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Who's Earning Doctorates in Economics and What Factors Contribute to Success in This Field?¹

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Abstract

This article explores who earned doctoral degrees in economics from U.S. institutions between 2021 and 2023 and how structural factors shape access, persistence, and professional outcomes. Using data from the National Center for Science and Engineering Statistics, insights from a roundtable convened by the Federal Reserve Bank of Chicago, and my own experience in the field, I examine demographic patterns and the conditions under which doctoral training in economics becomes a viable or exclusionary pathway to professional mobility. Particular attention is paid to the underrepresentation of U.S.-born students, especially those from certain racial or ethnic backgrounds, in economics doctoral programs. I evaluate programs and interventions, including pipeline programs and mentorship models, whose objective is to expand access to advanced research careers in economics. By tracing the relationship between educational opportunity and the demands of the labor market, this study contributes to broader discussions of workforce development and the political economy of higher education.

Keywords: PhD, Economics, Higher Education, Labor Market

JEL classification: A23, I23, J11, J15

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1. Introduction

Doctoral training in economics is a powerful lever of opportunity that plays a central role in shaping the nation's research capacity and economic policy. Economic writing and research shapes policy by identifying and quantifying issues that might not otherwise be identified. The agenda-setting role of economic research means that policymakers often look to economic data to justify why an issue deserves attention and at what scale (Nelson 1987). Economic models, simulations, and empirical analyses provide policymakers with measurable options and their likely tradeoffs. For instance, studies on the elasticity of labor supply or the impact of tax credits can shape whether a government chooses subsidies, tax relief, or direct transfers to achieve a particular goal (Chicago Booth Review 2019). Once policies have been enacted, economists use tools like randomized controlled trials, experimental designs, and longitudinal data to evaluate results. These analyses can lead to scaling up effective programs or winding down ineffective ones. Policymakers often balance political feasibility, public opinion, and fiscal constraints. While economic research does not set policy, it does set boundaries of what is seen as evidence-based and credible. Doctoral training in economics determines who becomes a professor, who conducts high-level research, and who helps guide public policy and economic strategy. But despite growing demand for analytical talent, the pipeline into economics PhD programs remains limited, particularly for U.S.-born students from historically underrepresented backgrounds.

In June 2024, the Economic Mobility Project at the Federal Reserve Bank of Chicago hosted a virtual event called Career Pathways in Business and Economics: Roundtable for Higher Education Administrators and Hiring Managers. This convening brought together 25 participants—nine higher education professors and leaders, plus 16 representatives from organizations that hire students and graduates in economics and related fields—to discuss

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strategies for developing and enhancing pipelines between academic institutions and employers. It is not often that professors, department chairs, and deans of business schools at small liberal arts colleges and historically Black colleges and universities (HBCUs) have the opportunity to gather with directors and vice presidents at Federal Reserve Banks and think tanks to share ideas about specific job requirements, student learning outcomes, and pipeline programs. But as one of the organizers of this event, I helped meet our goal of bringing this group together to discuss opportunities and challenges for improving the pipeline into economics PhD programs and increasing students' chances for success in the field, regardless of the path they might take upon degree completion.

The event commenced with a presentation on automation, artificial intelligence, and the implications of technological advancements for new entrants into business and economics careers. The conference organizers wanted to set the stage for the workplace that interns and graduates would encounter. The discussion that followed focused on how higher education institutions, particularly HBCUs and more teaching-focused liberal arts institutions, can prepare students for graduate programs and career opportunities in economics.

During the convening a key theme emerged—the need to strengthen and broaden the pipeline into PhD programs in economics. Events like the one held by the Chicago Fed offer a chance to share research and allow employers to play an active role in expanding the field. One practical way to do this is by encouraging college students and recent graduates to pursue research assistant positions or predoctoral fellowships that serve as stepping-stones to doctoral study. These jobs provide essential exposure to applied research, data analysis, and academic culture, helping students build the credentials and confidence to apply to competitive doctoral programs.

Expanding the pipeline into economics PhD programs requires a multipronged approach, which includes early math and economics exposure, mentoring, and research experience. Many students, particularly those from underrepresented backgrounds and schools with fewer resources may not learn about the path to a doctorate until it is too late to prepare effectively. Programs that provide structured research assistantships, GMAT and GRE preparation, graduate application support, and mentoring can help close the gap. Employers, particularly government agencies, academic institutions, and think tanks, are uniquely positioned to provide these opportunities and share information to support long-term inclusion in economics and other related quantitative fields.

This article is divided into six sections that include the introduction and conclusion. In the second section I provide demographic data on PhDs awarded in economics. In the third section, I attempt to answer the following question: What factors influence entry decisions, program completion, and research productivity in economics? Here I review and summarize a selected literature on various factors, including academic preparedness, access to mentorship, institutional environment, and exposure to research opportunities early in one's academic career. The fourth section provides information on career pathways, the economic outlook, and expected wages of professionals in economics. The fifth section offers information and data on pipeline programs that seek to expand opportunities in economics.

2. Who's Earning Doctoral Degrees in Economics?

A review of recent data from the National Center for Science and Engineering Statistics (NCSES) offers a clearer picture of progress, challenges, and where targeted efforts are still needed in economics. Table 1 provides data on earned doctorates in economics by sex, race, and ethnicity for U.S. residents and temporary visa holders from 2021 through 2023. Race and ethnicity data are not provided for temporary visa holders. During that time, U.S. universities awarded an average of 1,366 PhDs in economics annually. Only 34 percent of recipients were women. For comparison, in Business Administration, 44 percent of doctoral recipients were women—and in mathematics and statistics, 28 percent. Just 12 percent of doctoral recipients in economics identified as Black, Hispanic or Latino, or American Indian or Alaska Native.

International students earn a significant share of economics PhDs in the U.S. In 1993, for the first time, more than 50 percent of PhDs in economics were earned by temporary residents (Baker and Finn 2004). Twenty years later, in 2023, the percentage had increased to 64 percent. There are several explanations for this higher proportion in the literature. According to Baker and Finn (2004) increasing incomes in Asian countries like China increased the demand for higher education at both the baccalaureate and graduate levels. A spike in Chinese real gross domestic

product (GDP) beginning in the late 1970s led to greater enrollment and completion of social and behavioral science PhDs among Chinese students; those awarded by U.S. institutions are a part of that larger phenomenon.

