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ABSTRACT

We analyze data from two universities that allowed students to conceal grades from their transcripts during the Covid-19 pandemic. Across both institutions, we observe a significant and substantial gender concealment gap: women are less likely than men to conceal grades that would harm their GPA. We explore the robustness, drivers, and consequences of the concealment gap via rich data on student traits and course-level characteristics as well as complementary data from an experiment with real employers and a survey of impacted students. Our findings highlight how information-optional policies can create unexpected and potentially undesirable disparities.

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1 Introduction

There exist persistent gender gaps in pay and labor market representation (Goldin, 2014; Blau and Kahn, 2017). These gaps have given rise to a rich literature exploring the factors that contribute to them—ranging from gender differences in willingness to negotiate or compete (Niederle and Vesterlund, 2007; Hernandez-Arenaz and Iriberri, 2019*a*; Biasi and Sarsons, 2022; Roussille, 2022) to occupational sorting based on amenity tastes or other preferences (Fernandez and Freidrich, 2011; Petersen, Penner and Hogsnes, 2011; Zafar, 2013; Wiswall and Zafar, 2018).[1] Some of these gaps may be due to labor market discrimination, and research has found that discrimination is influenced by the amount of information available to employers.[2]

In this paper, we present evidence on how choices made by prospective workers—in response to information-optional policies—contribute to differences in information available to employers. More specifically, we document a *gender concealment gap*: women are less likely than men to conceal relatively poor academic performance when given the opportunity to do so.

The main sources of our data are two large-scale natural experiments at highly selective universities, Boston University and a flagship public school in the Midwest, which introduced grade-optional policies in response to the Covid-19 pandemic. Students at these schools had the option of choosing—for each of their classes—whether to conceal a passing letter grade by changing it to "Credit" on their transcripts.[3] When students concealed a letter grade in a class, the grade no longer impacted their grade point average (GPA), and information about their specific academic performance was hidden from future admissions officers and employers.

A key component of the policies at both institutions is that students observed the assigned letter grade they received for each class *before* deciding whether to conceal it. They could see if the letter grade was above their current GPA (which we call "helpful" for their

[1]Such preferences could relate to cultural beliefs and ideals (Correll, 2001; Charles and Bradley, 2009; Cech, 2013; Burbano, Padilla and Meier, 2020). Additional factors contributing to gender gaps in pay and representation that have been discussed in the literature include gender differences in risk and social preferences (Croson and Gneezy, 2009); parenting responsibilities and other reproductive differences (Adda, Dustmann and Stevens, 2017; Kleven, Landais and Sogaard, 2019; Low, 2022); gendered expectations (Bursztyn, Fujiwara and Pallais, 2017); and psychological gender differences (Hyde, 2014).

[2]A number of empirical studies show that constraints on information (e.g., "ban the box" policies) can increase discrimination (Wozniak, 2015; Bartik and Nelson, 2016; Agan and Starr, 2017; Doleac and Hansen, 2017; Agan and Starr, 2018; Doleac and Hansen, 2020). More generally, how the availability of information influences discrimination is a frequent topic in the literature (Lundberg and Startz, 1983; Altonji and Pierret, 2001; Blair and Chung, 2021; Lepage, Forthcoming).

[3]These policies emerged unexpectedly in 2020, in recognition of the challenges faced by many students when Covid brought unprecedented disruption to their educations as a result of mid-semester campus shutdowns and the shift to online instruction.

GPA); the same as their GPA ("neutral" for GPA); or below their GPA ("harmful" for GPA). We study responses to this policy for the one semester it was in place at Boston University (BU) and for the two semesters it was in place at the large public Midwestern university (hereafter "Midwestern Flagship"). Both schools provided us with information on assigned letter grades and whether each grade was converted to Credit, as well as additional information on students. Thus, one strength of our setting is that, unlike in many situations in which students may avoid taking a test or submitting a test score altogether, we observe the performance outcome of students even when they conceal their performance.

We find that students hardly ever conceal helpful or neutral grades (i.e., grades that would increase their GPA or leave it unchanged). In contrast, students conceal a substantial fraction of harmful grades (i.e., grades that would lower their GPA). Fifty-two percent of harmful grades are concealed at BU and 33 percent of them are concealed at the Midwestern Flagship. For these harmful grades, we observe a large and robust gender gap in concealment. Women are 8.9 percentage points (15%) less likely to conceal harmful grades than men at BU, and they are 8.3 percentage points (22%) less likely to do so at the Midwestern Flagship. Within each school, we find that the concealment gap is present across a range of student-level traits, types of majors, and course-level attributes. For example, we observe a strong and statistically significant concealment gap across years of study (from first-years to seniors); across prior GPA levels (from those with low to high GPAs); throughout a wide swath of the grade distribution (from C to B+); during different academic terms (Spring 2020, Fall 2020, and Winter 2021); and across classes that vary in terms of factors such as their size, measures of their difficulty, and their gender balance. The robustness of the concealment gap across these various dimensions and across the two schools—with different student populations and different implementations of the policy—suggests its potentially wide relevance to other settings, particularly given the increasing prevalence of information-optional policies.

In addition to documenting this novel gender difference, we explore the possible consequence of the concealment gap and of grade-optional policies more generally. Our main finding results from the fact that concealing a harmful grade increases a student's GPA, because it changes a GPA-lowering grade to a Credit-only grade that has no impact on GPA. We find that—because women conceal harmful grades less often than men—these policies shift GPA distributions in favor of men: on average, GPAs of men improved by 0.07 points more than the GPAs of women over one semester at BU and over two semesters at the Midwestern Flagship.[4] This relative GPA shift is substantial, eliminating more than half of the GPA advantage held by female students in a typical semester prior to the introduction of

[4] At BU, the policy improved men's GPAs by 0.23 points and women's GPAs by 0.16 points; at the Midwestern Flagship, it improved men's GPAs by 0.22 points and women's GPAs by 0.15 points.

the policies. This relative GPA shift in favor of men, moreover, may have a number of subsequent consequences, affecting, for example, qualification for awards, internships, majors, or jobs; one's confidence about academic performance and thus further career and educational decisions; and others' perceptions about one's ability.

We then use an employer experiment to examine the potential impact of grade optional policies, and the GPA shifts they create, in the labor market. We analyze additional data from a contemporaneous incentivized resume rating (IRR) experiment involving real employers hiring college seniors in the fall of 2020. That experiment leverages Candidate Match, a tool that was offered to employers engaged in campus recruiting at the University of Pennsylvania. Employers participating in Candidate Match are incentivized to evaluate resumes of hypothetical candidates because doing so will allow them to be matched, based on their ratings, with real job seekers (Kessler, Low and Sullivan, 2019). In our IRR experiment, various traits were randomly assigned to resumes, including candidate gender, candidate GPA, and whether candidate GPA is shown. We then measure how the propensity of employers to interview a candidate responds to each of these features.

We find that a 0.1 point increase in GPA increases the probability that an employer wants to interview a candidate by 1.8 percentage points. Furthermore, we find that employers respond less favorably to increases in female students' GPAs than to increases in male students' GPAs when considering whether to interview these candidates. Additionally, we randomly omit GPA from 10% of resumes (approximating the real fraction of students who choose not to show GPA on their resumes) and find that when equally-qualified candidates have their GPAs omitted from their resumes, men are 16 percentage points more likely to be interviewed than women are.[5] Consequently, the grade-optional policies we study have the potential to benefit men's employment outcomes relative to women through three channels. First, men's employment outcomes may be helped because the concealment gap results in an increase in their GPA relative to women, and employers respond to GPA increases. Second, and compounding the potential benefits men receive via the first channel, employers respond less favorably to increases in women's GPAs than increases in men's GPA, and thus men would receive a greater employment benefit from the induced GPA increases, even if there were no gap in concealment. Third, women who do take advantage of the information-optional policies may be relatively disadvantaged by the gender-differential employer response to omitting information.

Finally, we examine potential explanations for the gender gap in concealment that we

[5] While this result involves omitting GPA from a resume rather than individual letter grades from a transcript, it nonetheless provides evidence that employers respond differently by candidate gender to the absence of performance information.

observe, leveraging our rich administrative data, features of the programs, data from the IRR study, and additional survey data from students at the Midwestern Flagship. For example, differential attentiveness to the policy is unlikely to be the primary driver, since a concealment gap is observed regardless of whether the information-optional policy was announced in advance; further, it is found even among students who conceal grades in at least one class and hence are clearly aware of the policy. Gender differences in confidence that relate to current academic performance are unlikely to be a driver of the concealment gap, since students are informed of their letter grade in a class before deciding whether to conceal it. Even gender differences in confidence that relate to future academic performance (i.e., a belief that a harmful grade today might be helpful in the future) are unlikely to be important, since the gender gap appears also for grades well below a student's GPA and persists into the later years of study when there is less uncertainty about future grades. Many nuanced stories are also unlikely given the persistence of the concealment gap: across various demographic groups of students; across students who are first-years, sophomores, juniors, and seniors; across male- and female-dominated courses; across smaller and larger courses; across more and less "in demand" courses; and across courses that vary in terms of difficulty measures.

In addition to providing evidence against a number of plausible explanations, we present affirmative evidence for why women might reveal harmful grades more often than men. In the IRR experiment, we observe that employers make different inferences about male and female applicants when information about their performance is unavailable. If students anticipate their concealment decisions will impact future employment and admissions outcomes, this could provide a channel for women being more reluctant to conceal grades than men. Student survey results at the Midwestern Flagship suggest this may indeed be the case. First, survey respondents believe that concealment decisions are likely to be observed, leaving scope for concerns about how concealed grades will be perceived. Roughly 37% of survey respondents expect employers to look at specific grades on student transcripts and 62% of survey respondents plan to attend graduate school, which almost certainly requires submitting a transcript to an admissions committee.[6] Second, more risk-averse survey respondents are less likely to conceal grades, and the gender concealment gap is greater among those who are more risk averse (who might be more worried about the downside risk of concealment negatively impacting employment or admissions outcomes). Third, we elicit survey respondents' beliefs about how concealed grades will be inferred and find that the gender concealment

[6] There are also gender differences in beliefs about these measures. Women believe that employers are somewhat more likely to review specific grades on the transcript; and women are statistically significantly more likely to report plans to attend graduate school. Such differences point to women believing their specific letter grades will receive more scrutiny.

gap appears larger among survey respondents who anticipate a concealment penalty.

To summarize, the main contribution of this paper is to document a robust gender gap in grade concealment at two large, selective universities. We find that women are substantially less likely to conceal grades below their GPA when given access to an information-optional policy, a relationship that is observed across a range of student traits and course-level characteristics. We show that this gap may exacerbate gender inequities by lowering GPAs for women relative to men, which we further show may have labor market consequences.

In considering how our findings relate to gender gaps documented in prior work, earlier results could lead one to expect that women would be more likely—rather than less likely—to conceal performance information. For instance, women effectively conceal their performance more often than men do by negotiating less often (Hernandez-Arenaz and Iriberri, 2019*b*), competing less often (Niederle and Vesterlund, 2007, 2011), speaking up less often (Coffman, 2014), and applying for challenging work less often (Coffman, Collis and Kulkarni, 2019). These prior findings could help to explain the results of an expert survey we conducted in which 64 economists (primarily experts in labor or education, more than half of whom work directly on gender-related topics) were asked to predict whether men or women would be more likely to conceal grades. Only 22% of experts reported that female students would be less likely to conceal grades (as compared to 44% who reported that men would be less likely to do so).[7] One potential reason for this difference could be that a willingness to reveal performance information is reversed when considering clearer "failures"—e.g., while women may be more reluctant to speak up about potential successes, women may be more willing to speak up about their failures.[8] In any case, given the many opportunities that exist for men and women to voluntarily reveal information that might be unfavorable (e.g., in applications, in job interviews, on resumes), such a gender gap can have important implications for various educational opportunities and labor market outcomes.

Our results also speak to the unintended consequences that information-optional policies may have on already-disadvantaged groups. In our context, because men are more apt to

[7]In contrast, when students in our survey were asked about potential gender differences in concealing grades, 43% of them reported that female students would be less likely to conceal (as compared to 28% who reported that men would be less likely to do so), highlighting the value of surveying those impacted by the policy. Experts were asked the following: "Consider one male and one female student with identical cumulative GPAs and grades in a given course. Which student do you think would be more likely to mask their grade for the course?". Students were asked the following: "What is your best guess of the percent of the following groups [...] that masked at least one grade during the Winter 2021 semester here."

[8]To the extent that concealing poor performance is psychologically related to lying, our work is connected to a rich literature on gender differences in lying (Dreber and Johannesson, 2008; Erat and Gneezy, 2012; Abeler, Falk and Kosse, 2021). We note, however, that the decision to conceal information in our setting is not lying (either by commission or omission). The students' universities are inviting them to conceal information on their transcripts; if they choose to do so, their grade is accurately reflected—given the set of rules set by the school—as a grade of "Credit."

conceal harmful grades, the policy shifts the GPA distributions in favor of men, which we show in turn may exacerbate existing labor market inequities. It is entirely possible that the gender differential behavior we observe represents women optimizing, since, as we show in our IRR data, recruiters make relatively more negative inferences about female candidates when information about them is hidden. Our findings thus add support to the growing body of evidence on the possibly unintended effects of information-optional or information-restricted policies more generally. This discussion is growing in importance as many universities have considered widening information-optional policies (e.g., test-optional admissions, broader pass-fail policies) in light of both the Covid pandemic and efforts to increase equity.[9]

2 Setting

2.1 Background on the grade change policies

In recognition of Covid-19's "disruptive, stressful, and unconventional" impact on both coursework and life more generally, the two institutions we study adopted special grading policies (Morrison, 2020). Specifically, for each course taken for a letter grade, students could choose to conceal any passing grade (any letter grade from A to D at Boston University and any grade from A to C- at the Midwestern Flagship[10]) by converting it into a grade of "Credit" (at BU) or "Pass" (at the Midwestern Flagship).[11] This change would

[9]For example, in 2019, 55 percent of colleges required standardized test scores for admission; by 2023, this figure had fallen to 4 percent. A primary rationale for this shift has been to make college more inclusive to students who otherwise might be disadvantaged or deterred by standardized tests. But, as highlighted in recent work such as Conlin, Dickert-Conlin and Chapman (2023), the equity implications of these policies can depend on how different groups respond to them, a message that is reinforced by our own findings. Along these lines, several recent studies have examined the effect of test-optional policies on student characteristics and test scores. Belasco, Rosinger and Hearn (2015) and Saboe and Terrizzi (2019) find that test-optional policy adoption has no effect on diversity in student enrollment. Bennett (2022) identifies a statistically-significant but small increase in the share of students who are Pell grant recipients, underrepresented minorities, and women, while Borghesan (2022) identifies a small increase in college attendance among low-income students. A recent theoretical literature also relates to optional-information policies. This strand of research identifies the conditions under which it is advantageous for policymakers, university officials, or other decisionmakers to offer the option to reveal less information, for instance as a tool to reduce their "disagreement cost" with society (Hancart, 2023; Dessein, Frankel and Kartik, 2023).

[10]At the Midwestern Flagship, an A+ outside of the business school equals 4.0 GPA points and thus is equivalent to an A that also equals 4.0 GPA points. An A+ in the business school equals 4.4 GPA points, but we note that no students concealed a grade of an A+ in the business school. Thus, for analyses, we simply treat A and A+ grades as equivalent.

