

GRADUATE STUDENT AND FACULTY MENTAL HEALTH

Evidence from European Economics Departments

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ABSTRACT

We study the mental health of graduate students and faculty at 14 economics departments in Europe. Using clinically validated surveys sent out in the fall of 2021, we find that 34.7 percent of graduate students experience moderate to severe symptoms of depression or anxiety and 17.3 percent report suicidal or self-harm ideation in a two-week period. We find that 19.2 percent of students with significant symptoms are in treatment. Among faculty members, 15.8 percent experience moderate to severe depression or anxiety symptoms, with prevalence higher among nontenure track (42.9 percent) and tenure track (31.4 percent) faculty than tenured (9.6 percent) faculty. We estimate that the COVID-19 pandemic accounts for about 74 percent of the higher prevalence of depression symptoms and 30 percent of the higher prevalence of anxiety symptoms in our European sample relative to a 2017 US sample of economics graduate students. We also document issues in the work environment, including a high incidence of sexual harassment, and make recommendations for improvement.

KEYWORDS: campus mental health, mental health survey, economics faculty, European economics graduate students

JEL CLASSIFICATION: A23, I12, I18, I23

I. Introduction

A 2017–18 study of mental health issues among graduate students in top US economics departments provided evidence of high rates of depression and anxiety symptoms, as well as suicidal or self-harm ideation (Bolotny et al. 2022). The paper raised interest in how well the findings reflected graduate student mental health outside of the top US departments and left the state of faculty mental health unaddressed. Aiming to address these gaps, we implemented a new data-collection effort to investigate mental health issue prevalence among graduate students and faculty in economics departments in Europe.

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Electronically published June 12, 2026.

American Journal of Health Economics, volume 12, number 3, summer 2026.

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Our study consists of one graduate student survey, about 45 minutes in length, and one faculty survey, about 15 minutes in length, administered in the fall of 2021. Our objectives were to (1) understand the prevalence and severity of mental health issues in economics departments in Europe; (2) understand student and faculty experiences in their departments; (3) compare prevalence rates of student mental health issues and student experiences with those of US students (Bolotnyy et al. 2022); and (4) make data-informed recommendations to departments on ways to improve graduate student and faculty mental health. Our data-collection plans were significantly delayed by the COVID-19 pandemic and took place one and a half years into the pandemic. Motivated by existing studies of the effects of the pandemic on the mental health of the global population (Pfefferbaum and North 2020), we turned the delay into an opportunity to gain insight into how the pandemic affected mental health in economics departments.

The 14 programs participating in the study were the following: Bocconi University, Bonn Graduate School of Economics, Central European University, European University Institute, London School of Economics, Mannheim Graduate School of Economics, Paris School of Economics, Sciences Po, Stockholm School of Economics and Social Sciences, University College London, Universitat Pompeu Fabra, University of Warwick, University of Zurich, and Uppsala Universitet. These departments are selected in that they offer a cohort-model PhD program, to be comparable with the US sample in Bolotnyy et al. (2022). A week before the launch of the survey, each department chair emailed his or her students and faculty with an endorsement of the study, making clear that responses would be strictly confidential and promising that the results would be taken seriously. No financial participation incentives were provided for any of the surveys.

A total of 1,144 economics PhD students and approximately 814 faculty members across these programs received a link to our survey by email. In total, 556 students and 255 faculty members voluntarily participated in our study.¹ While the European sample seems generally comparable to the 2017–18 sample of graduate students from top economics departments in the US (Bolotnyy et al. 2022), it is characterized by higher diversity in terms of socioeconomic background (in our European sample, the percentage of students who have fathers with a high school degree or less is about twice as large as in the US sample) and by slightly older graduate students.

Our data show high rates of depression and anxiety symptoms, as well as suicidal or self-harm ideation, loneliness, and imposter phenomenon among graduate students in European economics departments. We found that 34.7 percent of graduate students experience moderate to severe symptoms of depression or anxiety and 17.3 percent report suicidal or self-harm ideation in a two-week period; 59 percent of students experience frequent or intense imposter phenomenon. These rates are higher than nationally representative equivalents from many European countries at the peak of the first COVID-19 wave (March 2020;

1 We defined participation for students as completing both the PHQ-9 (screen for depression symptoms) and the GAD-7 (screen for anxiety symptoms) and participation for faculty as finishing the survey, regardless of how many sections of it they skipped. In all, 12 students took our survey but skipped at least one of the PHQ-9 and GAD-7 sections; 90 faculty members took our survey but skipped at least one of the PHQ-9 and GAD-7 sections.

Shevlin et al. 2022) and at subsequent moments of the pandemic (November 2020, January 2021, and April 2021; Hajek et al. 2022).²

The prevalence of severe and moderate depression and anxiety symptoms in our sample of European economics graduate students is notably higher than in the 2017–18 sample of graduate students from top economics departments in the US (Bolotnyy et al. 2022) and higher than in a meta-analysis of depression, anxiety, and suicidal ideation among PhD students prior to the COVID-19 pandemic (Satinsky et al. 2021).

A supplementary analysis, which exploits data from a Harvard internal longitudinal study (2016–22) on mental health, suggests that only a part of the increased prevalence of depression and anxiety in the European sample can be ascribed to the COVID-19 pandemic (Barreira and Bolotnyy 2024). Assuming that the trend observed among Harvard University PhD students is indicative of the overall trend in the US sample and that the US and European trends are comparable, we can attribute approximately 74 percent of the difference in the prevalence of moderate to severe depression and 30 percent of the difference in the prevalence of moderate to severe anxiety between our European sample and the 2017–18 US sample to the impact of the COVID-19 pandemic.

In our faculty sample, the prevalence of severe and moderate anxiety is on average lower than graduate students as well as lower than comparable statistics for the post-COVID-19 European population. This average, however, hides a substantial heterogeneity by seniority level. Untenured tenure-track faculty in Europe are as likely to experience depression and anxiety symptoms as graduate students in our sample, and nontenure-track faculty show even higher prevalence of depression or anxiety symptoms. In contrast, the prevalence of depression and anxiety symptoms among European tenured faculty in our sample is about 70 percent lower than among their graduate students and is well below the comparable rates in the post-pandemic European population.

In terms of the work and learning environment, European departments in our sample appear similar to top US departments in 2017–18. Hours worked by graduate students and satisfaction with the PhD experience are broadly comparable, with European students only slightly less likely than US students to state that they work over 60 hours a week (Figure 1). Economics PhD students in our European sample and the US one are also similarly satisfied with their PhD experience, with 71 percent of students saying they are satisfied or more than satisfied with their PhD experience (Figure 2). For comparison, in a *Nature* 2022 study of graduate student mental health across countries, most respondents work between 41 and 50 hours per week, and 62 percent of respondents say they are satisfied with their current program (Woolston 2022). European and US sample students are also similar in terms of regrets, with time management by far the most common source of frustration for both US and European student samples (Figure 3). Finally, 25.9 percent of students in the European sample report having experienced at least one form of sexual harassment. Excluding a form of harassment not included in the US study, the sexual harassment prevalence rate in our European graduate student sample (19.5 percent) is comparable to the US sample (19.4 percent).

2 Hajek et al. (2022) also note a slight trend of decreasing prevalence rates in both probable depression and probable anxiety from November 2020 to April 2021. If this trend continued, our comparison here may be underestimating the true difference between our sample in the fall of 2021 and the general European population.

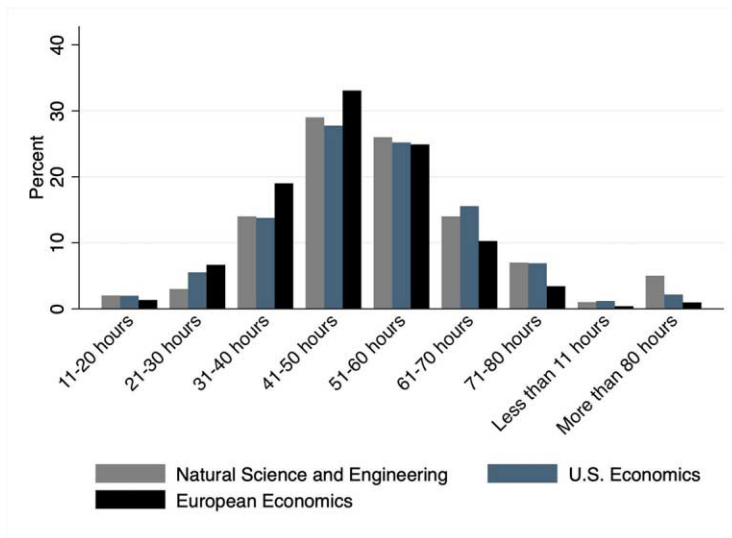


FIGURE 1. On average, how many hours a week do you typically work? Based on the results obtained from student survey. Sources: Results for natural science and engineering PhD students come from Woolston (2017). Results for US economics students come from Bolotnyy et al. (2022).

There is, however, evidence of less frequent interactions between students and faculty in Europe, and of European faculty being less satisfied with their job than US faculty—patterns that may or may not be due to disruptions caused by the pandemic. Another significant difference is that European economics PhD students with moderate to severe symptoms of depression or anxiety are less likely to be in treatment (19.2 percent) than economics PhD students in US top departments (25.2 percent).

The paper contributes to the growing literature on mental health in academia, particularly among graduate students, and examines the impact of the COVID-19 pandemic. Motivated by Bolotnyy et al. (2022), who found that 24.8 percent of graduate students experienced moderate or severe depression or anxiety symptoms at top US economics PhD programs in 2017, we explore mental health in European economics departments, provide the first measures of faculty mental health, and highlight the pandemic's effects.

Outside economics, Evans et al. (2018) surveyed 2,279 graduate students across various fields and found that 41 percent experienced moderate to severe anxiety, and 39 percent had moderate to severe depression. Additionally, Keloharju et al. (2022) used administrative data from Sweden (2005–15) to show that 7 percent of PhD students received treatment for depression annually, with 5 percent for anxiety. Their difference-in-differences approach attributes 80 percent of the mental health disadvantage to the PhD program. The lower diagnosis and treatment rates in this study may be due to the inclusion of only students who have already sought treatment.

Other studies offer valuable insights but face challenges with lower response rates (Garcia-Williams et al. 2014), a more qualitative focus (e.g., Gin et al. 2021), or a lack of

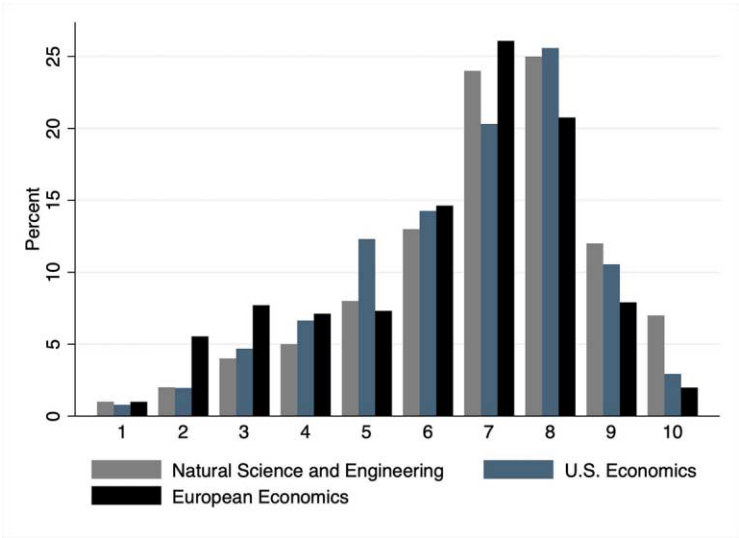


FIGURE 2. On a scale of 1 to 10, where 1 = extremely dissatisfied and 10 = extremely satisfied, how satisfied are you with your PhD experience? Based on the results obtained from student survey. Sources: Results for natural science and engineering PhD students come from Woolston (2017). Results for US economics students come from Bolotnyy et al. (2022).

clinically validated measures (e.g., Hyun et al. 2006). Comprehensive university reports, like Dench et al. (2020), further contribute by analyzing data from over 6,800 graduate students at Harvard, revealing that about 24 percent experienced moderate to severe depression and anxiety, with 25 percent receiving treatment for depression.