Survey data from (Aslanbeigui and Montecinos 1998) suggest that two of the most important factors that encourage foreign students to apply to and enroll in American doctoral programs are “the perceived quality of economics education in the United States and the international reputation of American universities” and the financial support, as American institutions offer more financial assistance than universities in other countries. The authors also found that foreign students in economics complete longer and more specialized undergraduate programs than typical U.S. economics majors and that foreign students are more likely to have earned a master’s degree prior to applying to a PhD program

Table 1. Earned Doctorates in Economics by Sex, Race and Ethnicity. 2021 – 2023

Race and Ethnicity	2023		2022		2021	
	No.	%	No.	%	No.	%
Total Male	907	65.1%	894	64.3%	869	66.1%
Hispanic or Latino	32	2.3%	24	1.7%	30	2.3%
Asian, Not Hispanic or Latino	42	3.0%	41	2.9%	46	3.5%
Black or African American, Not Hispanic or Latino	10	0.7%	9	0.6%	12	0.9%
White, Not Hispanic or Latino	235	16.9%	245	17.6%	207	15.7%
More than one race, Not Hispanic or Latino	9	0.6%	8	0.6%	7	0.5%
Other race or race not reported, Not Hispanic or Latino	5	0.4%	5	0.4%	8	0.6%
Ethnicity not reported	46	3.3%	44	3.2%	36	2.7%
Ethnicity/Race suppressed for temporary visa holders	528	37.9%	518	37.2%	523	39.8%
Total Female	485	34.8%	497	35.7%	445	33.8%
Hispanic or Latino	13	0.9%	7	0.5%	10	0.8%
Asian, Not Hispanic or Latino	30	2.2%	45	3.2%	39	3.0%
Black or African American, Not Hispanic or Latino	7	0.5%	12	0.9%	8	0.6%
White, Not Hispanic or Latino	95	6.8%	101	7.3%	98	7.5%
More than one race, Not Hispanic or Latino	5	0.4%	4	0.3%	3	0.2%
Other race or race not reported, Not Hispanic or Latino	4	0.3%	1	0.1%	1	0.1%
Ethnicity not reported	18	1.3%	23	1.7%	28	2.1%
Ethnicity/Race suppressed for temporary visa holders	313	22.5%	304	21.9%	258	19.6%
Unknown Sex	1	0.1%	-	-	1	0.1%
Ethnicity not reported	1	0.1%	-	-	1	0.1%
Total	1,393		1,391		1,315	

Source: National Center for Science and Engineering Statistics. Survey of Earned Doctorates, and authors’ calculations, 2023.

Table 2 shows earned doctorates in economics by U.S. citizens and permanent residents by sex, race, and ethnicity between 2021 and 2023. Compared to their percentage of the U.S. population, Indigenous people, African Americans, and Latino Americans are underrepresented among economics doctoral recipients. Between 2021 and 2023, of the 1,655 PhDs in economics earned by U.S. citizens and permanent residents, none were earned by an Indigenous person.

Table 2. Earned Doctorates by U.S. Citizens and Permanent Residents in Economics by Sex, Race, and Ethnicity. 2021 – 2023

Race and Ethnicity	2023			2022			2021		
	No.	% of PhD Recipients	% of U.S. Population	No.	% of PhD Recipients	% of U.S. Population	No.	% of PhD Recipients	% of U.S. Population
Total Male	379	68.7%	49.5%	376	66.1%	49.5%	346	64.8%	49.5%
Hispanic or Latino	32	5.8%	9.8%	24	4.2%	9.7%	30	5.6%	9.6%
American Indian or Alaska Native, Not Hispanic or Latino	-	-	0.4%	-	-	0.4%	-	-	0.4%
Asian, Not Hispanic or Latino	42	7.6%	3.0%	41	7.2%	2.9%	46	8.6%	2.9%
Black or African American, Not Hispanic or Latino	10	1.8%	6.1%	9	1.6%	6.1%	12	2.2%	6.0%
White, Not Hispanic or Latino	235	42.6%	28.9%	245	43.1%	29.2%	207	38.8%	29.4%
More than one race, Not Hispanic or Latino	9	1.6%	1.2%	8	1.4%	1.2%	7	1.3%	1.2%
Other race or race not reported, Not Hispanic or Latino	5	0.9%	-	5	0.9%	-	8	1.5%	-
Ethnicity not reported	46	8.3%	-	44	7.7%	-	36	6.7%	-
Total Female	172	31.2%	50.5%	193	33.9%	50.5%	187	35.0%	50.5%
Hispanic or Latino	13	2.4%	9.6%	7	1.2%	9.5%	10	1.9%	9.4%
American Indian or Alaska Native, Not Hispanic or Latino	-	-	0.7%	-	-	0.7%	-	-	0.6%
Asian, Not Hispanic or Latino	30	5.4%	3.2%	45	7.9%	3.2%	39	7.3%	3.1%
Black or African American, Not Hispanic or Latino	7	1.3%	6.6%	12	2.1%	6.6%	8	1.5%	6.6%
White, Not Hispanic or Latino	95	17.2%	29.4%	101	17.8%	29.6%	98	18.4%	29.8%
More than one race, Not Hispanic or Latino	5	0.9%	1.2%	4	0.7%	1.2%	3	0.6%	1.2%
Other race or race not reported, Not Hispanic or Latino	4	0.7%	-	1	0.2%	-	1	0.2%	-
Ethnicity not reported	18	3.3%	-	23	4.0%	-	28	5.2%	-
Unknown Sex	1	0.2%	-	-	-	-	1	0.2%	-
Ethnicity not reported	1	0.2%	-	-	-	-	1	0.2%	-
Total	552			569			534		

Source: National Center for Science and Engineering Statistics. Survey of Earned Doctorates 2023; Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States: April 1, 2020, to July 1, 2023 (NC-EST2023-SR11H), U.S. Census Bureau, Population Division, June 2024; and authors' calculations.

3. What Factors Influence Entry, Completion, and Research Productivity in Economics?

Earning a PhD in economics is a complex process that requires more than academic achievement alone. A growing body of research points to a combination of factors that influence who pursues doctoral study, who completes it, and who succeeds professionally in research, teaching, or policy roles. These factors include academic preparedness, access to mentorship, institutional environment, and exposure to research opportunities early in one's academic career.

Because careers for graduates in these areas follow many paths, it is difficult to specify the ideal graduate program training, proper balance between theory and practice, and types of knowledge skills, and proficiencies that would best support the work of PhDs in economics (Stock and Siegfried 2014). Nevertheless, here I lay out several factors that influence entry decisions, program completion, and research productivity in economics, from my own experience and from the literature.

