Financial Returns on a Graduate Degree

Doctoral Degrees vs. Master's Degrees

For students who have successfully earned a bachelor's degree in their chosen field, there is celebration but there can also be a question of, *what's next?* Do they go straight into the workforce and begin building their career? Or do they pursue an advanced degree? The demand for graduate education by employers has grown over the past two decades and is projected to continue to grow, with 16% of jobs estimated to require a graduate degree by 2031. At the same time, the promise of higher earnings and career advancement have made graduate degrees increasingly attractive to students. But do graduate degrees pay off?

Earning a doctoral degree is a substantial investment of both time and money, so it is important that the returns reflect that additional investment required. The Georgetown University Center on Education and the Workforce (CEW), looking at data from the U.S. Census Bureau and the Bureau of Labor Statistics, found that 90% of doctoral degree holders are employed, a small premium over master's degree holders (86%) and eight points higher than baccalaureates (82%). The median earnings of those with a doctoral degree was $126,000 while the median for master's was $92,000, a 37% return. Unlike the stagnate premiums for master's degrees, the premium of a doctorate over a baccalaureate degree has improved from just over 50% in 1993 to 63% in 2021. This is because, unlike earnings for workers with master's degrees, earnings for those with doctoral degrees have grown by nearly 20% in that time.

A recent paper from The University of Texas System explored the post-graduation earnings outcomes of UT System baccalaureates who earned no advanced degrees compared to those UT System baccalaureates who went on to earn either a master's or doctoral degree from any U.S. institution. This brief highlights some of the findings for those whose highest degree was a doctoral degree compared to those with highest degree of a master's. The full paper and related materials are available online at https://www.utsystem.edu/offices/institutional-research-and-analysis/reports-and-policy-papers.

Counts by Highest Degree Level, Years after Baccalaureate Degree and Institution of Bachelor's Degree

2006 – 2018 Exiting Baccalaureate Cohorts

	Within Five Years of Baccalaureate Degree		Within Ten Years of Baccalaureate Degree	
Baccalaureate Institution	# Highest Degree = Master's	# Highest Degree =Doctoral	# Highest Degree = Master's	# Highest Degree =Doctoral
UTA	8,885	595	6,434	826
UTAUS	10,147	4,946	9,060	5,254
UTD	4,906	804	3,268	825
UTEP	4,358	354	3,906	444
UTPB	811	49	659	46
UTRGV	5,824	468	5,451	516
UTSA	5,166	659	4,464	768
SFA	2,088	98	852	60
UTT	1,815	126	1,520	150

Wages are impacted by experience, education, location, industry, and, most critically, occupation. This study is focused on the education factor and accounts for experience or, at least, for potential years in the workforce. Although the study population is limited to those found working in Texas, which addresses location in a broad way, there are still going to be wide variations in wages within the state. Although we do have data on the industry where graduates are working, and have explored earnings by industry in previous work, industry is not included as part of this study. Occupation is a critical determinant of earnings, but that data element is unfortunately not available. So, this analysis is limited in that at least some differences in wages studied here would be attributed to occupation and detailed location differences.

Key Findings

It's important, as we attempt to quantify the impact of earning a graduate degree, that we acknowledge that there are benefits to the graduate beyond the financial, including higher levels of health, happiness, and well-being, as well as leading societal advancements in innovation, technology, education and the arts.

In this report, we compare the earnings outcomes of UT baccalaureates who completed their bachelor's degree between 2006 and 2018 who went on to earn a doctoral degree (from any U.S. institution) versus those UT baccalaureates whose highest degree is a master's degree. The study examines the median annual earnings of UT baccalaureates who are found working in Texas. The difference (i.e., earnings differential) in median wages between the master's degree holder and the doctoral degree holder is a proxy for the financial premium of a doctoral degree. We should interpret these differences with some caution, given that the students who choose to pursue and complete a doctoral degree may differ in meaningful ways from students who do not complete a doctoral degree. However, exploring the differences in earnings outcomes between students who earn doctoral degrees and students who do not provides important insight into the financial outcomes associated with earning a doctoral degree.

The results include breakdowns by UT institution where the baccalaureate was earned, area of baccalaureate study, and various demographic characteristics. As part of the analysis, we examined the results for individual cohort differences. Although there were some variations by cohort, in the main the results were relatively consistent, so we chose not to present that breakdown here. Earnings and earnings differentials for counts less than 20 are not presented.