Finally, we contribute to the literature on the impact of the COVID-19 pandemic on mental health. For example, Hajek et al. (2022) find a prevalence rate of 23.8 percent for depression and of 22.1 percent for anxiety in April 2021 using the European COVID Survey, a longitudinal data set of mental health in seven European countries. For comparison, Rotenstein et al. (2016) measure the mental health of the general population before the pandemic. Using data from the second wave of the European Health Interview Survey (2013–15) across 27 European countries, the authors find a 6.38 percent prevalence of depressive disorder, with significant variation between countries (from 2.58 percent in the Czech Republic to 10.33 percent in Iceland).

II. Methodology

A. SCREENING TOOLS

A.1. DEPRESSION: PHQ-9. We utilize several standardized screening tools from the mental health literature to assess symptoms of common mental health disorders in our population. To examine depressive symptoms, we use the PHQ-9 survey instrument.

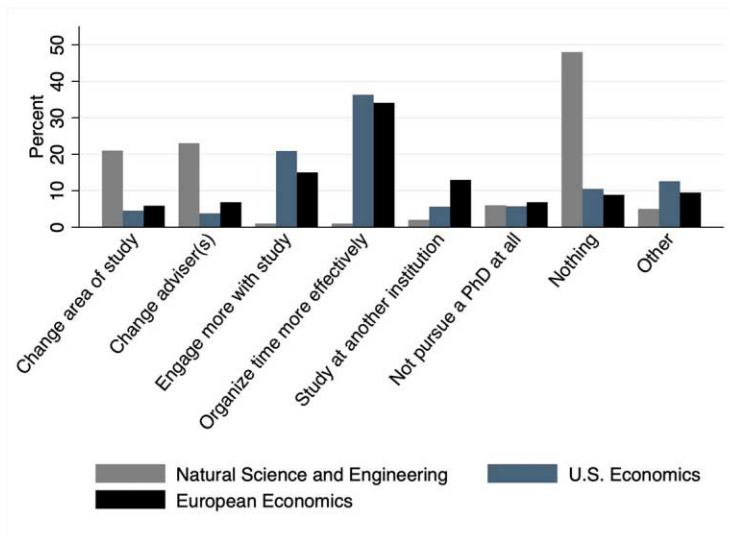


FIGURE 3. What would you do differently right now if you were starting your program? Based on the results obtained from student survey. Sources: Results for natural science and engineering PhD students come from Woolston (2017). Results for US economics students come from Bolotnyy et al. (2022).

The PHQ-9 has nine questions related to core symptoms of major depressive disorder, assessing mood, sleep, interest, guilt, energy, concentration, attention, psychomotor slowing, and suicidality. The nine symptoms assessed are classic clinical features of major depressive disorder, a diagnosis that can be made only by a licensed clinician (APA 2013).

In the PHQ-9, respondents are asked to report how often they have experienced the nine symptoms over the previous two weeks, with four available answer choices to assess both presence and severity of the symptom: not at all (0 points), several days (1 point), more than half the days (2 points), or nearly every day (3 points). Hence, the allowable range of scores is 0 (no presence of any symptom) to 27 (full severity of each of the nine symptoms). With a cutoff threshold of greater than or equal to 10, the PHQ-9 has an 88 percent sensitivity and an 88 percent specificity for the diagnosis of major depressive disorder (Kroenke and Spitzer 2002). Sensitivity tells us the probability of testing positive for depression (PHQ-9 ≥ 10) when the disease is present, while specificity shows the probability of testing negative (PHQ-9 < 10) for depression when the disease is absent.

The PHQ-9 is widely used not only as a tool for epidemiological measurement, but also for clinical screening in physicians' offices and hospitals (Kocalevent et al. 2013). Since diagnosis of major depressive disorder must involve an interview with a licensed clinician, we are able to gather information on the prevalence of symptoms, not to report the measured prevalence of the disorder itself. As noted above, the PHQ-9 relies on the self-report of symptoms. These, in turn, are predictive of diagnosis and of biological changes due to an interaction of genes with environmental stressors (Sapolsky 2003). While many active efforts are under

way to identify biomarkers of mental health issues, self-description of symptoms remains a core feature of the American Psychiatric Association's diagnostic criteria (APA 2013).

Other instruments commonly used to measure depressive symptoms include the Beck Depression Inventory II (BDI-II), the Hamilton Depression Rating Scale (HAM-D), and the Center for Epidemiologic Studies Depression Scale (CES-D). Numerous studies comparing these instruments have found high internal consistency among the measures (e.g., Schwenk et al. 2010; Kung et al. 2013; Choi et al. 2014). We chose to use the PHQ-9 in our study because it is short, free, and widely used, and has a high sensitivity and specificity. A number of other studies of graduate and professional student mental health have also utilized the PHQ-9, allowing us to directly compare our results with other settings in higher education (e.g., Garcia-Williams et al. 2014; Evans et al. 2018; Dench et al. 2020; Bolotnyy et al. 2022). Instrument internal consistency, however, also allows us to make comparisons across studies that use these other instruments (e.g., UCOP 2017).

A.2. ANXIETY: GAD-7. Our assessment of symptoms of anxiety proceeded similarly, using the GAD-7 survey instrument. The GAD-7 assesses the severity of common symptoms of anxiety, including feeling nervous, not being able to control worrying, and feeling afraid as if something awful might happen. The scoring system resembles the PHQ-9: Points are assessed from 0 to 3 for each symptom, depending on its reported presence and severity over the past two weeks. Using a cutoff threshold of greater than or equal to 10, the GAD-7 has a sensitivity of 89 percent and specificity of 82 percent for the diagnosis of generalized anxiety disorder (Spitzer et al. 2006). As with depression, a clinician is required for the diagnosis of this disorder; our results here indicate the prevalence of symptoms of anxiety, not of the disorder itself. The GAD-7 is widely used for epidemiological estimation and as a clinical screening tool for generalized anxiety disorder (Stein and Sareen 2015; Plummer et al. 2016).

A.3. SUICIDALITY: PHQ-9 ITEM 9. We assess the presence of suicidal risk through responses to the final question (Item 9) of the PHQ-9, which asks, "Over the past two weeks, how often have you been bothered by thoughts that you would be better off dead, or hurting yourself in some way?" Thoughts of death and self-harm measured through this question have been demonstrated to be a predictor of suicidal behavior and completed suicide, which is why we refer to it as a measure of suicidal ideation and suicidality (e.g., Uebelacker et al. 2011; Simon et al. 2013; Rossom et al. 2017). The question is also widely used as an indicator of suicidality in the epidemiologic literature and as a clinical assessment tool in behavioral health offices (Arenson et al. 2018).

For robustness, we use an additional screening tool for suicidality (Healthy Minds Network 2022), adapted from survey instruments by the National Comorbidity Survey replication (Kessler et al. 2004). The tool assesses the presence of self-reported suicidal ideation in the previous year, particularly thinking about suicide, making a plan, and attempting suicide. While we focus on PHQ-9 Item 9 results throughout the paper, both measures produce similar results.

A.4. LONELINESS: UCLA LONELINESS SCALE. We also assess loneliness, a psychological state that is closely related to several common mental health disorders (Mushtaq et al. 2014). We measure loneliness through a validated, three-question version of the UCLA Loneliness Scale, a tool utilized by the vast majority of studies on loneliness (e.g., Russell

et al. 1980; Oshagan and Allen 1992; Hughes et al. 2004). The UCLA Loneliness screen yields scores from 3 to 9, with 9 indicating a high degree of loneliness. Additional questions borrowed from other instruments, including the RAND American Working Conditions Survey and *Nature's* 2017 survey of graduate student work experiences, are discussed in depth throughout Section IV. Finally, respondents to the student survey also responded to a Brief Inventory of Thriving (BIT) questionnaire, which we included to track resilience. Analyzing the data, it became clear that the BIT scores tracked closely with PHQ-9 scores and did not appear to add additional insights. We thus do not include BIT analyses in this paper.

A.5. IMPOSTER PHENOMENON: CLANCE IMPOSTER PHENOMENON SCALE. Imposter phenomenon, first described by Clance and Imes (1978), is a condition in which one feels like a fraud and worries about being “found out.” Individuals experiencing imposter phenomenon do not believe that their success is due to their competence, but rather ascribe success to external factors such as luck. Those experiencing imposter phenomenon often experience fear, stress, self-doubt, and discomfort with their achievements. Imposter fears interfere with a person’s ability to accept and enjoy their abilities and achievements, and have a negative impact on emotional well-being (Sakulku 2011). Although imposter phenomenon is widely observed, certain populations tend to record higher imposter phenomenon scores based on variables including gender, race, socioeconomic status, and psychological well-being (Sakulku 2011). We measure imposter phenomenon through the Clance Imposter Phenomenon Scale (Clance and Imes 1978).

III. Data

A. SAMPLE SELECTION

We surveyed 14 European economics departments. The final list of participating institutions included Bocconi University, Bonn Graduate School of Economics, Central European University, European University Institute, London School of Economics, Mannheim Graduate School of Economics and Social Sciences, Paris School of Economics, Sciences Po, Stockholm School of Economics, University College London, Universitat Pompeu Fabra, University of Warwick, University of Zurich, and Uppsala Universitet.

The institutions in our sample are not a random sample of economics departments in Europe. First, we restricted our interest to economics departments that offer a cohort-style PhD program, where graduate students are admitted in cohorts to a graduate school, rather than following a chair-style model. As a result of our selection criteria, which was meant to improve comparability with other studies of graduate student mental health in the US, we contacted departments that are highly ranked among R1 research universities and often enroll relatively large cohorts. Departments actively chose to participate in the study.³ In addition to the selection of participating institutions, there is selection among graduate students and faculty who took the survey. To mitigate selection bias and reach a representative sample,

3 The full list of departments contacted, in addition to those participating, included Cambridge, CEMFI, Oxford, and the Toulouse School of Economics, for a total of 18 departments.

we worked closely with each department's administration and student groups to achieve high response rates, as shown in Table 1.

In total, 556 students (47.4 percent) and 255 faculty members (31.3 percent) voluntarily took the mental health surveys.⁴ The participation rate across departments ranges from 27.4 percent (LSE) to 75.8 percent (Zurich) among graduate students, and from 0 percent (Sciences Po) to 66 percent (Mannheim) among faculty. Working with administrators at each of the participating departments, we obtained administrative data on total enrollment, as well as gender breakdowns by program phase in the program.⁵ We additionally collected publicly available information on the number of faculty members from the department websites. To provide an additional layer of privacy protection and encourage survey completion, we did not collect any demographic data on our faculty respondents.

B. SAMPLE CHARACTERISTICS

For extensive demographic characteristics of our student sample, please see Table A.1 in the Online Appendix. Among our respondents, about 60 percent of students are male. Almost 88 percent are between 25 and 34 years old, with 70.4 percent having completed a two-year master's degree before starting their PhD. About 30 percent of students live alone, 56.7 percent are in a long-term relationship or married, and most students have no children (95.7 percent).⁶

Because the graduate students surveyed in Bolotnyy et al. (2022) (henceforth, "US study") are our most natural comparison and because voluntary participation in the study could induce differential selection, it is useful to compare response rates across the two samples. Our response rate is comparable, although slightly larger, among students: 47.4 percent in our sample versus 45.1 percent in the US study. In contrast, our response rate is slightly lower among faculty: 31.3 percent in our sample versus 42 percent in the US study. The lower response rate among faculty could be partly explained by the slightly longer survey tool, 15 minutes versus 5 minutes in the US study; by the fact that we also asked questions about mental health, a potential turnoff for some faculty; and because no faculty member from Sciences Po participated in our study.

The European and US samples are comparable in terms of gender composition (39.4 percent female in our study, 34.7 percent in the US study), tenure in the PhD program (57.6 percent of students in our study are in the dissertation phase, 63.7 percent in the US study), and sexual minority (10.6 percent identify as LGBTQI+ in our study, 9.2 percent in the US study). There are, however, some notable differences between our graduate student sample and the US study one.

4 At departments of the London School of Economics, University College London, Sciences Po, Mannheim, Bonn, and the European University Institute, students first opted into receiving our emails through a pre-study opt-in survey.

5 We consider two relevant phases: the course phase (normally consisting of one or two years when students primarily take classes, comparable to G1 and G2 years in the US) and the dissertation phase (normally lasting between two and four years, when students mainly focus on writing their dissertation, comparable to G3+ years in the US).