3.1 Entry: The Importance of Quantitative Preparation and Mentorship

At its core, economics involves modeling and estimating human behavior, testing hypotheses, and analyzing results. Economics is a hybrid discipline that sits at the confluence of mathematics, social science, and in some cases business and policy. Success in an economics graduate program requires a high level of quantitative preparation and comfort with calculus, linear algebra, probability and statistics, and real analysis. The Federal Reserve System, think tanks, universities, and tech companies have a demand for economists who can structure and analyze large datasets, run regressions, use causal inference tools, and write code on platforms including R, Stata, and Python. Many top fellowships, internships, and training programs use quantitative ability as a screening tool in their selection and hiring processes. But success in an economics program is not based on mathematical ability alone; analytical reasoning, interpretation, and pattern recognition skills found in the social sciences are also necessary. Hence, at

some schools the economics major is housed in the business school, while at others is a part of arts and sciences or social science. For many college students, regardless of major, an introduction to macroeconomics or introduction to microeconomics course provides their initial exposure to the economic perspective, and for non-business or economics majors, it might be the only economics course they take (Ahlstrom, 2021).

Economics has always been based on social science, but the emergence of applied economics shows a clear link to business, finance, marketing, and management strategies (Backhouse & Cherrie, 2016). Universities are changing to keep up with these trends (Khoury, 2023). Universities like Alcorn State University, a land-grant HBCU in Mississippi, are transferring their economics courses from the social science department to the business school curriculum, thereby prioritizing a more business-centric approach to the subject matter. These movements are becoming more prevalent, which implies that business schools or colleges are committed to preparing students for the modern competitive market by providing them with hands-on learning experiences that combine economic theory with business practices. This way, undergraduate students would not only grasp economic concepts but also be able to apply them in real-world situations, which may inspire them to seek a PhD in business economics.

Siegfried and Stock (2004) found that most economics PhD recipients had majored in economics as undergraduates and had taken substantial coursework in advanced math. Similarly, doctoral programs in mathematics and statistics require a high level of quantitative knowledge, and students often enter them after years of coursework and problem-solving experience that began in high school or early college. In business, quantitative readiness is also important, especially in fields like finance, accounting, and operations management. Strong writing, communication, and organizational skills are also vital. Students with experience conducting independent research, working as teaching or research assistants, or participating in undergraduate summer programs are better prepared for the expectations of a PhD program.

Early mentorship plays a key role in who considers entering a PhD program in economics in the first place. Grove and Wu (2007) emphasized that letters of recommendation from prominent faculty were more predictive of PhD program admission and later research productivity than the prestige of a student's undergraduate institution. Exposure to faculty mentors, particularly those who offer not only encouragement but also guidance on how to navigate graduate admissions, can be decisive. This is especially true for students from institutions that do not traditionally feed into elite doctoral programs.

3.2 Completion: Mentorship Quality, Belonging, and Academic Support

Once enrolled in economics PhD programs, completion rates vary based on students' preparedness, program rank, the quality of advising, and the broader support structures provided during their program of study. Grove and Wu (2007) found that students with strong quantitative skills and proactive mentorship were more likely to complete their doctoral studies in economics. The same holds true in mathematics and statistics, where attrition is often driven by inadequate guidance and a lack of community support. In my experience, I have found that in business administration doctoral programs, which are often smaller and more tightly mentored, the relationship between adviser and student can shape whether students persist, especially in programs where few peers share their background or research interests.

In terms of gender, Stock et al. (2011) found that in a study of 586 individuals who entered one of 27 economics PhD programs in the fall of 2002, the eight-year completion rate was 15 percentage points higher for men than for women. Hilmer and Hilmer (2007) found that same-gender mentorship can play a critical role in supporting women through doctoral programs in economics. Female PhD students with female dissertation advisors had higher rates of program completion, stronger job placements, and greater early publishing success than those with male advisors. These findings suggest that mentorship is not only academic, but also emotional, relational, and identity informed. In fields like mathematics and statistics and business, where women and people of color are underrepresented at the doctoral level, identity aligned mentorship can provide a sense of belonging that helps students persist through sometimes-isolating aspects of doctoral study. Another factor that contributes to success in economics PhD programs for women include pursuing the degree at a private university—which Stock et al. (2011, pp. 184) found to increase the probability of completion by 62 percentage points. The authors also found that women were more

likely to complete the degree in programs with fewer PhD students per faculty member and if they “entered the program after having earned an undergraduate degree in math.”

Siegfried and Stock (2004) documented that economics PhDs who had strong mentor networks fared better in the job market. In mathematics, early career co-authorship and postdoctoral placements can significantly impact long-term academic trajectory. Hilmer and Hilmer (2007) also found that mentoring relationships influenced early publication success. Students who had strong mentorship, particularly from advisors who actively advocated for them, were more likely to publish in top journals, an important marker of professional viability across all academic fields.

In a study of new graduates from North American PhD programs in economics between 1986 and 2000, Conley and Önder (2014) find that the ability to publish papers in top journals declines sharply as class rank decreases, regardless of institutional prestige, and that the overall rank of a graduate’s department is a weak predictor of subsequent research output. The authors found that graduates of certain lower-ranked programs, when compared at equivalent percentile ranks, outperform their counterparts from elite institutions in terms of research productivity.

Upon PhD completion, early career outcomes are shaped by what happens during the program. Research productivity, commonly measured by publication volume and journal quality, is closely related to factors like advisor support, field specialization, and exposure to research early in graduate school. Across the board, early engagement in research, opportunities to present at conferences and seminars, and connections to professional networks all improve the odds of long-term success. Programs that facilitate these opportunities through structured pipelines, summer enrichment programs, or institutional partnerships are preparing students for graduate school and improving their long-term prospects in academia and beyond.

4. Career Pathways, Sectoral Employment, and Wages

In 2023, there were 32,600 PhD economists residing in the United States (Survey of Doctorate Recipients, 2023). Of those, 27,950 (86 percent) were employed, 4,150 (12.7 percent) were retired, and around 500 (1.5 percent) were unemployed or not employed and not seeking work. The majority of employed PhD economists were male (69 percent) and White (64 percent).

In terms of sector of employment, 52 percent of PhD economists were employed by academic institutions. Many pursue tenure-track positions at research institutions, while others join teaching-focused colleges of professional schools. Academia offers flexibility and long-term stability and are highly competitive, especially in economics where publication output and job market presentations often determine placement outcomes.

Table 3 shows the comparative distribution of faculty for a matched sample of U.S. colleges and universities for the 2013-2014 and 2023-2024 academic years from the American Economic Association 2023-2024 Universal Questionnaire Summary Statistics conducted by Siegfried et al. (2024). The data in Table 3 includes data on faculty from PhD granting institutions and baccalaureate degree granting institutions. For Institution Type, the number in parentheses is the number of institutions included in the sample. Compared to their proportion of the U.S. population, women, Black, and Hispanic faculty are underrepresented across institution types and faculty ranks. Asian faculty are overrepresented in most categories, particularly higher ranked positions at PhD granting institutions.