[11]Our analyses exlcude the cases where students did not have the opportunity to change their letter grade to a grade of "Credit." At BU, this applies to grades of F, which could only be changed to a "No Credit." At the Midwestern Flagship, this applies to grades of either D or F. For these grades at the Midwestern Flagship, the default is set to "No Record Covid," and then students are only presented with an opportunity to change the "No Record Covid" to their letter grade of D or F, respectively. Fewer than 2% of students received such grades at either institution.

be implemented on the transcript, so the letter grade would not be visible.[12] Importantly, while credits from a course with a concealed grade would count towards a student's major and their progress through their undergraduate program in the same way as letter-graded credits, the concealed grade would not carry a point value, so it would be excluded from the student's GPA calculation.

Crucially for our analysis, at both schools and for each course, each student was still assigned a final letter grade that they could observe before deciding whether or not to conceal it. This feature of the policies allows us to investigate the decision to conceal a particular grade from the transcript without any uncertainty about what the particular grade might be.[13]

The policy was implemented in the spring semester of 2020 at BU and the fall semester of 2020 at the Midwestern Flagship. In each case, students were informed about the policy unexpectedly during these semesters. Prior to the winter semester of 2021, the Midwestern Flagship announced that the policy would continue. We always analyze the data separately for BU and the Midwestern Flagship, and we also note that our results are robust to only examining the fall 2020 semester at the Midwestern Flagship or only examining the winter 2021 semester at the Midwestern Flagship, confirming that the concealment gap persists when the policy is known in advance *and* when it is announced as a surprise.[14]

2.2 Data

We obtained administrative student-term level transcript records from both institutions. We received information on course enrollments, credits attempted, credits earned, and grades obtained. Crucial for our purpose, the datasets record the original letter grades and the concealment decision for each course. We also observe student demographics (including gender, race, and whether they are a first-generation college student) as well as some additional academic information (including year of study, major, and cumulative GPA). In total, we have information on over 15,000 students at BU and over 35,000 at the Midwestern Flagship, corresponding to roughly 60,000 and 260,000 passing grades at each institution that could potentially be concealed by students.

Appendix Table A.1 shows summary statistics of students at BU and the Midwestern Flagship split by student gender. Nearly 60% of students at BU are female and slightly above

[12] The grading policies were also explained on each student's transcript so anyone reviewing it, including employers or an admissions committee, would be made aware of the details of the policies.

[13] Grading policies where students do not know their letter grade before deciding whether or not to conceal it have also been explored, and the results from these analyses suggest that the timing of the concealment decision could have important implications for student behavior (Kolb et al., 2023; Trost and Wooten, 2023).

[14] For these results see Appendix Table A.11 and the discussion in Section 6.1.

50% of students at the Midwestern Flagship are female. At both schools, female students take slightly more credits and have GPAs that are about 0.10 to 0.13 points higher. We also see that GPAs are higher at the Midwestern Flagship than at BU.

3 The Concealment Gap

Students faced with the decision of whether to conceal a grade in a particular course may consider how the letter grade compares to their GPA. Grades above a student's GPA would improve their average ("helpful" grades). Grades that are the same as a student's GPA (possible only when a student's GPA is exactly equal to the point value of a letter grade) would not change their average ("neutral" grades). Grades below a student's GPA would pull down their average ("harmful" grades).[15]

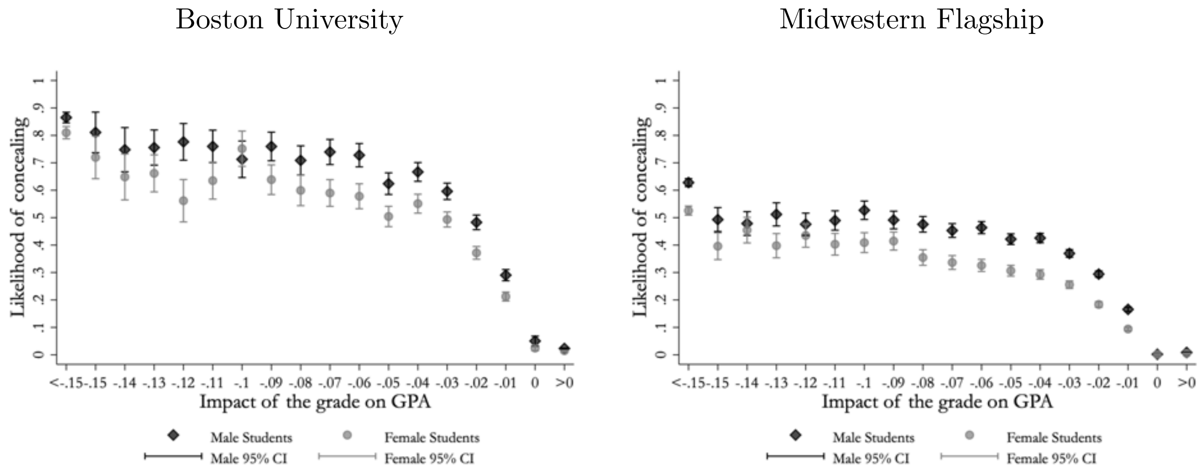
We begin by examining how students make their concealment decisions as a function of GPA impact, and whether those decisions differ by gender. Figure 1 shows the rates at which male and female students conceal their letter grades at Boston University (in the left panel) and at the Midwestern Flagship (in the right panel) by the "Impact of the grade on GPA" shown on the x-axis.

The rate of concealing helpful grades is shown on the far right of each panel of Figure 1, labeled with > 0 (indicating that the grade increases the student's GPA). At both schools, the concealment rate is less than 2% for these helpful grades. The rate of concealing neutral grades is shown next to the rate for helpful grades in Figure 1, labeled with 0 (indicating no impact on GPA). At both schools, the concealment rate is less than 5% for neutral grades. Given these low concealment rates of helpful and neutral grades, it is thus not surprising that there is little evidence for gender differences in concealment rates.

By contrast, evidence for gender differences in concealment rates is substantial for harmful grades, which are much more likely to be concealed. That is, Figure 1 shows—by plotting the concealment rates across a range of harmful grades—that the concealment gap arises for grades that are only slightly harmful and for grades that are more substantially harmful. Beginning with the slightly harmful grades, labeled with $-.01$ (indicating that the grade decreases the student's GPA by $(0, 0.01]$ points), the concealment gap arises at both universities. At BU, men conceal 29% of these slightly harmful grades while women conceal 22% of them. At the Midwestern Flagship, men conceal 17% of slightly harmful grades while women

[15] When defining course grades in this way, we consider the student's GPA at the start of the semester as the relevant GPA. One might instead consider the GPA after accounting for courses that are not concealed by a student at the end of the semester. This complicates the analysis as the definition of whether a grade is helpful, neutral, or harmful (as well as it's quantitative impact on GPA) might then depend on the student's decision of whether or not to conceal their other grades in that semester.

Figure 1: Decision to conceal by the grade's impact on GPA



This figure plots the likelihood of concealing a grade as a function of its impact on a student's GPA if the grade remained unconcealed, by male (diamond) and female (circle) students. "Impact of the grade on GPA" collapses ranges into specific points on the graph. The tick at -.01 includes course grades that would decrease the student's GPA by (0, -0.01], the tick at -.02 by (-0.01, -0.02], and so forth. The tick at <-.15 includes grades that would decrease the student's GPA by more than 0.15 points. The tick at 0 includes grades that would leave GPA unchanged and the one at >0 includes all grades that would increase GPA. Grades A to D are considered for Boston University, while grades A to C- are considered for the Midwestern Flagship. Error bars show 95% confidence intervals. This figure includes every grade obtained for each term covered by the policy at either institution, which involved 65,090 grades at BU from the decisions made by 15,690 students and 264,131 grades at the Midwestern Flagship from the decisions made by 37,574 students.

conceal 10% of them. The concealment gap persists as the grades become more harmful and as the concealment rates themselves generally increase. Thus, there is a robust concealment gap across harmful grades: women are less likely than men to conceal harmful grades that have various negative impacts on their GPA, including for grades that would lower their GPA by more than 0.15 (shown at label $< -.15$).

We note several further patterns across the two panels of Figure 1. First, concealment rates are more precisely estimated at the Midwestern Flagship, where we have roughly four times as much data as at BU. Second, there is a substantial level difference in the rates of concealment: students at BU are much more likely to conceal harmful grades than those at the Midwestern Flagship.[16] Despite the level difference in concealment rates across schools, however, the gender gap in concealment is remarkably robust both across schools and across the various impacts that grades may have on GPA at each school.

Table 1 analyzes the same data in a regression framework. To compare men and women

[16]Such level differences might reflect the differences in the demographics of students and differences in the specifics of the policies or how they were communicated (e.g., BU students had a shorter window during which to conceal their grades). These difference make the robustness of the concealment gap across these environments perhaps even more notable.

who are faced with an opportunity to conceal a grade that would have approximately the same impact on their GPA, our regressions include "Year$\times\Delta$GPA FEs." These fixed effects include an indicator for the amount by which a student's GPA would change if the student took a class for a letter grade rather than concealing it, discretized into 1,000 intervals separately for each program year. Allowing these fixed effects to vary by program year is intended to capture the fact that the impact on GPAs is mechanically larger for first year students than seniors because the former group has taken fewer courses. That said, our results are robust to including GPA fixed effects but not allowing them to vary by program year (as well as having no controls, adding in course and student level controls, adding in major fixed effects, and adding in course fixed effects).[17] Since each student makes multiple decisions in our data (i.e., one for each course), our regressions cluster standard errors at the student level.

Panel A of Table 1 presents results from BU and Panel B presents results from the Midwestern Flagship. Column 1 reveals a significant concealment gap when focusing on all grades that a student could conceal: relative to their male peers, female students are 3.4 percentage points less likely to conceal grades at BU and 2.8 percentage points less likely to conceal grades at the Midwestern Flagship. However, pooling across all grades masks substantial and important heterogeneity, as is evident from the concealment rates observed in Figure 1. While students rarely conceal neutral or helpful grades and hence the potential to observe a concealment gap is minimal in these cases—and indeed only a small concealment gap arises in these cases (see Column 3 and 4)—the concealment gap is substantial and statistically significant for harmful grades (see Column 2). At BU, female students are 8.9 percentage points (15%) less likely to conceal harmful grades than their male peers. At the Midwestern Flagship, female students are 8.3 percentage points (22%) less likely to conceal harmful grades than their male peers.

Section 4 will confirm the robustness of this concealment gap for harmful grades across a variety of course characteristics, student characteristics, and other dimensions. Before turning to these results, we present results in Table 2 that show a substantial and significant concealment gap when we examine student-level data rather than the course-level data that we have focused on so far. When consider whether students conceal *any harmful* grade, Column 1 reveals a significant concealment gap: female students are 11 percentage points less likely than their male peers to conceal any harmful grades at both universities. When considering the total number of harmful grades concealed, Column 2 reveals a significant

[17]See Appendix Table A.2, which shows this for our main result by building off of Column 2 in Table 1. See also the robustness of our results when examining whether the concealment gap persists across various groups of students and types of courses in Section 4.

Table 1: Gender gap in concealing grades

	(1) All	(2) Harmful Grades	(3) Neutral Grades	(4) Helpful Grades
Panel A: Boston University				
Female	-0.034***	-0.089***	-0.030*	-0.007***
	(0.003)	(0.009)	(0.016)	(0.002)
Observations	61,211	18,679	1,248	41,283
Conceal mean	0.172	0.522	0.043	0.018
Year × ΔGPA FEs	Yes	Yes	Yes	Yes
Panel B: Midwestern Flagship				
	(1) All	(2) Harmful Grades	(3) Neutral Grades	(4) Helpful Grades
Female	-0.028***	-0.083***	-0.000	-0.003***
	(0.002)	(0.005)	(0.001)	(0.001)
Observations	227,533	70,775	14,362	142,396
Conceal mean	0.107	0.329	0.002	0.007
Year × ΔGPA FEs	Yes	Yes	Yes	Yes

This table shows estimates from a linear probability model of whether a student chooses to conceal a letter grade in a course. Here we consider cases where students have the opportunity to change a letter grade to a grade of credit by concealing it in Column 1, a harmful letter grade (i.e., a grade that would pull down their GPA) to a grade of credit in Column 2, a neutral letter grade (i.e., a grade that would leave their GPA unaffected) to a grade of credit in Column 3 and a helpful letter grade (i.e., a grade that would pull up their GPA) to a grade of credit in Column 4. Female is a binary indicator that equals one when the student is listed as such in the administrative data; the data identify students as male or female. Conceal mean is the proportion of grades concealed for each column. Year × ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

concealment gap: female students conceal 0.27 fewer grades at BU and 0.255 fewer grades at the Midwestern Flagship. Finally, Column 3 shows that, even conditional on concealing at least one grade, female students conceal 0.146 fewer grades at BU and 0.186 fewer grades at the Midwestern Flagship.

Table 2: Extensive and intensive margins of grade concealment

Panel A: Boston University			
	(1)	(2)	(3)
Dep. variable:	Ever concealed	# concealed	# concealed | >0
Female	-0.114***	-0.270***	-0.146***
	(0.010)	(0.021)	(0.023)
Constant	0.616***	1.111***	1.746***
	(0.007)	(0.017)	(0.017)
Observations	10,576	10,163	5,838
Conceal mean	0.552	0.960	1.671
Panel B: Midwestern Flagship			
	(1)	(2)	(3)
Dep. variable:	Ever concealed	# concealed	# concealed | >0
Female	-0.113***	-0.255***	-0.186***
	(0.006)	(0.011)	(0.015)
Constant	0.449***	0.750***	1.649***
	(0.004)	(0.009)	(0.011)
Observations	37,574	37,241	14,823
Conceal mean	0.395	0.626	1.572

This table shows estimates at the level of a student rather than a letter grade. Column 1 reports estimates from a linear probability model of whether a student ever chooses to conceal a harmful letter grade in a course. Column 2 reports estimates from an OLS regression where the outcome variable equals the number of harmful letter grades a student concealed. Column 3 reports estimates from an OLS regression where the outcome variable equals the number of harmful letter grades a student concealed, conditional on concealing at least one. Female is a binary indicator equal to one when the student is listed as such in the administrative data; the data identify students as male or female. Conceal mean is the proportion of grades concealed for each column. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

4 Robustness of the Concealment Gap

Building on our main specification in Table 1, we explore the robustness of the gender concealment gap of harmful grades in this section.[18] Specifically, we explore how the concealment gap varies across: course letter grades (Subsection 4.1); male- versus female-dominated courses (Subsection 4.2); course size, demand, and difficulty (Subsection 4.3); student achievement (Subsection 4.4); program year (Subsection 4.5); major (Subsection 4.6); and demographic groups (Subsection 4.7). Across all of these analyses, we find robust evidence of a concealment gap.

4.1 Does the concealment gap persist across different letter grades?

Motivated by the possibility that concealment decisions reflect concerns around specific grades (e.g., the desire to reveal an A- even if it is harmful to one's GPA), Appendix Table A.3 presents the concealment gap across letter grades that could be changed to a grade of "Credit" if they were concealed; as with our analyses throughout, we present these results separately for each university.[19] Consistent with this possible desire to reveal higher grades even when they are harmful to one's GPA, the row labeled "Conceal mean" shows that the concealment rate increases as grades decrease. While an A- is rarely concealed (the concealment rate is 7% at BU and 4% at the Midwestern Flagship), the vast majority of grades equal to a C+ or lower are concealed.

