020]	[0.020]	[0.016]
Controls		✓	✓		✓	✓
Full-time Empl.			✓			✓
Major and Occ.			✓			✓
Career						✓
Observations	9,000	9,000	9,000	10,000	10,000	10,000

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:08/09/12). Sample: employed bachelor's degree recipients who graduated before age 31.

Table A1.16: Mental Health by LGBTQ+ Subgroups
(Average Marginal Effects)

	Anxiety or Depression (B&B:16/17)				**Learning or Mental Condition** (B&B:16/17)			
	All	All	Males	Females	All	All	Males	Females
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gay/Lesbian	0.088***	0.089***	0.077**	0.083**	0.119***	0.114***	0.108***	0.114***
	[0.026]	[0.027]	[0.031]	[0.042]	[0.029]	[0.028]	[0.037]	[0.043]
Bisexual	0.090***	0.086***	0.054	0.104***	0.130***	0.123***	0.075	0.140***
	[0.021]	[0.021]	[0.052]	[0.026]	[0.025]	[0.024]	[0.052]	[0.030]
Another	0.093**	0.085**	0.012	0.109**	0.187***	0.168***	-0.028	0.213***
	[0.044]	[0.040]	[0.039]	[0.053]	[0.051]	[0.048]	[0.054]	[0.058]
Questioning	0.076	0.071	-0.008	0.131*	0.131**	0.115**	0.212*	0.081
	[0.050]	[0.049]	[0.034]	[0.081]	[0.061]	[0.057]	[0.118]	[0.060]
Non-cisgender	0.035	0.036	0.013	0.056	0.064**	0.060**	-0.006	0.089*
	[0.027]	[0.028]	[0.044]	[0.042]	[0.031]	[0.031]	[0.060]	[0.046]
Female	0.035***	0.040***			0.028***	0.039***		
	[0.005]	[0.005]			[0.007]	[0.007]		
Controls		✓	✓	✓		✓	✓	✓
Observations	13,900	13,900	5,500	8,400	13,900	13,900	5,500	8,400

*p<0.1;**p<0.05;***p<0.01

Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: bachelor's degree recipients who graduated before age 31.

Table A1.17: Employment, Earnings, and Mental Health
(B&B:16/17)

	Employed	**Full-time**	**Log. Earnings**	**Learning or Mental Condition**	
	(1)	(2)	(3)	(4)	(5)
LGBTQ+	0.013 [0.016]	-0.047*** [0.018]	-0.110*** [0.032]	0.119*** [0.015]	0.114*** [0.017]
Female	0.009 [0.009]	-0.045*** [0.010]	-0.141*** [0.018]	0.040*** [0.007]	0.042*** [0.007]
Learning/Mental Cond.	-0.012 [0.018]	-0.019 [0.023]	-0.066** [0.033]		
Employed				-0.008 [0.011]	
Log Earnings					-0.011** [0.005]
Controls	✓	✓	✓	✓	✓
Observations	13,900	11,200	11,200	13,900	11,200

*p<0.1;**p<0.05;***p<0.01

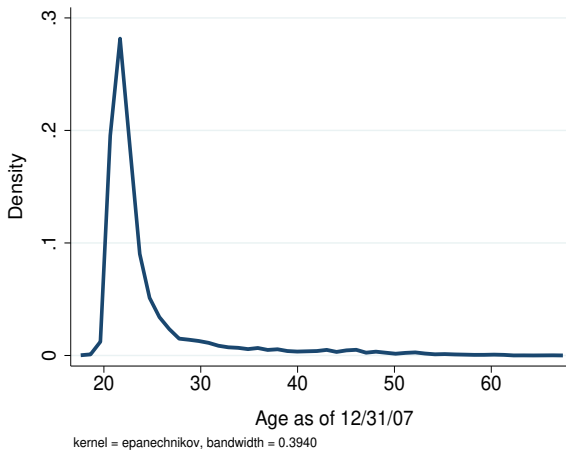
Balanced repeated replication standard errors in brackets.

Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: bachelor's degree recipients who graduated before age 31.