Table 3. Distribution of Faculty for Matched Sample of U.S. Colleges and Universities. 2013-2014 and 2023-2024

Institution Type		Total Faculty	Tenured or tenure track								Full time nontenure track		Part time			
			Full Professor		Associate Professor		Assistant Professor		Instructor				Tenured or tenure track		Nontenure track	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2013-2014	PhD institutions (74)	2,279	964	42.3	371	16.3	472	20.7	18	0.8	217	9.5	84	3.7	153	6.7
	Female (74)		232	10.2	479	21.0	604	26.5	381	16.7	841	36.9	353	15.5	670	29.4
	Black or Hispanic (61)		57	2.5	171	7.5	194	8.5	0	0.0	105	4.6	55	2.4	105	4.6
	Asian (61)		169	7.4	337	14.8	381	16.7	128	5.6	201	8.8	109	4.8	164	7.2
	BA institutions (92)	1,078	372	34.5	215	19.9	206	19.1	25	2.3	95	8.8	54	5.0	111	10.3
	Female (92)		223	20.7	341	31.6	434	40.3	474	44.0	374	34.7	300	27.8	310	28.8
	Black or Hispanic (64)		34	3.2	85	7.9	63	5.8	86	8.0	45	4.2	80	7.4	19	1.8
	Asian (64)		98	9.1	185	17.2	157	14.6	43	4.0	80	7.4	140	13.0	39	3.6
2023-2024	PhD institutions (74)	2,514	1,043	41.5	430	17.1	465	18.5	25	1.0	385	15.3	18	0.7	148	5.9
	Female (74)		402	16.0	654	26.0	870	34.6	1063	42.3	983	39.1	591	23.5	691	27.5
	Black or Hispanic (61)		143	5.7	186	7.4	282	11.2	194	7.7	216	8.6	0	0.0	387	15.4
	Asian (61)		254	10.1	473	18.8	480	19.1	387	15.4	314	12.5	442	17.6	219	8.7
	BA institutions (92)	1,045	338	32.3	231	22.1	200	19.1	5	0.5	150	14.4	30	2.9	90	8.6
	Female (92)		269	25.7	380	36.4	481	46.0	209	20.0	485	46.4	243	23.3	372	35.6
	Black or Hispanic (64)		38	3.6	91	8.7	105	10.0	0	0.0	83	7.9	70	6.7	70	6.7
	Asian (64)		161	15.4	208	19.9	261	25.0	418	40.0	166	15.9	70	6.7	93	8.9

Source: Siegfried, J. J., Braunstein, E., & Goren, E. (2024). American Economic Association 2023–2024 Universal Academic Questionnaire Summary Statistics. In AEA Papers and Proceedings (Vol. 114, pp. 712-16). American Economic Association and authors' calculations.

Table 4 shows the difference in the distribution of faculty for the same matched sample of U.S. colleges and universities between the 2013-2014 academic year and the 2023-2024 academic year. Over that ten-year period PhD granting institutions saw an increase of 235 faculty, while the number of faculty at bachelor's degree granting institutions decreased by 33. Across full-time faculty positions at PhD granting institutions the percentage of female faculty and Asian faculty increased. And the percentage of Black or Hispanic faculty increased at all ranks except Associate Professor. During this ten-year period faculty diversity increased more at PhD granting institutions than at bachelor's degree granting institutions.

Table 4. Distribution of Faculty for Matched Sample of U.S. Colleges and Universities. Difference Between 2013-2014 and 2023-2024

Institution Type		Total Faculty	Tenured or tenure track								Full time nontenure track		Part time			
			Full Professor		Associate Professor		Assistant Professor		Instructor				Tenured or tenure track		Nontenure track	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Difference between 2013-2014 and 2023-2024	PhD institutions (74)	235	79	-0.8	58	0.8	-7	-2.2	7	0.2	168	5.8	-67	-3	-4	-0.8
	Female (74)		170	5.8	175	5	266	8.1	683	25.6	142	2.2	238	8	21	-1.9
	Black or Hispanic (61)		86	3.2	15	-0.1	88	2.7	194	7.7	111	4	-55	-2.4	282	10.8
	Asian (61)		85	2.7	135	4	100	2.4	260	9.8	114	3.7	333	12.8	55	1.5
	BA institutions (92)	-33	-34	-2.2	16	2.2	-6	0	-20	-1.8	56	5.6	-24	-2.1	-21	-1.7
	Female (92)		46	5	40	4.8	46	5.7	-265	-24.0	111	11.7	-56	-4.5	62	6.8
	Black or Hispanic (64)		4	0.4	6	0.8	42	4.2	-86	-8.0	37	3.7	-10	-0.7	51	4.9
	Asian (64)		63	6.3	23	2.7	104	10.4	375	36.0	86	8.5	-70	-6.3	54	5.3

Source: Siegfried, J. J., Braunstein, E., and Goren, E. (2024). American Economic Association 2023–2024 Universal Academic Questionnaire Summary Statistics. In AEA Papers and Proceedings (Vol. 114, pp. 712-16). American Economic Association; and authors' calculations.

There is a wide earnings distribution for PhD economists. Generalities about the prestige of academic careers and high salaries in private sector jobs mask the fact that some economics professors—particularly those at top schools—are highly compensated and the fact that not all private sector economists earn high wages (Foster et al. 2023). In 2023, the median salary for all full-time employed PhD economists was \$160,000 (Survey of Doctorate Recipients, 2023). The median salary of PhD economists at four-year colleges and universities was \$130,000. However, salaries varied based on faculty rank and institution type. Table 5 shows nominal 2023-2024 academic-year salaries of tenured or tenure-track economics faculty at U.S. colleges and universities. The number in parenthesis is the number of institutions reporting salary data.

Table 5. Nominal 2023-2024 Academic-Year Salaries of Tenured or Tenure-Track Economics Faculty at U.S. Colleges and Universities

Institution Type	Full Professor	Associate Professor	Assistant Professor
PhD institutions (Mean)	\$242,699 (76)	\$179,793 (66)	\$154,250 (62)
Tier 1 and 2 (ranks 1-15)	\$408,424 (8)	\$266,950 (8)	\$200,712 (7)
Tier 3 (ranks 16-30)	\$315,833 (9)	\$231,516 (8)	\$183,998 (9)
Tier 4 (ranks 31-48)	\$256,390 (14)	\$188,408 (12)	\$153,846 (14)
Tier 4 (ranks 49+)	\$194,350 (45)	\$147,835 (38)	\$135,896 (32)
MA institutions (Mean)	\$147,248 (14)	\$121,899 (15)	\$101,937 (9)
BA institutions (Mean)	\$142,871 (52)	\$119,328 (41)	\$109,095 (28)

Source: Siegfried, J. J., Braunstein, E., and Goren, E. (2024). American Economic Association 2023–2024 Universal Academic Questionnaire Summary Statistics. In AEA Papers and Proceedings (Vol. 114, pp. 712-16). American Economic Association.