Appendix Table A.3 also reveals largely consistent evidence for the concealment gap across the distribution of letter grades. For a grade of A-, despite the low concealment rates that may mechanically limit the extent of possible gender differences, the coefficient estimates on *Female* indicate that a concealment gap directionally arises at both institutions, and significantly so at the Midwestern Flagship. For the grades of B+, B, B-, C+, and C, there is a large and robust gender gap in concealment that is statistically significant in 10 out of 10 cases. For grades of C-, the gender gap is directionally consistent but it is not statistically significant. The only time we observe evidence that is inconsistent with the concealment gap occurs when considering the letter grade of D at BU, which may reflect qualitatively different inference costs from concealing the lowest-possible passing grade that one may receive.[20]

[18] We focus on decisions where there is a meaningful chance that a student will conceal a grade (i.e., recall the extremely low concealment rates of neutral and helpful grades seen in Table 1).

[19] Recall that this excludes letter grades of F at BU and letter grades of D or F at the Midwestern Flagship, as detailed in Footnote 11.

[20] At BU, a D is the worst letter grade that a student could have received when they conceal their grade and instead receive a grade of "Credit." Consequently, a student at BU who wants to maximize their GPA—but is worried that concealing a grade might lead to a negative inference—faces no such inference cost from

4.2 Does the concealment gap arise in male-dominated and female-dominated courses?

Prior literature shows that gender differences can depend on group composition (Eckel and Grossman, 2001; Solnick, 2001; Gneezy, Niederle and Rustichini, 2003; Bowles, Babcock and Lai, 2007; Sutter et al., 2009; Hernandez-Arenaz and Iriberri, 2023). To investigate the possibility that the gender composition of a course impacts the concealment gap, Appendix Table A.4 splits the data—separately for both universities—by whether a course is "male dominated" in Column 1 (because it has more men than women enrolled), whether a course is "female dominated" in Column 2 (because it has more women than men enrolled), or whether the course is instead "gender balanced" in Column 3 (because it has the exact same number of men and women).

At both universities, the concealment gap is statistically significant both when a course is male dominated or female dominated. The concealment gap is also directionally present with an equivalent magnitude in gender-balanced courses, although these estimates are not statistically significant given the dramatically smaller sample sizes.[21]

4.3 Does the concealment gap persist across courses that vary in their size, demand, and measures of their difficulty?

Broadly motivated by the large literature on gender differences in competitiveness and risk preferences (for reviews see Croson and Gneezy, 2009; Niederle and Vesterlund, 2011; Niederle, 2016), we investigate the robustness of the concealment gap to the number of students in a course, the demand for the course, and two measures of the potential difficulty level of a course: the average and standard deviation of grades in a course.[22]

concealing a D. Thus, it is not surprising that 93.4% of D grades are concealed at BU, and the lack of any gender difference in concealing D grades could reflect gender differences in concerns related to such inferences. We return to this point in Section 6. We also note that a similar logic does not apply to Ds at the Midwestern Flagship, where credit could neither be secured from Ds nor Fs and where both Ds and Fs were defaulted to "No Record Covid" as detailed in Footnote 11.

[21] While it is interesting to consider why the concealment gap is larger in female-dominated courses than in male-dominated courses—perhaps the opposite of what one may expect—we note that this could be due to factors unrelated to gender in the group composition of these classes, as suggested by the substantial changes in the overall concealment rates across male- vs. female-dominated courses (see the "Conceal mean" row).

[22] The average and standard deviation of grades in a course during a semester impacted by the grading policy could also depend on students' concealment decisions, complicating their interpretation as measures of difficulty. To address this potential shortcoming, we also performed the analysis for the Midwestern Flagship defining difficulty measures using data on average and standard deviation of grades from 2017 to 2020, before the policy was implemented. This analysis yielded near-identical estimates to those presented in Appendix Table A.6.

Appendix Table A.5 splits the data into quintiles by class size, separately for both universities. The concealment gap is statistically significant in all 10 out of the 10 resulting cases. Appendix Table A.6 splits the data—separately for both universities—according to whether the course is one of the 10 most popular in a given major or not (see "low demand" and "high demand" courses), by the average grade received in the course (see "high average" and "low average" course), and by the standard deviation in grades for the course (see "low stand. dev." and "high stand. dev." course). The concealment gap is statistically significant in all 12 out of the 12 resulting cases.[23]

4.4 Does the concealment gap persist among relatively low and high performing students?

Motivated by the possibility that students with higher or lower GPAs may place differential weight on how much they care about their GPA and hence the impact of harmful grades on their GPA, Appendix Table A.7 splits the data—separately for both universities—according to whether a student's GPA at the start of the semester is ≤ 2.50, 2.51–3.00, 3.01–3.50, 3.51–3.75, or > 3.75. Among students with the higher starting GPAs of 3.01–3.50, 3.51–3.75, or > 3.75, the concealment gap is statistically significant in all 6 out of the resulting 6 cases.[24] The concealment gap also largely remains among students with the lower starting GPAs, although it is weaker and not statistically significant in the case with the smallest sample size (BU students with a starting GPA of ≤ 2.50).

4.5 Does the concealment gap persist across years in school?

Motivated by potential effects related to learning, experience and attention (e.g., more advanced students may be more aware of how concealing a grade influences their GPA), we examine whether the concealment gap persists across first-year, sophomore, junior, and senior students—separately for both universities. Appendix Table A.8 shows that the concealment gap is present and statistically significant in all 8 out of the resulting 8 cases. This additionally shows that the concealment gap does not have to do with gender differential

[23] While the gender gap is significantly larger for courses with higher average grades at the Midwestern Flagship, the gap is directionally larger for courses with lower average grades at BU. While the gender gap is significantly larger for courses with lower standard deviation in grades at the Midwestern Flagship, the gap is directionally larger for courses with higher standard deviation in grades at BU.

[24] While one may notice evidence for a directionally smaller concealment gap among higher performing students (i.e., those with GPAs that exceed 3.75), we note that these students are less likely to conceal grades in general; the concealment gap as a percentage of the average concealment rate at each grade is similar.

expectations about the trajectory of grades over time, which we discuss further in 6.2.[25]

4.6 Is the concealment gap driven by certain major groups?

Motivated by the evidence on differential gender discrimination across fields—which may in turn influence beliefs about returns in the labor market—we next explore whether the concealment gap persists across different majors (Reuben, Sapienza and Zingales, 2014; Kessler, Low and Sullivan, 2019). We classify majors into six different categories; the particular majors differ across the two universities, but can be classified within this broader framework. At both universities, Appendix Table A.9 reveals significant evidence for the concealment gap in Health and Medicine majors, STEM majors, and among students who are undecided. At the Midwestern Flagship, with the much larger sample size of students, evidence for the concealment gap is observed for all major categories.

4.7 Is the gender concealment gap present among other historically disadvantaged groups?

As a final investigation, we explore whether the gender concealment gap is observed for other historically disadvantaged groups. Appendix Table A.10 splits the data—separately for each university—according to whether students: do and do not belong to historically under-represented minorities in the United States (see Columns 1–2), are or are not low-income students (see Columns 3–4), and are and are not the first generation in their family to attend college (see Columns 5–6).[26] Significant evidence for the gender concealment gap arises in 11 out the 12 resulting groups. In addition, there is no robust pattern (as seen by the "Conceal mean") for a concealment gap arising for these other historically disadvantaged groups.[27]

[25] While the concealment gap is directionally smaller for seniors at BU, it is instead directionally smaller for first-years at the Midwestern Flagship, suggesting no consistent pattern with respect to the year of enrollment. The smaller results for BU seniors could also reflect the shorter timeline that these BU students had for concealing their grades.

[26] We categorize as under-represented minorities any students identified in administrative records as U.S. Citizens or U.S. Permanent Residents who have self-identified as belonging to any of the following race/ethnicity categories: Hispanic, Native American, Black or African American, Native Hawaiian or Other Pacific Islander. We identify low-income students as measured by the student's Pell grant status at entry into BU and whether the student's parental income is in the bottom quantile at the Midwestern Flagship.

[27] We consider 3 demographic groups beyond gender (given data availability) at these two universities. Out of the six resulting pairwise comparisons, there is only one statistically significant difference: among first generation vs non-first generation students at BU. While further examination of any potential differences in concealment rates among other demographic groups is an important question for future work, we note that the focus of our paper is on gender and showing that the gender concealment gap is robust even within these various demographic groups.

5 The consequences of the concealment gap

The prior sections provided evidence of a gender concealment gap and showed its robustness across various splits of the data, highlighting that it is not driven by a particular subset of students or courses. In this section, we consider the potential impact of the gender concealment gap. In Section 5.1 we explore the impact that information-optional policies have on male and female GPAs as a result of the concealment gap, and in Section 5.2 we bring in additional data from an incentivized resume rating experiment to explore how employers might respond to the GPA impacts we observe.

5.1 Impact on GPA

At both schools, students use the grade-optional policies to conceal grades below their GPA. These policies thus allow students to end up with higher GPAs than they would have earned if they had to keep the letter grades for all of their classes. Since women are less likely to take advantage of these policies (i.e., they are less likely to conceal harmful grades), it immediately follows that the GPAs of women do not go up by as much as the GPAs of men do.

Table 3 reports the GPA increase that students receive due to the grade-optional policies over one semester at BU, shown in Column 1, and across two semesters at the Midwestern Flagship, shown in Column 2. The dependent variable is the GPA increase from the policy calculated by comparing the GPA that students actually received to the GPA they would have received had they not been able to conceal any of their letter grades. The constant shows the increase in GPA earned by men (i.e., 0.227 points at BU and 0.228 points at the Midwestern Flagship). The coefficient on *Female* reveals a significant shift in GPA distributions in favor of men: female students gained roughly 0.07 fewer GPA points than men due to the policy. This shift in GPA distributions is substantial; it eliminates over half of the typical GPA advantage held by female students in a given semester. (See also Appendix Figure B.3 for a graphical representation of this shift in GPA distributions.)

Table 3: Gender gap in the GPA impact of concealment

	Dep. variable: GPA impact of concealment	
	(1)	(2)
	BU	Midwestern Flagship
Female	-0.068***	-0.074***
	(0.005)	(0.004)
Constant	0.227***	0.228***
	(0.004)	(0.003)
Observations	15,690	61,194

This table shows estimates from an OLS regression of the GPA impact of concealment. The GPA impact of concealment reflects the difference between the actual GPA calculated for the term compared with the GPA students would have received if the policy was not in place and all grades were revealed. Female is a binary indicator equal to one when the student is listed as such in the administrative data; the data identify students as male or female. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

5.2 Employer response to GPA

To examine how employers might respond to the higher GPAs received by men relative to women as a result of the grade-optional policies, we bring in additional evidence using data from an incentivized resume rating (IRR) experiment with real employers engaged in on-campus recruiting at the University of Pennsylvania (Penn). The IRR method was first introduced in Kessler, Low and Sullivan (2019).

In the experiment, employers are asked to rate resumes of hypothetical candidates, but are incentivized to do so because we then match them with 10 real Penn students that a machine learning algorithm predicts as the best match for the employer based on their resume ratings. Following the approach in the original IRR experiment, we collaborated with the career services office at Penn to conduct the experiment during the 2020–2021 academic year (a similar time to the grade-optional policies we study, following the onset of the Covid pandemic). Thirty-nine employers participated, rating 40 resumes each, yielding 1,560 resume evaluations.[28] Employers were asked to provide a binary measure of whether

[28]Given the labor market in 2020–2021, there was less on-campus recruiting activity than during the original IRR experiment. Nevertheless, the 39 employers came from a wide range of industries (including finance, consulting, technology, health, and education) and firm sizes (from less than 20 employees to more than 10,000 employees). Appendix Table A.12 summarizes the characteristics of participating employers. While participants were told their responses would be used for research, they were not recruited using language about research, and their primary motivation, and thus incentive, was to receive the 10 real student matches. This alleviates concerns about experimenter demand effects raised by Agan, Cowgill and Gee (2023).

they would interview the candidate, which we use as our outcome variable.[29] All resume characteristics such as name, major, GPA, as well as work and leadership experiences were independently and randomly assigned.[30] Specifically, we chose first names that were highly indicative of gender: 50% of the names were indicative of a female candidate (e.g., Claire, Emma, Michelle), and 50% were indicative of a male candidate (e.g., Adam, Luke, Scott), where indicative means statistically very likely for the specified gender and unlikely to be the other gender. We randomize GPA—the student's performance information—in two steps. First, to reflect the observed pattern in real student resumes, we omitted GPA for a random subset of resumes. Each resume had a 10% chance of GPA being omitted (set roughly equal to the fraction of student participants in Candidate Match at Penn who chose not to show GPA on their resumes). Second, when GPA was revealed, it was randomly drawn from a uniform distribution between 3.00 and 4.00.

Table 4 reports the results of regressions on whether the employer would interview the job candidate. The first two columns focus on the subset of resumes including GPA, while Columns 3–6 include all resumes. The coefficient on *GPA* in Column 1 indicates that as GPA increases by 0.1 points, the interview likelihood increases by 1.8 percentage points.[31] This result—that employers respond favorably to GPAs—suggests that the relative GPA shift in favor of men, documented in Section 5.1, which results from women being less likely to conceal harmful grades, may benefit the employment outcomes of men relative to women.

The table also shows that employers differentially respond to increases in GPA for men and women. Column 2 of Table 4 shows that, while a 0.1 point increase in GPA significantly raises the likelihood that a man will be interviewed by about 2.8 percentage points, the extent to which it raises the likelihood that a woman will be interviewed is 1.9 percentage points *lower*. This interaction is statistically significant at the 5% level, demonstrating that women have *lower* returns to GPA than men do. This result suggests that, even if the grade-optional policy improved the GPA of men and women by the same amount, it could still benefit women relatively less because they may benefit less from improvements in GPA than men do.[32] That women get a lower return to GPA from employers than men might

[29] We also asked how interested they were in the candidate, ignoring likelihood of acceptance, and how likely they thought the candidate was to accept their offer, and can use these measures as robustness checks. We use the interview probability as it most directly correlates to the actual employment outcomes of interest for this paper.

[30] Appendix Table A.13 lists all resume components and how they are randomized in the tool.

[31] The positive effect of GPA is very consistent and robust across different waves of the IRR experiment. Kessler, Low and Sullivan (2019) also find that higher GPA significantly raises employers' interest in candidates.

