



BACKGROUND & PURPOSE

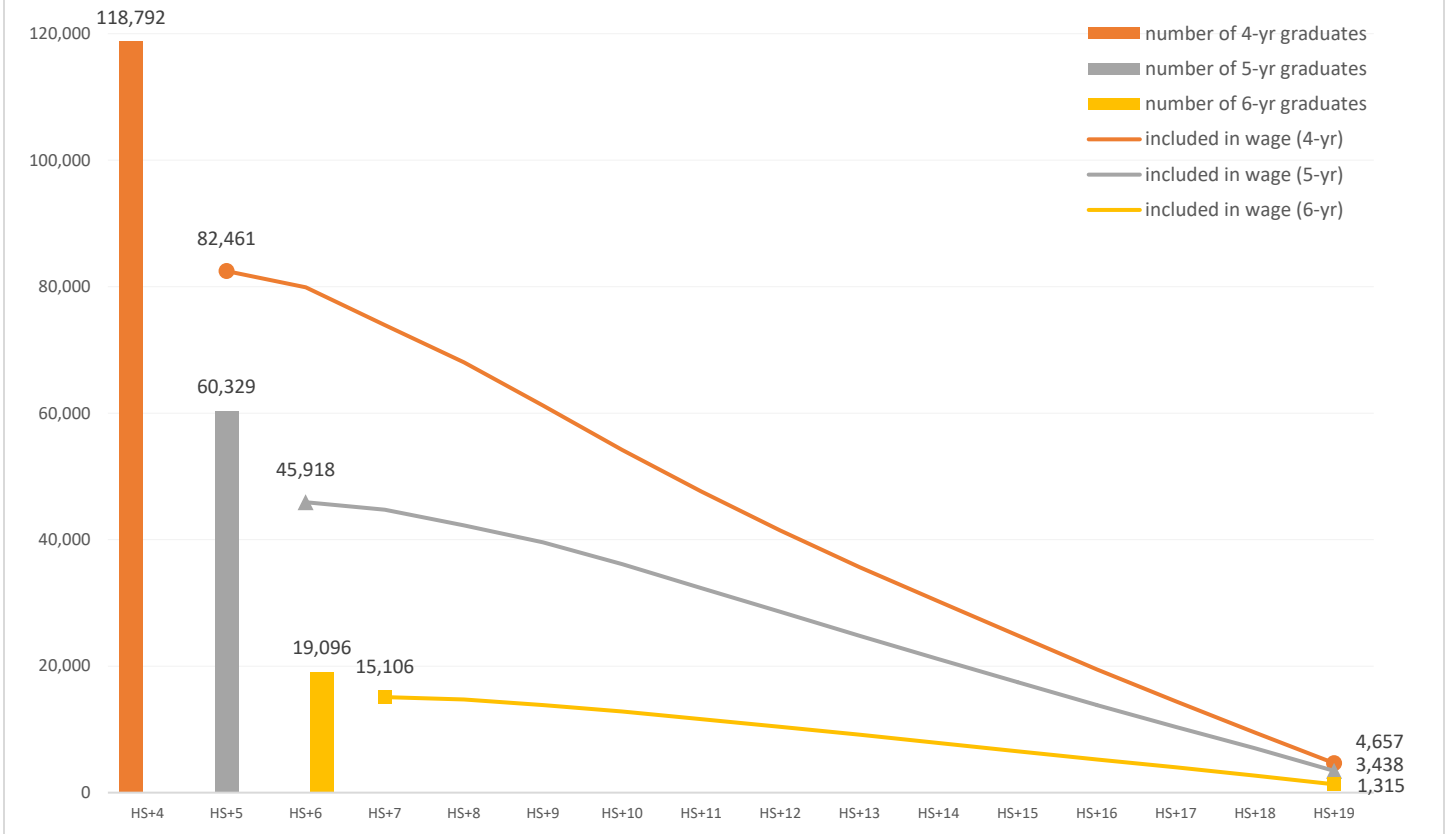
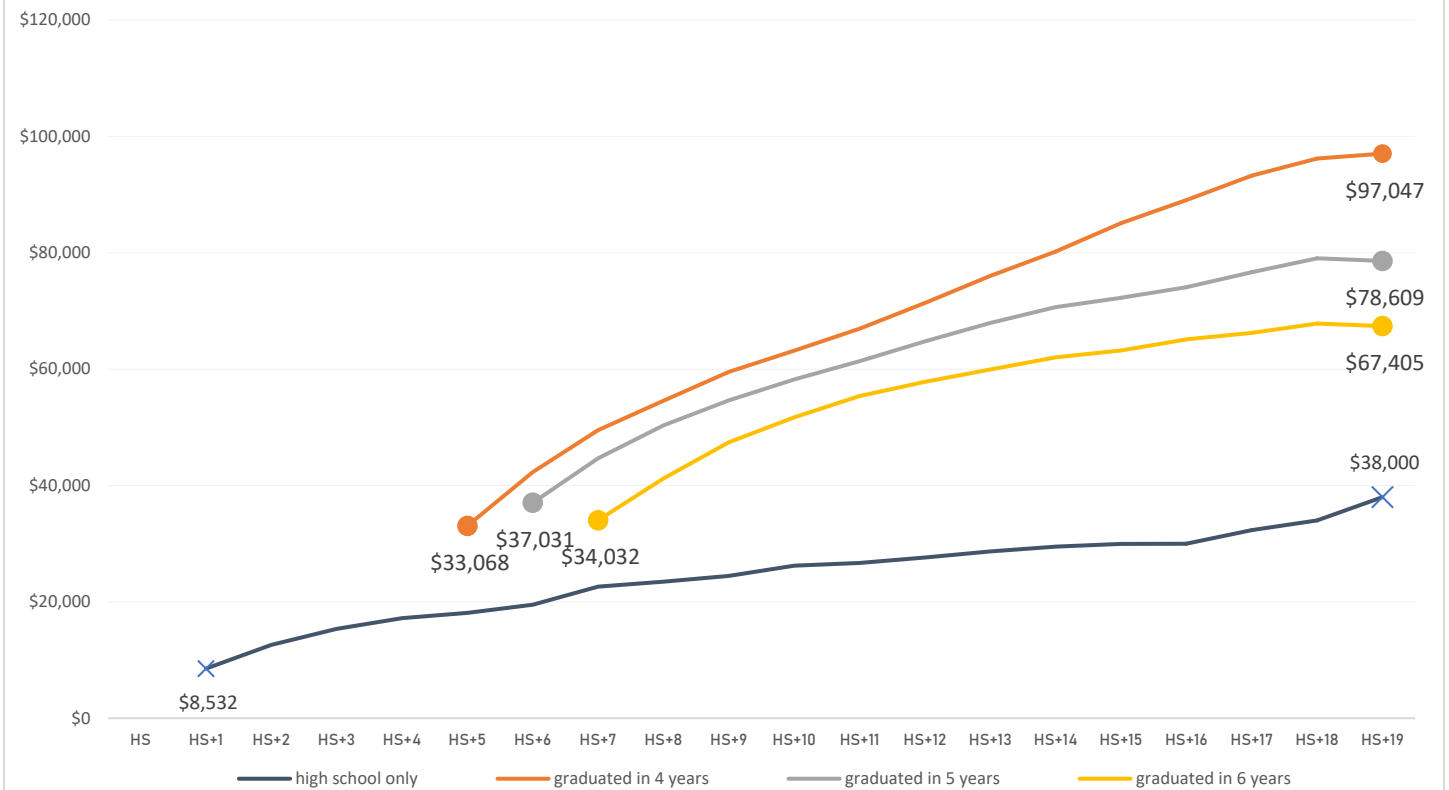
The University of Texas System is committed to providing an affordable education to Texans. In that effort, we must consider affordability across a student's time with the university. The first phase is affordability during application and matriculation—making sure all Texans know they can access a first-class education. Then, as students move through their time at UT institutions, we must do what we can to make sure that no student drops out for financial reasons. And, finally, there is considering the question of affordability after graduation: what is the return on that investment? Is a college graduate financially better off than someone who chooses to enter the workforce directly after high school instead of going to college?

This report by the Office of Institutional Research and Analysis focuses on this third component: return on investment. How long does it take a UT graduate to recoup the cost of their education and delayed entry into the workforce?