6 As mentioned above, we did not collect demographic characteristics for the faculty sample.

Students in our sample are older (26.9 percent are older than 30 years old, compared with 13.3 percent in the US). For most students (91.2 percent) in the European sample, English is not the first language (49.1 percent in the US), and 63.7 percent of the students are not native speakers of the country where their program is located (53.7 percent in the US). Racial representation is less diverse among our sample (77.9 percent White) than in the US sample (61.1 percent White), though our respondents are more diverse by nationality. The European sample is also characterized by a significantly higher share of first-generation students: 18.9 percent of respondents' fathers and 17.2 percent of respondents' mothers have only ever completed high school. The corresponding statistics for the US sample are 9.2 percent and 10.7 percent, respectively. Across the US more broadly, 65 percent of US-born economics PhD recipients between 2010 and 2018 had at least one parent with a graduate degree, higher than what we see in our sample (Schultz and Stansbury 2022). About 52.5 percent of European students start their PhD straight after finishing their bachelor's or master's degree.⁷ In the US study, 24.3 percent of respondents start the PhD right after finishing their bachelor's degree.

IV. Main Results

A. STUDENT MENTAL HEALTH

A.1. DEPRESSION. Among students in our sample, we find a prevalence of depressive symptoms that is larger than in nationally representative samples from many European countries at the peak of the first COVID-19 wave in March 2020 (Shevlin et al. 2022) and at subsequent moments of the pandemic.

We launched our survey in November 2021. At this point, 27.3 percent of our economics students scored in the moderate or severe symptom zone and were likely to have been diagnosed with depression upon seeing a mental health professional (Table 2). For comparison, about six months earlier, in April 2021, 23.8 percent of a representative sample of noninstitutionalized inhabitants (18+) from Germany, United Kingdom, Denmark, Netherlands, France, Portugal, and Italy had probable depression (European COVID Survey, Hajek et al. 2022).⁸ According to a meta-analysis conducted by Satinsky et al. (2021) based on data prior to the COVID-19 pandemic, the estimated proportion of PhD students experiencing depression was 24 percent. This estimate was based on 16 studies involving a total of 23,469 PhD students.

Narrowing our comparison sample to other economics graduate students, the prevalence of depressive symptoms we see is larger than the prevalence of comparable depressive

7 The question in our survey is as follows: "Did you go straight into this economics PhD program after completing your master's or undergraduate degree?"

8 Hajek et al. (2022) find evidence of a reduction in the prevalence of depression and anxiety symptoms from November 2020 to April 2021. If this trend continued, the prevalence of depression symptoms in April 2021 may overestimate the prevalence of depression symptoms in the general population at the time of our survey, November 2021.

TABLE 1. Eligible and study participants for the student and faculty surveys, by program

Programs	Total invited	Total responded	% responded	% of all responses
A. Student survey				
Bocconi University	61	45	73.8	8.1
Bonn Graduate School of Economics	117	60	51.3	10.8
Central European University	21	11	52.4	2.0
European University Institute	100	74	74.0	13.3
London School of Economics	135	37	27.4	6.7
Mannheim Graduate School of Economics	103	45	43.7	8.1
Paris School of Economics	144	53	36.8	9.5
Sciences Po	37	11	29.7	2.0
Stockholm School of Economics	37	14	37.8	2.5
Universitat Pompeu Fabra	97	36	37.1	6.5
University College London	87	33	37.9	5.9
University of Warwick	87	39	44.8	7.0
University of Zurich	95	72	75.8	12.9
Uppsala Universitet	52	26	50.0	4.7
Total	1,173	556	47.4	100
B. Faculty survey				
Bocconi University	44	18	40.9	7.1
Bonn Graduate School of Economics	52	10	19.2	3.9
Central European University	58	16	27.6	6.3
European University Institute	13	8	61.5	3.1
London School of Economics	71	31	43.7	12.2
Mannheim Graduate School of Economics	47	31	66.0	12.2
Paris School of Economics	139	20	14.4	7.8
Sciences Po	34	0	0.0	0.0
Stockholm School of Economics	28	11	39.3	4.3
Universitat Pompeu Fabra	140	28	20.0	11.0
University College London	64	27	42.2	10.6
University of Warwick	65	26	40.0	10.2

TABLE 1. *Continued*

Programs	Total invited	Total responded	% responded	% of all responses
University of Zurich	38	18	47.4	7.1
Uppsala Universitet	21	11	52.4	4.3
Total	814	255	31.3	100

Note: Panel A shows the total number of students invited to participate in the fall 2021 survey; the total number of students who took the survey and completed the depression and anxiety screening; the percentage of invited students who took the survey and completed the depression and anxiety screening; and the percentage of the entire sample represented by students from each program for each participating economics PhD program. Panel B shows the total number of faculty receiving the fall 2021 survey; the total number of faculty who took the survey; the percentage of invited faculty who took the survey; and the percentage of the entire sample represented by faculty from each program.

symptoms in the US study (17.7 percent). Similar to the US study, depression symptoms are more prevalent for those who are further along in their PhD program: The prevalence of moderate and severe depressive symptoms was 28.4 percent for students in the dissertation phase and 24.3 percent for students in the course phase (Table 2). The higher rate of depression in the dissertation phase is driven by students in years 6 and above, as shown in Figure 4.

As in the US study, minority status does not unequivocally predict higher depression rates. Women (28.2 percent) and non-White students (29.3 percent) are slightly more likely than the average student to be experiencing such symptoms, while first-generation students show a slightly lower (25.7 percent) prevalence of symptoms compared with the average student. Students who report being gay, lesbian, or bisexual, and non-White are particularly afflicted, with a prevalence rate of 42.6 percent (Table 3).

A.2. ANXIETY. Anxiety symptoms in our sample are also substantially higher than in the general population and higher than in the US study.

The overall prevalence rate for severe and moderate anxiety symptoms is 25.9 percent (Table 2), which is higher than the corresponding prevalence among the Hajek et al. (2022) representative sample of the European population in April 2021 (22.1 percent), among the graduate student sample of the US study (17.6 percent), and in a meta-analysis by Satinsky et al. (2021) of nine studies, pre-pandemic, across 15,626 students (17 percent).

Female students (27.7 percent) are more likely than male students (24.2 percent) to be experiencing serious symptoms of anxiety. As in the case of depressive symptom prevalence, differences in sample composition are unlikely to explain the larger levels of anxiety symptom prevalence in the European sample as compared with the US sample. Indeed, first-generation (21.1 percent) students, who are a larger share of the sample in the European than the US study, fare better than the average student, while minority (29.3 percent) students fare worse (Table 3). Different from the depression results, and similar to the US study, LGBTQI+ students (26.2 percent) show only slightly larger prevalence rates of anxiety relative to the average student.

TABLE 2. Student survey: Mental health issues, diagnoses, and treatment, by program phase [%]

	Program phase				Upper and lower bounds			
	All	Course phase	Dissertation phase	Phase wgt.	Lower est.	Upper est.	Min. dept. mean	Max. dept. mean
A. Mental health issue prevalence								
Depression	27.3	24.3	28.4	27.3	13.3	64.7	14.3	38.9
Anxiety	25.9	28.6	24.4	25.6	12.6	64.0	7.1	36.4
Depression or anxiety	34.7	36.5	33.8	34.5	16.9	68.3	21.4	42.2
Suicidality 2-weeks	17.3	14.3	18.8	17.6	8.4	59.8	0.0	27.8
Suicidal thought 1-year	11.0	9.0	12.5	11.5	5.4	56.8	0.0	21.6
Suicidal plan 1-year	1.8	1.1	1.6	1.5	0.9	52.3	0.0	10.3
Suicidal attempt 1-year	0.4	0.5	0.0	0.1	0.2	51.6	0.0	2.2

B. Diagnoses and treatment

Diagnosed, pre-program	14.7	18.5	12.5	14.2	7.2	58.6	6.7	24.2
Diagnosed, during program	9.7	6.9	11.3	10.1	4.7	56.1	0.0	17.0
In treatment for any mental illness	12.4	12.2	12.8	12.6	6.0	57.4	0.0	22.6
Of those w/ moderate to severe depression or anxiety, % in treatment	19.2	11.6	22.2	19.3	9.3	60.7	0.0	46.7

Note: Panel A shows the percentage of students who score above critical thresholds on mental health survey instruments, by program phase. Depression and anxiety show those scoring 10 or higher on the PHQ-9 and GAD-7, respectively. Suicidality 2-weeks captures individuals reporting contemplating suicide or self-harm on at least several days in the past two weeks, as measured by Item 9 on the PHQ-9. The phase wgt. column weights each prevalence rate based on the typical cohort sizes for the course phase and the total number of enrolled students in the programs we survey. We calculate the weights based on data provided by a subsample of departments and assume the same weights for all departments in the sample. The lower est. column provides lower bound estimates (assuming that all who do not participate in the study score below critical thresholds), and the upper est. column provides upper bound estimates (assuming that all who do not participate in the study score above critical thresholds). The min. dept. mean and max. dept. mean columns give the minimum and maximum of means by departments, respectively. For robustness, we use an additional screening tool for suicidality used by the Healthy Minds Study (Healthy Minds Network 2022), adapted from survey instruments by the National Comorbidity Survey replication (Kessler et al. 2004). The tool assesses the presence of self-reported suicidal ideation in the previous year, particularly thinking about suicide, making a plan, and attempting suicide. Panel B shows the percentage of students who report being diagnosed by a mental health professional with some form of mental illness, either before or during the PhD program, by program phase. We also show the percentage of students who are in treatment for any mental illness and the percentage of those with moderate or severe symptoms of depression or anxiety (PHQ-9 ≥ 10 or GAD-7 ≥ 10) who are in treatment.

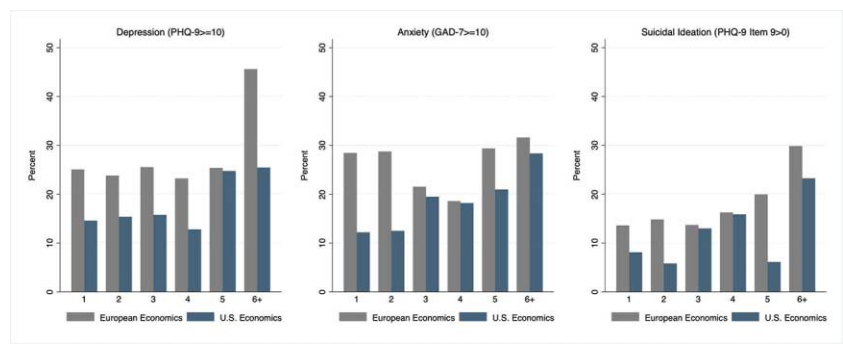


FIGURE 4. Prevalence of symptoms by year in graduate program in US and European studies. PHQ-9 measures symptoms of depression. GAD-7 measures symptoms of anxiety. Symptom intensity increases as PHQ-9 and GAD-7 scores increase. Mental health professionals use a score of 10 on the PHQ-9 and the GAD-7 as a cutoff when diagnosing individuals with depression or anxiety disorder, respectively. The PHQ-9 Item 9 measures suicidality by asking how many days over the past two weeks a student was bothered by thoughts of wanting to be dead or wanting to hurt themselves. We show here the percentage of students scoring 10 or higher on the PHQ-9 and GAD-7, and the percentage of students bothered by suicidal thoughts in a two-week period. The x-axis shows year in the graduate program. Source: Results for US economics students come from Bolotnyy et al. (2022).

In contrast to the US sample, European graduate students in the dissertation phase, that is, more senior graduate students, exhibit lower levels of anxiety (24.4 percent) compared with students in the course phase, that is, graduate students in the initial years of their program (28.6 percent), as shown in Table 2. Upon closer examination of the data, we observe a U-shaped trend in anxiety levels among European graduate students by year (Figure 4). This finding is in contrast to the linear increasing trend highlighted by Bolotnyy et al. (2022) in the US. The notably high levels of anxiety in the first two years of the program in Europe may be a result of the COVID-19 pandemic. However, they could also reflect stricter requirements for passing the course phase in European departments, similar to past requirements in US PhD programs.

A.3. SUICIDALITY. We found that 17.3 percent of students (96 people) report frequently thinking of committing suicide or self-harm in the two weeks before taking the survey (Table 2), a larger share than in the US study (11 percent). Focusing on suicidal thoughts in the one-year period before our survey, 11 percent of European economics PhD students thought seriously about suicide and 1.8 percent of students planned a suicide attempt. The COVID-19 pandemic could be a risk factor for higher levels of suicidal thoughts or behaviors. A review of published data worldwide on the consequences of suicidal behavior in the first six months of the COVID-19 pandemic found that the percentage of the population with suicidal or self-harm ideation in that period was 5–15 percent (Giner et al. 2022). Thus, the frequency of suicidal or self-harm ideation in our sample appears larger than the upper bound of general population estimates at the onset of the pandemic.