[32] The finding that the returns to a higher GPA are smaller for women compared to men aligns with other evidence on greater returns to quality for more advantaged groups (Bertrand and Mullainathan, 2004; Kessler, Low and Sullivan, 2019; Kessler, Low and Shan, 2023). Campos-Mercade and Mengel (2023) take

Table 4: Gender gap in the impact of GPA information on interview likelihood

	Dep. variable: Employer would interview candidate					
	(1)	(2)	(3)	(4)	(5)	(6)
	All	All	All	Experience≥1	All	Experience≥1
GPA	0.182**	0.280***	0.280***	0.333***	0.286***	0.340***
	(0.075)	(0.094)	(0.094)	(0.092)	(0.094)	(0.093)
GPA × Female		-0.190**	-0.192**	-0.218**	-0.200**	-0.223**
		(0.089)	(0.090)	(0.091)	(0.086)	(0.088)
GPA Concealed			0.156*	0.186**	0.159*	0.190**
			(0.084)	(0.085)	(0.086)	(0.087)
GPA Concealed × Female			-0.164*	-0.191**	-0.162*	-0.186**
			(0.092)	(0.093)	(0.092)	(0.093)
Female	-0.002	0.662**	0.668**	0.748**	0.694**	0.766**
	(0.029)	(0.309)	(0.311)	(0.317)	(0.295)	(0.306)
Observations	1,401	1,401	1,560	1,480	1,560	1,480
Resume work exp. controls	Yes	Yes	Yes	Yes	Yes	Yes
Major category fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Lasso controls	No	No	No	No	Yes	Yes

This table estimates the gender gap in the effect of the GPA level and concealing GPA on the interview likelihood. The outcome variable is a binary indicator for a candidate receiving an interview. Columns 1–2 focus on the majority of candidates who reveal a GPA between 3.00 and 4.00 on their resume, and Columns 3–7 also include resumes without GPA information. Specifically, Columns 4 and 6 focus on employers who have had at least 1 year of work experience at their institution. In Columns 3 through 6, we replace the variable *GPA* with a value of 3.00 for resumes without GPA information, so that the coefficient *GPA Concealed* estimates the difference in interview likelihood between men concealing GPA and men with a GPA of 3.00, and the coefficient *GPA Concealed* × *Female* estimates the gender gap in this difference. All regressions use a linear probability model and control for *Top Internship* (having an internship at a prestigious company like Google and McKinsey), *Work-for-Money Job* (having a paid summer job such as a waiter or a cashier), *Second Job* (having a second regular internship), and indicators for major categories. Columns 5 and 6 employ double-lasso to select additional control variables from the rich set of resume characteristics: dummies for employer subject, a student's major, first and second student leadership experience, resume review order, SAT writing, reading, and math scores, whether SAT scores are missing, and white name. See Appendix Table A.13 for details of various resume components. We cluster standard errors at the employer level. ***, **, * denote that estimates are statistically significant at the 1, 5, and 10% levels, respectively.

speak to the causes of the concealment gap, a point that we return to in Section 6.

Combining the fact that women receive a lower benefit from GPA than men do with the fact that women conceal harmful grades less often, and thus get a smaller GPA gain from the policy than men do, as reported in Section 5.1, highlights the two ways in which the policy

this one step further, establishing a causal link between employers' conservative updating about the quality of relatively less advantaged groups and education decisions among the less advantaged groups.

may disproportionately benefit men relative to women. Appendix Figure B.5 shows these two effects graphically when considering the likelihood of being interviewed, and estimates a benefit from the policy that is about five times larger for men than women at each of the two schools.

5.3 Employer response to concealment

In this section, we further investigate how employers respond to the availability of performance information of men versus women. To do so, we exploit the IRR data by focusing on the availability of GPA information. While we look at GPA rather than course grades—and while employers may respond differently to different types of performance information, which is an important avenue for future work—we view this exercise as informative about the potential impact of information-optional policies more generally.

In Columns 3–6 of Table 4, we look at employer responses to concealed GPA by using all resumes, including those that omit GPA. For resumes that omit GPA, we assign a GPA value of 3.00 (the lowest GPA in the experiment) in order to estimate the GPA coefficient, and then include an indicator for omitting GPA. This indicator therefore estimates the difference in interview likelihood between a student with a 3.00 GPA and a student who does not have information available about their GPA on their resume. We also interact this indicator with gender.

Column 3 shows that concealing GPA is differentially beneficial to men and to women. The marginally significant coefficient estimate on *GPA Concealed* suggests a potential gain to concealing potentially harmful performance information: the interview probability for a man is higher when he has a resume that conceals GPA information rather than a resume that reports the lowest GPA of 3.0. However, the marginally significant negative coefficient estimate on *GPA Concealed*$\times$*Female* indicates that this potential gain to concealment only exists for men. The results are slightly stronger in magnitude and significance when we exclude employers with less than one year of experience working at their firm, as shown in Column 4. Adding control variables selected by double-lasso (Belloni, Chernozhukov and Hansen, 2014) in Columns 5 and 6 does not substantively alter the results. That women are treated as if they have the worst GPA in our data when their resume omits GPA information—while men are not treated this way—might speak to the causes of the concealment gap, which we discuss in Section 6.

Given that men and women differentially conceal information, one might also wonder whether this response to concealed GPA is rational inference on the part of employers. If fewer women conceal, employers might expect them to be concealing worse grades, and therefore rationally penalize them more. We can use our IRR data to calculate the "equivalent GPA" for resumes without GPA information; that is, the GPA level of candidates rated equally likely to receive an interview as those with concealed GPAs. In an unraveling model (Grossman, 1981; Milgrom, 1981), those who conceal would be expected by employers to have lower GPAs than all those who reveal, so fewer and fewer individuals would end up concealing. For women, the equivalent GPA for resumes without GPA information is 2.91, below the distribution of revealed GPAs in the IRR experiment. However, for men, the equivalent GPA for resumes without GPA information is 3.51—at the midpoint of revealed GPAs.[33]

That women are treated worse than men when their resumes lack GPA information, and that men are actually treated as though their GPAs fall in the middle of the distribution, appears hard to reconcile with rational behavior by employers. However, such a result is consistent with a large body of evidence in which lack of information or ambiguity can allow a greater influence of subjective beliefs or provide "moral cover" for undesirable behaviors, such as favoritism toward an advantaged group (e.g., see Dana, Weber and Kuang (2007) and more recently Chan (2022) in the context of discrimination).[34]

We provide very speculative evidence on this channel by examining heterogeneity between a domain thought to be "male typed" and one thought to be "female typed." The IRR experiment was originally designed with just such a division: before reviewing resumes, employers are first asked to select whether they would like to evaluate candidates from STEM fields or Humanities and Social Science fields (see Kessler, Low and Sullivan (2019)). When evaluating candidates with concealed GPA in Humanities and Social Science fields, employers treat men and women roughly similarly—the equivalent GPAs for candidates are 3.13 for women and 3.23 for men. However, in STEM fields, men and women are treated very differently. Female candidates with concealed GPA are treated equivalently to candidates with a 2.86 GPA, while male candidates with concealed GPAs are treated equivalently to candidates with a 3.97 GPA—almost the highest GPA possible.[35] This strikingly high rating of male STEM candidates with concealed GPAs appears inconsistent with most models of

[33]It is also worth noting that because women have higher grades than men on average, even though women conceal fewer grades, their average concealed grades are still equal to (at the Midwestern Flagship) or higher than (at BU) those concealed by men.

[34]For evidence on how individuals may more generally use ambiguity, uncertainty, or subjectivity to justify undesirable behavior, see also Snyder et al. (1979); Kunda (1990); Haisley and Weber (2010); Di Tella et al. (2015); Exley (2016). Individuals may even act as if they are confused when processing information to justify undesirable behavior (Exley and Kessler, Accepted). Kessler, Low and Shan (2022) shows evidence that individuals may look for internal justification for bias, by doing so only when the preferred group has high quality, as favoring a low quality candidate would make the discrimination obvious.

[35]These calculations use the approximate linear relationship between GPA and ratings to calculate the equivalent GPAs. See Appendix Figure B.4 for details.

rational employer beliefs. Instead, it is suggestive that the absence of consistent, objective information may allow subjective beliefs to have a greater influence on evaluations.

The results from our IRR experiment reinforce the caution to potential policymakers looking to implement information-optional policies. If advantaged groups receive the benefit of the doubt in the absence of information, then information-optional policies create more option value for advantaged groups. Individuals perceived as less competent may need to reveal information in order to distinguish themselves. And, when faced with poor performance, those in disadvantaged groups might need to reveal this potentially damaging information to avoid an even worse inference on the part of decisionmakers.

6 What drives the gender concealment gap?

In this section, we discuss possible explanations for the gender concealment gap and assess their potential relevance based on several sources of data. We leverage the transcript data from BU and the Midwestern Flagship, the employer data discussed in Section 5, and additional student survey data collected at the Midwestern Flagship.

The survey data were collected through an online questionnaire (administered in Qualtrics) in fall 2022. A link to the survey was sent to a random sample of juniors and seniors who had been exposed to the grade-optional policy at the Midwestern Flagship in the prior academic year. The first 300 respondents who completed the survey were guaranteed a $10 Amazon gift card. The remaining students who completed the survey were eligible for a random drawing of 100 $10 Amazon gift cards. A total of 631 students completed the survey, 58% of whom were female, corresponding to a response rate of approximately 10%. The share of students who used the concealment policy was similar across the survey sample and the full population (28% versus 27%), along with the raw gender gap in grade concealment (0.09 versus 0.11 percentage points). The survey included questions about various factors that could potentially affect the decision to conceal grades, allowing us to explore their potential contributions to the gender concealment gap. See Appendix C for the survey questionnaire.

6.1 Could differential awareness or inattention drive the gap?

Students had to opt into concealing grades. It is thus possible that the gender concealment gap we observe is due to lower awareness or less attentiveness toward the policy among female students.[36] We find this potential explanation to be unlikely.

[36]We are not aware of prior evidence of women being less attentive than men. In contrast, there exists evidence that men are more likely than women to procrastinate (Cortés et al., forthcoming). To the extent that procrastination would lead individuals to miss the opportunity to conceal grades, it would push against

First, the grading policies were prominently announced and advertised at each institution, and they allowed students to change their grades flexibly over generous time windows in most cases. Second, students are very likely to conceal some low grades, for which the concealment gap still persists. When students receive a letter grade of C, around 83% choose to conceal it at BU and around 73% choose to conceal it at the Midwestern Flagship; nonetheless, the concealment gap persists (recall Column 6 of Table A.3). Third, the concealment gap persists even when we only consider data from the Winter 2021 semester at the Midwestern Flagship and even when we only consider data from the Winter 2021 semester for the set of students who previously concealed at least one grade in the Fall 2020 semester (see Column 3 of Appendix Table A.11), and hence decisions made by students in which awareness of the information-optional policy was likely heightened. Fourth, the concealment gap arises on the intensive margin (i.e., it even arises when considering the number of classes students conceal conditional on concealing at least one class), which means it is observed among students who are clearly aware of the policy and responding to it (recall Table 2). Fifth, the survey data from the Midwestern Flagship *further* reveals no evidence of gender differences in knowledge of the policy among respondents: both female and male students report an average of 1.8 out of 5 (where 5 is most important) in indicating how important the following was in deciding not to conceal a grade: "I did not know about the policy, or about how to do it." The p-value is ($p = 0.943$).

6.2 Could gender differences in confidence about (future) grades drive the gap?

There is a well-documented gender gap in confidence (Lundeberg, Fox and Punćcohař, 1994; Niederle and Vesterlund, 2007; Niederle, 2016; Bordalo et al., 2019), which could lead one to expect that women would choose to conceal harmful grades less often because, relative to men, they underestimated the grade they would earn in a class. Importantly however, this cannot explain our results since students make their concealment decision *after* learning the grade they earned. That is, beliefs about one's current grade—and hence gender differences in these beliefs—cannot contribute to the concealment gap we document given how the information-optional policies were implemented at both institutions.

A more nuanced version of the potential role for gender differences in beliefs about grades could be that women hold more pessimistic beliefs about their grades in classes that they will take in the future. This could contribute to women being less likely to conceal grades that are harmful to their current GPA because, while they are below their current GPA,

observing the gender concealment gap that we document in our main results.

they expect the grades to be above their final GPA at the end of college. We also find this potential explanation unlikely for several reasons.

First, the concealment gap persists even among seniors in college (recall Appendix Table A.8), when uncertainty about future grades is mostly or entirely resolved. Second, the concealment gap persists even for lower grades (e.g., recall results relating to the grades of C or C+ in Table A.3) and when the grade has a very harmful impact on a student's current GPA (e.g., even pulling the cumulative GPA down by more than 0.15 points, as shown in Appendix Figure B.3). That is, the gap arises even when a grade would certainly be below a student's final college GPA, implying that they should conceal the grade if they are driven by concerns over their future GPA.

6.3 Could gender differences in preferences for transparency drive the gap?

While the literature on gender differences in lying and deception is mixed, a recent meta-analysis shows there is support for the view that men have a higher propensity to lie than women do (Capraro, 2018).[37] Could such gender differences—or gender differences in preferences for transparency more generally—drive the gender concealment gap? Again, we think this potential explanation is unlikely.

First, lying is conceptually distinct from concealing grades in the context of the grade-optional policies we study. In our settings, choosing to conceal grades is neither a lie by omission nor by commission given how the policies were advertised and implemented. Second, as already noted in Section 6.1, we do not see a concealment gap on letter grades of "C-" and we see a reverse concealment gap for grades of "D" at BU—grades for which a pure preference for transparency argument would still apply. (Similarly, at BU we do not see a gender gap in the rates at which men and women change an "F" to grade of "No Credit.") Third, survey responses from the Midwestern Flagship are also inconsistent with a preference for transparency. Male students report being directionally more concerned than women are about the policy being deceptive when considering whether or not to conceal grades: male students report an average of 2.9 (on a 5-point scale, with 5 being extremely important) while female students reported an average of 2.7 ($p = 0.173$) in indicating how important the following was in deciding not to conceal a grade: "I thought that masking a grade could be deceiving or not truly represent my performance in the course."

[37] See also, e.g., Dreber and Johannesson (2008) and Erat and Gneezy (2012).

6.4 Could gender differences in beliefs or concerns about how concealed grades will be interpreted drive the gap?

The concealment gap could result from differential beliefs—or differential concerns (e.g., due to differential risk aversion)—by men and women about how concealed grades will be perceived by future employers or graduate school admissions committees. If women—more so than men—are concerned that future employers or graduate programs will draw less favorable inferences about their performance when they have a grade of "Credit", women may be more likely to reveal harmful performances than men will. Put differently, when making a decision about whether to conceal a relatively harmful grade, men may expect the "benefit of the doubt" about concealed grades while women may not.

Prior evidence suggests that women may have reasons to hold those beliefs: women are often viewed more negatively than men in response to the same performance information (Coffman, Exley and Niederle, 2021), particularly when performance was poor (Sarsons, 2017). Such an explanation—which relies on gender differences in beliefs about how employers will treat men and women—is also reinforced by findings in the nascent body of work that studies expected discrimination. That literature shows, mostly in laboratory settings, that women anticipate discrimination based on gender (Alston, 2019; Dustan, Koutout and Leo, 2022; Ruebeck, 2023), which may in turn impact incentives to apply for or exert effort at a job (Gagnon, Bosmans and Riedl, 2022; Koutout, 2022).

Additional evidence from our IRR experiment, our student survey, and our transcript data are all consistent with this explanation. To begin, the results from the IRR experiment provide evidence as to why women may hold greater concerns about concealing their grades. Specifically, the results in Columns 3–6 of Table 4 show that, when employers see a woman's resume without GPA, they treat her as if she has the worst GPA in the data. When they see a man's resume without GPA they treat him much more favorably (i.e., he is 16 percentage points more likely to be interviewed than a man with the lowest GPA in the data). While GPA is a broader performance metric than individual course grades, employers' responses suggest that women may be penalized more for withholding information about their performance than men. Relatedly, women may be less likely to conceal grades because they expect such differential treatment.

The results from the student survey at the Midwestern Flagship suggest that it may indeed be the case that women anticipate more negative inferences if they withhold grades than men do. We begin by noting that survey respondents believe that individual grades on their transcripts are likely to be viewed, leaving scope for inferences about individual course performance impacting future hiring or admissions decisions. In the survey, 33% of respondents expect employers to look at specific grades on student transcripts, with women being more likely to believe employers will review specific grades on the transcript.[38] In addition, 62% of respondents plan to attend graduate school, which almost certainly requires submitting a transcript to an admissions committee, which could be expected to look at particular grades. Women are also statistically significantly more likely to report plans to attend graduate school: 68% of female students report planning to attend graduate school, while only 55% of male students report planning to attend graduate school ($p = 0.001$).