A FEW KEY TERMS

The following terms are important to understanding the analysis. Additional details can be found in the “Methodology” section at the end.

- **Population.** For each entering cohort (Fall 2003 through Fall 2013), only first-time, full-time students who graduate from the same University of Texas institution in four, five, or six years are included. The analysis is limited to this population to control for total cost and years to graduation, as well as years in the workforce. For each year's entering cohort, there is also an assumed high school graduate who enters the workforce instead of a university.
- **Average adjusted cost.** The average adjusted cost is calculated by first determining each graduate's total academic cost (tuition, fees, and books costs from IPEDS) for each semester enrolled (prorated based on number of Semester Credit Hours enrolled). To calculate the adjusted cost, any free aid (e.g., grants and scholarships, tuition exemptions and waivers) the graduate received is deducted from that total cost. If the total of the free aid is greater than the total academic cost (i.e., the adjusted cost is negative), then the adjusted cost for that graduate is set to zero. Then the average adjusted cost is calculated for all students in that slice (slice = time to graduation plus any demographic characteristic relevant to the analysis).
- **Median cumulative earnings.** Earnings for high school graduates are based on Integrated Public Use Microdata Series (IPUMS) median wages in Texas for high school graduates by year and age. This includes those employed both full- and part-time. The earnings for the college graduates were calculated based on individual-level Texas Workforce Commission UI wage records. This calculation includes those graduates employed in Texas both full- and part-time. Cumulative Earnings sums all available wage records. Earnings are pre-tax. Starting one year after exit, for each slice of the population, we calculated the graduates' median cumulative earnings for all years available for those who were found working in Texas.
- **Median net cumulative earnings** is calculated by deducting the average adjusted cost from the median cumulative earnings. To do this, we amortized the cost over ten years (similar to paying off student loans), assuming evenly distributed “payments.” This is deducted from the cumulative earnings, creating net median cumulative earnings.
- **Break-Even Point (BEP)** occurs when the median net cumulative earnings of a college graduate (baccalaureate) after graduation is greater than or equal to the cumulative earnings of a high school graduate entering the workforce immediately after high school. In short, the BEP is when a college graduate has recouped the cost of their degree and the opportunity cost of not entering the workforce full time after high school.
- **Missingness** refers to the number of quarters for which there are no reported earnings out of quarters in which there could/should be earnings. For the purposes of this analysis, the observable workforce includes those UT graduates whose employers report earnings to the Texas Workforce Commission. Graduates may drop out of the observable workforce—have missing earnings—for various reasons. They may lose or quit their job, have contract work or other self-employment, or move to or work for a company in another state. Missing and incomplete quarters of earnings will lead to lower cumulative earnings.

Fig. 1 Counts: Number of Graduates and Number Included in the Earnings Data**Fig. 2 Median Annual Earning Trends for Graduates Who Began as FTIC in Fall 2003 through Fall 2017 and Graduated Within Six Years**

UNDERSTANDING AFFORDABILITY AFTER GRADUATION: RETURN ON INVESTMENT (ROI)

To explore the final affordability concept—the return on investment—we will use the “story” of four young people graduating from a Texas high school: Jake, Brittany, Maria, Carlos. Obviously, these are not real people—but they are representations of the medians of the populations used for this study.

- All four represent students who graduated from high school.
- Jake represents Texas workers with only a high school diploma. He did not go to college and instead entered the workforce immediately after high school.
- The remaining three represent students who entered a UT academic institution in Fall 2003 through Fall 2016 as first-time-in-college students who graduated within six years.
 - Brittany represents graduates who completed within 4 years (with an adjusted cost of \$20,600) working in Texas.
 - Maria represents graduates who completed within 5 years (with an adjusted cost of \$21,500) working in Texas.
 - Carlos represents graduates who completed within 6 years (with an adjusted cost of \$20,600) working in Texas.
- Assumption throughout: No one experiences significant unemployment that disrupts earnings.

Breaking Even: How long does it take?

Jake started working in Texas right after he graduated high school. In his first full year, he earned \$8,532. In the following years he earned \$12,611; \$15,371; \$17,194; and \$18,113.

Brittany represents nearly 82,500 four-year college graduates working in Texas one year after graduation. (Fig. 1, above)

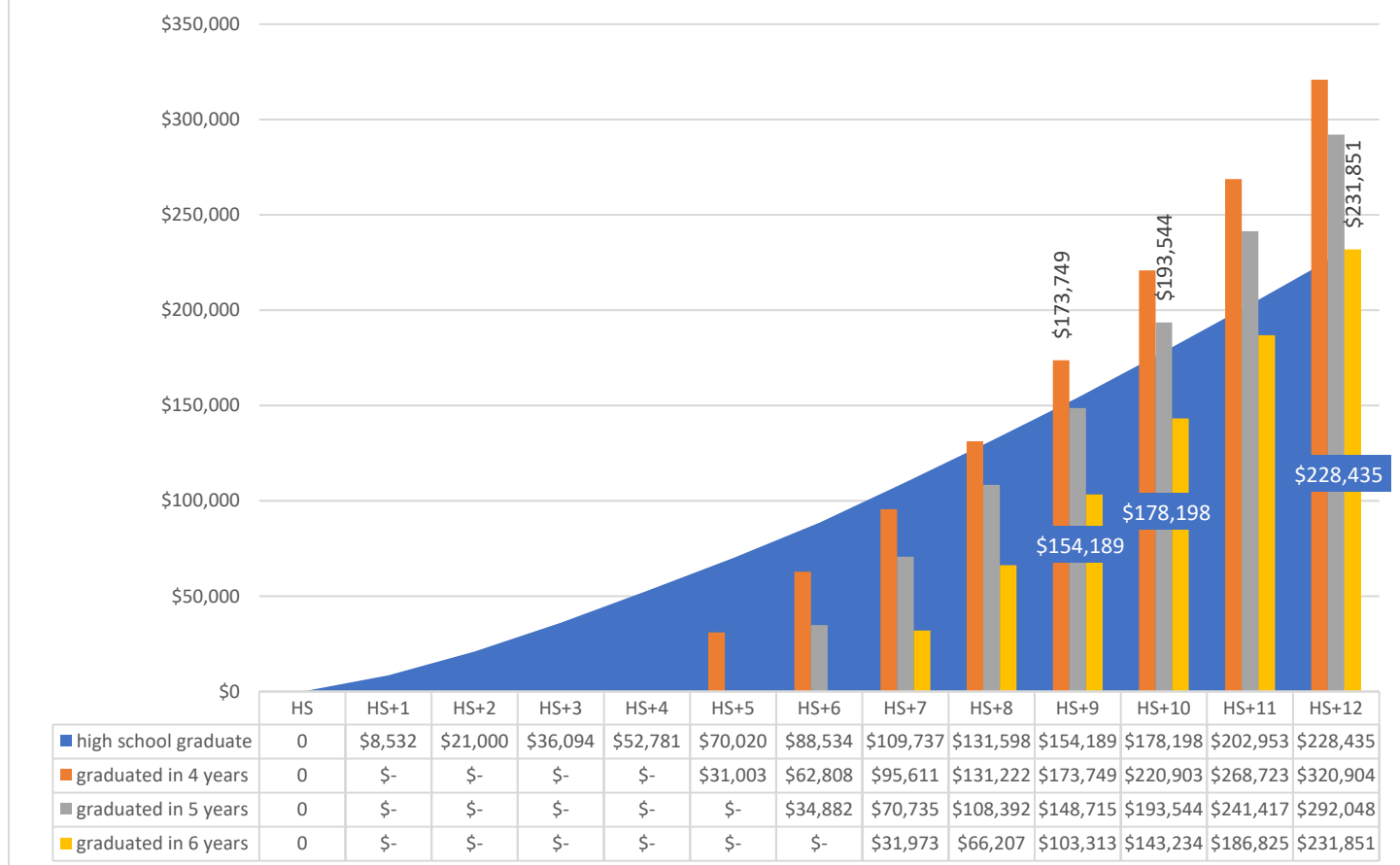
- By the time Brittany starts earning post-graduation income (\$31,003 in the first year after deducting 10% of total adjusted cost), Jake has worked for five years and earned a cumulative \$70,020. (Fig. 3, below)
- It takes Brittany **five years** of work to catch up to Jake—to break even. By the end of her fifth year after graduation (at which point she represents more than 68,000 graduates), she will have made a net cumulative \$173,749, compared to Jake’s \$154,189 cumulative from nine years of work. Each year an additional 10% of Brittany’s adjusted cost is deducted from her income, so that by the fifth year, her net cumulative income includes a total deduction of 50% of her total adjusted cost. (Fig. 1 and 2, above; Fig. 3, below)