The Federal government employed 2,400 economists (9 percent) in 2023 with a median salary of \$169,000 (Survey of Doctorate Recipients, 2023). The Federal Reserve System is widely considered the single largest employer of PhD economists in the United States, with about 400 in its Washington, DC, office and around 400 spread across the 12 regional Federal Reserve Banks (Taylor 2025). Each Reserve Bank has a research department that supports monetary policy, supervises financial institutions, and conducts public policy research. Government agencies like the U.S. Bureau of Labor Statistics and the Congressional Budget Office rely on economists to help design and assess public policy.

The private sector employs 31 percent of all employed PhD economists, in roles involving forecasting, pricing, market design, data analytics, and strategic planning. The median salary of PhD economists in the for-profit private sector in 2023 was \$180,000 (Survey of Doctoral Recipients, 2023). In recent years, tech firms, investment banks, and major consulting companies have expanded their hiring of PhD economists to lead or advise on complex quantitative projects. Amazon is the largest private sector employer of PhD economists. The company hired more than 150 between 2018 and 2019 (Knapp 2019). Unlike PhD economists who work for academic institutions, the Federal Reserve System, or other government agencies, those who work at Amazon must sign confidentiality agreements, so I have less information on what they actually do. However, from my own experience interacting with the company I found that some PhD economists earn salaries in the \$300,000 to \$400,000 range and some of the tasks they work on include tracking product pricing changes, supply costs, and ways to increase workforce productivity.

McClung (2023) noted that economists in industry roles often command substantial salaries, especially those in executive management or specialized financial positions. For graduates seeking high compensation, project-based work, or applied research environments, the private sector offers compelling and lucrative opportunities. In analyzing factors that drive employers' demand for PhD graduates in economics and other quantitative fields,

Garcia-Quevedo et al. (2012) found that employers' demand for PhD graduates is influenced by several factors, including firm size, sector, and involvement in research and development activities. Firms that collaborate with academic institutions or operate in innovation-intensive sectors are more likely to hire PhD-level professionals. The rise of data-driven decision-making across industries has further increased the value of advanced training in economics, statistics, and related disciplines.

5. Best Practices for Building and Maintaining Pipeline Programs

In previous sections I documented factors that influence students' decisions to apply to and enroll in an economics PhD program. One of most influential factors is mentorship, which requires networking. But according to Schultz and Stansbury (2022), students "with limited family experience of higher education" may be less adept at forming effective mentoring relationships and feel less comfortable in interactions with faculty than students whose parents or close relatives had higher education experience. So, what is the best way to impart knowledge and skills to students who may not even have an understanding of what an economist does? Here I share information on pipeline programs in mathematics and economics that have developed best practices to expose students to the field of economics and prepare them for graduate programs and productive careers.

To be most effective, pipeline programs must account for differences in institutional resources. Many students from underrepresented backgrounds attend underfunded institutions, which limits their access to faculty mentors, research experience, and doctoral preparation. Strengthening partnerships with these institutions and advocating for greater state and federal funding are critical components for broadening the pipeline.

5.1 Pipeline Programs to Develop Quantitative Skills

The underrepresentation of women and people of color in fields that require a high level of quantitative preparation, including the field of economics, has long been a concern for academic institutions and professional organizations. In response, a number of organizations have developed robust pipeline programs aimed at preparing students for the rigors of graduate programs and supporting them through the PhD journey. This means increasing their mathematical skills in preparation for the statistical analyses required in PhD programs and careers that involve data analysis.

Launched in 1998 by Sylvia Bozeman and Rhonda Hughes, Enhancing Diversity in Graduate Education Program (EDGE), prepares female students, called EDGers, for success in mathematics PhD programs (EDGE Foundation 2025). It is a summer residential program hosted at rotating institutions, featuring intensive coursework, professional development, and ongoing mentoring. As of 2025, 149 EDGers have earned a PhD. EDGE alumnae have gone on to secure tenure-track positions at research universities, contributing to increased visibility and leadership of women of color in mathematics. EDGE provides a long-term mentoring network, modeling a cohort-based support system that continues post-program.

Aimed at underrepresented undergraduates interested in research, the Simons Laufer Mathematical Sciences Institute (SLMath) located in Berkeley, California, is an independent nonprofit organization that provides research experience in mathematical sciences, with mentorship from faculty and graduate students (Simons Laufer Mathematical Sciences Institute 2025). SLMath summer programs offer intensive research opportunities and community mentoring through programs including the ADJOINT and Self-ADJOINT Workshop, Summer Research in Mathematics, Summer Graduate Schools, and the MSRI Undergraduate Program. A significant portion of program participants go on to attend top PhD programs, and many contribute as mentors themselves.

Founded in 2001, the National Alliance for Doctoral Studies in the Mathematical Sciences, now best known as the Math Alliance, is a partnership between math sciences departments at University of Iowa, Iowa State University, University of Northern Iowa, Alabama A&M University, Benedict College, Florida A&M University, and Jackson State University (National Alliance for Doctoral Studies in the Mathematical Sciences 2025). The organization's original name, the Alliance for the Production of African American PhDs in the Mathematical Sciences, reflected the partner organization's concern about the underrepresentation of African Americans at all levels of the field of mathematical sciences. Organized as a community of mentors, the mission of the Math Alliance is to ensure that every underrepresented or underserved student with an interest and ability to pursue a doctoral degree in mathematics has the opportunity and support to do so. The program provides personalized mentoring by Math

Alliance Mentors. The annual Field of Dreams Conference connects students with faculty and PhD programs. The program facilitates admissions to partner institutions through the Facilitated Graduate Applications Process (F-GAP program). With hundreds of mentors and institutional partners, the Alliance serves as a national network for graduate recruitment and retention.

With a focus on middle and high school girls with an interest in mathematics, Sonia Kovalevsky Days (SK Days) is a program that offers early pipeline development by fostering confidence, problem-solving skills, and academic curiosity (Association for Women in Mathematics 2025). SK Days are organized by Association for Women in Mathematics members and held at colleges and universities throughout the country. The program offers workshops, talks, and problem-solving competitions. Though not directly tied to PhD preparation, the program provides early exposure and engagement opportunities.