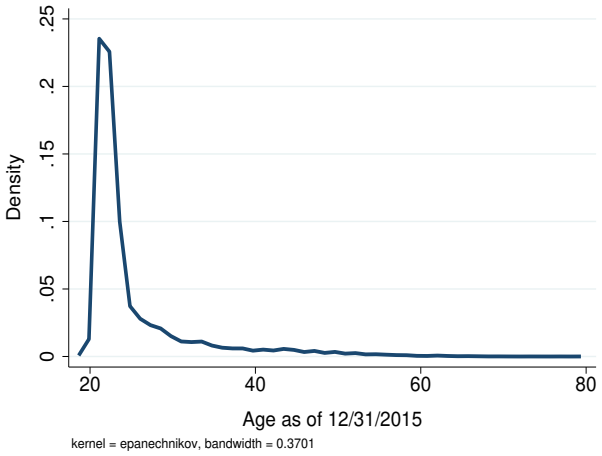
A.2. **Additional Figures**

Figure A1.1: Distribution of Age

(a) B&B:2008/18



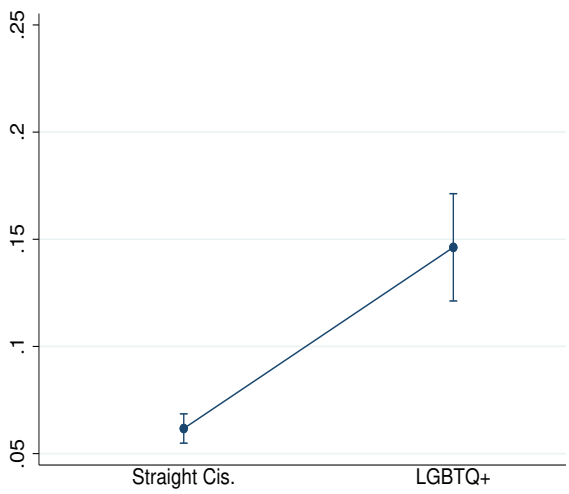
(b) B&B:2016/17



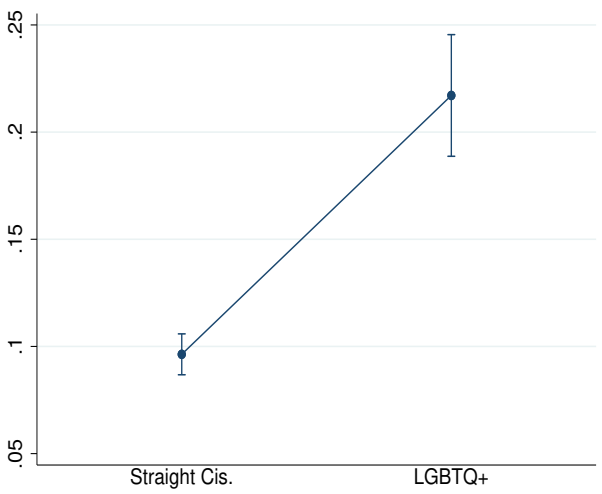
Source: Baccalaureate and Beyond Longitudinal Study (B&B:08/18 and B&B:16/17).

Figure A1.2: Mental Health
(Predictive Margins)