Maria represents more than 45,900 five-year graduates working in Texas one year after graduation. (Fig. 1, above)

- By the time Maria has post-graduation income (\$34,882 in the first year, deducting 10% of total adjusted cost), Jake has worked for six years and earned a cumulative \$88,534. (Fig. 3, below)
- It takes Maria **five years** of work to catch up to Jake—to break even. But by the end of her fifth year after graduation (at which point she represents nearly 40,000 graduates), she will have made a net cumulative \$193,544, compared to his \$178,198 from ten years of work. (Fig. 3, below)

Carlos represents more than 15,100 six-year graduates working in Texas one year after graduation. (Fig. 1, above)

- By the time Carlos has post-graduation income (\$31,973 in the first year, deducting 10% of total adjusted cost), Jake has worked for seven years and earned a cumulative \$109,737. (Fig. 3, below)
- Carlos takes **six years** of work after earning his degree to catch up to Jake—to break even. But by the end of his sixth year after graduation (at which point he represents more than 10,400 graduates), Carlos made a cumulative \$231,851, compared to Jake’s \$228,435 earned over 12 years. At this point, they have all been out of high school for 12 years. (Fig. 3, below)

Fig. 3 Median Net Cumulative Earnings and Years to Break Even**Present ROI: Where are they now (2021)?**

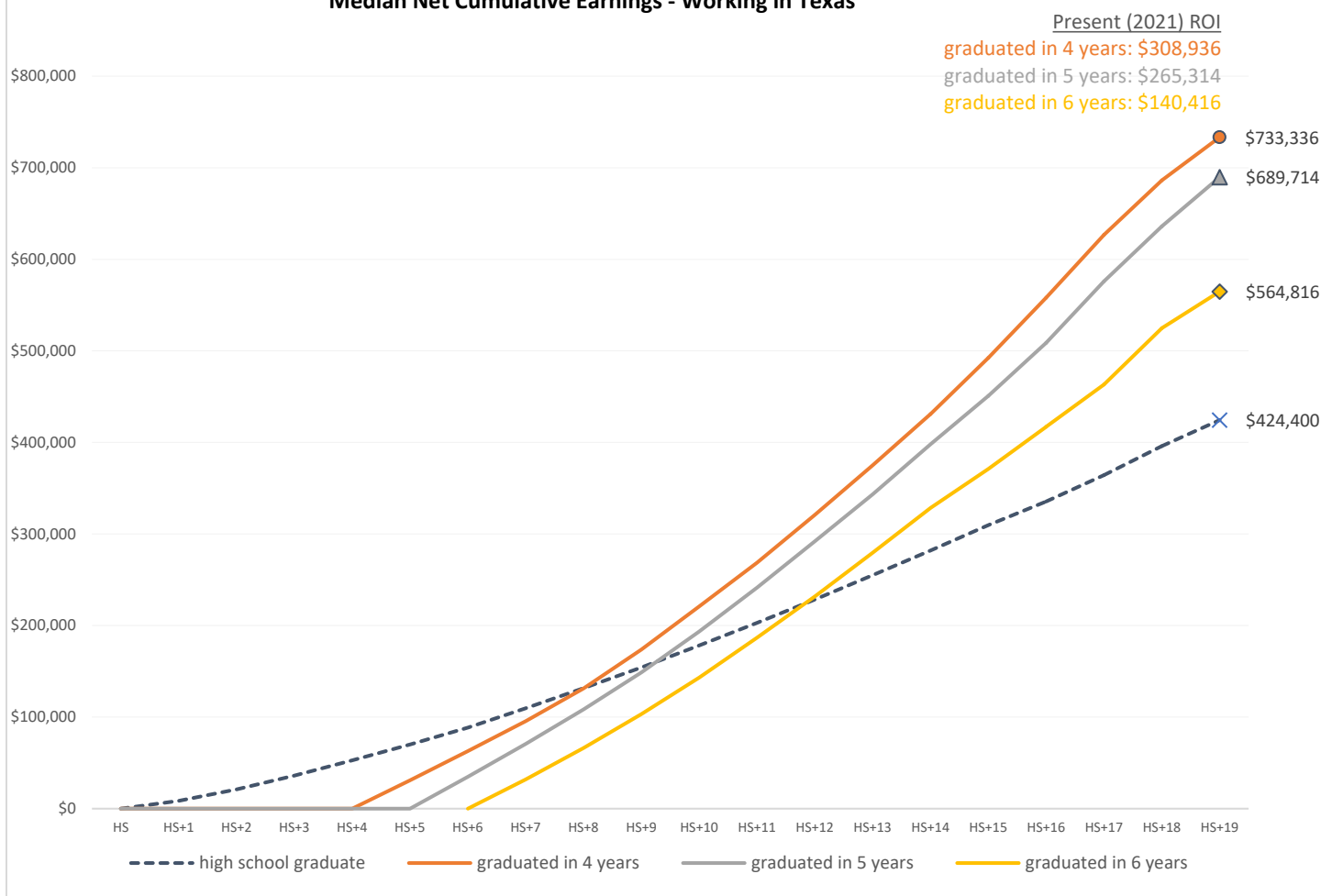
We have real earnings for graduates through 2021. Assuming for this section only that Brittany, Maria, and Carlos represent the earliest cohort in the analysis (2003) and have the most years of earnings, we have:

- 19 years of earnings for Jake (high school only)
- 15 years of earnings for Brittany (BA in 4 years)
- 14 years of earnings for Maria (BA in 5 years)
- 13 years of earnings for Carlos (BA in 6 years)

Even with the costs of education, the Great Recession, and the impacts of COVID, college graduates are seeing a significant return on their investment compared to a high school graduate who chooses to forego college and immediately enter the workforce, as demonstrated by the median annual earnings and the median net cumulative earnings in 2021 in Table 1 below.

Table 1 Earnings Profile									
Representative	Education Level	# Years to Break Even	Net Cumulative Earnings at Break Even	Average Adjusted Cost	Years in Workforce	Does not include adjusted costs		Includes adjusted costs	
						2021 Median Annual \$	Difference from Jake	2021 Median Net Cumulative \$	Difference from Jake
Jake	High school only	--	--	--	19 years	\$38,000	--	\$424,400	--
Brittany	BA in four years	5	\$173,749	(\$20,647)	15 years	\$97,047	\$59,047	\$733,336	\$308,936
Maria	BA in five years	5	\$193,544	(\$21,489)	14 years	\$78,609	\$40,609	\$689,714	\$265,314
Carlos	BA in six years	6	\$231,851	(\$20,591)	13 years	\$67,405	\$29,405	\$564,816	\$140,416

Fig. 4 Return on Investment for Graduates Who Graduated Within Six Years
Median Net Cumulative Earnings - Working in Texas



EXPLORING EARNINGS AND ROI BY PROGRAM

Cost and earnings vary by program, and so, then, does return on investment. For example, in the fifth year after graduation, the median net cumulative earnings vary from a low of \$87,635 for biology and life sciences to a high of \$315,418 for architecture and engineering. In the middle (8th out of the 15 areas) at the fifth year was physical sciences at nearly \$161,561.