TABLE 3. Student survey: Percentage of students scoring above critical thresholds

Category	Depression	Anxiety	Suicidality 2-weeks	Suicidal thought 1-yr.	Suicidal plan 1-yr.	Suicidal attempt 1-yr.
All (%)	27.3	25.9	17.3	11.0	1.8	0.4
Male (%)	24.8	24.2	17.3	11.1	2.0	0.3
Female (%)	28.2	27.7	14.9	10.4	0.5	0.0
All gender wgt. (%)	25.9	25.3	16.5	10.9	1.5	0.2
Diff. male & female <i>p</i> -value	0.456	0.429	0.539	0.914	0.318	0.834
Minority race (%)	29.3	29.3	17.3	12.8	3.0	0.0
Diff. w/ White <i>p</i> -value	0.373	0.309	0.786	0.560	0.150	0.589
Minority sexuality (%)	42.6	26.2	24.6	23.0	3.3	0.0
Diff. w/ heterosexual <i>p</i> -value	0.005	0.892	0.103	0.003	0.439	0.241
First generation (%)	25.7	21.1	12.8	9.2	2.8	0.0
Diff. w/ non-first gen. <i>p</i> -value	0.923	0.262	0.301	0.580	0.346	0.482

Note: Table shows percentage of students scoring above thresholds for mental health concern. Depression and anxiety show those scoring 10 or higher on the PHQ-9 and GAD-7, respectively. Suicidality 2-weeks are those reporting contemplating suicide or self-harm on at least several days in the past two weeks, as captured by Item 9 on the PHQ-9. Suicidal thought 1-year, suicidal plan 1-year, and suicidal attempt 1-year are those having thought about, made a plan, or attempted a suicide in the past year. The all gender wgt. row weights each prevalence rate based on the gender breakdown of students enrolled in the programs we survey. We calculate the weights based on data provided by a subsample of departments and assume the same weights for all departments in the sample. Students classified as minority race are those who select at least one non-White race (Black or African American, Hispanic or Latino, Asian or Asian American, Native Hawaiian or other Pacific Islander, American Indian or Alaska Native). Students classified as minority sexuality are those who select bisexual or gay or lesbian as their sexual orientation. Students with a father or mother with high school or less as the highest level of educational attainment are included in the first-generation category. The *p*-values for chi-squared tests of differences are also reported, showing levels of statistical significance for relationships between mental health and gender, race, sexual orientation, and parent education level.

There is, however, heterogeneity by student characteristics. Though the differences are not statistically significant, men (17.3 percent) are more likely than women (14.9 percent) to have scores of concern on the PHQ-9 Item 9, which measures suicidal and self-harm ideation. As in the US study, LGBTQI+ students (24.6 percent) exhibit especially high prevalence rates of suicidal ideation (Table 3). The patterns in the data are very similar when considering other measures of suicidality.

A.4. LONELINESS. Our sample revealed a high prevalence of loneliness among graduate students. The rates in our sample were comparable to the rates observed in the US study and were above average relative to the US population.

The mean score on the three-item UCLA Loneliness Scale was 5.3, with a standard deviation of 1.9. The prevalence of loneliness in our sample is comparable to the prevalence of loneliness among the sample of graduate students in the US study, where the mean score was 5.2. A total of 9.7 percent of respondents scored 9 on the UCLA Loneliness Scale, meaning that they feel a high degree of loneliness, that is, the respondent often lacks companionship, often feels left out, and often feels isolated from others (Table 4).

TABLE 4. Student survey: UCLA Loneliness

	Percent
A. Questions and answers	
How often do you feel you lack companionship?	
Hardly ever (1)	46.8
Some of the time (2)	32.7
Often (3)	20.6
How often do you feel left out?	
Hardly ever (1)	42.2
Some of the time (2)	40.4
Often (3)	17.5
How often do you feel isolated from others?	
Hardly ever (1)	38.9
Some of the time (2)	42.2
Often (3)	18.9
B. Distribution of scores	
3	23.6
4	19.0
5	14.3
6	17.1
7	9.2
8	7.0
9	9.7

Note: Panel A shows the questions and answers. A higher response value indicates greater loneliness. Panel B shows the distribution of the UCLA Loneliness score. The UCLA Loneliness screen yields a score ranging from 3 to 9. A score of 9 indicates a high degree of loneliness. For exact question wording, see the survey instrument in Online Appendix B1.

A.5. IMPOSTER PHENOMENON. Feelings of not being good enough or being an imposter are pronounced in our sample; 59 percent of students experience frequent or intense imposter phenomenon symptoms (Table 5, panel A). A similar fraction of graduate students (61 percent) experienced frequent or intense imposter phenomenon symptoms in the US study. In our sample, 93.1 percent of students experience moderate, frequent, or intense imposter phenomenon.

In a 2020 study across graduate programs at Harvard University, the percentage of students experiencing frequent or intense imposter phenomenon symptoms ranged across

TABLE 5. Student survey: Imposter phenomenon (IP)

A. Imposter phenomenon distribution	Percent		
Low IP	6.8		
Moderate IP	34.1		
Frequent IP	38.0		
Intense IP	21.0		
B. Imposter phenomenon by demographics	IP score mean	% frequent IP	% intense IP
Male	62.43	36.7	15.7
Female	69.75	41.8	28.9
Diff. male-female <i>p</i> -value	0.000	0.293	0.001
Nonminority race	64.64	34.8	21.1
Minority race	65.94	42.0	20.6
Diff. w/ White <i>p</i> -value	0.449	0.188	1.000
Nonminority sexuality	64.42	36.9	20.2
Minority sexuality	72.26	49.2	27.9
Diff. w/ heterosexual <i>p</i> -value	0.000	0.086	0.229
Non-first generation	65.94	40.7	22.2
First generation	65.24	38.1	20.6
Diff. w/ non-first gen. <i>p</i> -value	0.694	0.692	0.823

Note: The Clance Imposter Phenomenon screen includes 20 questions and provides a score of between 20 and 100. Scores are grouped into four categories representing the degree to which the individual experiences feeling like an imposter (few, moderate, frequent, intense). If the total score is 40 or less, the respondent has few imposter characteristics; if the score is between 41 and 60, the respondent has moderate IP experiences; a score between 61 and 80 means the respondent frequently has imposter feelings; and a score higher than 80 means the respondent often has intense IP experiences. Panel A shows the percentage of respondents falling into each IP category. Panel B shows the mean of the imposter phenomenon score and the percentage of students who fall into the frequent IP and intense IP category by demographic group. For exact question wording, see the survey instrument in Online Appendix B1.

programs from 49.4 percent to 78.9 percent, putting economics roughly in the middle of the range (Dench et al. 2020). The Harvard report underscores that such symptoms are more prevalent among underrepresented minority, LGBTQI+, first-generation, and low-income students.

Our setting confirms that LGBTQI+ students experience a stronger incidence of imposter phenomenon. Panel B of Table 5 shows, for example, that 49.2 percent of LGBTQI+ students face frequent imposter phenomenon compared with 36.9 percent of non-LGBTQI+ students. In contrast to findings in the Harvard graduate program setting, women face higher rates of imposter phenomenon than men: 28.9 percent of women face intense imposter phenomenon and 41.8 percent of women face frequent imposter phenomenon, compared with 15.7 percent and 36.7 percent of men, respectively. We do not find a significant difference in imposter phenomenon prevalence by racial minority and first-generation status.

A.6. DIAGNOSES. In our study, 24.4 percent of economics students report having been diagnosed by a professional with a mental illness: 14.7 percent before starting their PhD program and another 9.7 percent after starting their program (Table 2). For comparison, a similar rate (25 percent) of graduate students in the US study had been diagnosed by a mental health professional before or during the program.

Graduate students in the dissertation phase—that is, more senior graduate students—have a lower probability of being diagnosed pre-program (12.5 percent) than graduate students in the course phase (18.5 percent), that is, less senior graduate students. Students in the dissertation phase have a higher probability of having been diagnosed during the program (11.3 percent) than students in the course phase (6.9 percent).

The fact that younger students are more likely to have been diagnosed pre-program may indicate improved access to mental health professionals among younger cohorts, which may also be related to the COVID-19 pandemic. The fact that older students are more likely to be diagnosed during the program could be mechanical, but it may also be due to either students being more likely to seek help the longer they are in the program and/or students further into their program being more likely to suffer from mental health issues. The latter explanation would be consistent with our results in Figure 4 and data from the US study, showing that the prevalence of depression and anxiety increases with seniority in the graduate program. In a related study leveraging administrative medical records in Sweden, Keloharju et al. (2022) also find an increase in depression or anxiety diagnoses for PhD students once they start their programs.

As noted before, the main difference in mental health trends over the course of the program years, between the US and Europe, is the very high levels of anxiety in the first two years of the program in Europe, as shown in Figure 4.⁹ Also different from the US study, graduate students diagnosed with mental health issues during the PhD program are not more likely to have worse mental health today than those diagnosed before the PhD program.

Online Appendix Table A.3 reports that of those students who were diagnosed in graduate school, 50.0 percent experience moderate or severe symptoms of depression; among

9 Note that having a diagnosed mental illness is different from experiencing moderate or severe symptoms of that illness. Diagnosis and proper treatment can reduce symptom severity.

students who were diagnosed before graduate school, the percentage is about 52.4 percent. Of those students who were diagnosed in graduate school, 25.9 percent have contemplated suicide in a two-week period; of those who were diagnosed before the PhD, 30.5 percent contemplated suicide in the same two-week period. This small difference could be explained through selection—those diagnosed before the PhD have worse mental health—or the correlation of years in the program, mental health concerns, and diagnosis during the program.

A.7. TREATMENT. Among our European graduate students, 12.4 percent are currently in treatment for some mental health issue, with the percentage only rising mildly with tenure in the program: from 12.2 percent in the course phase to 12.8 percent in the dissertation phase (Table 2). Treatment rates are low with respect to students in the US study and students in other studies of graduate student mental health (Woolston 2022). In the US study, despite the lower prevalence of mental health issues, on average 14.9 percent of students are in treatment for mental illness. In the 2022 *Nature* graduate student sample, about 30 percent of respondents report that they have already received help for anxiety or depression caused by their graduate school work and another 21 percent say they want help but have yet to receive it. In a study on PhD student mental health in Sweden using administrative records, Keloharju et al. (2022) find that 7 percent of students receive medication or diagnosis of depression in a given year (5 percent for anxiety), validating the relatively low rates of students in our whole sample who say they are in treatment.

Zooming in on those students with moderate or severe mental health issues, the share receiving treatment is higher (19.2 percent) than for the sample overall. The share is also rising with tenure in the graduate program, from 11.6 percent in the course phase to 22.2 percent in the dissertation phase. Overall, however, these percentages are still lower than the US study average of 25.2 percent (Bolotnyy et al. 2022). One finding in the seemingly opposite direction is that, when focusing only on students with severe symptoms of depression, the percentage of graduate students in treatment is about twice as large in the European sample (47.1 percent) as in the US one (28.6 percent), as shown in Online Appendix Table A.3. However, this outlier can be explained by (1) a small sample size for those with severe depression in Europe and by (2) the cutoff for the severity of depression. While 47.1 percent of students with severe depression are in treatment, only 3.6 percent of students with moderately severe depression are in treatment, compared with 18.2 percent in the US. We do not see a discrepancy in treatment for those students experiencing severe symptoms of anxiety between the US and European sample. The share in treatment of those with severe symptoms of anxiety is comparable in the European (18.8 percent) and US (18.2 percent) samples. Finally, only 21.9 percent of those students (96) who report contemplating suicide or self-harm within a two-week period are currently receiving some form of treatment. Again, the percentage of students who receive treatment conditional on reporting suicidal ideation is lower than the percentage in the US study (26.8 percent).