(a) Anxiety or Depression

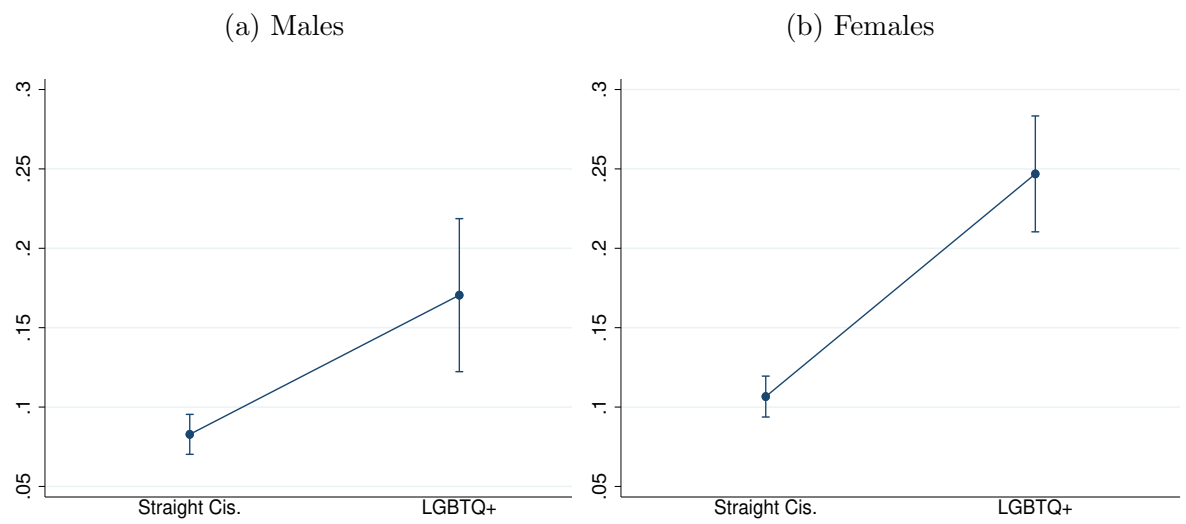


(b) Learning or Mental Condition



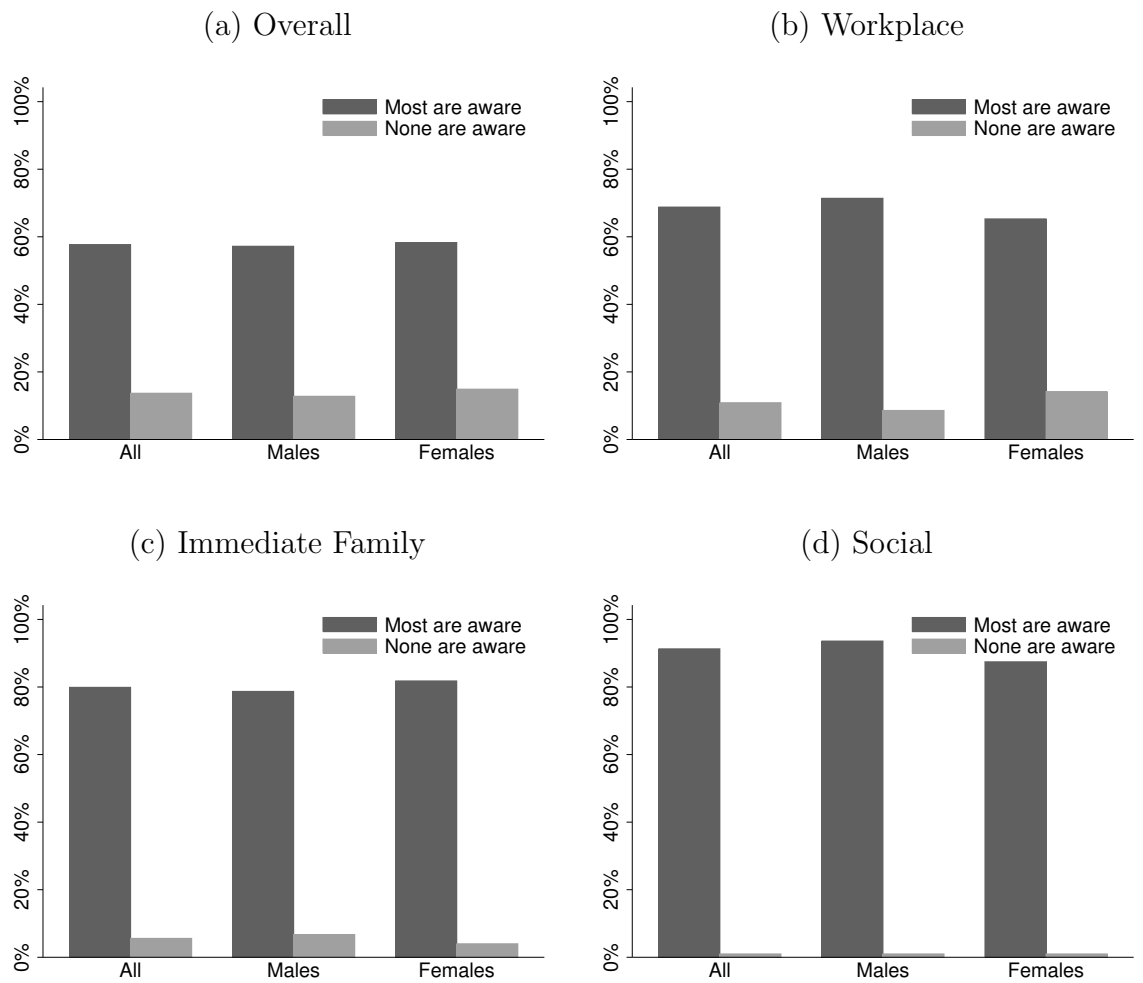
Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: bachelor's degree recipients who graduated before age 31.