Second, survey respondents' concealment decisions appear related to their risk preferences, which again reinforces the possibility that concerns about inferences related to concealed grades may play a role. As a measure of risk preferences in the survey, we asked respondents the following question: "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" Responses ranged from 1 to 7, with higher values indicating higher risk aversion. Consistent with prior work that has found women being more risk averse than men in certain contexts (Niederle and Vesterlund, 2011), we find that female respondents average 4.0 on the scale and thus are more risk averse than male respondents, whose average is 3.5 ($p < 0.001$). Looking across all respondents, as shown in Appendix Table A.14, we see those who are more risk averse (a score of 4-7) are less likely to conceal than respondents who are are less risk averse (22.3% versus 33.8%, $p < 0.01$). In addition, the gender concealment gap among survey respondents is substantially greater among survey respondents who are relatively more risk averse.

Third, survey respondents' concealment decisions also appear related to their beliefs about what others would infer about performance when a grade was concealed. As a measure of these beliefs in the survey, we asked respondents about (i) their beliefs about the likely grade of a student of their gender who concealed, which we call their first-order beliefs, and (ii) their beliefs about what others believe about the likely performance of that student, which we call their second-order beliefs.[39] These beliefs then allow us to group students

[38] Our measure of expected scrutiny of grades is based on the survey question: "Assume a scenario where you send your resume to 100 employers. Given your major and your GPA, of these 100 employers, when looking at your application, how many do you think would take a look at some of your grades instead of only your overall GPA (0-100)?" Female students expect 35.3% of employers to look at grades versus 30.6% for male students ($p < 0.05$).

[39] The corresponding survey questions are "Considering students in the following groups [STEM, business and economics female; STEM, business and economics male; non-STEM, business and economics female; non-STEM, business and economics male] who masked at least one grade, what do you think their original grade on that course would have been (on average)?" and "How do you think your peers (other students) answered this question?" One advantage of eliciting beliefs about peers is that it allows us to incentivize belief elicitation. Specifically, students received $0.25 if the absolute difference between their reported beliefs about peers and the true beliefs of their peers is smaller than 0.025 GPA points. We asked beliefs for STEM, business and economics versus other majors separately, but only use respondents' beliefs about students in their own field to measure the penalty they anticipate.

according to whether or not they are pessimistic about the beliefs of others relative to their own. We say students are concerned about a concealment penalty if they believe others will infer a concealed grade as worse than the respondent believes it to be, i.e., their second-order beliefs are lower than their first-order beliefs (42% of respondents). We say students are unconcerned about a concealment penalty if they believe others will have the same or a more favorable inference than they have about the grade (58% of respondents). Looking across all respondents, as shown by comparing concealment means in Appendix Table A.15, we see those who are concerned about a penalty are about 15% less likely to conceal than respondents who are unconcerned. In addition, consistent with the view that the gender concealment gap is driven by concerns about how others will infer a concealed grade, the gender gap is concentrated among respondents who are concerned about a concealment penalty.

Finally, results from the transcript data are also consistent with the concealment gap being driven by women being more concerned about the potential negative inferences that may occur when they conceal their grades. The results in Table A.3 show that the gender gap decreases or disappears for lower grades. Indeed, when concealing the grade cannot result in an inferred grade that is potentially worse than the actual grade—as is the case when a student has the lowest possible passing letter grade of D at BU—the concealment gap, if anything, reverses with women being 4 percentage points more likely to conceal their letter grade than men.[40]

Overall, women may thus have greater concerns about concealing grades for fear of negative inferences that might be made about their ability or performance if they do so. Those potential negative inferences are a cost of concealing, while the benefit from concealing is a slightly higher GPA. It is thus worth reiterating that, as shown in Table 4, the return to GPA is smaller for women than for men in the IRR data. Thus, women may not only worry that the cost of concealing is high, but also believe that the benefit to concealing is relatively low.

7 Discussion

In this paper, we document a robust gender gap in grade concealment at two large, selective universities. Women are substantially less likely to conceal grades below their GPA when given access to an information-optional policy, a relationship that is observed across a range of

[40]Recall that we cannot do a similar exercise at the Midwestern Flagship with Ds, because concealing Ds at the Midwestern Flagship resulted in "No Record Covid", which was the same outcome that resulted from concealing Fs.

student traits and course-level characteristics. This gap has adverse consequences for gender equity. It results in lower GPA gains for women relative to men. In addition, we show that the concealment gap may have labor market consequences. Using data from an IRR experiment, we find that a higher GPA leads to a higher probability of a candidate being interviewed, but less so for female candidates. Additional findings suggest that women may be treated more negatively when they hide information about their performance. Considering the various possible causes of the gender concealment gap, we find that the evidence suggests that female students may be more worried about the potential negative inferences of concealing grades than men are, and women may therefore choose to conceal grades less often.

Our findings open up several avenues for future work related to the potential drivers and the potential implications of gender concealment gaps. On the potential drivers, future research may further investigate the factors that lead to gender differences in willingness to reveal performance information. One important question relates to *when* gender differences in willingness to reveal performance information are likely to arise. For instance, it could be that women are *more reluctant* to reveal their *potential successes*—consistent with prior work on gender differences in competition (Niederle and Vesterlund, 2007), speaking up (Coffman, 2014), applying for challenging work (Coffman, Collis and Kulkarni, 2019), and self-promotion (Exley and Kessler, 2022)—but *less reluctant* to reveal their *known failures* as seen via the concealment gap that we document in this paper.

On the potential implications, building on our finding that grade-optional policies introduced gender equity concerns, future work may investigate the possibility that information-optional policies more broadly—including undergraduate admission policies that allow students to selectively report information like SAT scores and job applications that allow individuals to selectively report information (e.g., via resumes)—could lead to different realized outcomes in the labor market or differences in graduate school admissions. Future work should also carefully consider the tradeoffs between optional information policies versus mandatory information policies. Just because a policy introduces flexibility does not mean it is good for equity. The option value of a choice to reveal information is much more valuable for those who can benefit from positive inference in the absence of information (e.g., groups that are viewed more favorably in the absence of information). Institutions should carefully consider these equity implications when discussing information-optional policies, and those institutions with extant information-optional policies may wish to consider ways to mitigate the impact of the gender concealment gap we document.

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ONLINE APPENDIX

A Additional Tables

Table A.1: Summary statistics

	Boston University		**Midwestern Flagship**	
	Female	Male	Female	Male
Eligible students	9,148	6,542	16,022	15,888
Cumulative GPA	3.33	3.20	3.56	3.45
Credits earned	14.87	15.28	13.97	13.57
Number of grades	37,899	27,191	136,410	127,721

The table reports summary statistics for Boston University and the Midwestern Flagship, respectively, by student gender as identified in administrative data. Eligible students is the number of students eligible for the policy. Cumulative GPA is the average Cumulative GPA prior to the term(s) with the information-optional policy, where both institutions use a 0–4 GPA scale. Credits earned is the average number of credits earned per student. Number of grades is the number of grades assigned eligible for the policy.

Table A.2: Alternative specifications for the gender gap in concealing grades

Panel A: Boston University					
	(1)	(2)	(3)	(4)	(5)
Female	-0.112***	-0.089***	-0.087***	-0.050***	-0.050***
	(0.010)	(0.009)	(0.008)	(0.009)	(0.009)
Observations	18,686	18,679	18,671	18,671	18,671
Conceal mean	0.522	0.522	0.522	0.522	0.522
Year $\times$ ΔGPA FEs	No	Yes	Yes	Yes	Yes
Controls	No	No	Yes	Yes	Yes
Major FE	No	No	No	Yes	Yes
Course level FE	No	No	No	No	Yes
Panel B: Midwestern Flagship					
	(1)	(2)	(3)	(4)	(5)
Female	-0.108***	-0.083***	-0.087***	-0.061***	-0.061***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Observations	70,882	70,775	69,113	69,113	69,112
Conceal mean	0.329	0.329	0.329	0.329	0.329
Year $\times$ ΔGPA FEs	No	Yes	Yes	Yes	Yes
Controls	No	No	Yes	Yes	Yes
Major FE	No	No	No	Yes	Yes
Course level FE	No	No	No	No	Yes

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful letter grade in a course. Female is a binary indicator equal to one when the student is listed as such in the administrative data. Conceal mean is the proportion of letter grades concealed for each column. Year $\times$ ΔGPA FEs are indicators for every possible change in GPA, discretized into 1,000 intervals separately for each program year. "Controls" includes controls for number of courses, number of letter-graded courses, low-income status, first-generation status, race, and whether the student is an international student. Major FEs are indicators for each college major category, encompassing fields such as Engineering, Humanities, Natural Science, and Social Science. Course level FEs are indicators as to whether the course is a 100, 200, 300, or 400 level course. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table A.3: Gender gap in concealing harmful grades by letter grade

Panel A: Boston University								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	A-	B+	B	B-	C+	C	C-	D
Female	-0.010	-0.046**	-0.107***	-0.110***	-0.068***	-0.075***	-0.010	0.040*
	(0.014)	(0.019)	(0.020)	(0.024)	(0.025)	(0.022)	(0.029)	(0.022)
Observations	2,143	3,994	4,028	2,550	1,540	1,578	719	862
Conceal mean	0.072	0.319	0.465	0.616	0.813	0.833	0.915	0.934
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Midwestern Flagship								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
	A-	B+	B	B-	C+	C	C-	
Female	-0.020***	-0.081***	-0.119***	-0.103***	-0.058***	-0.064***	-0.020	
	(0.004)	(0.008)	(0.010)	(0.013)	(0.015)	(0.015)	(0.023)	
Observations	15,399	17,984	16,703	7,917	4,994	4,698	2,058	
Conceal mean	0.042	0.228	0.346	0.499	0.709	0.726	0.730	
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful letter grade in a course, by the letter grade the student received in a class. Female is a binary indicator equal to one when the student is listed as such in the administrative data. Conceal mean is the proportion of grades concealed for each column. Year × ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table A.4: Gender gap in concealing by female ratio in classes

	(1)	(2)	(3)
Panel A: Boston University			
	Male dominated	Female dominated	Gender balanced
Female	-0.037***	-0.081***	-0.126
	(0.012)	(0.011)	(0.090)
Observations	7,908	10,282	165
Conceal mean	0.626	0.442	0.558
Year × ΔGPA FEs	Yes	Yes	Yes
p-value Col(1) vs. Col(2)	0.006		
Panel B: Midwestern Flagship			
	(1)	(2)	(3)
	Male dominated	Female dominated	Gender balanced
Female	-0.041***	-0.091***	-0.058
	(0.007)	(0.007)	(0.062)
Observations	41,635	28,551	281
Conceal mean	0.385	0.248	0.295
Year × ΔGPA FEs	Yes	Yes	Yes
p-value Col(1) vs. Col(2)	0.000		

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful grade in a course, by the gender ratio in a class. Column 1 includes classes that have more men that women enrolled. Column 2 includes classes that have more women that men enrolled. Column 3 includes classes that have the exact same number of men and women enrolled. Female is a binary indicator equal to one when the student is listed as such in the administrative data; the data identify students as male or female. Conceal mean is the proportion of grades concealed for each column. Year × ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table A.5: Gender gap in concealing by course size

	(1) Lowest	(2) 2nd Quintile	(3) 3rd Quintile	(4) 4th Quintile	(5) Highest
Panel A: Boston University					
Female	-0.046**	-0.079***	-0.097***	-0.085***	-0.130***
	(0.020)	(0.018)	(0.018)	(0.018)	(0.019)
Observations	3,388	3,615	3,558	3,655	3,494
Conceal mean	0.434	0.515	0.529	0.596	0.517
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes
Panel B: Midwestern Flagship					
	(1) Lowest	(2) 2nd Quintile	(3) 3rd Quintile	(4) 4th Quintile	(5) Highest
Female	-0.065***	-0.083***	-0.112***	-0.109***	-0.047***
	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)
Observations	14,382	13,703	13,998	14,541	13,621
Conceal mean	0.297	0.318	0.350	0.342	0.341
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful grade in a course, by the quintiles of class size. Column 1 includes classes in the 0–19.99th percentile of class size, Column 2 includes classes in the 20–39.99th percentile of class size, Column 3 includes classes in the 40–59.99th percentile of class size, Column 4 includes classes in the 60–79.99th percentile of class size, and Column 5 includes classes in the 80–100th percentile of class size. Female is a binary indicator equal to one when the student is listed as such in the administrative data; the data identify students as male or female. Conceal mean is the proportion of grades concealed for each column. Year × ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table A.6: Gender gap in concealing grades by class characteristics

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Boston University						
	Low demand	High demand	Low average	High average	Low stand. dev.	High stand. dev.
Female	-0.074***	-0.107***	-0.096***	-0.077***	-0.079***	-0.099***
	(0.011)	(0.012)	(0.011)	(0.012)	(0.012)	(0.011)
Observations	10,310	8,304	9,379	9,233	9,494	9,071
Conceal mean	0.533	0.508	0.594	0.448	0.474	0.572
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes	Yes
p-value	0.024		0.188		0.164	
Panel B: Midwestern Flagship						
	(1)	(2)	(3)	(4)	(5)	(6)
	Low demand	High demand	Low average	High average	Low stand. dev.	High stand. dev.
Female	-0.084***	-0.081***	-0.070***	-0.101***	-0.104***	-0.065***
	(0.005)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
Observations	47,394	23,346	34,938	35,790	36,505	34,174
Conceal mean	0.336	0.314	0.367	0.292	0.291	0.369
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes	Yes
p-value	0.710		0.000		0.000	

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful grade in a course, by class characteristics. Columns 1–2 split the data according to whether a class is among the ten most popular classes in its major or not. Columns 3–4 do a median split of the data according the average grades received in classes. Columns 5–6 do a median split of the data according to the standard deviation of class grades. Female is a binary indicator equal to one when the student is listed as such in the administrative data; the data identify students as male or female. Conceal mean is the proportion of grades concealed for each column. Year × ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table A.7: Gender gap in concealing by GPA at the start of the policy

Panel A: Boston University					
	(1)	(2)	(3)	(4)	(5)
	≤2.50	2.51–3.00	3.01–3.50	3.51–3.75	>3.75
Female	0.003	-0.043*	-0.089***	-0.072***	-0.052**
	(0.050)	(0.024)	(0.013)	(0.020)	(0.020)
Observations	738	2,536	7,951	3,729	2,706
Conceal mean	0.768	0.730	0.534	0.448	0.286
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes

Panel B: Midwestern Flagship					
	(1)	(2)	(3)	(4)	(5)
	≤2.50	2.51–3.00	3.01–3.50	3.51–3.75	>3.75
Female	-0.100*	-0.078***	-0.091***	-0.090***	-0.051***
	(0.054)	(0.024)	(0.011)	(0.011)	(0.006)
Observations	838	3,696	17,373	16,321	31,867
Conceal mean	0.399	0.525	0.411	0.354	0.244
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful grade in a course, by the student's GPA at the start of the term. Column 1 includes students with a GPA at or below 2.50 at the start of the term, Column 2 includes students with a GPA ranging from 2.51 to 3.00 at the start of the term, Column 3 includes students with a GPA ranging from 3.01 to 3.50 at the start of the term, Column 4 includes students with a GPA ranging from 3.51 to 3.75 at the start of the term, and Column 5 includes students with a GPA higher than 3.75 at the start of the term. Female is a binary indicator equal to one when the student is listed as such in the administrative data; the data identify students as male or female. Conceal mean is the proportion of grades concealed for each column. Year × ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table A.8: Gender gap in concealing grades across program years