While we cannot make definitive statements on the reasons behind the lower rates of treatment in the European sample as compared with the US sample, certain survey responses point to European students facing higher barriers to using mental health services than US students. Of European economics graduate students, 25.6 percent say that they would not know where to turn for help if experiencing a mental health issue, a share that is about two times higher than in the US study (12.9 percent) (see Table 6). Only 31.8 percent of

TABLE 6. Student survey: Help with mental health and advising (%)

Question	Answer	Mean	Min. dept. mean	Max. dept. mean
If issue with mental health, would you know where to turn for help?	Yes	74.4	61.1	84.6
	No	25.6	17.8	38.9
If issue with advising, would you know where to turn for help?	Yes	48.0	20.6	84.0
	No	52.0	23.1	79.4

Note: A higher response value indicates knowing where to turn for help. Min. and max. give the minimum and maximum values of the average by department. For exact question wording, see the survey instrument in Online Appendix B1.

students in the European sample feel encouraged to speak up about potential mental health issues, and 37.7 percent report being encouraged to seek departmental support for mental health concerns (see Online Appendix Table A.9).

B. FACULTY MENTAL HEALTH

The prevalence of depressive symptoms in our faculty sample is lower than in our graduate student sample. About 11.6 percent of faculty experience moderate to severe symptoms of depression (Table 7). Symptoms of anxiety are also less common, with 11.9 percent of faculty experiencing moderate to severe symptoms of anxiety. Overall, about 15.8 percent are experiencing moderate to severe symptoms of depression or anxiety. Focusing on the last item of the PHQ-9 scale, we find 6.1 percent of the faculty (10 people) reporting frequently thinking of suicide or self-harm in the past two weeks (Table 7).

The average prevalence of depression and anxiety in our sample masks a sizable heterogeneity by seniority. In particular, we observe significant and large differences in the prevalence of depressive symptoms between tenured and untenured tenure-track faculty:

TABLE 7. Faculty survey: Mental health issues (%)

	Tenure track	Nontenure track	Tenured	All
Depression	25.7	28.6	6.2	11.6
Anxiety	20.6	28.6	8.0	11.9
Depression or anxiety	31.4	42.9	9.6	15.8
Suicidality 2-weeks	8.6	0.0	6.1	6.1

Note: Table shows the percentage of faculty who score above critical thresholds on mental health survey instruments. Depression and anxiety rows show those scoring 10 or higher on the PHQ-9 and GAD-7, respectively. Suicidality 2-weeks are those reporting contemplating suicide or self-harm on at least several days in the past two weeks, as captured by Item 9 on the PHQ-9. The columns indicate the percentage of tenure track, nontenure track, and tenured faculty scoring above the critical value for depression, anxiety, depression or anxiety, and suicidality.

31.4 percent of untenured tenure-track faculty and 42.9 percent of nontenure track untenured faculty such as postdoctoral fellows experience moderate to severe depression or anxiety symptoms compared with 9.6 percent of the already tenured faculty. The depression and anxiety prevalence rates we find among untenured faculty are comparable to or larger than those of graduate students in our sample.

The prevalence of depression and anxiety symptoms among untenured faculty is also larger than nationally representative equivalents from many European countries at the peak of the first COVID-19 wave (March 2020; Shevlin et al. 2022) and at subsequent moments of the pandemic (November 2021, January 2021, and April 2021; Hajek et al. 2022). In contrast, depression and anxiety rates among our sample of tenured faculty are much lower than overall European population rates (about 20–25 percent) at the peak of the COVID-19 pandemic. For reference, the prevalence of depressive disorder symptoms in 27 European countries was estimated to be about 6.8 percent before the pandemic (Arias de la Torre et al. 2021).

C. WORK EXPERIENCES

Bolotnyy et al. (2022) use the 2015 RAND American Working Conditions Survey (Maestas et al. 2015) to get an overview of the work environment in US economics departments and a sense of how it compares with what Americans generally experience in their jobs. We use the RAND survey questions in our survey of students and faculty to similarly understand the work experiences of our respondents and draw comparisons with the US. We additionally ask a set of questions on stress factors, which were not asked in the US study. We summarize the stress factor statistics in Table 8 and the RAND survey question results in Table 9.

C.1. GRADUATE STUDENTS. Our data reveal that the European economics PhD programs in our sample appear to be similar, and in some instances worse, than top US departments in the frequency with which graduate students experience satisfaction, usefulness, and meaningfulness.

Compared with students in the US sample, graduate students in our European sample report lower job satisfaction and lower satisfaction with their PhD experience (Figure 2). In our study, 33.8 percent of students report experiencing satisfaction of work well done always or most of the time (Table 9), compared with 37 percent in the US study. The job satisfaction rate among graduate students in the US study was lower than the average job satisfaction of American men and women with a college degree between the ages of 25 and 35 (Bolotnyy et al. 2022).

On metrics of usefulness, the two samples appear relatively comparable. For example, 24 percent of graduate students in our sample report experiencing the feeling of doing useful work always or most of the time, and fewer than 20 percent of students feel that they have opportunities to make a positive impact on their community or society. These numbers are similar to the rates for graduate students in the US study, which again were lower than the equivalent rates in the general US population. Additionally, about one student out of two (48.6 percent) feels they have opportunities to fully use their talents always or most of the time.

For most students in the European sample, making time for their personal life (77 percent, either somewhat or extensively), balancing academic work with other responsibilities (85.7 percent), and managing their time (91.4 percent) are a source of stress (Table 8). This suggests that graduate students in our sample struggle with work-life balance. In fact, many students report having more to do than they can comfortably handle (62.9 percent) and feel

TABLE 8. Student stressors: Extent to which the following had been source of stress during past year (%)

Questions and answers	Not at all	Somewhat	Extensive
Making time for my personal life	23.0	45.6	31.4
Balancing academic work with other responsibilities	14.3	46.6	39.1
Managing my time	8.6	39.1	52.3
Managing my relationship with my adviser	43.4	38.1	18.5
Managing personal relationships at home	41.9	37.1	21.0
Managing relationships with peers in my department/lab	60.9	30.9	8.2
Finding a job after graduate school	20.2	29.4	50.4
Tenure status of adviser	84.7	12.4	2.9
Managing relationships with faculty in the department	46.3	42.8	10.9
Finding funding	56.6	24.3	19.1
Being unsure of what is expected of me by my adviser	31.0	46.6	22.4
Passing my qualifying exams	34.5	23.3	42.2
Finding a dissertation topic	16.2	37.6	46.2
Putting together a dissertation committee	46.8	35.5	17.7
Finishing my dissertation	17.2	34.4	48.5
Financial difficulties	58.7	27.5	13.8
Paying off debt/loans	86.3	10.3	3.4
Food insecurity	95.6	2.9	1.5
World events (politics, climate issues, COVID-19, etc.)	18.9	48.3	32.8
Access to safe and affordable housing	69.1	21.7	9.2
Personal health issues	55.0	33.3	11.8
Issues pertaining to visas	77.0	13.3	9.7
Other	60.0	10.0	30.0

Note: Responses show to what extent each of the listed items were sources of stress during the previous year. A higher response value indicates a respondent experienced more of each type of situation. For exact question wording, see the survey instrument in Online Appendix B1.

like they cannot say no when being asked to take on more responsibilities within the department (35.9 percent) (Table 10).

Another relevant source of stress comes from uncertainty in the advising relationship (Table 8). Students find it stressful, somewhat or extensively, to manage their relationship with their adviser (56.6 percent), as well as other faculty in the department (53.7 percent). In addition, 69 percent of students stress about being unsure of what advisers expect from them. Overall, stress derived from work-life balance and one’s relationship with faculty is comparable to the stress graduate students feel as a result of world events, such as the COVID-19 pandemic. We further investigate the relationship between students and advisers in Section IV.D.

Another major stressor for graduate students in our sample is finding a job after graduation. Indeed, more than half (50.4 percent) of graduate students in our sample experienced finding a job after graduate school as an extensive stressor in the previous year. Online Appendix Table A.4 shows that 40.1 percent of students who experience finding a job after graduate school as an extensive stressor experience moderate to severe symptoms of depression, and 34.3 percent experience moderate to severe symptoms of anxiety. In contrast, of those who do not experience the job search as a major stressor at all, only 12.7 percent score above the critical PHQ-9 threshold and 18.2 percent above the critical GAD-7 threshold. This difference suggests that finding a job after graduate school could contribute to depression and anxiety prevalence and/or that students who are prone to symptoms of depression and anxiety are also experiencing some of the highest levels of stress related to finding a job after graduate school.

C.2. FACULTY. Faculty in our sample and faculty in the US study sample share many work experiences, but show differences in levels of job satisfaction and financial security. The data indicate that while on average economics faculty in the sampled European departments report higher levels of job satisfaction compared with graduate students in the same departments, their job satisfaction is lower than that of economics faculty in top US departments: 54.5 percent of European economics faculty in our sample report experiencing satisfaction of work well done always or most of the time (Online Appendix Table A.5), compared with 77 percent among faculty in the US study. Similarly, 54.2 percent of our faculty report experiencing the feeling of doing useful work always or most of the time, compared with 70 percent of faculty respondents in the US sample and 63 percent of the entire US working age population. Only 44.3 percent of faculty in our sample feel that they have opportunities to make a positive impact on their community or society always or most of the time, compared with 58 percent of faculty in the US sample and 53 percent of the US working age population. Finally, 69.1 percent of faculty in our sample feel they have opportunities to fully use their talents always or most of the time, compared with 85 percent of faculty in the US study.

European faculty members also face more difficulties in making ends meet financially, with 23 percent of them struggling to do so always or most of the time, compared with only 0.5 percent in the US sample. In terms of work-life balance, the faculty members in our European sample are comparable to those in the US study. About 51 percent of faculty in our European sample report worrying about work when they are not working, which is similar to the 60 percent reported by US faculty. Additionally, 18.3 percent of European faculty members find themselves too tired for activities in their private lives most of the time, in line with the 20.1 percent rate among US faculty (Online Appendix Table A.6).

It is worth noting that only 1.2 percent of faculty members reported that work has prevented them from spending time with family or significant others always or most of the time, whereas 22 percent of faculty members in the US study sample indicated it did.

D. STUDENT RELATIONSHIPS WITH PEERS AND ADVISERS

To learn more about the economics PhD environment, we asked students detailed questions about their interactions with their peers and advisers. While students report positive impressions overall, the majority of students are uncomfortable engaging in seminars and many do not communicate honestly and effectively with their advisers.

TABLE 9. Student survey: RAND meaningfulness of work

Questions and answers	Percent
Opportunities to fully use your talents	
Always	6.2
Most of the time	42.4
Sometimes	39.0
Rarely	10.8
Never	1.6
Opportunities to make positive impact on community/society	
Always	3.9
Most of the time	14.8
Sometimes	38.1
Rarely	29.4
Never	13.8
Sense of personal accomplishment	
Always	5.3
Most of the time	27.4
Sometimes	43.8
Rarely	19.0
Never	4.5
Goals to aspire to	
Always	13.1
Most of the time	35.4
Sometimes	33.2
Rarely	15.0
Never	3.3
Satisfaction of work well done	
Always	5.6
Most of the time	28.2
Sometimes	40.6
Rarely	20.3
Never	5.2
Feeling of doing useful work	
Always	4.1
Most of the time	19.9
Sometimes	40.6

TABLE 9. *Continued*

Questions and answers	Percent
Rarely	27.3
Never	8.0

Note: These questions were borrowed from the RAND American Working Conditions Survey (Maestas et al. 2015). A higher response value indicates a respondent's work provides more of each question item. For exact question wording, see the survey instrument in Online Appendix B1.

As we show in Table 11, most students have friendly relationships with other graduate students in their department (66 percent strongly agree). We found that 76.9 percent of students believe, strongly or slightly, that peers in their department care about their mental health and 88.4 percent strongly or slightly agree that there is at least one peer in their department they can turn to if they need help. Still, a sizable number of students feel isolated and out of place. In our study, 10.5 percent of students disagree strongly or slightly that they have a personal support network that can help them through mental health challenges. Among student respondents, 5.6 percent say they have zero people in their personal life to whom they can talk about their most private feelings (5.8 percent in the US sample), and another 11 percent say that there is only one person in their personal life with whom they can be so open

TABLE 10. Learning environment for students: Work-life balance

Questions and answers	Percent
I feel like I have more to do than I can comfortably handle.	
Strongly disagree	4.2
Slightly disagree	15.4
Neither agree nor disagree	17.5
Slightly agree	32.6
Strongly agree	30.3
I feel like I can't say no to others in my department when being asked to take on more work responsibilities than I am comfortable with.	
Strongly disagree	14.6
Slightly disagree	24.5
Neither agree nor disagree	25.0
Slightly agree	27.6
Strongly agree	8.3

Note: A higher response value indicates greater feeling of good work-life balance. For exact question wording, see the survey instrument in Online Appendix B1.