Table 2 Median Net Cumulative Earnings for Students Graduates by Program and Years After Graduation

	YEAR 1		YEAR 3		YEAR 5		YEAR 10		YEAR 13		YEAR 15	
	\$	#	\$	#	\$	#	\$	#	\$	#	\$	#
Arch & engineer...	\$62,131	17,085	\$182,180	14,830	\$315,418	12,131	\$696,247	5,656	\$1,010,514	2,478	\$1,250,799	450
Arts	\$21,695	4,950	\$67,905	4,467	\$120,413	3,725	\$279,748	1,806	\$353,264	742	\$389,394	112
Biology and life...	\$15,413	14,580	\$40,063	13,342	\$87,635	11,771	\$359,651	5,429	\$621,397	2,315	\$792,012	459
Business	\$41,973	24,919	\$137,716	22,381	\$241,368	18,589	\$538,341	9,398	\$777,529	4,021	\$966,767	815
Communications...	\$29,960	11,911	\$91,618	11,398	\$164,327	9,909	\$373,267	5,425	\$504,755	2,511	\$568,201	627
Computers, stats...	\$56,810	7,270	\$172,208	5,688	\$285,890	4,246	\$587,132	1,791	\$815,917	774	\$1,094,679	183
Education	\$46,105	7,197	\$139,888	6,637	\$235,096	5,708	\$470,485	2,925	\$630,134	1,210	\$629,723	214
Health	\$47,141	10,260	\$131,571	8,664	\$232,226	6,604	\$543,448	2,461	\$733,215	912	\$844,096	151
Humanities and...	\$24,251	12,370	\$73,887	11,893	\$138,897	10,569	\$335,751	5,802	\$474,754	2,575	\$547,439	576
Industrial arts...	\$20,906	8,049	\$70,052	7,387	\$153,656	6,074	\$417,701	2,576	\$579,453	1,050	\$692,850	171
Legal services...	\$26,735	4,636	\$92,610	4,035	\$169,111	3,100	\$387,833	1,192	\$542,111	432	\$667,572	66
Physical sciences	\$28,126	2,448	\$88,661	2,301	\$161,561	1,915	\$438,429	799	\$629,663	335	\$628,730	51
Psychology	\$20,626	7,376	\$64,993	6,806	\$130,749	5,704	\$334,361	2,759	\$491,138	1,181	\$601,318	267
Social Sciences	\$28,576	10,229	\$82,129	10,041	\$154,350	8,776	\$398,013	4,894	\$572,896	2,225	\$687,237	515

DARK RED = LOWEST \$. **LIGHT RED** = SECOND LOWEST \$. **LIGHT GREEN** = SECOND HIGHEST \$. **DARK GREEN** = HIGHEST \$.

What Is the Top Earning Program?

- Overall—whether they graduated in four, five, or six years—students who graduate with a degree in Architecture and engineering (A&E) earned more than graduates from all other majors.
- A&E graduates have higher annual earnings, break even faster, have higher cumulative earnings, and, thus, higher ROI than graduates with other majors.

Table 3 Earnings Profile for Architecture and Engineering (Overall)

Year of Post-Graduation Work	Median Annual Earnings		Median Cumulative Earnings		Average Adjusted Cost	Median Net Cumulative Earnings
	\$	#	\$	#		
1	\$64,525	17,085	\$64,500	17,085	\$2,394 [10%]	\$62,131
3	\$77,156	12,829	\$189,362	14,830	\$7,182 [30%]	\$182,180
5	\$87,782	9,901	\$327,400	12,131	\$11,971 [50%]	\$315,418
10	\$115,106	4,260	\$720,200	5,656	\$23,941 [100%]	\$696,247
13	\$135,435	1,775	\$1,034,500	2,478	\$23,941 [100%]	\$1,010,514
15	\$146,890	312	\$1,274,700	450	\$23,941 [100%]	\$1,250,799

Table 4 Median Cumulative Earnings: Comparison to Architecture and Engineering

	Year 1		Year 5		Year 10		Year 13		Year 15	
Arts	-\$40,435	4,950	-\$195,005	3,725	-\$416,499	1,806	-\$657,250	742	-\$861,405	112
Biology and life sciences	-\$46,718	14,580	-\$227,784	11,771	-\$336,596	5,429	-\$389,117	2,315	-\$458,788	459
Business	-\$20,157	24,919	-\$74,051	18,589	-\$157,906	9,398	-\$232,984	4,021	-\$284,032	815
Communications and journalism	-\$32,171	11,911	-\$151,091	9,909	-\$322,980	5,425	-\$505,759	2,511	-\$682,598	627
Computers, statistics, and math	-\$5,321	7,270	-\$29,528	4,246	-\$109,114	1,791	-\$194,597	774	-\$156,120	183
Education	-\$16,026	7,197	-\$80,322	5,708	-\$225,762	2,925	-\$380,380	1,210	-\$621,076	214
Health	-\$14,989	10,260	-\$83,193	6,604	-\$152,798	2,461	-\$277,299	912	-\$406,704	151
Humanities and liberal arts	-\$37,880	12,370	-\$176,521	10,569	-\$360,496	5,802	-\$535,760	2,575	-\$703,361	576
Industrial arts, consumer services...	-\$41,225	8,049	-\$161,762	6,074	-\$278,545	2,576	-\$431,061	1,050	-\$557,949	171
Legal services, public policy...	-\$35,395	4,636	-\$146,308	3,100	-\$308,414	1,192	-\$468,403	432	-\$583,227	66
Physical sciences	-\$34,004	2,448	-\$153,857	1,915	-\$257,818	799	-\$380,851	335	-\$622,069	51
Psychology	-\$41,505	7,376	-\$184,669	5,704	-\$361,886	2,759	-\$519,375	1,181	-\$649,481	267
Social sciences	-\$33,555	10,229	-\$161,068	8,776	-\$298,234	4,894	-\$437,618	2,225	-\$563,562	515
	2nd lowest gap				2nd highest gap					
	Lowest gap				Highest gap					

- Architecture and engineering graduates who took either four or five years to graduate break even in just two years, compared to five years for those four-year and five-year graduates overall.
- For graduates who took six years to finish, it takes four years to break even, which is still two years sooner than six-year graduates overall.

Fig. 5 Median Net Cumulative Earnings and Break Even by Program

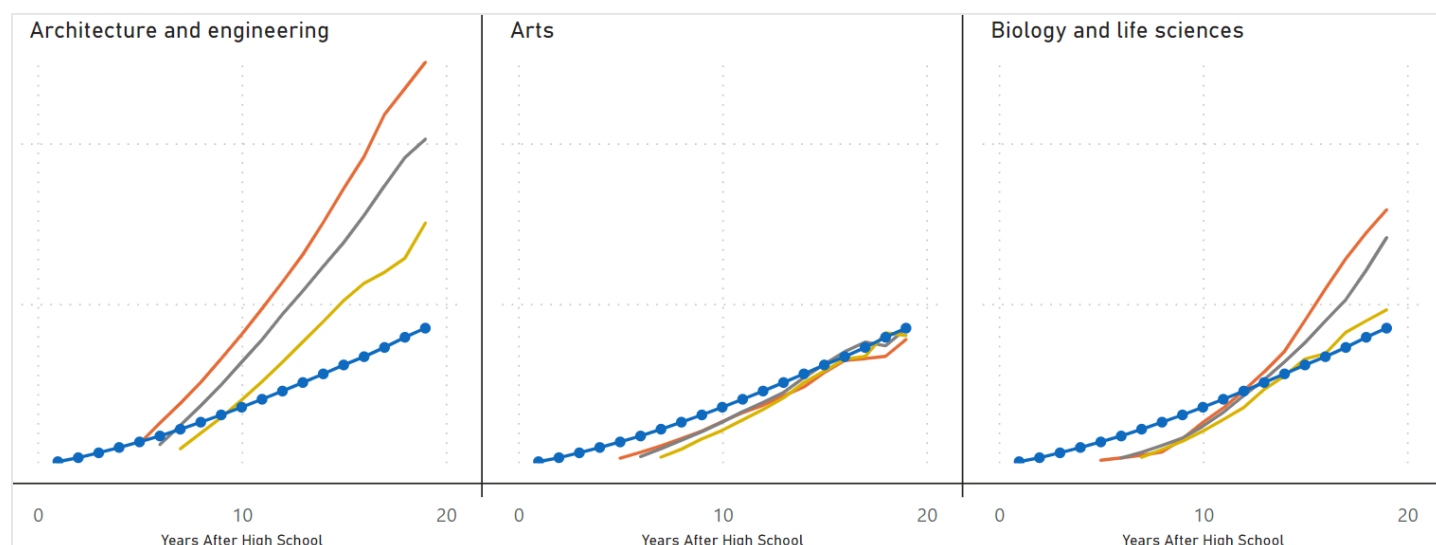


Table 5 Architecture and Engineering: Break Even				
Years to Graduation	# Years to Break Even	Net Cumulative \$ at Break Even	Net Cumulative \$ in Most Recent Year	ROI Compared to High School Graduate
4 years	2	\$128,920	\$1,252,362	\$827,962
5 years	2	\$121,925	\$1,012,716	\$588,316
6 years	4	\$200,832	\$751,665	\$327,265

What is the Program with the Lowest Earnings?

