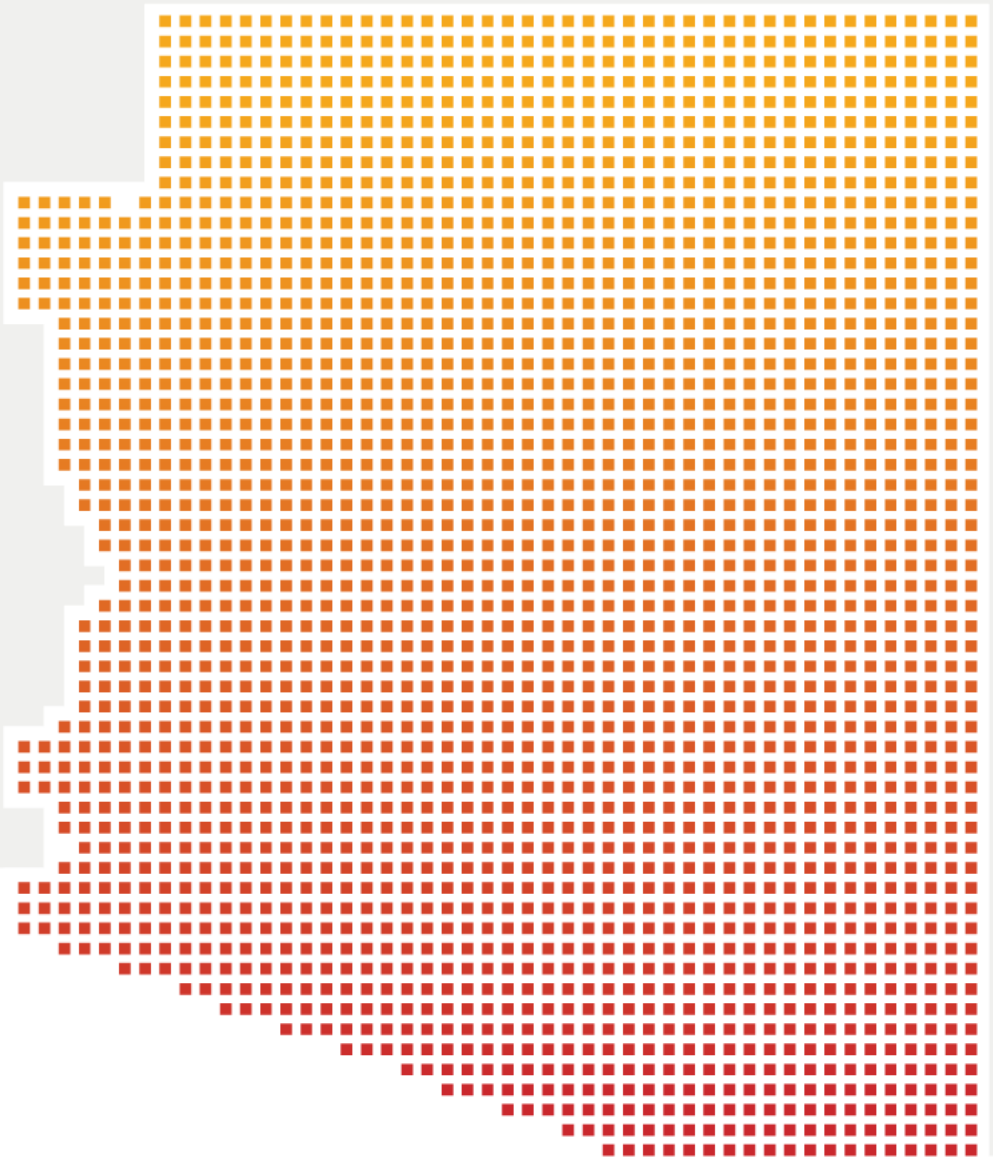
2026



Billions in the Balance

Technical Appendix

OCTOBER 2026

Helios Education Foundation

education FORWARD arizona

Table A1. Cohort Education Pipeline

POPULATION OR MEASURE	HS GRADUATE	SOME COLLEGE	AA DEGREE	BA DEGREE	ADVANCED DEGREE
Status quo:					
Female Hispanic	32.0	23.2	9.4	24.8	10.6
Female White	22.0	27.0	8.7	29.8	12.5
Female Other +	29.2	25.8	8.7	24.3	11.9
Male Hispanic	39.0	24.7	8.9	18.4	8.9
Male White	33.0	27.2	8.2	23.1	8.6
Male Other +	36.9	24.8	9.4	20.7	8.3
Total cohort	24,860	19,840	6,920	18,540	7,920
Total percent	31.8	25.4	8.9	23.7	10.1
College enrollment +20:					
Female Hispanic	19.0	31.0	11.5	27.6	10.9
Female White	7.3	36.2	10.5	33.0	12.9
Female Other +	15.2	34.8	10.7	27.0	12.3
Male Hispanic	25.9	33.5	11.3	20.3	9.0
Male White	21.0	35.3	9.9	25.2	8.7
Male Other +	23.6	33.7	11.4	22.9	8.5
Total cohort	14,510	26,500	8,490	20,470	8,110
Total percent	18.6	33.9	10.9	26.2	10.4
College completion +10:					
Female Hispanic	32.0	18.7	10.4	27.3	11.7
Female White	22.0	21.9	9.6	32.7	13.8
Female Other +	29.2	21.3	9.6	26.8	13.1
Male Hispanic	39.0	21.1	9.8	20.3	9.8
Male White	33.0	23.2	9.0	25.4	9.4
Male Other +	36.9	20.9	10.3	22.8	9.1
Total cohort	24,860	16,500	7,610	20,390	8,710
Total percent	31.8	21.1	9.7	26.1	11.2

Sources: 4-year public high school cohort from AZ DOE (2025); adjusted per Arizona Board of Regents 2023 Postsecondary Attainment Report data; AZ Report Cards (2024); and IPEDS (2021 cohort, Table 22). Notes: Total cohort 78,080 high school graduates (2025); excludes special education students (AZ DOE SPED, 2025). Rows add to 100.

Table A2. Earnings by Education Level (Lifetime)

POPULATION OR MEASURE	HS GRADUATE	SOME COLLEGE	AA DEGREE	BA DEGREE	ADVANCED DEGREE
Female: Hispanic	$946,430	$1,131,330	$1,238,830	$1,837,100	$2,122,850
Female: White	$1,056,270	$1,195,480	$1,374,090	$2,082,230	$2,358,460
Female: Other	$968,770	$1,128,500	$1,224,940	$1,995,110	$2,305,670
Male: Hispanic	$1,272,710	$1,497,570	$1,598,390	$2,303,060	$2,798,270
Male: White	$1,440,200	$1,694,020	$1,865,760	$2,994,930	$3,266,490
Male: Other	$1,210,450	$1,452,120	$1,521,150	$2,447,490	$2,713,780