TABLE 11. Student survey: Social sources of support (%)

Questions and answers	Percent	Min. dept. mean	Max. dept. mean
About how many people do you have in your personal life that you can really open up to about your most private feelings without having to hold back?			
0	5.6	0.0	14.7
1	11.0	0.0	20.0
2 to 5	59.4	45.7	70.0
6 to 10	19.7	4.2	39.2
11 or more	4.3	0.0	14.3
When you have a problem or worry, how often do you let someone in your personal life know about it?			
Never	2.1	0.0	8.6
Rarely	20.2	4.2	32.6
Sometimes	27.7	20.0	45.8
Often	30.9	18.2	40.0
Very often	19.1	0.0	36.4
I have friendly relationships with other graduate students in my department.			
Strongly disagree	1.5	0.0	6.7
Slightly disagree	4.1	0.0	30.0
Neither agree nor disagree	5.1	0.0	20.0
Slightly agree	23.3	10.0	42.9
Strongly agree	66.0	40.0	79.5
I have friendly relationships with other graduate students outside of my department.			
Strongly disagree	19.1	0.0	44.4
Slightly disagree	10.0	0.0	22.9
Neither agree nor disagree	17.2	7.7	33.3
Slightly agree	22.1	9.1	38.5
Strongly agree	31.7	2.9	46.2
There is at least one peer in my department to whom I feel like I can turn if I need help.			
Strongly disagree	4.1	0	11.8
Slightly disagree	3.4	0	20
Neither agree nor disagree	4.1	0	10
Slightly agree	17.5	5.9	42.9
Strongly agree	70.9	40.0	84.9

TABLE 11. *Continued*

Questions and answers	Percent	Min. dept. mean	Max. dept. mean
I have a personal support network (at my university or elsewhere) to help me through mental health challenges.			
Strongly disagree	4.5	0	11.4
Slightly disagree	6.0	0	20.0
Neither agree nor disagree	9.4	4.2	17.2
Slightly agree	24.8	14.3	40.0
Strongly agree	55.3	31.4	70.8
I believe that my peers in my department care about my mental health and well-being.			
Strongly disagree	3.6	0	8.6
Slightly disagree	6.2	0	20.0
Neither agree nor disagree	13.3	0	40.0
Slightly agree	29.5	13.3	36.4
Strongly agree	47.4	20.0	64.3

Note: A higher response rate indicates more people to open up to, more frequently letting someone know about a problem, more friendly relationships at the department, more friendly relationships outside of the department, having a peer at the department to turn to for help, having a personal support network, and higher perception that the department cares about mental health. For exact question wording, see the survey instrument in Online Appendix B1.

(14.6 percent in the US sample). A share of 20.6 percent of students say they often lack companionship, and 18.9 percent say they often feel isolated from others (Table 4).

Although these numbers indicate some level of isolation among graduate students, they are not sufficient to explain the stark differences in mental health outcomes between US and European departments. Indeed, students in both regions generally maintain positive relationships with their peers. Moreover, despite the impact of the COVID-19 pandemic, European students seem to have stronger peer support networks than their US counterparts. Given that peer interactions do not seem to be the primary driver of mental health issue differences between graduate students from European and US departments, we investigate other factors that could be contributing to the differences.

Looking at the general learning environment, we find that about 22.9 percent of male students and 45.3 percent of female students feel uncomfortable voicing a thought in a seminar setting (Online Appendix Table A.7). Only 7 percent of female students feel very comfortable in doing so, compared with 13.1 percent of male students. These numbers are comparable with the US study.

With regards to students' relationships with their advisers, in our European sample 9.9 percent of students have not met with their main adviser in the past two months (Table 12). In the US study, the number of graduate students who did not meet with their main adviser at all was lower, 4.4 percent. Importantly, the average hides sizable in-sample heterogeneity, with one department having 23.3 percent of students who did not meet at all with their adviser in the two months before our study. Notably, 57.9 percent of students believe, more or less strongly, that the number of advising meetings they have is sufficient to meet their needs, and for 25.3 percent of students the number of meetings is too few. Moreover, 30.2 percent of students feel that they do not receive enough feedback to understand whether they are on track with their progress (Table 13). Overall, this suggests that the lower number of adviser-advisee meetings reported by students in the European sample is not just explained by a lower demand from the student side.

Advising relationships are directly related to student mental health (Hyun et al. 2006). In the US study, students who talk to faculty that care about their success and care about them as a person have better mental health than students who do not. In our sample, as summarized in Table 14, 29.9 percent of students believe that the faculty in their department do not care about their mental health and well-being, 22.4 percent of students do not have a faculty member from whom they feel they can seek advice and guidance, and 26.2 percent believe that faculty would not be supportive of them if they were facing mental health or well-being issues. Altogether, 46.4 percent of students feel that their mental health has a negative effect on their progress in the PhD program (Table 13). More than half of students, 52 percent, report that they would not know where to turn for help if they were facing issues with advising (Table 6). The latter number is heterogeneous across departments, with one department having as many as 79.4 percent of students who would not know where to turn for help with advising issues.

Another relevant area of student-faculty interaction is the preparation for postgraduate life (Table 15). In our European sample, most students (71.7 percent) agree that faculty are aware of the challenges facing current students entering the job market. However, 19.1 percent of students disagree strongly or slightly that there are professional development opportunities in the department to prepare them for the job search. Almost a third of students in our study, 30.2 percent, say that faculty are not proactively helping students to develop professional networks. Concerning the nature of the job-market conversation with advisers, 30.1 percent of students would not feel comfortable discussing plans for a career outside academia with their advisers (Table 14). This number is similar to the share of students, 25.7 percent, that do not feel like they can be honest when discussing other personal life issues with their advisers (Online Appendix Table A.8).

More generally, most students (57 percent) agree that there is a strong sense of community in their graduate program (Table 16). Yet, for more than 25 percent of students this is not the case, and only 35.1 percent of the students think that departments take great care to make students feel included. In sum, while pursuing a graduate degree in economics is a positive experience for most students, there is a significant minority of students who are not having good experiences in their program. In particular, compared with US students, European students are similarly likely to interact with their peers, but less likely to interact with faculty.

TABLE 12. Student survey: Number of meetings with advisers (%)

Questions and answers	Percent	Min. dept. mean	Max. dept. mean
In the past two months, number of times met with main adviser			
0	9.9	0.0	23.3
1	12.4	4.3	33.3
2	18.9	3.0	29.3
3	13.2	0.0	23.3
4	12.6	0.0	22.0
5	8.8	0.0	21.2
6 to 10	19.1	9.8	39.1
11 to 15	2.5	0.0	9.1
15+	2.5	0.0	6.1
In the past two months, number of times met with any of three advisers			
0	7.4	0.0	20.0
1	7.6	0.0	20.0
2	9.2	3.0	19.5
3	12.2	4.9	18.5
4	8.8	2.9	15.4
5	10.3	0.0	27.3
6+	44.5	20.0	69.6
The number of times I have met with my advisers over the past year was sufficient to meet my needs.			
Strongly disagree	9.3	0.0	24.1
Slightly disagree	16.0	4.0	26.9
Neither agree nor disagree	16.8	0.0	28.6
Slightly agree	27.4	7.1	36.4
Strongly agree	30.5	20.7	52.0

Note: For the first question, a higher response value indicates greater number of times met with main adviser. For the second question, a higher response value indicates greater number of times met with one of three advisers (summed across the three advisers). For exact question wording, see the survey instrument in Online Appendix B1.

TABLE 13. Learning environment for students: Progress to the degree

Questions and answers	Percent
I am on track to complete my degree program on time.	
Strongly disagree	7.1
Slightly disagree	16.2
Neither agree nor disagree	19.4
Slightly agree	34.8
Strongly agree	22.5
I am well-prepared for the work required to complete my program.	
Strongly disagree	6.4
Slightly disagree	18.2
Neither agree nor disagree	27.5
Slightly agree	34.7
Strongly agree	13.2
I felt well-prepared when I took my general exam/qualifying exam/ PGE/etc.	
Strongly disagree	9.8
Slightly disagree	18.0
Neither agree nor disagree	23.9
Slightly agree	30.0
Strongly agree	18.3
I feel like I receive the feedback necessary to understand whether I am on track with my progress.	
Strongly disagree	6.1
Slightly disagree	24.1
Neither agree nor disagree	24.9
Slightly agree	32.2
Strongly agree	12.7
I feel that my mental health has had a negative effect on my progress in the PhD program.	
Strongly disagree	18.8
Slightly disagree	14.7
Neither agree nor disagree	20.1
Slightly agree	24.2
Strongly agree	22.2

Note: A higher response value indicates greater feeling of progress towards the degree. For exact question wording, see the survey instrument in Online Appendix B1.

TABLE 14. Student survey: Perceptions of faculty care (%)

Questions and answers	Percent	Min. dept. mean	Max. dept. mean
My advisers really care about my well-being.			
Strongly disagree	5.2	0.0	13.8
Slightly disagree	9.2	0.0	20.0
Neither agree nor disagree	17.3	0.0	30.8
Slightly agree	37.4	25.7	70.0
Strongly agree	30.8	6.9	64.0
I would feel comfortable telling my advisers about my postgraduation plans if they were outside of academia.			
Strongly disagree	13.4	0.0	31.0
Slightly disagree	16.7	0.0	26.5
Neither agree nor disagree	18.4	6.9	29.4
Slightly agree	24.6	9.1	50.0
Strongly agree	26.9	6.9	45.5
I have at least one faculty member in my department aside from my adviser from whom I can seek advice and guidance.			
Strongly disagree	11.1	0.0	18.8
Slightly disagree	11.3	0.0	19.5
Neither agree nor disagree	10.7	0.0	19.1
Slightly agree	31.9	18.2	50.0
Strongly agree	35.1	23.3	54.5
I believe that the faculty in my department would be supportive of me if a mental health or well-being-related issue interfered with my work.			
Strongly disagree	9.3	0.0	22.0
Slightly disagree	16.9	0.0	45.5
Neither agree nor disagree	22.2	12.0	32.3
Slightly agree	31.1	9.1	44.0
Strongly agree	20.5	3.0	64.3
I believe that the faculty in my department care about my mental health and well-being.			
Strongly disagree	10.7	0.0	22.5
Slightly disagree	19.2	7.1	36.4
Neither agree nor disagree	20.4	4.0	30.3
Slightly agree	32.0	14.3	48.0
Strongly agree	17.7	3.0	57.1

Note: A higher response value indicates greater perceived care. For exact question wording, see the survey instrument in Online Appendix B1.

TABLE 15. Learning environment for students:
Preparation for postgraduate life

Questions and answers	Percent
In applying to this program, I was aware of the career outcomes of the department's recent graduates.	
Strongly disagree	6.4
Slightly disagree	10.7
Neither agree nor disagree	7.5
Slightly agree	40.1
Strongly agree	35.2
Faculty are proactive in helping students develop professional networks.	
Strongly disagree	10.6
Slightly disagree	19.6
Neither agree nor disagree	22.3
Slightly agree	38.1
Strongly agree	9.4
There are professional development opportunities in my department that help prepare students for the job search.	
Strongly disagree	6.4
Slightly disagree	12.7
Neither agree nor disagree	22.4
Slightly agree	41.2
Strongly agree	17.3
Faculty are aware of the challenges facing current students entering the job market.	
Strongly disagree	3.3
Slightly disagree	6.6
Neither agree nor disagree	18.4
Slightly agree	45.0
Strongly agree	26.7

Note: A higher response value indicates greater feeling of preparation for postgraduate life. For exact question wording, see the survey instrument in Online Appendix B1.

TABLE 16. Learning environment for students: Sense of community

Questions and answers	Percent
There is a strong sense of community in my graduate program.	
Strongly disagree	8.6
Slightly disagree	16.7
Neither agree nor disagree	17.7
Slightly agree	35.7
Strongly agree	21.3
The department takes great care to make students feel included.	
Strongly disagree	17.1
Slightly disagree	23.8
Neither agree nor disagree	24.0
Slightly agree	23.2
Strongly agree	11.9
I make an effort to create or foster an inclusive environment for others.	
Strongly disagree	4.8
Slightly disagree	10.4
Neither agree nor disagree	21.7
Slightly agree	39.0
Strongly agree	24.0
Academic accomplishments of current graduate students are celebrated by my department.	
Strongly disagree	8.1
Slightly disagree	13.8
Neither agree nor disagree	24.0
Slightly agree	38.0
Strongly agree	16.1
Professional accomplishments of current graduate students are celebrated by my department.	
Strongly disagree	17.0
Slightly disagree	21.5
Neither agree nor disagree	30.7
Slightly agree	21.9
Strongly agree	9.0

Note: A higher response value indicates greater feeling of sense of community. For exact question wording, see the survey instrument in Online Appendix B1.