Biology

Table 6 Biology: Break Even				
Years to Graduation	# Years to Break Even	Net Cumulative \$ at Break Even	Net Cumulative \$ in Most Recent Year	ROI Compared to High School Graduate
4 years	8	\$229,467	\$792,967	\$368,567
5 years	8	\$263,617	\$705,952	\$281,552
6 years	9	\$328,121	\$481,416	\$57,016

- In the first six years after graduation, graduates in Biology and Life Sciences had the lowest median net cumulative earnings.
- Biology graduates take longer to break even than graduates overall. However, their annual and cumulative earnings rise rapidly after that point, yielding better long-term ROI. In fact, four- and five-year biology graduates have higher ROI than those graduates overall.
- Biology graduates who took either four or five years to graduate take eight years to break even, compared to five years for those four-year and five-year graduates overall.
- For biology graduates who took six years to graduate, it took nine years to break even.
- This will be covered in-depth in future work, but initial explorations into missingness in the earnings data show that Biology graduates have no data reported in 39% of their possible quarters of earnings—the highest of all the program areas. These missing quarters are likely related to the trend of a significant portion of biology majors to continue on to graduate or medical school, which also explains the eventual increase in earnings.

Arts

Table 7 Arts: Break Even				
Years to Graduation	# Years to Break Even	Net Cumulative \$ at Break Even	Net Cumulative \$ in Most Recent Year	ROI Compared to High School Grads
4 years	--	--	\$388,951	-\$35,449
5 years	12	\$312,309	\$422,590	-\$1,810
6 years	13	\$409,653	\$401,799	-\$22,601

- After the first six years after graduation, graduates in Arts had the lowest median net cumulative earnings going forward.
- Five-year Art graduates took 12 years to break even, compared to five years for five-year graduates overall. Six-year art graduates took 13 years to break even, compared to six years for six-year graduates overall. However, despite breaking even in earlier years, the net cumulative earnings in the most recent year for both were below that of the high school graduate.
- Those who graduated in four years have yet to break even, even for those working for up to 15 years.

Table 8 Earnings Profile for Arts

Year of Post-Graduation Work	Median Annual Earnings		Median Cumulative Earnings		Median Adjusted Cost	Median Net Cumulative Earnings
	\$	#	\$	#		
1	\$23,829	4,950	\$23,829	4,950	\$2,133 [10%]	\$21,695
3	\$36,390	3,765	74305	4,467	\$6,400 [30%]	67905
5	\$45,255	2,872	\$131,080	3,725	\$10,667 [50%]	\$120,413
10	\$59,528	1,228	\$301,082	1,806	\$21,334 [100%]	\$279,748
13	\$62,802	464	\$374,598	742	\$21,334 [100%]	\$353,264
15	\$60,018	65	\$410,728	112	\$21,334 [100%]	\$389,394

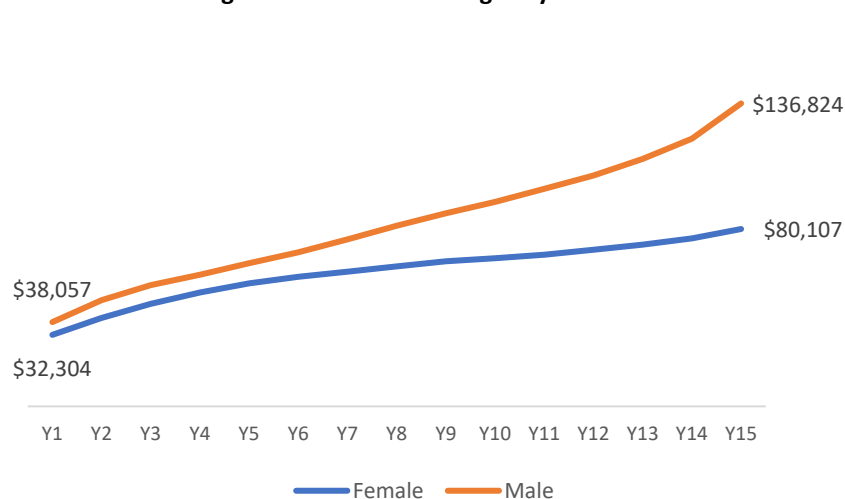
Table 9 Median Cumulative Earnings: Comparison to Arts

	Year 1		Year 5		Year 10		Year 13		Year 15	
Architecture and engineering	\$40,435	17,085	\$195,005	12,131	\$416,499	5,656	\$657,250	2,478	\$861,405	450
Biology and life sciences	-\$6,282	14,580	-\$32,778	11,771	\$79,903	5,429	\$268,133	2,315	\$402,618	459
Business	\$20,278	24,919	\$120,954	18,589	\$258,593	9,398	\$424,266	4,021	\$577,373	815
Communications and journalism	\$8,265	11,911	\$43,914	9,909	\$93,519	5,425	\$151,491	2,511	\$178,808	627
Computers, statistics, and math	\$35,115	7,270	\$165,477	4,246	\$307,385	1,791	\$462,653	774	\$705,285	183
Education	\$24,410	7,197	\$114,683	5,708	\$190,737	2,925	\$276,870	1,210	\$240,329	214
Health	\$25,446	10,260	\$111,812	6,604	\$263,701	2,461	\$379,951	912	\$454,702	151
Humanities and liberal arts	\$2,556	12,370	\$18,484	10,569	\$56,003	5,802	\$121,490	2,575	\$158,045	576
Industrial arts, consumer services...	-\$789	8,049	\$33,243	6,074	\$137,954	2,576	\$226,189	1,050	\$303,457	171
Legal services, public policy...	\$5,040	4,636	\$48,697	3,100	\$108,085	1,192	\$188,847	432	\$278,178	66
Physical sciences	\$6,431	2,448	\$41,148	1,915	\$158,681	799	\$276,399	335	\$239,336	51
Psychology	-\$1,069	7,376	\$10,336	5,704	\$54,613	2,759	\$137,875	1,181	\$211,924	267
Social sciences	\$6,881	10,229	\$33,937	8,776	\$118,265	4,894	\$219,632	2,225	\$297,843	515
	2nd highest gap				2nd lowest gap					
	Highest gap				Lowest gap					

EXPLORING EARNINGS AND ROI BY GENDER

Looking across all cohorts, the population is 56% female and 44% male, with that distribution being closer for earlier cohorts and wider for later, more recent cohorts. Isolating for gender only, no matter what year after graduation or how many years it took the student to graduate, male graduates have higher earnings than female graduates.

- Among the graduates found with earnings in their first year after graduation 57% were female and 43% were male.
- In their first year, male graduates reported nearly \$5,800 (18%) more in earnings than female graduates.
- In general, it takes female graduates an additional one year of work to break even compared to their male counterparts even though, on average, adjusted costs for male graduates were 17% higher than for female graduates (\$22,744 versus \$19,432). (Table 10)

Fig. 6 Median Annual Wages by Gender**Table 10 Years to Break Even by Gender**

	Measure	Graduated in 4 years	Graduated in 5 years	Graduated in 6 years
Female	# years	5 years	5 years	7 years
	Net Cumulative \$	\$167,906	\$182,228	\$260,612
Male	# years	4 years	4 years	6 years
	Net Cumulative \$	\$143,596	\$160,016	\$249,367

- By the fifth year of earnings, the median annual earnings of males are more than 16% higher than for females. Looking at the median net cumulative earnings for the first five years, males had accumulated \$24,100 more in earnings than females—or 14% more.
- The median annual earnings for male graduates were 37% higher than for female graduates by the tenth year after graduation. This disparity in annual earnings meant that male graduates had an additional \$81,700 (20%) in median net cumulative earnings compared to female graduates.

- In the fifteenth year of earnings, female graduates make up 61% of those found working, and male graduates make up 39%. The median male annual earnings were nearly \$57,000 (71%) more than for female graduates. This growing disparity means male graduates had almost \$284,700 more in cumulative net earnings than females—nearly 44% more.