- In half of the UT baccalaureate areas of study, the doctoral degree is most frequently in the same broad area. For those areas where it is not, the doctoral degree is most commonly in health or legal services, public policy, and social work. For baccalaureates from five areas, at least 40% of those who earned doctoral degrees remain in-field.
- Examining the broad area of study for UT baccalaureates, the top five areas by median wage for both master's degree holders and doctorates working in Texas are more varied, with social sciences and biology and life sciences making appearances.
- For those UT baccalaureates from all areas who earned a doctorate within either 10 or 15 years, the earnings are higher than for those whose highest degree is a master's.
- At ten years, the range of difference is $7,600 for computers, statistics, and mathematics to $49,000 for communications and journalism, with graduates from ten baccalaureate areas who go on to earn a doctorate having at least a $20,400 premium.
- At fifteen years, it ranges from $12,000 for bachelor's in computers, statistics, and mathematics to $82,200 for biology and life sciences, with graduates from seven baccalaureate areas who go on to earn a doctorate having at least a $31,600 premium over those with a master's degree.
- Female graduates with doctoral degrees see higher rates of return then male graduates, but their median wages are significantly below those for men with doctoral degrees at ten and fifteen years out, although women with a doctorate do have higher median annual earnings than men whose highest degree is a master's.
- For doctorates earned within ten years, Asian American graduates see the lowest rate of return (24%), but they have the highest median wage at nearly $135,000. Hispanic UT baccalaureates who went on to earn a doctoral degree had nearly a 40% earnings differential compared to those with only a master's degree at ten years, although the median wages of Hispanic doctorates are the lowest.

Contextual Information

Related contextual measures for recipients of doctoral degrees are available from the National Center for Science and Engineering Statistics (NCSES) Survey of Earned Doctorates (SED), which is an annual census survey of all recipients of U.S. research doctoral degrees.[1] In the 2023 survey, 57,862 doctorates were surveyed and 91.2% completed the survey.[2]

- For doctorates in science and engineering fields, 64.3% of recipients report receiving a bachelor's degree in the same field as doctorate. That varies from 38.8% for computer and information sciences to 80.6% for mathematics and statistics.

[1] National Center for Science and Engineering Statistics, Survey of Earned Doctorates, 2023. Data Tables. Downloaded from https://ncses.nsf.gov/surveys/earned-doctorates/2023#data on March 20, 2025.

[2] National Center for Science and Engineering Statistics, Survey of Earned Doctorates, 2023. Methodology. Accessed from https://ncses.nsf.gov/surveys/earned-doctorates/2023#methodology on March 21, 2025.

- For doctorates in non-science and engineering fields, only 46.0% report receiving a bachelor's degree in the same field, ranging from 25.7% for education to 71.3% in humanities. (SED, Table 5-2)
- 68.0% of science and engineering doctorate recipients report having earned a master's degree, with 52.2% having earned a master's degree in the same field as the doctorate.
- 93.5% of doctorate recipients in non-science and engineering fields reported having earned a master's degree, with 67.9% having earned a master's degree in the same field as the doctorate. (SED, Table 5-3)
- The 2023 SED also indicates that the median years to a research doctorate since starting a doctoral program was 5.7 years.
- Nearly three quarters of doctorate recipients in 2023 indicated they had a definite commitment for new employment, a postdoctoral study position, or return to a pre-doctoral position
- Non-science and engineering doctorates were far more likely to enter the academe (60.9%) and far less likely to enter the industry/business sector (11.4%). (SED, Table 2-1 and 2-6)

Institution Differences (Institution of Baccalaureate)

For UT baccalaureates who went on to earn their doctorate degree within ten years, we see strong returns against those whose highest degree was a master's degree. In fact, the earnings differential versus master's degree holders at ten years was at least 33%--and as much as 55%--at UT Austin, UTPB, UTRGV, UTSA, and SFA, with UTA, UTEP, and UTT having earnings differentials of 23-29%.