Panel A: Boston University				
	(1)	(2)	(3)	(4)
	First-year	Sophomore	Junior	Senior
Female	-0.084***	-0.114***	-0.097***	-0.045**
	(0.017)	(0.015)	(0.018)	(0.018)
Observations	4,719	5,801	4,342	3,817
Conceal mean	0.498	0.519	0.558	0.516
Year $\times$ ΔGPA FEs	Yes	Yes	Yes	Yes
Panel B: Midwestern Flagship				
	(1)	(2)	(3)	(4)
	First-year	Sophomore	Junior	Senior
Female	-0.043***	-0.073***	-0.091***	-0.089***
	(0.013)	(0.008)	(0.009)	(0.008)
Observations	4,502	17,163	22,243	26,867
Conceal mean	0.224	0.285	0.346	0.361
Year $\times$ ΔGPA FEs	Yes	Yes	Yes	Yes

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful grade in a course, by the student's year in school noted in the column header. Female is a binary indicator equal to one when the student is listed as such in the administrative data; the data identify students as male or female. Conceal mean is the proportion of grades concealed for each column. Year $\times$ ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table A.9: Gender gap in concealing grades

	(1) Arts+Humanities	(2) Business+Economics	(3) Health+Medicine	(4) Social science	(5) STEM	(6) Undecided
Panel A: Boston University						
Female	-0.014	-0.023	-0.120***	-0.002	-0.102***	-0.147***
	(0.031)	(0.018)	(0.018)	(0.025)	(0.014)	(0.039)
Observations	1,911	4,398	4,556	2,912	6,685	1,309
Conceal mean	0.419	0.668	0.597	0.494	0.526	0.521
Female Mean	0.685	0.424	0.530	0.687	0.436	0.621
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Midwestern Flagship						
	(1) Arts+Humanities	(2) Business+Economics	(3) Health+Medicine	(4) Social science	(5) STEM	(6) Undecided
Female	-0.035*	-0.082***	-0.166***	-0.083***	-0.055***	-0.069***
	(0.016)	(0.014)	(0.014)	(0.017)	(0.008)	(0.009)
Observations	6,719	12,004	11,513	5,626	27,999	15,443
Conceal mean	0.258	0.438	0.371	0.298	0.355	0.276
Female Mean	0.647	0.367	0.472	0.564	0.375	0.522
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes	Yes

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful grade in a course, by the student's major noted in the column header. Female is a binary indicator equal to one when the student is listed as such in the administrative data; the data identify students as male or female. Conceal mean is the proportion of grades concealed for each column. Year × ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table A.10: Gender gap in concealing grades across demographic subgroups

	(1) URM	(2) Non URM	(3) Low-income	(4) Non low-income	(5) First gen	(6) Non first gen
Panel A: Boston University						
Female	-0.072***	-0.098***	-0.116***	-0.089***	-0.037	-0.098***
	(0.016)	(0.010)	(0.024)	(0.009)	(0.024)	(0.009)
Observations	5,972	12,621	3,033	15,434	2,763	15,677
Conceal mean	0.523	0.521	0.541	0.517	0.557	0.516
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes	Yes
p-values	0.154		0.237		0.009	
Panel B: Midwestern Flagship						
	(1) URM	(2) Non URM	(3) Low-income	(4) Non low-income	(5) First gen	(6) Non first gen
Female	-0.098***	-0.084***	-0.085***	-0.078***	-0.087***	-0.081***
	(0.014)	(0.005)	(0.008)	(0.008)	(0.013)	(0.005)
Observations	10,178	55,488	28,783	24,067	10,354	58,673
Conceal mean	0.349	0.318	0.330	0.327	0.335	0.327
Year × ΔGPA FEs	Yes	Yes	Yes	Yes	Yes	Yes
p-values	0.354		0.591		0.672	

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful grade in a course, across demographic subgroups. Female is a binary indicator equal to one when the student is listed as such in the administrative data; the data identify students as male or female. Conceal mean is the proportion of grades concealed for each column. Column 1 examines U.S. Citizens or U.S. Permanent Residents who have self-identified as belonging to any of the following race/ethnicity categories: Hispanic, Native American, Black or African American, Native Hawaiian or Other Pacific Islander; Column 2 examines Non-URM students; Column 3 examines low-income students, or students with Pell grant status at program entry for Boston University and students whose parental income is in the bottom quantile at the Midwestern Flagship; Column 4 examines students who do not qualify as low-income; Column 5 examines students who are the first in their family to attend college; Column 6 examines non-first generation students. Year × ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table A.11: Gender gap in concealing by each term at the Midwestern Flagship

	(1) Fall 2020	(2) Winter 2021	(3) Winter 2021|concealed before
Female	-0.097***	-0.074***	-0.056***
	(0.007)	(0.005)	(0.010)
Observations	30,543	40,135	15,179
Conceal mean	0.351	0.312	0.495
Year × ΔGPA FEs	Yes	Yes	Yes
p-value	0.001		

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful grade in a course. Column 1 presents data from Fall 2020 at the Midwestern Flagship, while Column 2 presents data from Winter 2021 at the Midwestern Flagship. Column 3 also presents data from Winter 2021 but is further restricted to students who had concealed at least one grade in Fall 2020. Female is a binary indicator equal to one when the student is listed as such in the administrative data; the data identify students as male or female. Conceal mean is the proportion of grades concealed for each column. No results are shown for BU because we only collect data for one semester at BU. Year × ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

Table A.12: Characteristics of Participating Employers

Recruiter Characteristics	
Identify as Female	66.7%
Identify as White	60.5%
Has a Graduate Degree	35.9%
Has at least 2-Year Tenure in Organization	60.5%
Firm Industry	
Consulting	10.3%
Finance	23.1%
Education, Non-Profit, or Government	12.8%
Technology	17.9%
Health	7.7%
Others	28.2%
Firm Size (in Employees)	
1–19	17.1%
20–49	22.0%
50–99	17.1%
100–249	9.8%
250–999	9.8%
1,000–9,999	12.2%
10,000 or more	12.2%
Position Location (Multiple Responses Allowed)	
East Coast	87.2%
West Coast	30.8%
Midwest	17.9%
South	12.8%
International	10.3%

This table shows descriptive statistics about the employers who participated in the incentivized resume rating experiment.

Table A.13: Randomization of Resume Components

Resume Component	**Description**
Personal Information	
First & last name	50% Male, 50% Female; drawn from list of 50 possible names given selected race and gender
Education Information	
GPA display condition	90% displayed, 10% missing
Revealed GPA	Drawn from $Unif[3.00, 4.00]$ to second decimal place
Major	Drawn from a list of majors at Penn
Degree type	BA, BS fixed to randomly drawn major
School within university	Fixed to randomly drawn major
Graduation date	Fixed to upcoming spring (i.e., May 2021)
Work Experience	
First job	Drawn from curated list of top internships and regular internships
Title and employer	Fixed to randomly drawn job
Location	Fixed to randomly drawn job
Description	Bullet points fixed to randomly drawn job
Dates	Summer after candidate's sophomore year (i.e., 2019)
Second job	Left blank or drawn from curated list of regular internships and work-for-money jobs
Title and employer	Fixed to randomly drawn job
Location	Fixed to randomly drawn job
Description	Bullet points fixed to randomly drawn job
Dates	Summer after candidate's junior year (i.e., 2020)
SAT Scores	
Display condition	39% displayed, 61% missing
Math Score	50% drawn from $Unif[700, 790]$, 50% equal to 800
Reading Score	50% drawn from $Unif[680, 760]$, 50% drawn from $Unif[770, 800]$
Writing Score	50% drawn from $Unif[690, 780]$, 25% equal to 790, 25% equal to 800
Leadership Experience	
First & second leadership	Drawn from curated list
Title and activity	Fixed to randomly drawn leadership
Location	Fixed to Philadelphia, PA
Description	Bullet points fixed to randomly drawn leadership
Dates	Start and end years randomized within college career, with more recent experience coming first
Language Skills	
Display condition	75% displayed, 25% missing
Displayed skills	Drawn from six combinations between English and one foreign language (Mandarin, Spanish, French)

This table lists resume components in the order that they appear on hypothetical resumes.

Table A.14: Gender gap in concealing grades by risk aversion

	(1)	(2)
	1–3	4–7
Female	-0.049	-0.151**
	(0.073)	(0.063)
Observations	349	377
Conceal mean	0.338	0.223
Year $\times$ ΔGPA FEs	Yes	Yes

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful grade in a course. Female is a binary indicator equal to one when the student is listed as such in the administrative data. Conceal mean is the proportion of grades concealed for each column. Risk aversion refers to answers on the survey question: "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" Values range from 1 to 7, with higher values indicating higher risk aversion. Year $\times$ ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Individual clustered standard errors are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

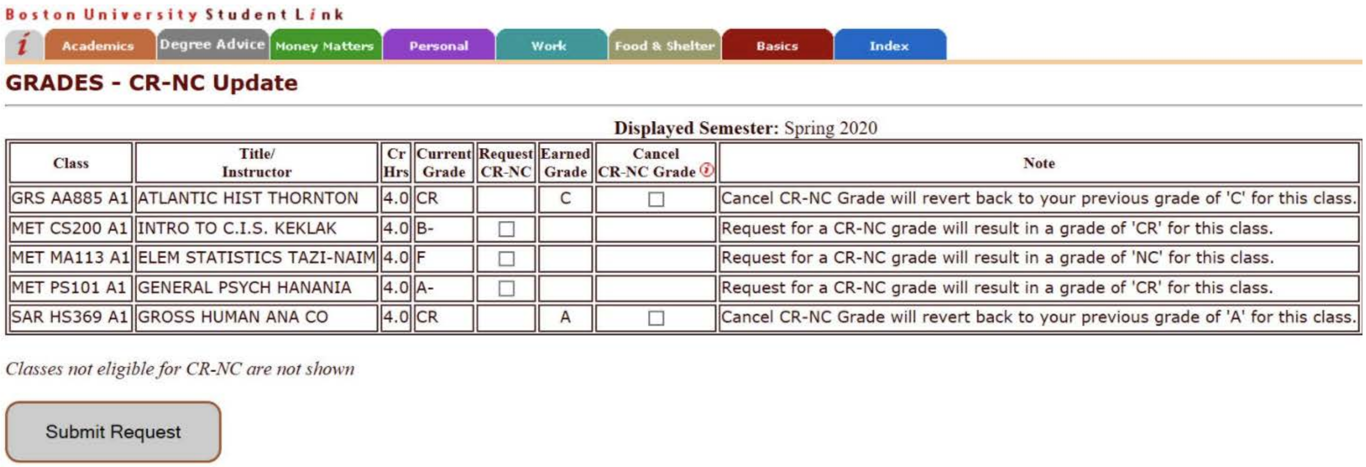
Table A.15: Gender gap in concealing grades by anticipated penalty in grade inference

	(1) Unconcerned about penalty	(2) Concerned about penalty
Female	-0.031	-0.263***
	(0.062)	(0.074)
Observations	467	257
Conceal mean	0.287	0.241
Year $\times$ ΔGPA FEs	Yes	Yes

This table shows estimates from a linear probability model of whether a student chooses to conceal a harmful letter grade in a course, by the anticipated penalty that students expect in the inference of grades concealed by their own gender. Female is a binary indicator equal to one when the student is listed as such in the administrative data. Conceal mean is the proportion of grades concealed for each column. We define unconcerned/concerned about penalty if the difference between the student's own beliefs about the average grade concealed by their gender (first order beliefs) and the student's beliefs about others' beliefs about the average grade concealed by their gender (second order beliefs) is smaller than or equal to/greater than zero. Year $\times$ ΔGPA fixed effects include an indicator for every possible change in GPA, discretized into 1,000 intervals separately for each program year. Standard errors, clustered at the individual level, are reported in parentheses. ***, **, * denote that estimates are statistically significant at the 1%, 5%, and 10% levels, respectively.

B Additional Figures

Figure B.1: Boston University Student Link tool



Boston University Student Link

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GRADES - CR-NC Update

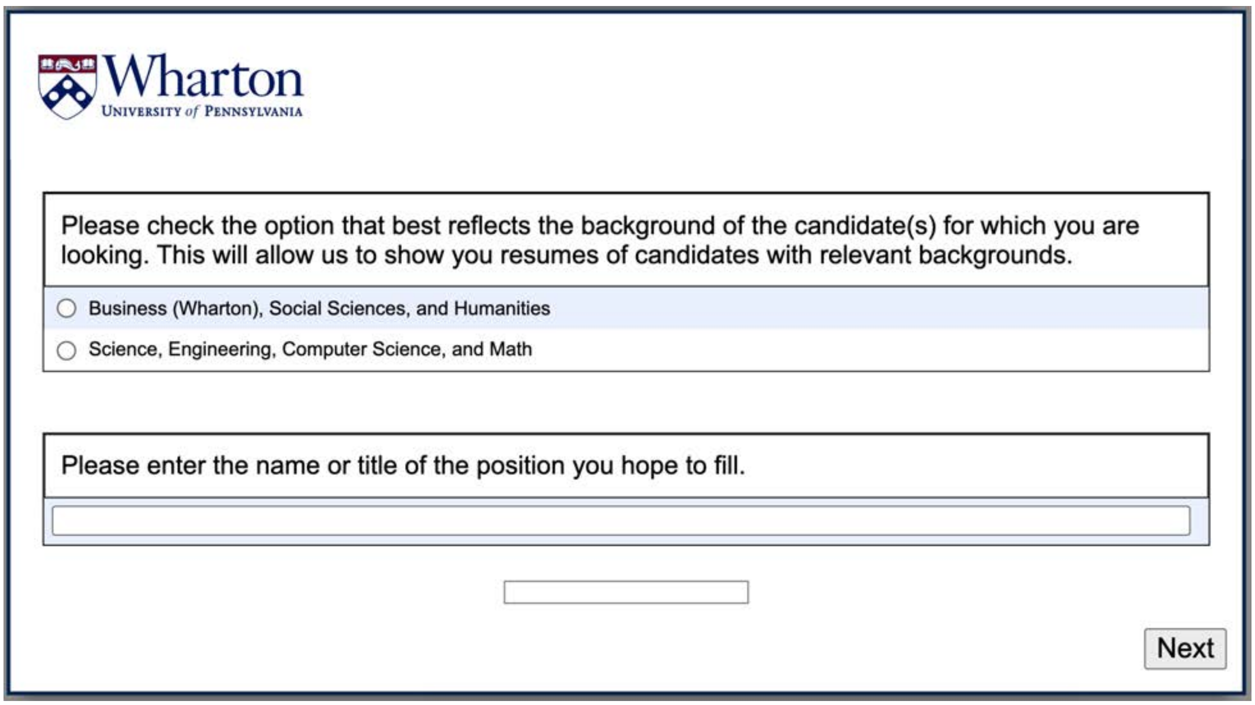
Displayed Semester: Spring 2020

Class	Title/ Instructor	Cr Hrs	Current Grade	Request CR-NC	Earned Grade	Cancel CR-NC Grade	Note
GRS AA885 A1	ATLANTIC HIST THORNTON	4.0	CR		C	☐	Cancel CR-NC Grade will revert back to your previous grade of 'C' for this class.
MET CS200 A1	INTRO TO C.I.S. KEKLAK	4.0	B-	☐			Request for a CR-NC grade will result in a grade of 'CR' for this class.
MET MA113 A1	ELEM STATISTICS TAZI-NAIM	4.0	F	☐			Request for a CR-NC grade will result in a grade of 'NC' for this class.
MET PS101 A1	GENERAL PSYCH HANANIA	4.0	A-	☐			Request for a CR-NC grade will result in a grade of 'CR' for this class.
SAR HS369 A1	GROSS HUMAN ANA CO	4.0	CR		A	☐	Cancel CR-NC Grade will revert back to your previous grade of 'A' for this class.