Table 11 Median Net Cumulative Earnings by Gender

		Year 1		Year 5		Year 10		Year 13		Year 15	
		\$	#	\$	#	\$	#	\$	#	\$	#
4 years	Female	\$29,138	50,311	\$167,906	37,579	\$409,757	18,544	\$570,741	8,773	\$643,650	2,854
	Male	\$34,935	32,150	\$187,348	23,622	\$483,842	11,695	\$756,344	5,660	\$929,551	1,803
	Difference MvF	\$5,797		\$19,442		\$74,084		\$185,604		\$285,901	
5 years	Female	\$32,876	23,924	\$182,228	18,676	\$415,463	9,166	\$568,333	3,665	--	--
	Male	\$37,834	21,994	\$209,061	17,445	\$507,253	8,293	\$738,412	3,352	--	--
	Difference MvF	\$4,958		\$26,832		\$91,791		\$170,079		--	--
6 years	Female	\$30,368	7,404	\$176,292	5,632	\$379,690	2,580	\$515,322	677	--	--
	Male	\$33,953	7,702	\$199,018	5,985	\$456,914	2,655	\$642,019	638	--	--
	Difference MvF	\$3,585		\$22,726		\$77,224		\$126,697		--	--
Overall	Female	\$30,360	81,639	\$173,266	61,887	\$408,497	30,290	\$566,676	13,115	\$644,020	2,854
	Male	\$35,783	61,846	\$197,375	47,052	\$490,185	22,643	\$742,015	9,650	\$928,697	1,803
	Difference MvF	\$5,423		\$24,109		\$81,688		\$175,340		\$284,677	

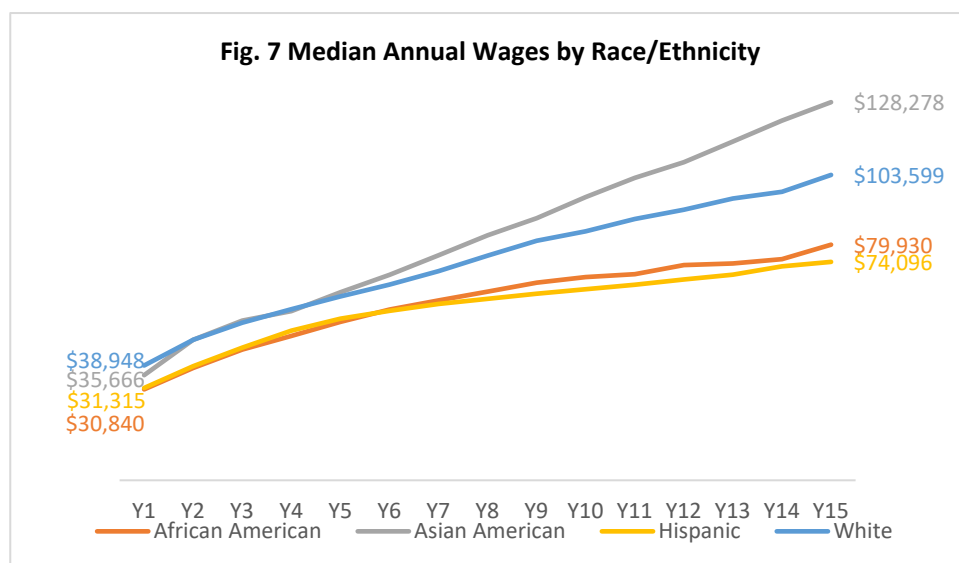
Are these gaps related to women leaving the workforce? Our initial analysis of the missingness rate in the workforce data shows that, across all graduates, women are no more likely to be missing quarters of earnings than men. Both are missing 28% of possible earnings quarters. Are women more likely to earn degrees in programs that have lower earnings? Yes, but we still see gaps by gender even within graduates from the same program. Also related to major are the industries and occupations where women work. Are women more likely to work in lower-paying but socially impactful jobs like teaching or social services? A more detailed and intersectional look at gender is required.

EXPLORING EARNINGS AND ROI BY RACE/ETHNICITY

- Across all cohorts, graduates in this population were 5% African American, 17% Asian American, 35% Hispanic, 38% White, and the remaining 5% were International, Additional Races, or Unknown. This last group, because of small cell sizes, is omitted from this section of the analysis. More recent cohorts are less White and more Hispanic. Earlier cohorts were more White and less Hispanic.

Median Annual Earnings

- For the first year of earnings, the population, which includes all cohorts, was 6% African American, 15% Asian American, 38% Hispanic, and 38% White. In the first year after graduation, the median annual earnings were highest for White graduates.
- However, starting in the fifth year and continuing, the median earnings of Asian American graduates are consistently highest. African American graduates would need to earn 19% more, Hispanic graduates 16% more, and White graduates 2% more to match the fifth-year earnings of Asian American graduates.



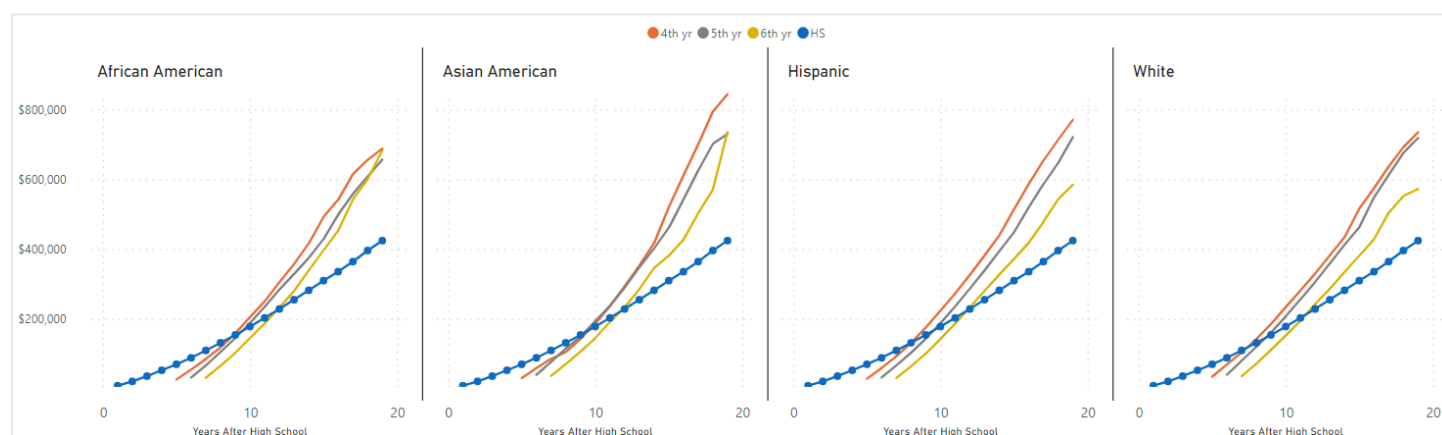
- In the tenth year, the graduates found working were 5% African American, 14% Asian American, 33% Hispanic, and 46% White. Asian Americans continue to have the highest median annual earnings. African American graduates would need to earn 39% more, Hispanic graduates 48% more, and White graduates 14% more to match the tenth-year earnings of Asian American graduates.
- The graduates found working in the fifteenth year of earnings was 3% African American, 18% Asian American, 22% Hispanic, and 56% White. To match the annual median earnings of Asian American graduates, African American graduates would need to earn 60% more, Hispanic graduates 73% more, and White graduates 24% more.