Difference in Annual Wages: Those with a Master's Degree vs Doctoral Degree, by Institution

	Within Five Years of Baccalaureate Degree				Within Ten Years of Baccalaureate Degree			
Institution	Master's Median $	Doctoral Median $	% Difference	$ Difference	Master's Median $	Doctoral Median $	% Difference	$ Difference
UTA	$81,600	$80,600	-1%	-$1,000	$94,300	$116,200	23%	$21,900
UTAUS	75,700	76,100	1%	$400	98,200	132,300	35%	$34,100
UTD	76,600	69,600	-9%	-$6,900	96,800	113,100	17%	$16,300
UTEP	62,500	79,100	27%	$16,600	71,700	92,000	28%	$20,300
UTPB	68,800	74,200	8%	$5,400	74,400	100,600	35%	$26,200
UTRGV	62,900	69,500	11%	$6,700	72,100	103,800	44%	$31,600
UTSA	64,600	75,200	16%	$10,600	74,600	99,000	33%	$24,400
SFA	65,400	77,500	19%	$12,100	70,200	109,100	55%	$38,900
UTT	66,600	81,000	21%	$14,300	80,100	103,500	29%	$23,300
	Scale:	>=20	10 thru 19	5 thru 9	-4 thru 4	-9 thru -5	-10 thru -19	<= -20

Area Differences (Area of Baccalaureate)

In half of the UT baccalaureate areas of study, the doctoral degree is most frequently in the same broad area. For those areas where it is not, the doctoral degree is in health or legal services, public policy, and social work. For baccalaureates from five areas, at least 40% of those who earned doctoral degrees remain in-field.

Median Wages

- Examining the broad area of study for UT baccalaureates, the top five areas by median wage for both master's degree holders and doctorates working in Texas are more varied, with social sciences and biology and life sciences making appearances.
- For those who earned doctoral degrees within five years, the earnings are below those whose highest degree is a master's degrees in these baccalaureate areas of study: architecture and engineering; computers, statistics, and mathematics; and health. The earnings are very close in business and physical sciences.
- For those UT baccalaureates from all areas who earned a doctorate within either 10 or 15 years, the earnings are higher than for those whose highest degree is a master's.

Top 5 Areas of Study for UT Baccalaureates Who Earned Advanced Degrees by Highest Degree and Median Annual Earnings

	5 Years	10 Years	15 Years
Highest Degree = Masters	health $95,800	architecture and engineering $118,800	architecture and engineering $148,300
	business $87,400	business $112,800	business $124,200
	architecture and engineering $87,200	health $110,000	health $107,300
	computers, stats, and math $80,200	physical science $96,500	physical science $104,300
	physical science $70,300	computers, stats, and math $90,400	computers, stats, and math $101,600
Highest Degree = Doctoral	communications and journalism $93,700	business $141,200	architecture and engineering $188,600
	business $88,700	architecture and engineering $139,100	biology and life sciences $175,000
	health $86,400	biology and life sciences $135,300	business $157,600
	industrial arts, consumer services $82,900	physical science $131,300	physical science $146,400
	social sciences $80,900	health $128,500	social sciences $134,800

Earnings Differential (Doctoral versus Master's Degrees)

Actual values are important, but so is the earnings differential, or the difference between the earnings of UT baccalaureates working in Texas who go on to earn a doctoral degree versus those whose highest degree is a master's.

- At ten years, the range of difference is $7,600 for computers, statistics, and mathematics to $49,000 for communications and journalism, with graduates from ten baccalaureate areas who go on to earn a doctorate having at least a $20,400 premium.
- At fifteen years, it ranges from $12,000 for bachelor's in computers, statistics, and mathematics to $82,200 for biology and life sciences, with graduates from seven baccalaureate areas who go on to earn a doctorate having at least a $31,600 premium.

Difference in Annual Wages: Doctoral Degree versus Master's Degree, by UT Baccalaureate Area of Study