Weighted average [a]	$1,176,480	$1,367,040	$1,482,780	$2,254,150	$2,556,880

Sources: Current Population Survey (CPS), 2014-2024; Arizona residents aged 18-64 adjusted for labor market participation. Notes: Gross earnings before tax. Labor market activity begins at age 18 (conditional on not being in college) and lasts until age 65. Model includes health and pension benefits incidence as per CPS average at ECI, BLS; alpha factor of 10%; productivity growth rate 1.5%. No adjustments for incarceration. [a] Demographic weights from Appendix Table A1 (status quo). Present values at age 18; discount rate 3%. 2026 dollars.

Table A3. Tax Contributions by Education Level (Lifetime)

POPULATION OR MEASURE	HS GRADUATE	SOME COLLEGE	AA DEGREE	BA DEGREE	ADVANCED DEGREE
Federal tax contributions:					
Female: Hispanic	$36,740	$79,400	$109,900	$220,090	$313,300
Female: White	$45,590	$87,360	$127,490	$259,520	$348,550
Female: Other	$40,580	$80,780	$112,360	$248,330	$352,810
Male: Hispanic	$58,970	$118,820	$157,590	$298,840	$473,780
Male: White	$71,520	$143,160	$194,080	$412,650	$526,120
Male: Other	$56,540	$121,380	$154,270	$337,690	$433,110
Weighted average [a]	$53,130	$106,290	$143,160	$290,400	$399,760
State tax contributions:					
Female: Hispanic	$30,640	$44,410	$56,360	$96,460	$126,000
Female: White	$35,900	$48,070	$64,090	$113,230	$142,740
Female: Other	$31,720	$44,790	$56,530	$107,250	$139,200
Male: Hispanic	$44,880	$63,400	$77,530	$127,130	$170,860
Male: White	$52,310	$73,650	$93,740	$168,490	$201,600
Male: Other	$42,330	$62,450	$74,310	$136,260	$166,360
Weighted average [a]	$40,790	$56,850	$70,920	$123,270	$155,190
Tax Total (weighted ave.)	$93,920	$163,140	$214,080	$413,670	$554,950

Sources: Current Population Survey (CPS), 2014-2024; Arizona residents aged 18-64 adjusted for labor market participation. Federal tax rates from average of: simulated taxes from TAXSIM35; Saez and Zucman (2019); IRS (2025). State/local tax rates: Tax Foundation, 2025; ITEP (2024). Notes: State tax include state income, property, and sales/excise taxes. Earnings profiles as per Appendix Table A2. [a] Demographic weights from Appendix Table A1 (status quo). Present values at age 18; discount rate 3%. 2026 dollars.