E. SEXUAL HARASSMENT

To obtain a more complete picture of the departmental environment, we asked questions about sexual harassment. Specifically, we wanted to know what share of students have experienced some form of sexual harassment in their department and what form that harassment took.

For comparability purposes, we used the same phrasing for our questions that was employed by the Association of American Universities Climate Survey on Sexual Assault and Sexual Misconduct in 2015 (see Cantor et al. 2017). A preamble to the questions emphasized that students should think of situations in which a student, faculty member, staff member, or someone else associated with their department said or did something that interfered with their work, limited their ability to participate in their program, or created a hostile work environment.

We find that 25.9 percent of students experienced some form of sexual harassment in their department since starting the PhD program (Table 17). These forms of sexual harassment are listed in panel B of Table 17 and range from “inappropriate or offensive comments about your or someone else’s body, appearance, or sexual activities” to “requests to go out for dinner, have drinks, or have sex even though you said ‘No’” and also include “something else that makes me uncomfortable but doesn’t fall into any of the other categories.” Breaking it down by gender, 34.5 percent of women, more than 1 in 3, experienced harassment, compared with 18.7 percent, slightly fewer than 1 in 5, of men.

Next, we dive deeper into the distribution across types of sexual harassment. Panel B of Table 17 shows the percentage of respondents who have ever experienced sexual harassment by type of harassment in the European sample in the left column. In order from most common to least common, respondents experienced: (1) inappropriate or offensive comments about your or someone else’s body, appearance, or sexual activities (9.4 percent), (2) sexual remarks, jokes, or stories that were insulting or offensive to you (6.1 percent), (3) requests to go out for dinner, have drinks, or have sex even though you said “No” (1.5 percent), (4) crude or gross sexual comments or tried to get you to talk about sexual matters when you did not want to (1.4 percent), and (5) email(s), text(s), phone call(s), or instant message(s) with offensive sexual remarks, jokes, stories, pictures, or videos that you did not want to receive (1.1 percent). In addition, 14.7 percent of respondents experienced “something else that makes me uncomfortable but doesn’t fall into any of the other categories.”

In panel B of Table 17, we also present the corresponding US survey results for comparison. Overall, the US sample shows similar patterns regarding which types of sexual harassment occur most frequently. The most common type is 0.6 percentage points higher in Europe than the US mean of 8.8 percent, and the second most common type is 0.5 percent percentage points higher than the US mean of 5.6 percent. A notable difference is that in this European study we included an additional category, “Something else that makes me uncomfortable but doesn’t fall into any of the other categories” (14.7 percent). To compare overall rates, we excluded this extra category and found that 19.5 percent of European respondents and 19.4 percent of US respondents reported experiencing sexual harassment under the specified categories—indicating similar rates in both regions. However, our

TABLE 17. Sexual harassment of students: Experience, type, and aggressor (%)

A. Respondent has experienced sexual harassment in department	Yes	Min. dept. mean	Max. dept. mean
All	25.9	22.4	50.0
Female	34.5	28.6	63.6
Male	18.7	15.4	50.0

B. Respondent has experienced sexual harassment by type	Europe	US
Inappropriate or offensive comments about your or someone else's body, appearance, or sexual activities	9.4	8.8
Sexual remarks, jokes, or stories that were insulting or offensive to you	6.1	5.6
Requests to go out for dinner, have drinks, or have sex even though you said "No"	1.5	3.1
Crude or gross sexual comments or tried to get you to talk about sexual matters when you did not want to	1.4	1.9
Email(s), text(s), phone call(s), or instant message(s) with offensive sexual remarks, jokes, stories, pictures, or videos you did not want to receive	1.1	0.0
Something else that makes me uncomfortable but doesn't fall into any of the other categories	14.7	N/A
None of the above	65.6	N/A

C. Respondent has ever experienced sexual harassment by aggressor	Europe	US
Graduate student friend or acquaintance	9.9	11.3
Professor	4.1	0.6
Adviser	0.7	0.0
Staff member	0.5	0.0
Undergraduate student friend or acquaintance	0.5	0.6
At the time, it was someone I was romantically involved or intimate with	0.2	0.0
Someone I had been romantically involved or intimate with	0.2	0.6
Stranger	0.4	1.3
Other	0.2	0.0
Don't know	0.2	0.0

Note: Panel A shows percentage of each group of students that report having experienced one or more forms of sexual harassment from someone in their department. Panel B shows the distribution of the harassment type of all survey responses. Panel C shows the distribution of harassment aggressors of all survey responses. The US data come from Bolotnyy et al. (2022). For exact question wording, see the survey instrument in Online Appendix B1. N/A stands for not available in Bolotnyy et al. (2022).

findings highlight the importance of including open-ended categories to capture all forms of sexual harassment, suggesting that a deeper exploration of this additional category is a worthwhile direction for future research.

Who commits sexual harassment? Panel C of Table 17 shows the percentage of respondents who have ever experienced sexual harassment by the reported aggressor type in the European sample and in the US sample, based on data from Bolotnyy et al. (2022). As in the US sample, the most common identified aggressors of sexual harassment were graduate student friends or acquaintances (9.9 percent). A notable difference, however, is that in the European sample 4.1 percent of students experienced sexual harassment from professors. This number is about seven times larger than the equivalent number in the US (0.6 percent).

The context of our survey—namely, the fact that our survey ran in November 2021, or about one and a half years into the COVID-19 pandemic—is relevant for the interpretation of the sexual harassment statistics in the European sample. In fact, this implies that our respondents had more limited in-person interactions in their department than respondents to previous surveys. Thus, our numbers may be a lower bound for the prevalence of sexual harassment in European economics departments during non-pandemic years. In the 2022 *Nature* graduate student mental health study, 20 percent of students stated that they felt discriminated against or harassed during the course of their graduate degree (3 percent preferred not to say), likely also a lower bound of prevalence in non-pandemic years.

F. THE COVID-19 PANDEMIC

Our findings indicate a significant prevalence of symptoms related to depression and anxiety among European economics graduate students and untenured faculty. Although the time of our survey was after the peak of the pandemic in 2020, the evidence of mental health issues in our sample is notably higher than in the general population at the peak of the pandemic and among US graduate students in studies conducted prior to the pandemic. One hypothesis is that the COVID-19 pandemic may have had exacerbating effects on the mental health of these groups, and these effects were still lingering afterwards.

Our data show that most students (81.1 percent) report that world events such as the COVID-19 pandemic were a source of stress for them during the past year before the survey took place (Table 8). We also asked students to what extent specific aspects of their professional and personal lives were affected by the pandemic (Table 18). The major impact was on students' connections. For almost half of the students (49.1 percent), the pandemic affected the possibility of maintaining existing relationships or making new ones a lot or to a great extent. A comparable share of students (45.9 percent) stated that the pandemic impacted their feeling of connection with their economics department to a similarly great extent. For 34.4 percent of the students, the pandemic impacted their professional productivity, while fewer students (14.2 percent) reported a direct impact on their physical or mental health. The pandemic significantly affected the viability of research projects for 14 percent of students; the share rises to 32.2 percent when including students reporting a moderate effect. However, only 6.1 percent felt the pandemic had a significant impact on uncertainty about their future employment or job-market prospects, with 7.8 percent saying the pandemic significantly impacted their decision making related to finishing their graduate program.

TABLE 18. Student survey: Has the COVID-19 pandemic impacted the following?

Questions and answers	Percent	PHQ-9 ρ	GAD-7 ρ	PHQ-9 Item 9 ρ
Your physical/mental health		0.164	0.146	0.038
Not at all	38.3			
A little	28.5			
Moderately	18.9			
A lot	11.9			
To a great extent	2.3			
Your family members'/friends' health and safety		0.296	0.264	0.197
Not at all	12.5			
A little	29.8			
Moderately	29.6			
A lot	19.1			
To a great extent	9.0			
Your financial health		0.115	0.114	0.025
Not at all	24.5			
A little	29.4			
Moderately	29.7			
A lot	11.0			
To a great extent	5.5			
Uncertainty about your future employ- ment and/or job market		0.170	0.130	0.111
Not at all	73.5			
A little	13.8			
Moderately	6.6			
A lot	4.3			
To a great extent	1.8			
Maintaining the viability of your research projects		0.233	0.249	0.081
Not at all	41.4			
A little	26.4			
Moderately	18.2			
A lot	10.5			
To a great extent	3.5			

TABLE 18. *Continued*

Questions and answers	Percent	PHQ-9 ρ	GAD-7 ρ	PHQ-9 Item 9 ρ
Managing the demands of remote work		0.203	0.219	0.064
Not at all	59.7			
A little	17.7			
Moderately	13.0			
A lot	7.3			
To a great extent	2.4			
Your professional productivity		0.239	0.142	0.116
Not at all	15.4			
A little	21.5			
Moderately	28.7			
A lot	24.4			
To a great extent	10.0			
Finishing your graduate program		0.233	0.260	0.158
Not at all	67.8			
A little	16.1			
Moderately	8.3			
A lot	4.9			
To a great extent	2.9			
Maintaining existing or making new re- lationships, friendships, and social connections		0.184	0.189	0.112
Not at all	6.5			
A little	17.0			
Moderately	27.4			
A lot	32.7			
To a great extent	16.4			
Staying connected with your economics department		0.177	0.163	0.108
Not at all	11.4			
A little	14.9			
Moderately	27.7			
A lot	30.8			

TABLE 18. *Continued*

Questions and answers	Percent	PHQ-9	GAD-7	PHQ-9
		ρ	ρ	Item 9 ρ
To a great extent	15.1			
Note: A higher response value indicates greater concern about the impact of COVID-19 on the item. Higher PHQ-9, GAD-7, and PHQ-9 Item 9 scores reflect worse mental health. PHQ-9 captures depressive symptoms, GAD-7 captures anxious symptoms, and PHQ-9 Item 9 captures thoughts of suicide and self-harm. The last three columns report Pearson correlation (ρ) between response to the question and each mental health measure. For exact question wording, see the survey instrument in Online Appendix B1.				

Table 18 also shows correlation coefficients with prevalence of depression and anxiety (PHQ-9 score and GAD-7 score) as well as suicidal ideation (PHQ-9 Item 9). Concerns about a family member’s or friend’s health and safety, keeping research projects viable, managing remote work, professional productivity, and completing the graduate program show the strongest correlations with depression and anxiety prevalence. Additionally, worries about a family member’s health and finishing the program have the highest correlations with suicidal ideation.

Since we know that social connections are an important determinant of mental health, we examine whether mental health issues are more prevalent in departments that closed in response to the pandemic. To explore this mechanism, we compare the prevalence of anxiety and depression symptoms among students from departments that were closed at some point in 2021 with those that remained open. In Online Appendix Figure A.1, we show the prevalence of mental health issues in graduate programs by year. No clear patterns emerge. Across the entire student sample, the rates of moderate to severe depression and anxiety symptoms are similar between the two groups. At departments that were closed at some point in 2021, 27.1 percent of graduate students exhibit moderate to severe depression symptoms and 26.5 percent show moderate to severe anxiety. In departments that remained open, these rates are 27.0 percent and 24.5 percent, respectively.

Our data show a higher prevalence of mental health issues among economics graduate students in Europe in 2021 than in the US in 2017, before the pandemic. The difference in time between the US and European surveys draws into question whether the observed difference in mental health prevalence stems from the COVID-19 pandemic or is the result of other factors. A key issue is the lack of post-COVID-19 data on economics graduate students in the US, which leaves us without a valid comparison group. To overcome this issue, we draw on internal data from the Harvard Graduate Student Mental Health Initiative (Barreira and Bolotnyy 2024), led by one of the authors (Paul Barreira). This data set measures mental health prevalence using a similar framework to ours. For comparability reasons, we focus on data for social science departments available in 2016, 2020, and 2022. We use these data to construct an artificial comparison group for the European study.