	5 Years		10 Years		15 Years	
Area of UT Bachelor's Degree	%	$	%	$	%	$
Agriculture and natural res...	--	--	--	--	--	--
Architecture and engineering	-19%	-$16,300	17%	$20,400	27%	$40,300
Arts	34%	$16,900	23%	$15,700	39%	$28,000
Biology and life sciences	12%	$7,500	63%	$52,300	88%	$82,200
Business	2%	$1,400	25%	$28,400	27%	$33,500
Communications and journ...	54%	$32,700	64%	$49,000	37%	$31,600
Computers, statistics, math	-13%	-$10,600	8%	$7,600	14%	$14,500
Education	4%	$2,900	14%	$10,100	16%	$12,000
Health	-10%	-$9,400	17%	$18,600	17%	$18,600
Humanities and liberal arts	34%	$19,200	60%	$42,200	70%	$52,900
Industrial arts, consumer ser...	28%	$17,900	30%	$22,700	25%	$19,900
Legal, public policy, social...	20%	$11,700	32%	$22,300	21%	$15,300
Physical sciences	1%	$700	36%	$34,800	40%	$42,100
Psychology	37%	$19,900	37%	$25,400	61%	$44,800
Social sciences	31%	$19,100	46%	$36,200	53%	$46,800

Scale:	>=20	10 thru 19	5 thru 9	-4 thru 4	-5 thru -9	-10 thru -19	<= -20

Area + Institution (of the Bachelor's Degree)

Not every institution offers doctoral programs in all areas, or some (particularly new) programs may have low counts of graduates. But for where there is reportable data, there are some trends.

- UT graduates who earned their bachelor's degree in biology and life sciences and then their doctoral degree within either five or ten years after their baccalaureate see positive returns versus those whose highest degree is a master's at all institutions, including UTPB (not shown below). For those biology baccalaureates who earned their doctoral degree within ten years, those returns range from 42% at UT Dallas to 98% at UT Tyler.
- UT graduates with bachelor's degrees in health, industrial arts, and social sciences who earned a doctoral degree within five or ten years also saw positive returns versus master's degree, and the returns on a doctoral degree versus a master's degree for bachelor's degrees in psychology and the humanities were positive except for one instance.

Heat Map: Percent Difference in Annual Wages: Those Who Earned a Master's Degree vs Doctoral Degree Within Five or 10 Years, by Baccalaureate Area of Study and Institution

Baccalaureate Institution	UTA		AUS		UTD		UTEP		UTRGV		UTSA		UTT	
Years Since Baccalaureate	5	10	5	10	5	10	5	10	5	10	5	10	5	10
Area of UT Bachelor's Degree														
Architecture and engineering		0	-29	5		4		-14						
Arts			67	34										
Biology and life sciences	29	53	5	52	16	42	47	54	5	78	33	65	43	98
Business	4	10	-6	15	-10	-11	2	22		15	5	6		
Communications and journ...			54	59							21			
Computers, statistics, math			-16	5		-30								
Education		5		18		35								
Health	26	11	8	33	9			21	39	38				14
Humanities and liberal arts	6	20	35	72	57	43	40	18		-5	33	29		
Industrial arts, consumer ser...	30	21	16	23			65	41	35		28	33	34	18
Legal, public policy, social...	5	26							14		24	18		
Physical sciences			-21	14				62	10	133				
Psychology		36	34	54	31	9		-1			30	37		
Social sciences	14	19	28	37	22	31	42	27	40	29	36	26		
# Areas < 5%	1	1	4	0	1	3	1	2	0	1	0	0	0	0
# Areas >= 20%	3	5	5	8	3	4	4	6	3	4	7	5	2	1
Scale:	>=20		10 thru 19		5 thru 9		-4 thru 4		-9 thru -5		-10 thru -19		<= -20	

Gender Differences

Female graduates with doctoral degrees see higher rates of return then male graduates, but their median wages are significantly below those for men with doctoral degrees at ten and fifteen years out, although women with a doctorate do have higher median annual earnings than men whose highest degree is a master's. At all three time points, women are around 63% of the master's degree holders while men are around 37%. For doctorates, it is more evenly split.

Median Annual Wages: Master's Degree versus Baccalaureate Degree, by Institution of Bachelor's Degree

	Female				Male			
	Master's – Median $	Doctoral – Median $	% Difference	$ Difference	Master's – Median $	Doctoral – Median $	% Difference	$ Difference
5 Years	$67,100	$ 76,300	14%	$9,100	$ 75,600	$ 74,100	-2%	-$1,400
10 Years	75,300	111,800	49%	$36,500	97,000	127,900	32%	$31,000
15 Years	78,300	121,500	55%	$43,200	112,000	165,700	48%	$53,700
Scale:	>=20	10 thru 19	5 thru 9		-4 thru 4	-5 thru -9	-10 thru -19	<= -20