Pathways to Research and Doctoral Careers (PREDOC.org) is a consortium of universities with top economics programs like Harvard, Princeton, MIT, and University of Chicago, along with National Bureau of Economic Research (NBER) and various Federal Reserve Banks, that aims to broaden the pipeline into quantitative social science research and doctoral programs (PREDOC.org, 2025). This initiative connects undergraduate students and recent graduates with paid, post-baccalaureate research roles that involve faculty mentorship and exposure to real-world research environments. The program is focused on fostering diversity in economics and related fields by intentionally recruiting students from underrepresented backgrounds. Pre-docs hone their coding, quantitative, and field work proficiencies; develop skills like team and project management, and explore subfields that might interest them—all of which help them to evaluate whether to pursue a PhD.

5.2 Pipeline Programs for Economics PhDs

Located at the University of Chicago, the Becker Friedman Institute for Economics (BFI) is a leading research institute dedicated to advancing economic research and applying rigorous economic thinking to real-world problems. Named after Nobel laureates Gary Becker and Milton Friedman, the institute fosters collaboration among scholars, policymakers, and business leaders (BFI 2025). The BFI Expanding Discovery in Economics (EDE) Summer Institute is a nine-week immersion designed for early undergraduate students from diverse backgrounds to sharpen their research skills, technical acumen, and economic knowledge, all while building meaningful connections with other students, faculty members, and economics professionals. The goal of the program is to diversify the economics pipeline by attracting students from under-resourced, first generation, Pell-grant eligible, and community college backgrounds into economics and quantitative social sciences. Students receive a \$2,000 stipend plus fully covered travel and accommodation during the in-person segments of the program in Chicago and Washington, DC. Students participate in a mix of virtual and in-person engagements, including an intensive bootcamp on data literacy and statistical programming and lectures from top economists. Students work in groups to complete a final research presentation and are invited to showcase their work at the PREDOC.org undergraduate research conference in DC.

Founded in 2018 by Anna Gifty Opoku-Agyeman and Fanta Traore, The Sadie Collective is nonprofit organization that addresses the pipeline and pathway challenge of people from underrepresented backgrounds in the field of economics and related disciplines by providing mentorship, professional development, and networking opportunities (The Sadie Collective 2025). The organization is named after Dr. Sadie Tanner Mossell Alexander, the first African American woman to earn a PhD in economics in 1921. The Sadie T. M. Alexander Conference for Economics and Related Fields is the organization's flagship event, bringing together students, professions, and faculty and staff from institutions of higher education from across the country and abroad to discuss research, career opportunities, and policy issues. The organization collaborates with universities, policymakers, and organizations to create pathways in economics and related fields.

Established in 1974, the American Economic Association Summer Program (AEASP) is an intensive program that has increased diversity in the field of economics by preparing talented undergraduate students for doctoral programs in economics and related disciplines (American Economic Association 2024). The program is administered by the National Science Foundation and the American Economic Association which determine the university that will host the AEASP every five years (Michigan State University 2025). Students who participate in the program are immersed into an experiential learning environment. Students live on the campus of the host university and take graduate level courses, taught by top economics professors. Students have the opportunity to apply their knowledge and skills through the completion of a research project on a topic of their choice, with guidance from a PhD

economist. Having participated in the program as a student during the cycle hosted at Duke University and then serving as a mentor 18 years later, I can attest to the value of program participation. Participants are given a preview of the rigor of PhD courses. Working in groups and teams further develops their communication and delegation skills. Gathering data, running various types of regressions, and presenting data improves their research and presentation skills.

AEASP provides seminars on applying to graduate programs, securing funding, and navigating academic and professional career opportunities. Students interact with leading economists, alumni, and peers, creating valuable connections that support them throughout their careers. Becker et al. (2014) found that AEASP “participants were over 40 percentage points more likely to apply to attend a PhD program in economics, 26 percentage points more likely to complete a PhD, and about 15 percentage points more likely to ever work in an economics-related academic job.” The study estimated that between 17 and 21 percent of PhDs awarded to minorities in economics between 1994 and 2014 were graduates of the program.

The American Economic Association Summer Economics Fellows Program (SEFP) provides research and professional development opportunities for PhD students pursuing careers in economics (American Economic Association 2025). It is designed to complement the AEASP by offering PhD candidates and early career professionals hands-on research experience under the guidance of leading economists at sponsoring institutions. Fellows work on real-world economic research, often assisting economists with data analysis, literature reviews, and empirical studies. Fellows are paired with economists who provide guidance on research methods and career pathways. Fellows receive compensation, normally commensurate with the sponsoring institution’s usual practices for an economist of equivalent experience, making the program accessible to a broad range of students and early career professionals. Many program alumni have gone on to pursue successful careers in academia, government, policy research, and private sector economics.

Some scholars enter the field of economics through study in business. Several participants in the Chicago Fed’s Career Pathways roundtable event earned PhDs in business administration with a major in economics, as opposed to a PhD in economics. There is a growing niche of institutions offering hybrid PhD programs that blend business administration and economics. Harvard University offers a PhD in business economics that is jointly administered by Harvard Business School and the Department of Economics. It combines coursework in microeconomic and macroeconomic theory, econometrics, and probability alongside select MBA-level business courses (Harvard 2025). Similarly, the University of Michigan and Lehigh University offer a PhD in business and economics that equip students to analyze business behavior and public policy. Jackson State University’s PhD in business administration allows students to focus on economics as one of its three concentrations (the others being accounting and management). Students have the option to add a second doctoral concentration, giving them more academic breadth (Jackson State University 2025). These programs provide a deep understanding of economic theory plus applied business knowledge. In many cases, students who complete these programs earn enough graduate hours to teach courses in business, management, and economics, as opposed to graduates of economics PhD programs who generally only earn enough graduate credits to teach courses in economics.

While business schools have made strides in expanding access at the MBA level, doctoral programs remain far less diverse. In fields such as finance, accounting, organizational behavior, and strategy, students from underrepresented backgrounds face substantial barriers to entry to doctoral programs. However, several programs offer targeted support, mentoring, and structured pathways to PhD success.

Founded in 1994, in partnership with the KPMG Foundation and other major sponsors, the PhD Project’s mission is to increase the diversity of business school faculty by supporting underrepresented minorities (Black, Latinx, and Native American) pursuing doctoral degrees in accounting, finance and economics, information systems and sciences, management, or marketing (The PhD Project 2025). The Annual PhD Project Conference introduces prospective students to doctoral programs, current doctoral students, and faculty. The program maintains five discipline-specific doctoral student associations (accounting, finance, information systems, marketing, and management) and offers ongoing mentoring and community building throughout the doctoral process. More than 1,500 program participants have earned their doctoral degrees through the program’s network, with many now serving as faculty mentors to the next generation of PhD students and business leaders.

Focused on scholars of color in business disciplines such as operations research, analytics, and information systems, INFORMS Minority Issues Forum (MIF) provides travel funding and mentorship at INFORMS conferences and research-focused workshops for junior scholars. The program provides a disciplinary home for PhD students and early-career researchers who might otherwise lack representation or networking opportunities. The MIF Early Career Award recognizes outstanding contributions to the theory or practice of operations research and management science (INFORMS Minority Issues Forum and Workshop 2025).