Figure A1.3: Learning or Mental Condition by Sex
(Predictive Margins)



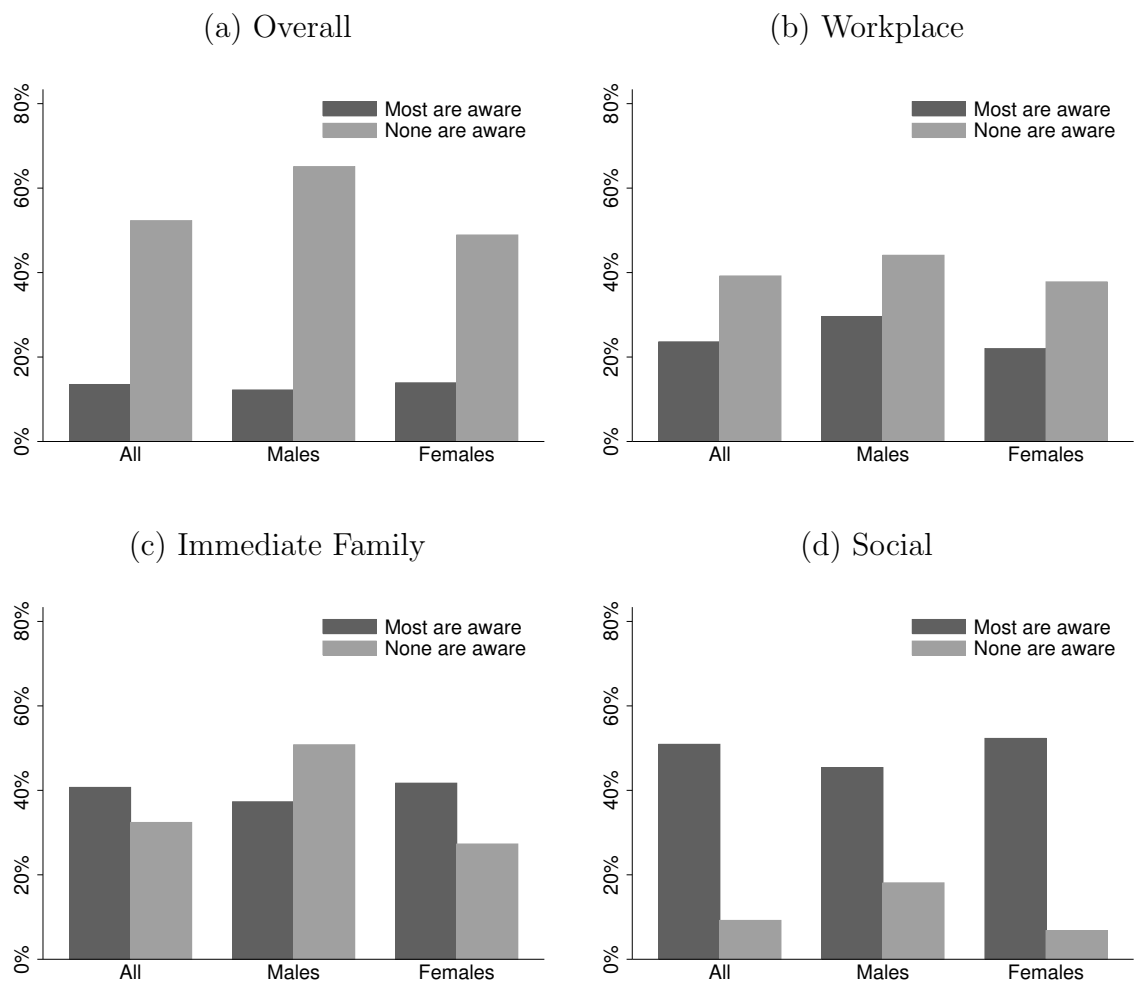
Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: bachelor's degree recipients who graduated before age 31.