Classes not eligible for CR-NC are not shown

Submit Request

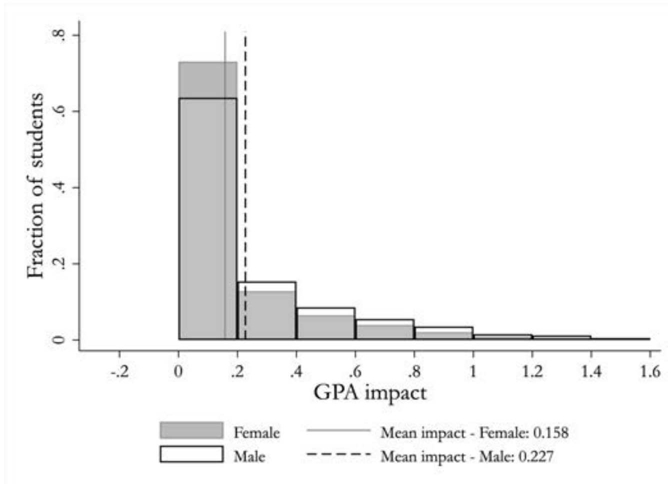
Figure B.2: Employer interface—Choosing STEM or non-STEM candidates



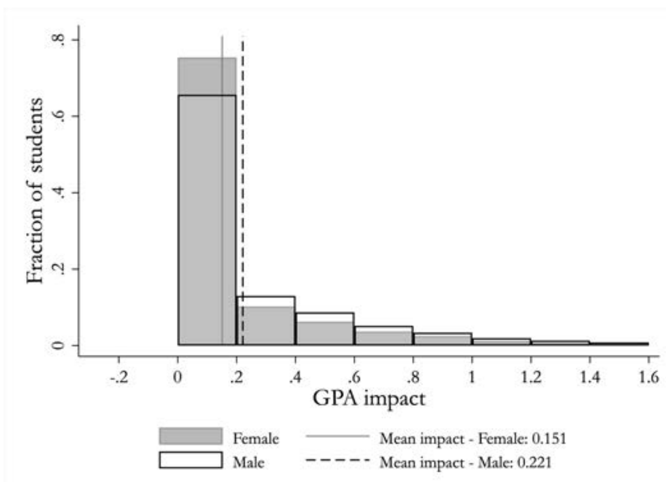
This figure shows a screenshot of the page in the IRR survey where employers choose whether they want to recruit candidates with STEM or non-STEM backgrounds (and enter the position they are hoping to fill).

Figure B.3: Distributional impacts of the grade-optional policies on GPA

Boston University

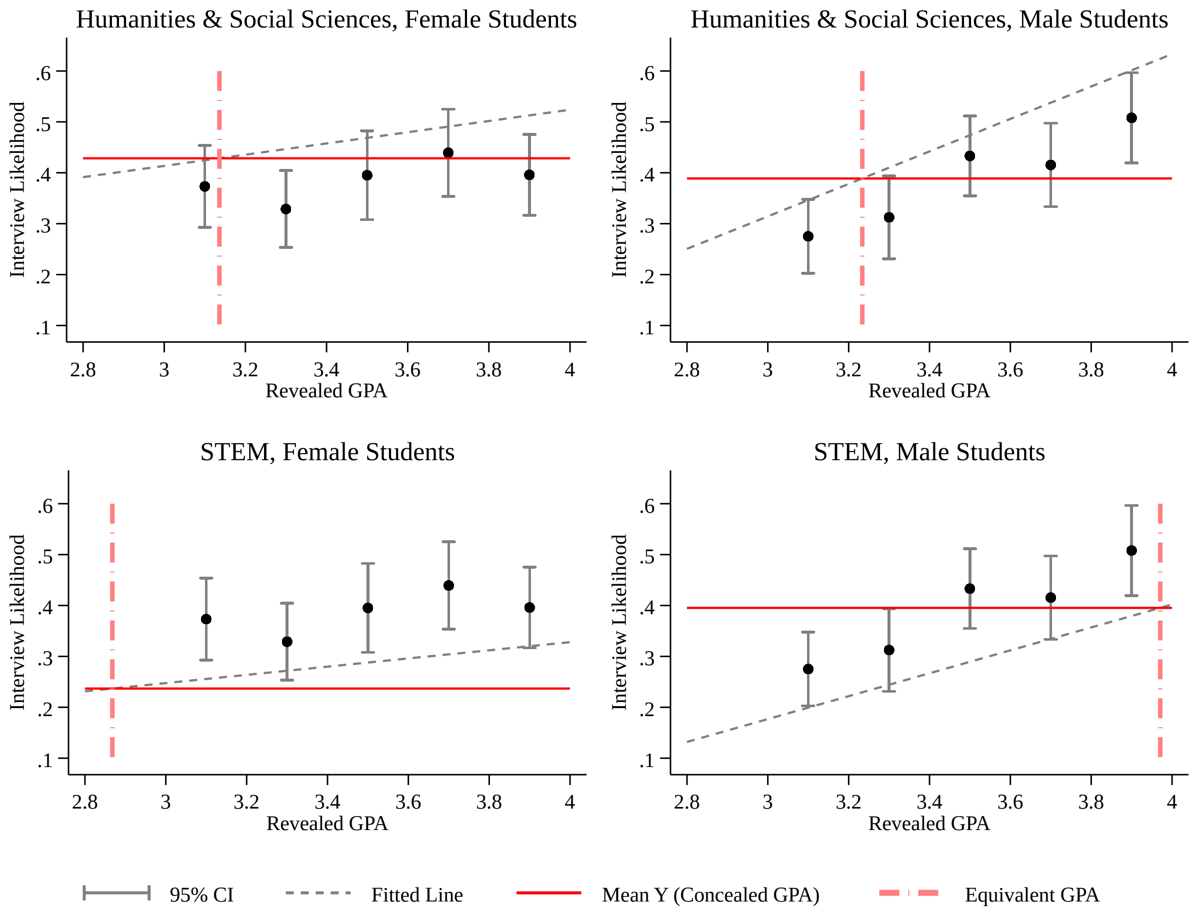


Midwestern Flagship



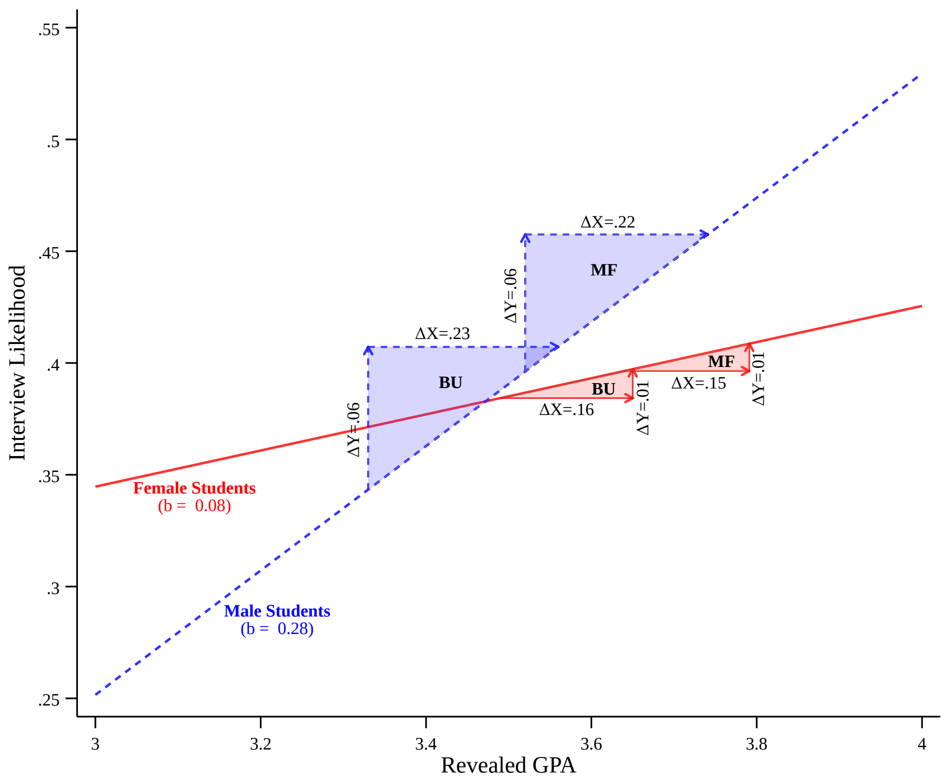
This figure plots the distribution of changes in students' GPA from the grade-optional policy, subtracting each student's GPA assuming no optional-information policy (i.e. assuming students revealed all of their letter grades) from their effective GPA after making their grade-concealment decisions. The figure compares the impact among male students (white bars with black outline; average impact shown by the dashed black line) and female students (gray bars with no outline; the average impact shown by the gray solid line). The distribution is truncated at the bottom and top 1%. The impact is calculated over one term for BU and two terms for the Midwestern Flagship, given the timing of the policy at each institution. This figure includes every grade obtained for each term covered by the policy at either institution, which involved 65,090 grades at BU from the decisions made by 15,690 students and 264,131 grades at the Midwestern Flagship from the decisions made by 37,574 students.

Figure B.4: GPA information and interview likelihood by industry and candidate gender



This figure shows for each employer sector and candidate gender (1) the relationship between the likelihood of a candidate receiving an interview and the revealed GPA (black dots and gray dashed lines), (2) the average interview likelihood of candidates concealing GPA (red horizontal lines), and (3) the implied equivalent GPA level of candidates concealing GPA (red dashed vertical lines).

Figure B.5: Example of how grade-optional policies could impact labor market outcomes



This figure first shows the relationship between interview likelihood and revealed GPA separately for male and female students based on the IRR data (blue dashed and red solid fitted lines). In addition, we plot the implied change in GPA (ΔX) of male and female students as a result of the grade-optional policy at BU and the Midwestern flagship (MF) university imagining that the relevant GPA for IRR is the GPA received in the semesters when the policy was active (so the starting point and ending point of ΔX correspond to the average GPA if the grade-optional policy had not existed and the GPA average actually achieved, see Section 5.1 for details of how we calculate the GPA impact). Given the relationship between GPA and interview likelihood, we then infer the corresponding change in interview likelihood (ΔY) for male and female students at each university (estimated to be 6.3 and 1.3 percentage points for men and women at BU and 6.1 and 1.2 percentage points for men and women at the MF).

C Student and expert surveys

Start of Block: Section 1: Demographic Information

Time0 Timing
First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

Q.Consent Please indicate your agreement to participate in this research study:

- O Yes, I agree to participate in the research study. (1)
- O No, I do not agree to participate in the research study. (2)

Skip To: End of Survey If Please indicate your agreement to participate in this research study: = No, I do not agree to participate in the research study.

Page Break

Time1 Timing
First Click (1)
Last Click (2)
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Click Count (4)

Q1.1 What is your current age?
(1)

▼ 16 (1) ... 50 (35)

Q1.2 What is your country of birth?

▼ Afghanistan (1) ... Other (1358)

Q1.3 Please state the gender with which you identify.

- Male (1)
- Female (2)
- Non-binary / third gender (3)
- Prefer not to say (4)
- Prefer to self-describe (5) ____

Q1.4 What is your race/ethnicity? Please select all that apply

- ☐ White/Caucasian (1)
- ☐ Black/African American (2)
- ☐ American Indian (3)
- ☐ Hispanic/Latino (4)
- ☐ Asian/Pacific Islander (5)
- ☐ Prefer not to answer (6)
- ☐ Other (please specify) (7) ____

Q1.5 What fields are you majoring (or do you plan to major) in? List up to two fields.

Q1.5a Major 1 choice.
(1)

▼ Actuarial Mathematics (Sub-Major) (1) ... Other (134)

Q1.5b Major 2 choice. Select N/A if you are not planning to pursue a second major.
(1)

▼ N/A (1) ... Other (135)

Display This Question:

If Major 1 choice. = Other

Q1.5a_other You selected "other" for major 1 choice. Please write in your major below.

____

Display This Question:

If Major 2 choice. Select N/A if you are not planning to pursue a second major. = Other

Q1.5b_other You selected "other" for major 2 choice. Please write in your major below.

____

Q1.6 What fields are your minoring in (or planning to minor in)? Select N/A if you do not (plan to) have a minor.
(4)

▼ N/A (1) ... Yiddish Studies (117)

Q1.7 What is your cumulative grade point average (GPA)? (Please round up to the nearest tenth.)
(1)

▼ (1) ... 4 (32)

Q1.8 When do you expect to graduate?
(1)

▼ 2022 Fall (1) ... 2025 Summer (9)

Q1.9 Were you registered as a full-time student during Fall 2020 and Winter 2021?

- O Yes, I was registered in both semesters (1)
- O Yes, I was registered in Fall 2020 only (2)
- O Yes, I was registered in Winter 2021 only (3)
- O No, I was not registered in either semester (4)

Skip To: Not Eligible If Were you registered as a full-time student during Fall 2020 and Winter 2021? = No, I was not registered in either semester

Skip To: Not Eligible If Were you registered as a full-time student during Fall 2020 and Winter 2021? = Yes, I was registered in Fall 2020 only

Display This Question:

If Were you registered as a full-time student during Fall 2020 and Winter 2021? = Yes, I was registered in Fall 2020 only

Or Were you registered as a full-time student during Fall 2020 and Winter 2021? = No, I was not registered in either semester

Not Eligible Thank you for your interest in our survey but you are not eligible to take the survey. In order to participate you must be currently enrolled, and should have registered as a degree-seeking undergraduate student for the Winter 2021 semester.

Skip To: End of Survey If Thank you for your interest in our survey but you are not eligible to take the survey. In order t... Is Displayed

Q1.10 What were your scores on the SAT? Please write N/A if you did not take the SAT.

- O Verbal (1) ____
- O Math (2) ____

Q1.11 What was your composite score on the ACT? (Round up your score to the nearest integer; write N/A if this is not applicable to you)

O (1) ____

Q1.12 What was your rank in your high school graduating class? Please answer on a 1-100 scale, where 1 means you ranked in the top 1%. If your school did not rank graduating classes then please estimate your ranking as best you can. Note that 100 means the lowest rank.

	1	11	21	31	41	51	60	70	80	90	100
()											

End of Block: Section 1: Demographic Information

Start of Block: Section 2:Perceptions

Time2 Timing
First Click (1)
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Page Submit (3)
Click Count (4)

Perceptions In some of the questions in this survey, we will ask you about students majoring in STEM/BE fields.
By **STEM/BE** fields, we mean majors in “Science, Technology, Engineering, and Math” OR in Business/Economics.
By **non-STEM/BE** fields, we mean all other majors (many of which are in the humanities, arts, public health, other social sciences, etc.).

In 2019, even though female students made up 51% of the undergraduate student body here, they comprised only 45% of all STEM/BE majors but 64% of all non-STEM/BE majors. **That is, female students were more likely to major in non-STEM/BE fields, and male students in**

STEM/BE fields. These statistics are from 2019, the academic year before Covid. However, the statistics have largely been the same before 2019, as well as after.

Please answer the next questions carefully. In many questions, there is no correct or wrong answer - we are simply interested in your beliefs. However, in some questions, you can earn extra money if your answer is correct.

Q2.0 Is your primary major in a STEM/BE field?

- O Yes (1)
- O No (2)

Page Break

Q2.1 Consider all students who graduated from here with a STEM/BE major in 2019. What do you think the average GPA of male and female **STEM/BE** students was? Please answer on a 0-4 scale.