The trend in mental health issue prevalence in the Harvard study is not as pronounced as the difference in mental health issue prevalence between the US and European studies.

Indeed, in the Graduate Student Mental Health Initiative sample, the percentage of students with moderate to severe depression increased by 40 percent, and the percentage of students experiencing moderate to severe anxiety increased by 14 percent between pre-COVID (2016) and post-COVID (2022) years. If we extrapolate the 2022 mental health prevalence of the US sample from the 2017 data assuming a similar trend as at Harvard, the time trend accounts for 74.0 percent of the US-European difference in depression prevalence and 30.1 percent of the US-European difference in anxiety prevalence.¹⁰

The increase of mental health issue prevalence over the COVID-19 period at Harvard might not be representative—it could be smaller or larger than the true change in the US sample of 2017 or in Europe. However, for it to explain the full US-European difference it would need to underestimate the true US trend in the sample by 26 percent for depression and by 69.1 percent for anxiety.

Taken together, our analyses suggest that a significant part of the difference in mental health issue prevalence between the European and US contexts is likely unrelated to the COVID-19 pandemic. Instead, the difference is likely the result of structural factors, such as access to mental health services, inadequate clarity about expectations and job prospects, and program requirements. Future data collection on the mental health of economics graduate students in the US and in Europe, post-COVID-19, would be valuable for more insight into the differences we observe.

V. Recommendations

A. NORMALIZE AND ENABLE USAGE OF MENTAL HEALTH SERVICES BY STUDENTS AND FACULTY

Even accounting for the COVID-19 trend, the prevalence of depression and anxiety symptoms is much higher in the European sample compared with the US sample. At the same time, the percentage of students with symptoms of depression and anxiety in treatment

10 To bound the difference in mental health issue prevalence between the European and US samples, we project the US prevalence rates from Bolotnyy et al. (2022) to post-COVID levels based on the increase in issue prevalence between pre-COVID (2016) and post-COVID (2022) years found in the Harvard sample described above. Our assumption is that the COVID-19 pandemic had a similar impact on the trend of mental health in Europe and the US. We project the post-pandemic adjusted rate of moderate to severe depression in the US to be 24.8 percent, reducing the difference with the European sample to 2.5 percentage points. Similarly, we can project the post-pandemic-adjusted rate of moderate to severe anxiety to be 20.1 percent in the US, leading to a difference with the European sample of 5.8 percentage points. Based on this exercise, the COVID pandemic can explain 74 percent of the US-European difference in moderate to severe depression prevalence and 30.1 percent of the US-European difference in moderate to severe anxiety prevalence. We can do a similar exercise using the Harvard Graduate Student Mental Health Initiative's 2020 data for the social science departments. Between 2016 and 2020, the percentage of students with moderate to severe depression increased by 47 percent. The percentage of students with moderate to severe anxiety increased by 0 percent. We would project the percentage of students with moderate to severe depression mid-COVID to be 26 percent for the Bolotnyy et al. (2022) sample and the percentage of students with moderate to severe anxiety mid-COVID to be 17.6 percent, reducing the US-European difference for depression to 1.3 percentage points and for anxiety to 8.3 percentage points.

is lower in Europe. One explanation is that the COVID-19 pandemic increased the barrier for students to seek or receive treatment. Another explanation is that access to mental health care is in general harder in Europe, perhaps especially so for university populations. While students at US universities often have direct access to mental health services through university health services, this is often not the case in Europe, where in many countries health services are generally not integrated into the university. Provision of mental health services also varies substantially between European countries. Countries differ in terms of who provides mental health services, who is the access point and who refers to mental health services, whether services are reimbursed, and the number of available mental health-care providers (Dezetter et al. 2013).

There are things that European economics departments can do to improve access to health care. For example, independent psychological counselors can give initial guidance and help students navigate the health-care system with active support. Lowering the barriers and costs for initial consultations and follow-up with professionals is essential for people with mental health concerns who struggle having the energy and confidence to be proactive. In our European sample, indeed, many departments have already taken steps to address and improve student mental health. Some of the departments have student groups bringing the topic of mental health to the table for discussion with administrators. One department has training for faculty and staff on student mental health and detection of mental health issues. Three departments reported having psychologists or well-being officers whom the students can approach.

Departmental efforts to normalize mental health support should be targeted not only at students. Our results show that both untenured tenure-track and nontenure-track faculty, such as postdoctoral fellows, experience similarly high levels of anxiety and depression as graduate students. It is important to provide mentorship for these individuals and to ensure that they have and know how to access mental health resources.

We recommend implementing regular surveys to monitor the mental health of both students and faculty members. This approach can help inform targeted mental health initiatives and ensure that departments prioritize mental health. The Harvard Graduate Student Mental Health Initiative provides a useful example of such an effort, and the Blueprint for Mental Health and Well-Being in Higher Education (Barreira and Bolotny 2024) can offer guidance on how to implement similar initiatives. In addition, given the significant percentage of students who do not believe that mental health is a priority in their departments, regular surveys may also serve as a collaborative effort between students and faculty to make improvements and instill a general sense of care in the departmental community.

B. ADDRESS SEXUAL HARASSMENT

The high rate of sexual harassment—comparable to that in the US—disproportionately affects women and involves perpetrators ranging from fellow students to professors. The challenge of identifying specific cases underscores the need to allocate more resources toward reporting and support systems.

Thus, we encourage departments to have a broader discussion about sexual harassment and to help all faculty, staff, and students get on the same page about the kinds of speech

and conduct that are not appropriate in the community. Clear procedures should be established to address any instances of sexual harassment, particularly regarding reporting. In our study, we ensure a very high level of privacy for respondents, and it is essential to continue this practice in future internal analyses to avoid misinterpreting potentially lower reporting as a declining incidence of harassment. Recent work on monitoring harassment in organizations highlights the value of using garbled survey methods as a way to give respondents plausible deniability that they were the ones who filed an incriminating report (Boudreau et al. 2023).

C. IMPROVE ADVISING RELATIONSHIPS

European economics graduate students are less satisfied with their graduate program and struggle to find usefulness and meaningfulness in their work even more than graduate students in the US sample. Most common stress factors are advising relationships, uncertainty about expectations, and time management, which even trump world events such as the COVID-19 pandemic. At the same time, European graduate students in our sample are less likely to interact with their adviser or other faculty in their departments.

Gin et al. (2021) interviewed life science PhD students with depression in the US and found that negative reinforcement and absence of positive reinforcement can worsen depression, but that meaningful work can alleviate depression. We see helping students arrive at research projects that are particularly meaningful to them and that will sustain them over time as vital for students' mental well-being and research. We also see good mentorship of students as essential to counteract perpetual feelings of failure, negative reinforcement, loneliness, and imposter phenomenon.

Many articles have described interventions that may improve imposter phenomenon; however, there are no controlled studies of advising in any population. Overall, the literature suggests that activities that allow a person to share their experience with others, such as facilitated workshops, may reduce imposter fears (Bravata et al. 2020). Learning how to do research is characterized by repetitive failure and negative reinforcement, both of which aggravate depression (Gin et al. 2021). Mentorship by advisers who actively incorporate positive feedback, normalize expectations about success and failure, and give students a sense of belonging appears important.

Creating opportunities for faculty and students to interact is particularly relevant after the COVID-19 pandemic. We recommend implementing active programs that give students the chance to reconnect with each other and with faculty, not only to recover pandemic losses but also because social connections are vital protective measures against mental health concerns (Woolston 2022). Acknowledging the loss of productivity and actively trying to address it will help students regain their footing and succeed.

D. OFFER STRUCTURE AND HELP STUDENTS AVOID RUTS

In our sample, one of the students' biggest struggles and regrets is their time management. Gin et al. (2021) found that a lack of structure and a lack of short-term goals that give a feeling of accomplishment are exacerbating factors for already existing depression. Administrators and advisers can implement guidelines and practices to offer students more structure on research activities, preventing them from falling through the cracks and getting stuck for

long periods of time. A clear system of check-ins, accountability, and help should be a part of every student–faculty advising relationship.

VI. Conclusion

Motivated by the study on graduate student mental health in US economics departments (Bolotnyy et al. 2022), we surveyed graduate students and faculty at 14 European economics departments on mental health, well-being, and their correlates. Our goals were to measure prevalence of mental health issues among students and faculty, understand student and faculty experiences at the department, compare our findings with the US sample, and make evidence-based recommendations to departments on how to improve student and faculty well-being. The European surveys were administered in November 2021. In all, 556 students and 255 faculty members voluntarily participated in the study, with response rates of 47.4 percent and 31.3 percent, respectively.

The European student sample exhibits high levels of anxiety and depression symptoms. About one-third of the students experience moderate to severe symptoms of depression or anxiety and almost one-fifth report suicidal ideation. These levels are higher than in the US graduate student sample of 2017. Mental health concerns increase over the years in the program on average, with the exception of anxiety, which is, in contrast to the 2017 US study, particularly high for students in the course phase. Students in years 6+ exhibit the highest risk of depression and suicidal ideation. LGBTQI+ students exhibit the highest depression and suicidal ideation rates of any group, at 42.6 percent and 24.6 percent, respectively. We found that 59 percent of students experience frequent or intense imposter phenomenon.

Economics faculty in Europe experience fewer mental health issues than students on average, but this result disguises a significant heterogeneity by tenure status; 31.4 percent of untenured tenure-track faculty and 42.9 percent of nontenure-track faculty exhibit moderate to severe depression or anxiety symptoms, compared with 9.6 percent for tenured faculty. Thus, untenured faculty experience levels of anxiety and depression that are comparable to those of their graduate students. On average, European economics faculty are less satisfied with their job than are faculty at the eight top-ranked US institutions surveyed in 2017.

About one-quarter of students report having been diagnosed by a professional with a mental illness and 12.4 percent of students are currently in treatment for some mental health issue. Of the diagnosed students, more were diagnosed before the start of their PhD (14.7 percent) than during the program (9.7 percent). Fewer students are in treatment compared with students in the US study; 19.2 percent of those with moderate to severe depression or anxiety symptoms are currently in treatment, compared with 25.2 percent in the US study. Only 21.9 percent of students who exhibit suicidal ideation are receiving treatment. Finally, 25.6 percent of students in Europe do not know where to turn for help if they have issues with mental health, almost two times as many as in the US.

Events of the COVID-19 pandemic had a substantial adverse impact on students' social connections, their ability to maintain and make friendships, their feelings of connection to the department, and their productivity. However, our evidence, based on both internal data and a comparison with external contemporaneous longitudinal analyses of undergraduates

in the US, does not support the hypothesis that differences in mental health issue prevalence across our sample and the 2017 US study should be entirely attributed to the pandemic.

Lastly, we find that 25.9 percent of European graduate students in our sample have experienced at least one form of sexual harassment since starting their PhD program, with 34.5 percent of women and 18.7 percent of men reporting at least one such experience. The most frequent aggressors are fellow graduate students and professors, with the former being more than two times as likely to be the source of harassment as the latter.

In addition to the recommendations reported in Bolotnyy et al. (2022), our findings suggest the following recommendations for promoting mental health and well-being in economics departments: (1) Normalize and enable usage of mental health services by students and faculty. (2) Address sexual harassment. (3) Improve advising relationships through clearer and more consistent communication about progress, expectations, life after the PhD, and other issues. (4) Offer structure and help students avoid ruts.

ACKNOWLEDGEMENTS

We are grateful to the Harvard Graduate Student Mental Health Initiative and to Karen Pearce and Scott Spurlock at Harvard College Institutional Research for their assistance. Peter Hong provided excellent technical support. This study would not have been possible without the support of students, faculty, department chairs, and deans of graduate study at the 14 participating departments. In particular, we are grateful to Jose Apesteguia, Manuel Bagues, Kirill Borusyak, Antonio Ciccone, Mariano Croce, Edgard Dewitte, David Domeij, Antonio Guarino, Sergei Guriev, Simon Heiler, Radost Holler, Andrea Ichino, Marc Kaufmann, Gustave Kenedi, Sylvie Lambert, Benny Moldovanu, Eva Mork, Ralph Ossa, Lexi Schubert, Johannes Spinnewijn, Michele Tertilt, Stefan Timmermann, Roberto Weber, and Adam Zawadowski. This study was approved by Harvard University's Committee on the Use of Human Subjects under Protocol IRB17-0813.

FUNDING INFORMATION

This study would not have been possible without the Pershing Square Fund for Research on the Foundations of Human Behavior.

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