Launched in 2002, Management Leadership for Tomorrow (MLT) is a national nonprofit organization that is expanding economic mobility. MLT's MBA Prep programs provide early-career professionals, particularly Black, Latinx, and Native American students, access to career accelerating resources, personalized guidance, and effective tools to complete the business school application process and optimize their MBA experiences. The program includes a growing network of academic faculty of color and business PhD candidates. Its alumni network and recruitment events increasingly serve as informal entry points for business PhD consideration (Management Leadership for Tomorrow 2025).

Because mentorship should not end with completion of a PhD in economics, the Diversity Initiative for Tenure in Economics (DITE) at Duke University provides mentoring and workshops to assist junior faculty in the transition to associate professor with tenure status. Since 2008, the program has hosted 101 fellows, 31 of whom now have tenure, two are deans, four are department chairs, five are center directors, and two are full professor (DITE 2025).

Each of the programs mentioned shares a common mission: to broaden participation in economics and related quantitative fields by providing structured opportunities, targeted resources, and access to influential networks. They are all built on the recognition that talent is widely distributed. These programs directly help by focusing on early identification of promising students, skill-building, mentorship, and exposure to professional pathways that are often invisible to those without existing connections. What these programs do well is combine skill development with intentional relationship building. They offer technical content and access to people, spaces, and career trajectories that can impact how participants see themselves and their future in the field. For example, PREDOC's emphasis on paid, full-time research positions immerses early career scholars in the day-to-day work of economic research, while the AEA Summer Program offers intensive graduate-level coursework and GRE prep that can be transformative for students from less resourced undergraduate institutions. The Sadie Collective brings a culturally affirming community experience for Black women in economics and related fields, helping participants see themselves reflected at all levels of the profession.

Overall, the layered approach these programs offer includes:

1. **Early and repeated exposure:** Programs that reach students at the sophomore or junior year and then keep them engaged through multiple touchpoints are likely to have better long-term outcomes.
2. **Structured skill building:** Coursework, research assistantships, or project-based learning ensures participants leave with tangible skills that can be applied in the field.
3. **Sustained mentorship and alumni engagement:** The most impactful programs have strong, visible alumni networks that continue to mentor and open opportunities well after the official program ends.
4. **Community and identity affirmation:** Recognizing the role of belonging in retention is vital. Programs like the Sadie Collective demonstrate that representation and cultural alignment are powerful retention tools that keep participants involved in organization program offerings.
5. **Pathway clarity:** These programs clearly lay out the steps from undergraduate to graduate school to career, replacing guesswork with concrete, actionable guidance.

6. Conclusion

Doctoral education in economics and related disciplines remains a powerful engine for generating academic research and public and private sector leadership and cultivating innovation. My findings underscore the need for sustained investment in talent pipelines that begin early, bridge institutional divides, and extend beyond access into support, a sense of belonging, and professional development. Programs like the AEA Summer Program, the PhD Project, EDGE, and the Math Alliance offer models that can be replicated by other individual organizations or partnerships between various types of organizations, but they are unlikely to substitute for broader changes in how doctoral programs are designed, funded, and evaluated. This research demonstrates the benefits of partnerships between

academic institutions and employers that aim to align graduate education with the demands of modern labor markets while also broadening the pipeline of the economics profession.

In short, who earns doctorates in economics and related disciplines, as well as who hires them, does not depend on academic merit alone. The partnerships, networks, and systems that prepare students who seek to enter these fields are also major factors. By strengthening and broadening the pipeline, academic institutions, nonprofit organizations, government agencies, and the private sector can work to ensure that the next generation of economists, statisticians, business leaders, and mathematicians reflects the makeup of the population and is equipped to meet the challenges and demands of a rapidly evolving economy.

References

Ahlstrom, L. (2021). Promoting Economic Literacy: Combining News Articles and Clicker Questions in a Large Introductory Microeconomics Course. *The Journal of Economic Education*, 52(4), 334-342.

American Economic Association. (n.d.). Guidelines for Preliminary Proposals for AEA Summer Training Program Applicants. Retrieved April 28, 2025, from <https://www.aeaweb.org/about-aea/committees/aeasp/hosting-applicant-guidelines>

American Economic Association Summer Program. (n.d) Michigan State University Institutional Diversity and Inclusion. Retrieved July 23, 2025, from: <https://inclusion.msu.edu/awards/excellence-in-diversity/AEASP.html>

American Economic Association. (n.d.). Summer Economic Fellows Program. Retrieved April 29, 2025, from: <https://www.aeaweb.org/about-aea/committees/summer-fellows-program>

Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States: April 1, 2020 to July 1, 2023 (NC-EST2023-SR11H), U.S. Census Bureau, Population Division, June 2024

Aslanbeigui, N., & Montecinos, V. N. (1998). Foreign students in US doctoral programs. *Journal of Economic perspectives*, 12(3), 171-182.

Association for Women in Mathematics. (n.d.). Sonia Kovalevsky High School and Middle School Mathematics Days. Retrieved May 8, 2025, from <https://awm-math.org/programs/sk-days/>

Backhouse, R. & Cherrier, B. (2016). The Age of the Applied Economist: The Transformation of Economics Since the 1970s Available at SSRN: <https://ssrn.com/abstract=2868144>.

Baker, J. G., & Finn, M. G. (2004). Foreign National Doctoral Students in US Economics Programs. *Journal of College Teaching & Learning*, 1(11), 7-16.

Becker, C. M., Rouse, C. E., & Chen, M. (2016). Can a summer make a difference? The impact of the American Economic Association Summer Program on minority student outcomes. *Economics of Education Review*, 53, 46-71.

Becker Friedman Institute for Economics at The University of Chicago. (n.d.). *About*. Retrieved April 30, 2025, from <https://bfi.uchicago.edu/about/>

Broady, K., Perry, A. M., & Romer, C. (2021). Underfunding HBCUs leads to an underrepresentation of Black faculty. The Brookings Institution.

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Mathematicians and Statisticians, at <https://www.bls.gov/ooh/math/mathematicians-and-statisticians.htm> (visited April 18, 2025).