Figure A1.4: Sexual Orientation Concealment
(Gay/Lesbian)



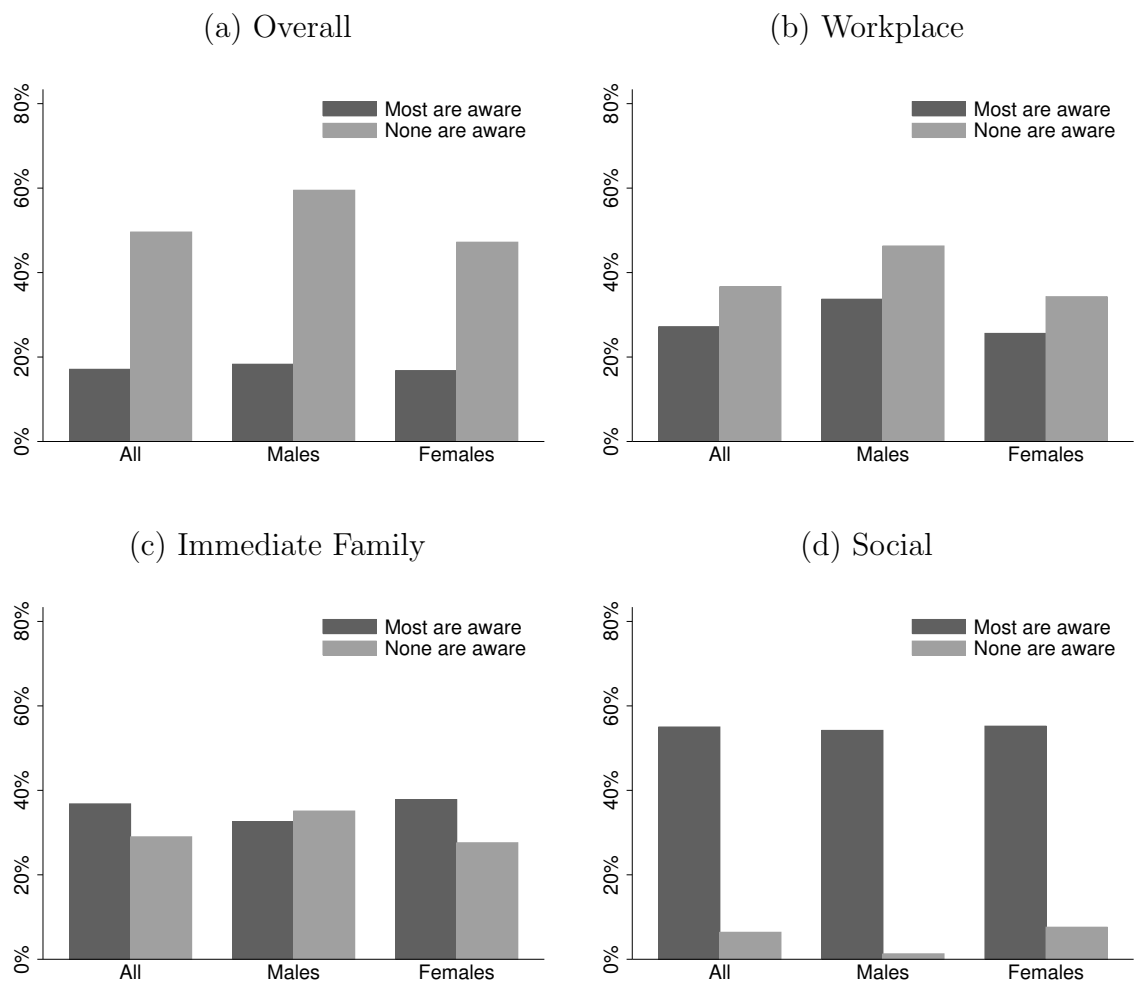
Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: Gay/Lesbian bachelor's degree recipients who graduated before age 31.

Figure A1.5: Sexual Orientation Concealment
(Bisexual)



Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: Bisexual bachelor's degree recipients who graduated before age 31.

Figure A1.6: Sexual Orientation Concealment
(Another Sexual Orientation)



Source: Baccalaureate and Beyond Longitudinal Study (B&B:16/17). Sample: Another Sexual Orientation bachelor's degree recipients who graduated before age 31.

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