Median Net Cumulative Earnings

Table 12 Median Net Cumulative Earnings by Race/Ethnicity

Year of work	Y05	Y06	Y07	Y08	Y09	Y10	Y11	Y12	Y13	Y14	Y15
4-Year Graduates											
African American	\$158,566	\$205,151	\$250,365	\$305,268	\$357,195	\$416,738	\$492,425	\$541,220	\$615,013	\$655,973	\$688,131
Asian American	142,722	186,491	236,462	293,177	352,836	416,415	520,077	611,267	699,841	794,091	843,977
Hispanic	175,327	223,604	273,086	326,608	381,787	439,336	513,764	586,387	653,544	713,419	770,420
White	185,882	233,874	281,585	330,085	382,146	433,996	515,923	574,521	636,421	692,368	734,848
5-Year Graduates											
African American	\$188,335	\$235,029	\$284,150	\$328,801	\$374,994	\$428,709	\$499,407	\$558,165	\$607,341	\$656,618	
Asian American	193,817	237,996	289,450	348,092	402,040	461,053	542,319	625,282	701,887	730,058	
Hispanic	187,902	235,507	286,618	338,951	394,306	448,486	519,379	586,197	647,035	721,350	
White	207,224	256,062	305,540	358,546	412,212	462,098	548,236	612,277	675,724	718,788	
6-Year Graduates											
African American	\$187,255	\$232,961	\$279,992	\$338,985	\$396,440	\$453,215	\$542,545	\$600,319	\$682,698		
Asian American	191,479	232,990	285,431	345,642	380,736	426,781	503,000	570,546	735,715		
Hispanic	186,366	232,881	280,893	327,374	371,981	417,905	477,653	542,941	584,463		
White	194,854	242,757	286,170	334,344	380,967	428,456	504,531	551,981	572,630		

Fig. 8 Median Net Cumulative Earnings and Break Even by Race/Ethnicity



- Among four-year graduates, White graduates in the first nine years have higher median net cumulative earnings than African American, Asian American, and Hispanic graduates. However, the gap is narrowing over that time.
- Although it takes some time to accumulate, the higher median annual earnings for Asian American graduates (as noted in the section above) that begin in the fifth year mean that, in the eleventh year, the median net cumulative earnings of Asian American graduates come even with White graduates and then surpass them starting in the eleventh (for four-year graduates) or twelfth (for five- and six-year graduates) year.

Table 13 Years to Break Even by Race/Ethnicity

	Graduated in 4 years	Graduated in 5 years	Graduated in 6 years
African American	5	5	6
Asian American	6	5	6
Hispanic	5	5	6
White	4	4	6

EXPLORING EARNINGS AND ROI BY PELL STATUS

Looking across all cohorts, 40% of the population received Pell (Yes Pell) while 60% did not (No Pell). Two-thirds of No Pell graduates completed in four years, with 28% completing in five years and 6% in six years. In general, Yes Pell graduates took longer to complete. Half of Yes Pell graduates completed in four years, with 35% taking five years, and 15% taking six years.

Table 14 Number of Graduates

	4-Year	5-Year	6-Year	Overall
No Pell	77,544	32,794	7,546	117,884
Yes Pell	39,314	27,535	11,550	78,399

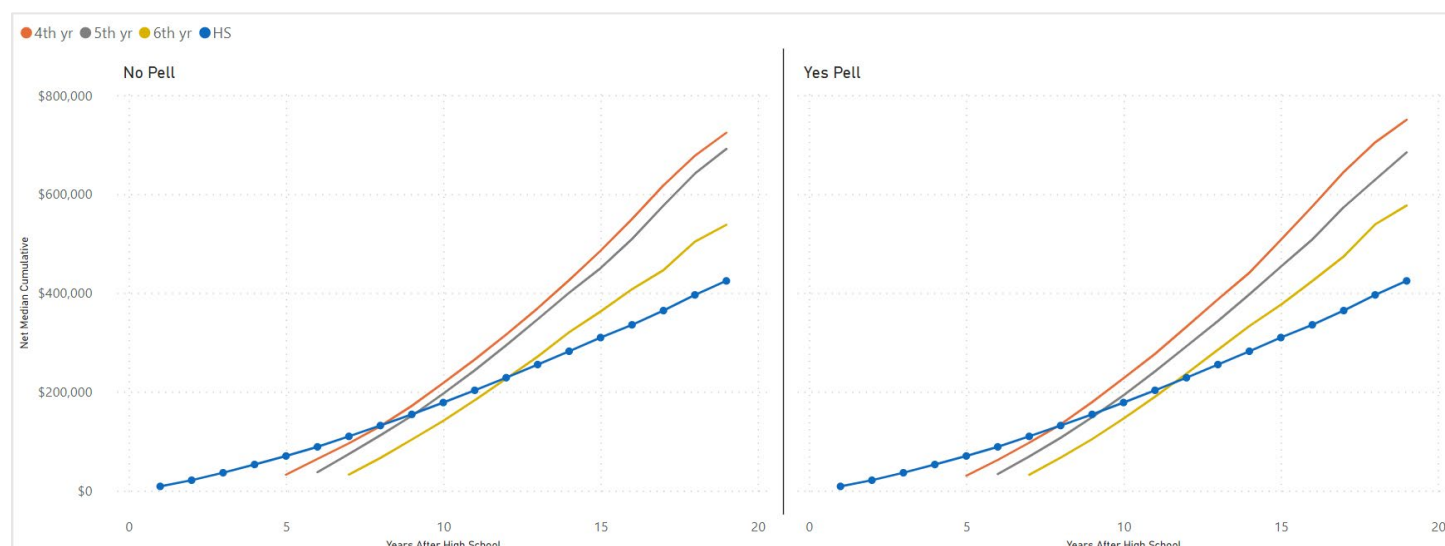
Isolating for Pell only, no matter what year after graduation or how many years it took the student to graduate, graduates who did not receive Pell have higher median annual earnings than graduates who received Pell.

- Among the graduates found with earnings in their first year after graduation, 56% were No Pell and 44% were Yes Pell.
- Students who are Yes Pell have significantly lower average adjusted cost than those who do not (between \$25,000 and \$28,000 less). This means, despite their lower median annual earnings, Yes Pell graduates tend to break even sooner.

Table 15 Years to Break Even by Pell Status

	Graduated in 4 years	Graduated in 5 years	Graduated in 6 years
Yes Pell	4	5	6
No Pell	5	5	7

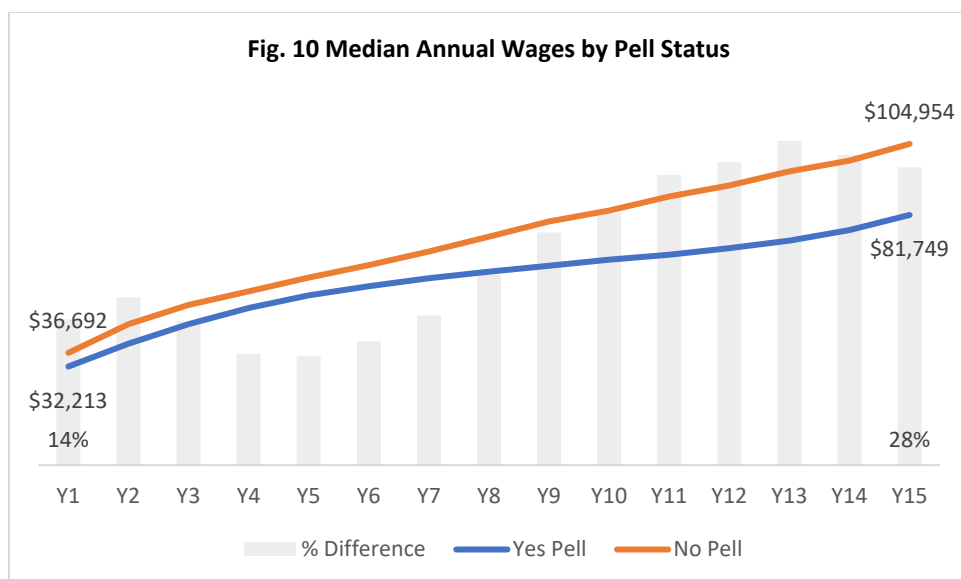
Fig. 9 Net Median Cumulative Earnings and Break Even by Pell Status



- In their first year, No Pell graduates had nearly \$4,500 (14%) more in annual earnings than Yes Pell graduates. In the fifth year of earnings, the median annual earnings of No Pell graduates are still more than 10% higher than Yes Pell graduates. The gap decreased between the first and fifth years, so the fifth year shows the smallest gap between the two groups. After year five, however, the gap widens again quickly, more than doubling (to 22%) by year nine and more than tripling (to 31%) by year thirteen. (Figure 10)

Table 16 Median Annual Earnings including Counts and Distribution by Pell Status

	Year 1			Year 5			Year 10			Year 13			Year 15		
	\$	#	%	\$	#	%	\$	#	%	\$	#	%	\$	#	%
No Pell	\$35,010	51,836	63%	\$61,641	31,104	64%	\$86,612	14,913	69%	\$101,068	6,993	71%	\$104,954	2,242	72%
Yes Pell	\$30,455	30,625	37%	\$56,518	17,545	36%	\$70,739	6,744	31%	\$78,517	2,862	29%	\$81,749	862	28%



Median Net Cumulative Earnings

- Although No Pell graduates have consistently higher median annual earnings, Yes Pell graduates have higher net cumulative earnings. (Table 17)
- This disparity is likely related to No Pell graduates dropping out of the observable workforce. Graduates who received Pell are missing about 24% of all possible quarters of earnings. Graduates who did not receive Pell, however, are missing 31% of all possible quarters of earnings.