Race/Ethnicity Differences

- UT African American baccalaureates who earn a doctorate within five years see little return compared to a master's degree, and they have the lowest median wages. For doctorates earned within ten years, African American graduates see the third-highest rate of return, but that is still the lowest actual dollar amount.
- Asian Americans who earn a doctorate within five years see a negative return compared to a master's degree, with median wages falling below those for graduates with a master's degree. For doctorates earned within ten years, Asian American graduates see the lowest rate of return (24%), but they have the highest median wage at nearly $135,000.
- Hispanic graduates who earn a doctorate within five years have the largest rate of return and the greatest difference in actual median wages compared to Hispanics with a master's degree. They also have the greatest rate of return at ten years, although their median wages are the lowest.
- White graduates with a doctorate within five years see a 11% return and have the highest median wages. At ten years out, White doctorates see the second-highest rate of return and the highest dollar amount, although their actual median wages are second-highest median wage.

Difference in Annual Wages: Those with a Master's Degree vs Doctoral Degree, by Race/Ethnicity

	Within Five Years of Baccalaureate Degree				Within Ten Years of Baccalaureate Degree			
Institution	Master's – Median $	Doctoral – Median $	% Wage Difference	$ Wage Difference	Master's – Median $	Doctoral – Median $	% Wage Difference	$ Wage Difference
African American	$68,100	$68,500	1%	$500	$80,100	$104,400	30%	$24,300
Asian American	$81,500	$70,000	-14%	-$11,500	$109,100	$134,900	24%	$25,900
Hispanic	$64,700	$75,000	16%	$10,300	$73,600	$102,300	39%	$28,700
White	$74,700	$82,600	11%	$7,900	$90,800	$124,300	37%	$33,500

Conclusion

For UT baccalaureates who earned their doctorate within five years of their bachelor's degree, the returns are mixed compared to those who earned a master's degree or whose highest degree is a bachelor's degree. However, for UT baccalaureates who earn a doctorate within 10 or 15 years, the earnings differential is substantial, compared to those with highest degrees of either bachelor's or master's. This disparity between the outcomes for those at five years versus later may be due to the timing and less time in the workforce. In the long run, with both the degree and time in their career, doctoral degree holders see strong returns on their investment. Like a master's degree, however, a doctoral degree for those who earned their bachelor's degree in computers, statistics, and mathematics does not appear to provide a positive financial gain on average.

Financial returns are not the only impact of a graduate degree, of course, but given rising program costs for students, they must be considered as part of a student's decision-making process.

Occupation or job title is missing from this analysis because it is not available in the data. Recent legislation has ordered an expansion in the required fields for Texas Workforce Commission Unemployment Insurance wage reports submitted to the state. These new fields will hopefully allow for a more nuanced analysis of employment outcomes, but these changes will take several years to roll out, be adopted, and then become available for study. Additionally, the new data will only be available going forward, so longitudinal analyses will be limited.

Methodology and Sources

Methodology

The initial population is based on students exiting a University of Texas System academic institution with a bachelor's degree between 2006 and 2018. This data is provided by the Texas Higher Education Coordinating Board Graduation Report (THECB). Those students were then tracked across time using THECB data as well as data from the National Student Clearinghouse to look for students earning graduate degrees within five, ten, or fifteen years after earning their bachelor's degree. At five, ten, and fifteen years after exiting with their baccalaureate, individuals are put into one of three categories based on their highest degree at that point: bachelor's, master's, or doctorate.

This degree data is at that point combined with earnings data, provided by the Texas Workforce Commission Unemployment Insurance wage data through a data sharing agreement with The University of Texas System. An individual's wage (if present) is included in the calculation of median wage.

	5 Years	10 Years	15 Years
2006	✓	✓	✓
2007	✓	✓	✓
2008	✓	✓	✓
2009	✓	✓	
2010	✓	✓	
2011	✓	✓	
2012	✓	✓	
2013	✓	✓	
2014	✓		
2015	✓		
2016	✓		
2017	✓		
2018	✓		

Sources

- Texas Higher Education Coordinating Board Graduation Report (CBM 009)
- Texas Workforce Commission Unemployment Insurance wage data
- National Student Clearinghouse
- Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System