Bureau of Labor Statistics. (2025). Industry and occupational employment projections overview and highlights, 2022–32. Retrieved April 30, 2025, from <https://www.bls.gov/opub/mlr/2023/article/industry-and-occupational-employment-projections-overview-and-highlights-2022-32.htm#:~:text=October%202023-.Industry%20and%20occupational%20employment%20projections%20overview%20and%20highlights%2C%2022-32.percent%20over%20the%20projections%20decade>

Chatterji-Len, K., & Kovner, A. (2024). *Thinking of Pursuing a PhD in Economics? Info on Graduate School and Beyond*. <https://libertystreeteconomics.newyorkfed.org/2024/05/thinking-of-pursuing-a-phd-in-economics-info-on-graduate-school-and-beyond/>

Chicago Booth Review. (n.d.). *How Should Economics Shape Policy? Chicago Booth and the University of Chicago's Lars Peter Hansen and Kevin M. Murphy discuss the challenges of translating academic research into policy advice*. (July 19, 2019). Accessed from <https://www.chicagobooth.edu/review/how-should-economics-shape-policy>

Conley, J. P., & Önder, A. S. (2014). The research productivity of new Ph.Ds. in economics: The surprisingly high non-success of the successful. *Journal of Economic Perspectives*, 28(3), 205-216.

Diversity Initiative in Tenure in Economics (n.d.). The Samuel DuBois Cook Center on Social Equity at Duke University. Retrieved July 23, 2025, from: <https://socialequity.duke.edu/projects-programs/dite-diversity-initiative-for-tenure-in-economics/>

EDGE Foundation. (n.d.). About EDGE. Retrieved May 8, 2025, from <https://www.edgeforwomen.org/about-edge/>

Federal Reserve Bank of San Francisco (n.d.). What kinds of research and analysis do economists at the Federal Reserve System do, what types of information do they use, and what kinds of presentations do they make? Retrieved June 9, 2025, from <https://www.frbsf.org/research-and-insights/publications/doctor-econ/2006/01/economist-research-fed/#:~:text=The%20Federal%20Reserve%20System%20is,of%20the%20Federal%20Reserve%20System.>

Foster, Lucia, Erika McEntarfer, and Danielle H. Sandler. "Early Career Paths of Economists inside and outside of Academia." *Journal of Economic Perspectives* 37, no. 4 (2023): 231-250.

Garcia-Quevedo, J., Mas-Verdú, F., & Polo-Otero, J. (2012). Which firms want PhDs? An analysis of the determinants of the demand. *Higher Education*, 63, 607-620.

Grove, W. A., & Wu, S. (2007). The search for economics talent: Doctoral completion and research productivity. *American Economic Review*, 97(2), 506-511.

Harvard Business School. (n.d.). *Doctoral Programs, Business Economics*. Retrieved August 12, 2025, from <https://www.hbs.edu/doctoral/phd-programs/business-economics/Pages/default.aspx>

Hilmer, C., & Hilmer, M. (2007). Women helping women, men helping women? Same-gender mentoring, initial job placements, and early career publishing success for economics PhDs. *American Economic Review*, 97(2), 422-426.

Howard University. (2025). AEA Summer Program. <https://economics.howard.edu/aeasp>

INFORMS Minority Issues Forum and Workshop. (n.d.). Minority Issues Forum. Retrieved May 8, 2025, from <https://www.informs.org/Recognizing-Excellence/Community-Prizes/Minority-Issues-Forum>

Jackson State University. (n.d.). *Business Graduate Program College of Business*. Retrieved August 12, 2025 from <https://www.jsums.edu/businessgraduate/ph-d-program-in-business/>.

Knapp, Clara. (March 25, 2019). Hyper-Secretive Economists Are Transforming How Amazon Does Business. UC Berkeley Law. Retrieved on August 13, 2025 from <https://sites.law.berkeley.edu/thenetwork/2019/03/25/hyper-secretive-economists-are-transforming-how-amazon-does-business/>

Management Leadership for Tomorrow. (n.d.). *Early Career MBA Prep Program*. Retrieved May 8, 2025, from <https://mlt.org/mba-prep/>

McClung, C. (2023). *Which economists are paid the most, and where?* <https://inomics.com/advice/which-economists-are-paid-the-most-and-where-1537131>

National Alliance for Doctoral Studies in the Mathematical Sciences (n.d.). A brief history of the National Alliance. Retrieved May 7, 2025, from <https://www.mathalliance.org/about-the-math-alliance/a-brief-history-of-the-national-alliance.html>.

National Center for Science and Engineering Statistics. Survey of Earned Doctorates (2021 – 2023).

National Center for Science and Engineering Statistics. Survey of Doctorate Recipients (2023).

Nelson, Robert H. "The economics profession and the making of public policy." *Journal of Economic Literature* 25, no. 1 (1987): 49-91.

PREDOC.org. (n.d.) *For Undergraduates*. Retrieved on August 12, 2025, from <https://www.predoc.org/for-undergraduates>

Schultz, Robert, and Anna Stansbury. "Socioeconomic diversity of economics PhDs." Peterson Institute for International Economics Working Paper 22-4 (2022).

Siegfried, J. J., & Stock, W. A. (2004). The market for new Ph. D. economists in 2002. *American Economic Review*, 94(2), 272-285.

Simons Laufer Mathematical Sciences Institute. (n.d.). Home. Retrieved May 7, 2025, from <https://www.slmath.org/>

Stewart, M. M., Williamson, I. O., & King Jr, J. E. (2008). Who wants to be a business PhD? Exploring minority entry into the faculty "pipeline". *Academy of Management Learning & Education*, 7(1), 42-55.

Stock, W., & Siegfried, J. (2014). Career patterns of economics Ph. Ds: A decade of outcomes for the class of 1997. *The economics of economists: Institutional settings, individual incentives and future prospects*, 174-93.

Stock, W. A., Siegfried, J. J., & Finegan, T. A. (2011). Completion rates and time-to-degree in economics PhD programs. *American Economic Review*, 101(3), 176-187.

Taylor, Timothy. (July 22, 2025). Trying to Soften Up the Federal Reserve. *Conversable Economist*. Retrieved August 13, 2025, <https://conversableeconomist.com/2025/07/22/trying-to-soften-up-the-federal-reserve/#:~:text=Out%20of%20the%20total%20employment,the%20regional%20Federal%20Reserve%20banks.>

The PhD Project. (n.d.) *About Us*. Retrieved May 7, 2025, from <https://PhDproject.org/about-us/>

The Sadie Collective. (n.d.). Our Story. Retrieved April 29, 2025, from <https://www.sadiecollective.org/our-story>

U.S. Bureau of Labor Statistics. (2023). *Industry and occupational employment projections overview and highlights, 2022–32*. Retrieved April 30, 2025, from <https://www.bls.gov/opub/mlr/2023/article/industry-and-occupational-employment-projections-overview-and-highlights-2022-32.htm#:~:text=October%202023-.Industry%20and%20occupational%20employment%20projections%20overview%20and%20highlights%2C%202022-32.percent%20over%20the%20projections%20decade.>