Again, by STEM/BE we mean majors in Science, Technology, Engineering, Math, OR Business/Economics.

O Average GPA of **male STEM/BE** students (1) ____

O Average GPA of **female STEM/BE** students (2) ____

Q2.2 The prior question was also asked to other current students. We would like to know how you think **your peers (other students)** answered this question. We will randomly choose one of your two guesses and you will receive $0.25 if it is within 0.025 GPA points of the actual average guess of the other survey respondents. Please answer on a 0-4 scale.

O My guess of what the other students said was the average GPA of **male STEM/BE** students (1) ____

O My guess of what the other students said was the average GPA of **female STEM/BE** students (2) ____

Page Break

Perceptions_NonSTEM We will now ask you the same two questions, but regarding **non-STEM/BE** majors. By non-STEM/BE majors, we mean majors in fields such as the humanities, arts, public health, other social sciences, etc.

Q2.3 Consider all students who graduated from here with a **non-STEM/BE** major in 2019. What do you think the average GPA of male and female non-STEM/BE students was? Please answer on a 0-4 scale.

O Average GPA of **male non-STEM/BE** students (1)
____

O Average GPA of **female non-STEM/BE** students (2)
____

Q2.4 The prior question was also asked to other current students. We would like to know how you think **your peers (other students)** answered this question. We will randomly choose one of your two guesses and you will receive $0.25 if it is within 0.025 GPA points of the actual average guess of the other survey respondents. Please answer on a 0-4 scale.

O My guess of what the other students said was the average GPA of **male non-STEM/BE** students (1) ____

O My guess of what the other students said was the average GPA of **female non-STEM/BE** students (2) ____

End of Block: Section 2:Perceptions

Start of Block: Section3: Masking

Q3.1 During the 2020-2021 academic calendar, the university had a flexible undergraduate policy. Specifically, in the Winter 2021 semester, students could change their letter grades between A+ and C- to a Pass, after seeing their final letter grade. Were you aware of this "masking" policy?

O Yes (1)

O No (2)

Q3.2 Based on our analysis, we found that 27.6% of undergraduate students masked at least one grade during the Winter 2021 semester. Again, by masking, we mean changing a letter grade to a Pass.

What is your best guess of the percent of the following groups that **masked at least one grade** during the Winter 2021 semester here. Please answer on a 0-100 scale for each question, where 100 means all the students in that group masked at least one grade.

	0 10 20 30 40 50 60 70 80 90 100
% of Male STEM/BE majors ()	
% of Female STEM/BE majors ()	
% of Male non-STEM/BE majors ()	
% of Female non-STEM/BE majors ()	

Q3.3 Considering students in the following groups who masked at least one grade, what do you think their **original grade** on that course would have been (on average)?

Q3.3.1 **Male STEM/BE** majors who masked at least one grade
(12)

▼ A/A+ (1) ... C- (8)

Q3.3.2 **Female STEM/BE** majors who masked at least one grade
(12)

▼ A/A+ (1) ... C- (8)

Q3.3.3 **Male non-STEM/BE** majors who masked at least one grade
(12)

▼ A/A+ (1) ... C- (8)

Q3.3.4 **Female non-STEM/BE** majors who masked at least one grade
(12)

▼ A/A+ (1) ... C- (8)

Q3.4.1 We asked the same question to other students. How do you think they answered this question?

My guess of what my **peers** thought was the **original course grade**:

Q3.4.1 **Male STEM/BE** majors who masked at least one grade
(12)

▼ A/A+ (1) ... C- (8)

Q3.4.2 **Female STEM/BE** majors who masked at least one grade
(12)

▼ A/A+ (1) ... C- (8)

Q3.4.3 **Male non-STEM/BE** majors who masked at least one grade
(12)

▼ A/A+ (1) ... C- (8)

Q3.4.4 **Female non-STEM/BE** majors who masked at least one grade
(12)

▼ A/A+ (1) ... C- (8)

Page Break

Q3.5 Assume a scenario where you send your resume to 100 employers. **Given your major and your GPA,** of these 100 employers, when looking at your application, how many do you think would take a look at some of your **grades** instead of only your overall GPA (0-100)?

	Number of employers 0 10 20 30 40 50 60 70 80 90 100
()	

Q3.6 Consider 100 employers who receive resumes of students. Of these 100 employers, how many do you think would take a look at some of the **grades** instead of only the overall GPA of the students if

	0 10 20 30 40 50 60 70 80 90 100
The resumes were those of **male STEM/BE** majors ()	
The resumes were those of **female STEM/BE** majors ()	
The resumes were those of **male non-STEM/BE** majors ()	
The resumes were those of **female non-STEM/BE** majors ()	

Page Break

Q3.7 Consider the case where an employer receives job applications from a male and female **STEM/BE** major. Both have similar profiles and seem equally qualified. The employer can make only **one** offer. Who do you think the employer will make an offer to if:

	Male applicant (1)	Female applicant (2)
Both the male and female applicant do not mask any grades (1)	O	O
Both the male and female applicant mask a grade (2)	O	O
The male applicant masks a grade but the female applicant does not (3)	O	O
The male applicant does not mask a grade but the female applicant does (4)	O	O

Q3.8 The same question was asked to other students. What is your guess of the percent of students who said the employer would hire the **male STEM/BE** major applicant (instead of the female STEM/BE major applicant) in each scenario (0-100)?
Please answer carefully. We will pick one of these questions at random. If your guess is correct (that is, within 1 percentage point of the actual percent), you will receive $0.25.

What % of your **peers** said the employer would hire the **male** applicant:

	0 10 20 30 40 50 60 70 80 90 100
If both the male and female applicant do not mask any grades ()	
If both the male and female applicant mask a grade ()	
If the male applicant masks a grade but the female applicant does not ()	
If the male applicant does not mask a grade but the female applicant does ()	

Page Break

Q3.9 Now consider the case where an employer receives job applications from a male and female **non-STEM/BE** major. Both have similar profiles and seem equally qualified. The employer can make only **one** offer. Who do you think the employer will make an offer to if:

	Male applicant (1)	Female applicant (2)
Both the male and female applicant do not mask any grades (1)	O	O
Both the male and female applicant mask a grade (2)	O	O
The male applicant masks a grade but the female applicant does not (3)	O	O
The male applicant does not mask a grade but the female applicant does (4)	O	O

Q3.10 The same question was asked to other students. What is your guess of the percent of students who said the employer would hire the **male non-STEM/BE** major applicant (instead of the female non-STEM/BE major applicant) in each scenario (0-100)?
Please answer carefully. We will pick one of these questions at random. If your guess is correct (that is, within 1 percentage point of the actual percent), you will receive $0.25.

What % of your **peers** said the employer would hire the **male** applicant:

	0 10 20 30 40 50 60 70 80 90 100
If both the male and female applicant do not mask any grades ()	
If both the male and female applicant mask a grade ()	
If the male applicant masks a grade but the female applicant does not ()	
If the male applicant does not mask a grade but the female applicant does ()	

End of Block: Section3: Masking

Start of Block: Section4: Demographics (Continued)

Q4.1 Did you make use of the “grade masking” policy in the Winter 2021 semester? That is, did you change a letter grade to Pass?

O Yes (1)

O No (2)

Display This Question:

If Did you make use of the “grade masking” policy in the Winter 2021 semester? That is, did you chan... = Yes

Q4.1.1 How many course grades did you mask?
(1)

▼ 1 (1) ... More (6)

Display This Question:

If How many course grades did you mask? = 1

Q4.1.2 What was the original grade of the course you masked?
(1)

▼ A/A+ (1) ... C- (8)

Display This Question:

If How many course grades did you mask? != 1

And Did you make use of the “grade masking” policy in the Winter 2021 semester? That is, did you chan... = Yes

Q4.1.3 You said you masked multiple course grades. What was the worst grade among the courses you masked?
(1)

▼ A/A+ (1) ... C- (8)

Display This Question:

If Did you make use of the “grade masking” policy in the Winter 2021 semester? That is, did you chan... = Yes

Q4.1b How important were each of the following reasons in deciding to mask a grade

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
My GPA would have been negatively impacted had I not done so (1)	O	O	O	O	O
Taking the course with a letter grade was not needed (2)	O	O	O	O	O
I could focus on learning rather than worrying about the grade (3)	O	O	O	O	O

Display This Question:

If Did you make use of the “grade masking” policy in the Winter 2021 semester? That is, did you chan... = Yes

Q4.1b_other If you have other reasons in deciding to mask a grade, please specify.

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
Other (please specify) (1)	O	O	O	O	O

Display This Question:

If Did you make use of the “grade masking” policy in the Winter 2021 semester? That is, did you chan... = No

Q4.1c How important were each of the following reasons in deciding NOT to mask a grade?

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
I had good grades and didn't need to mask a grade (1)	O	O	O	O	O
I have to take courses for letter grades for my major (2)	O	O	O	O	O
I did not know about the policy, or about how to do it (3)	O	O	O	O	O
I thought that my employment opportunities would be negatively impacted by masking a grade (4)	O	O	O	O	O
I thought that graduate school admission chances would be negatively impacted by masking a grade (5)	O	O	O	O	O
I thought that masking a grade could be deceiving or not truly represent my performance in the course (6)	O	O	O	O	O

Display This Question:

If Did you make use of the “grade masking” policy in the Winter 2021 semester? That is, did you chan... = No

Q4.1c_other If you have other reasons in NOT deciding to mask a grade, please specify.

	Not at all important (1)	Slightly important (2)	Moderately important (3)	Very important (4)	Extremely important (5)
Other (please specify) (1)	o	o	o	o	o

Q4.2 On a scale of 1-5, how strongly do you agree with the following statements?

	1 - Strongly Disagree (1)	2 - Slightly Disagree (2)	3 - Neutral (3)	2 - Slightly Agree (4)	5 - Strongly Agree (5)
I care about my grades (1)	O	O	O	O	O
Letter grades are important because they signal a person's actual ability (2)	O	O	O	O	O
Letter grades are important because employers value them (3)	O	O	O	O	O
Letter grades are important for applying to graduate school (4)	O	O	O	O	O
Letter grades are important for motivation (5)	O	O	O	O	O
Letter grades are important because of my family's or friends' expectations (6)	O	O	O	O	O
Letter grades are important because I believe it is important to be transparent (7)	O	O	O	O	O

Q4.3 What do you think is the minimum GPA employers would have required to hire you if you majored in a

- O STEM/BE field (1) ____________________
- O Non-STEM/BE field (2) ____________________

Q4.4 Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please select a number between 1 and 7 where 1 means “absolutely unwilling to take risks” and 7 means “fully prepared to take risks”.

	1	2	3	4	5	6	7
Risk Preference ()							

Q4.5 How likely is it that you will pursue a post-bachelor's degree (such as a MD, PhD, Masters, etc.) at some point after graduating from here?

- O Very likely (1)
- O Somewhat likely (2)
- O Somewhat unlikely (3)
- O Very unlikely (4)

Q4.6 What is the most likely career you plan to pursue after college?

- O Medical or healthcare professional (nurse, medical doctor, dentist, pharmacist, etc.) (1)
- O Lawyer (2)
- O Engineer (computer science or software, electrical, mechanical, etc.) (3)
- O Pre-K-12 Teacher (4)
- O Researcher (in natural sciences or social sciences) (5)
- O Business/Finance (analyst, consultant, etc.) (6)
- O Federal or state government professional (7)
- O Career in the arts or entertainment (publishing and writing, graphic design, etc.) (8)
- O Other (please list) (9) ____

End of Block: Section4: Demographics (Continued)

Start of Block: Submission

Submit Thank you for completing our survey. Press the right arrow below to submit your survey.

If you are selected for one of the $10 Amazon gift cards or qualify for compensation based on the accuracy of your answers, the study team will contact you within 6 weeks after the end of the survey with information on how to claim your prize.

End of Block: Submission

Masking Policy (Experts)

Start of Block: Section 0: Consent

Time0 Timing
First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

Consent During the 2020-2021 academic calendar, the University had a flexible undergraduate policy. Specifically, in the Fall 2020 and Winter 2021 semesters, undergraduate students could change their letter grades between A+ and C- to a Pass, AFTER seeing their final letter grade.

We would like to invite you to participate in a short 5-minute anonymous survey designed to collect your forecasts of how male and female students may have responded to this policy. This will allow us to evaluate the extent of agreement among experts on this topic.

Q.Consent Please indicate your agreement to participate in this research study:

- I am 18 years of age or older and consent to participate in this survey. (1)
- I do not consent to participate in this survey. (2)

Skip To: End of Survey If Please indicate your agreement to participate in this research study: = I do not consent to participate in this survey.

End of Block: Section 0: Consent

Start of Block: Section1:

*

Q12 During the 2020-2021 academic calendar, the University had a flexible undergraduate policy. Specifically, in the Fall 2020 and Winter 2021 semesters, undergraduate students could change their letter grades between A+ and C- to a Pass, AFTER seeing their final letter grade.

Our analysis of the data shows that 10% of all course grades (from A to C-) were masked by students. By masking, we mean changing a letter grade to a PASS (after having seen the final letter grade).

What is your best guess of the percent of all course grades that were masked by the following groups? Please answer on a 1-100 scale.

O % by **male** undergraduate students (1) ____

O % by **female** undergraduate students (2) ____

*

Q34 Now consider all undergraduate students majoring in **STEM, Business, or Economics**.

What is your best guess of the percent of all course grades that were masked by the following groups? Please answer on a 1-100 scale.

O % by **male** undergraduate students (1) ____

O % by **female** undergraduate students (2) ____

Q5 If you answered that the difference in masking across gender would differ by whether undergraduate students major in **STEM, Business, or Economics** or not, please briefly explain your answer.

____

Page Break

Q6 Now again consider all undergraduate students regardless of major.

Consider one male and one female student with **identical** cumulative GPAs and grades in a given course. Which student, if any, do you think would be more likely to mask their grade for the course?

- O Both students would be equally likely to mask (1)
- O The **male** student would be more likely to mask (2)
- O The **female** student would be more likely to mask (3)

Q7 Please briefly explain your answer to the previous question.

____

End of Block: Section1:

Start of Block: Section2: Demographics

Sec2_Intro We would appreciate it if you could share some information about yourself. This information will only be used to distinguish patterns in the answers of different experts.

Qd1 What is your gender?

- O Male (1)
- O Female (2)
- O Non-binary / third gender (3)
- O Prefer not to say (4)

Qd2 Which of the following best describes your primary field(s) of expertise? Please select all that apply.

- ☐ Labor Economics (1)
- ☐ Industrial organization (2)
- ☐ Behavioral economics (3)
- ☐ Experimental economics (4)
- ☐ Health Economics (5)
- ☐ Macroeconomics (6)
- ☐ Economics of Education (7)
- ☐ Personnel economics (8)
- ☐ Public Economics (9)
- ☐ Economics of crime (10)
- ☐ Economics of gender (11)
- ☐ Econometrics (12)
- ☐ Development economics (13)
- ☐ Other (14) ____

Qd3 Which of the following best describes your professional position?

- O Full Professor, Associate Professor or equivalent (1)
- O Assistant Professor or equivalent (2)
- O Postdoc or equivalent (3)
- O Graduate (PhD / Master's) student or equivalent (4)
- O Research coordinator or assistant (5)
- O Non-academic researcher (6)
- O Other (7) ____

Qd4 Have you done any work on gender differences?

- O No (1)
- O Yes (2)

Ending Thank you for providing your predictions. Press the right arrow below to submit your survey.

End of Block: Section2: Demographics