Table 17 Median Net Cumulative Earnings including Counts and Distribution by Pell Status

	Year 1			Year 5			Year 10			Year 13			Year 15		
	\$	#	%	\$	#	%	\$	#	%	\$	#	%	\$	#	%
No Pell	\$33,602	80,698	56%	\$180,214	63,845	59%	\$432,725	33,716	64%	\$622,307	15,309	67%	\$722,290	3,446	74%
Yes Pell	\$31,627	62,787	44%	\$185,758	45,094	41%	\$442,871	19,217	36%	\$630,220	7,456	33%	\$748,878	1,211	26%

Looking at Pell More Closely

- To explain some of the findings for Pell recipients, we explore the characteristics of the population in Table 18 below.
- As noted above, the population of graduates overall is 60% No Pell and 40% Yes Pell.
- Yes Pell are less likely than No Pell to be graduates from programs with higher median salaries such as Architecture and Engineering, Computers, and Business. They are somewhat more likely to be in programs with lower median earnings but higher social impact, e.g., Education, Health, Legal Services, and Psychology.
- Pell recipients are more likely to be female than those who do not receive Pell.
- Yes Pell graduates are more likely to be African American and Hispanic and less likely to be Asian American or White than No Pell graduates.
- These three characteristics—specific programs, being female, and African American and Hispanic race/ethnicity—are all associated with lower median annual earnings, as explored above.
- Pell recipients were as likely as those who did not receive Pell to be found enrolled after graduation, probably indicating they pursued a graduate degree. In both cases, 45% were found enrolled after graduation.

Table 18 Characteristics of Pell Recipients

	Characteristic by Pell Status		Pell Status by Characteristic	
	Yes Pell	No Pell	Yes Pell	No Pell
Program				
<i>High Median Earnings</i>				
Architecture and Engineering	32%	68%	10%	14%
Business	37%	63%	15%	17%
Computers	34%	66%	5%	6%
<i>Low Median Earnings</i> (high social impact)				
Education	54%	46%	6%	3%
Health	52%	48%	8%	5%
Legal Services	70%	30%	5%	1%
Psychology	49%	51%	6%	4%
Gender				
Male	43%	57%	40%	47%
Female	36%	64%	60%	53%
Race/Ethnicity				
African American	62%	38%	8%	3%
Asian American	38%	62%	16%	17%
Hispanic	65%	35%	56%	20%
White	19%	81%	18%	52%
Additional Education				
Found Enrolled	40%	60%	45%	45%
Not Found Enrolled	40%	60%	55%	55%

POLICY IMPLICATIONS

Across all the different characteristics—major, gender, race/ethnicity, and Pell status—the one consistent finding is that those graduates who finish within four years break even in fewer years and have higher return on investment than those who finished in five or six years. This seems less to do with the costs, since on average, the costs are relatively similar (around \$21,000).

THE METHODOLOGY

Calculating Adjusted Cost

For each individual in the data, the cost for each semester was estimated based on tuition and fee rates published in IPEDS, as well as the number of semester credit hours taken. All semesters were summed for a total cost. Total grant and scholarship aid plus tuition exemptions and waivers were calculated and then deducted from the total cost, yielding the adjusted cost. Where total free aid was higher than total cost (i.e., the adjusted cost was negative), zero (\$0) was used as the adjusted cost for the purpose of this report. Then the average for each population (graduating in four, five, or six years) was calculated.

- The average adjusted cost for the cohorts who graduated in four years was \$20,600
- The average adjusted cost for the cohorts who graduated in five years was \$21,500
- The average adjusted cost for the cohorts who graduated in six years was \$20,600

Calculating Earnings (Median Annual Earnings)

Earnings for high school graduates are based on IPUMS median earnings in Texas for high school graduates by year and age. For example, we used the Texas high school only median earnings for 19-year-olds in year one, for 20-year-olds in year two, for 30-year-olds in year twelve, etc. This includes those employed both full- and part-time.

The earnings for the college graduates were calculated based on Texas Workforce Commission UI wage records. Members of the entering cohorts from Fall 2003 through Fall 2017 who graduated within six years were tracked through 2021. Unlike the calculations used in seekUT, the calculations used in this analysis include those graduates employed in Texas both full- and part-time.

While TWC collects wage data for most employment, there are specific kinds of employment that are not included: federal employees, including postal workers and the military; self-employment; and contract work, which includes those employed in certain service work like Uber drivers. This will impact both the number of students found working and the potential total annual and total cumulative earnings of some graduates. The most likely outcome of this gap is that Break Even Points might actually be earlier and ROI might be higher than reported.

The Components of ROI and the Break-Even Point

Calculating Cumulative Earnings

Without access to record-level data for high school graduates, we had to sum the annual medians to estimate a cumulative value. For college graduates, individual earnings are collected and summed to create an annual cumulative earnings value, and then the median cumulative value is used. A graduate remains included in all eligible years, even if there are no earnings in one or more of those years. For example, an individual from the earliest cohort who had earnings reported in the first five years but then has no wages reported after that, would continue to be included in the cumulative earnings calculation but with just the five-year cumulative value. They are not, however, included in the calculation of median annual earnings (above). As noted above, the cumulative earnings in this report are likely lower than actual cumulative earnings due to some sources of wages not being available in the data.

# of Cohorts Included in Annual and Cumulative Earnings			
	Graduated in 4 years	Graduated in 5 years	Graduated in 6 years
Yr 1 earnings	15	14	13
Yr 2 earnings	14	13	12
Yr 3 earnings	13	12	11
Yr 4 earnings	12	11	10
Yr 5 earnings	11	10	9
Yr 6 earnings	10	9	8
Yr 7 earnings	9	8	7
Yr 8 earnings	8	7	6
Yr 9 earnings	7	6	5
Yr 10 earnings	6	5	4
Yr 11 earnings	5	4	3
Yr 12 earnings	4	3	2
Yr 13 earnings	3	2	1
Yr 14 earnings	2	1	
Yr 15 earnings	1		

Calculating Net Cumulative Earnings

Not all graduates have student loans, but all students have tuition and fees (costs), so we use the calculated adjusted cost to quantify the investment in education for each person. This adjusted cost is included in calculations related to break even and return on investment. To do this, we amortized the cost over ten years (similar to paying off student loans), assuming evenly distributed payments. This is deducted from the median cumulative earnings, creating a Median Net Cumulative Earnings.

$$\text{Net Cumulative Earnings}_{\text{YEAR 1}} = \text{Cumulative Earnings} - (1 \times (\text{Adjusted Cost}/10))$$

$$\text{Net Cumulative Earnings}_{\text{YEAR 2}} = \text{Cumulative Earnings} - (2 \times (\text{Adjusted Cost}/10))$$

$$\text{Net Cumulative Earnings}_{\text{YEAR 5}} = \text{Cumulative Earnings} - (5 \times (\text{Adjusted Cost}/10))$$

$$\text{Net Cumulative Earnings}_{\text{YEAR 10}} = \text{Cumulative Earnings} - (\text{Adjusted Cost}) \text{ (this is the same for all years 10 and above)}$$

The “Break Even Point”

The BEP is the year in which the cumulative median net pre-tax earnings of a college graduate (baccalaureate) after graduation are greater than or equal to the cumulative median earnings of a high school graduate entering the workforce immediately after high school.

Calculating ROI

Return on investment was calculated by subtracting the calculated estimate of cumulative earnings of the high school graduate from the calculated cumulative earnings for the college graduates, minus adjusted cost.

Present ROI is the amount of median cumulative earnings of the earliest cohort of baccalaureates above the cumulative median earnings of a high school graduate in the most current year (2021).