Table A4. Postsecondary Financing by Education Level (Lifetime)

POPULATION OR MEASURE	HS GRADUATE	SOME COLLEGE	AA DEGREE	BA DEGREE	ADVANCED DEGREE
College expenditures:					
Federal subsidy	-	$2,670	$390	$8,950	$17,190
State subsidy	-	$10,680	$12,130	$35,800	$68,770
Tuition/fees [a]	-	$16,320	$6,740	$54,690	$105,070
Social total expenditure	-	$29,680	$19,250	$99,430	$191,040

Sources: Higher education costs for average two-year and four-year colleges (IPEDS, 2025). Federal proportions from Digest of Educational Statistics, 2025, Table 333.10. Budgetary evidence from Arizona Regents (2026). Notes: Social expenditure for college includes public subsidy plus tuition/fees (expected). [a] Model assumes tuition/fees paid at average rate of ASU, UA, NAU. Present values at age 18; discount rate 3%. 2026 dollars.

Table A5. Health Gains/Burdens by Education Level (Lifetime)

POPULATION OR MEASURE	HS GRADUATE	SOME COLLEGE	AA DEGREE	BA DEGREE	ADVANCED DEGREE
Healthcare: Federal					
Female: Hispanic	$42,690	$43,250	$18,350	$14,940	$1,930
Female: White	$77,840	$62,420	$34,150	$22,640	$4,880
Female: Other	$41,640	$35,700	$39,230	$16,360	$17,470
Male: Hispanic	$20,290	$25,990	$14,000	$9,870	$2,280
Male: White	$41,620	$21,110	$19,170	$5,680	$9,930
Male: Other	$38,390	$37,020	$37,580	$3,360	$10,440
Weighted average	$40,870	$37,970	$23,490	$13,660	$5,820
Healthcare: State					
Female: Hispanic	$21,410	$19,400	$8,670	$10,210	$980
Female: White	$28,720	$18,830	$14,570	$4,430	$540
Female: Other	$15,360	$19,660	$16,270	$4,160	$1,950
Male: Hispanic	$6,470	$10,000	$6,180	$1,510	$1,170
Male: White	$14,400	$7,240	$6,370	$2,020	$640
Male: Other	$13,140	$15,460	$13,550	$590	$5,320
Weighted average	$15,840	$14,370	$9,730	$4,610	$1,160
Health status gains [a]	-	$44,290	$55,370	$83,050	$110,740

Sources: Medicaid spending: KFF, 2025. State/federal spending/matching rate: KFF, 2026. QALY valuation at $100,000 (Ye et al., 2022). Notes: [a] Health status gains relative to high school graduate (weighted average). Medicare spending over-65 excluded. Present values at age 18; discount rate 3%. 2026 dollars.

Table A6. Crime Burdens by Education Level (Lifetime)

POPULATION OR MEASURE	HS GRADUATE	SOME COLLEGE	AA DEGREE	BA DEGREE	ADVANCED DEGREE
Crime burden federal:					
Female	$8,740	$3,670	$2,190	$1,050	$440
Male	$31,220	$13,110	$7,810	$3,750	$1,560
Weighted average	$18,610	$8,400	$5,090	$2,590	$1,090
Crime burden state/local:					
Female	$13,550	$5,690	$3,390	$1,630	$680
Male	$48,390	$20,320	$12,100	$5,810	$2,420
Weighted average	$28,840	$13,020	$7,890	$4,020	$1,680
Social crime burden:					
Female	$35,220	$14,790	$8,800	$4,230	$1,760
Male	$125,790	$52,830	$31,450	$15,090	$6,290
Weighted average	$74,970	$33,850	$20,520	$10,440	$4,380

Sources: Crime–arrest gradient from Cano-Urbina and Lochner (2019); Cruz and Lopez (2019). Spending per offender from Koegl and Farrington (2021); Miller et al. (2021). Federal spending: Justice Expenditure and Employment Tool, 2025. State spending from Urban Institute, June 2025. Incarceration population from Prison Policy Initiative, 2025.
Notes: Social crime burden proportional to Criminal Justice System burden. Present values at age 18; discount rate 3%. 2026 dollars.

Table A7. Productivity Spillovers by Education Level (Lifetime)

POPULATION OR MEASURE	HS GRADUATE	SOME COLLEGE	AA DEGREE	BA DEGREE	ADVANCED DEGREE
Income:					
Female: Hispanic	$42,590	$50,910	$55,750	$82,670	$95,530
Female: White	$47,530	$53,800	$61,830	$93,700	$106,130
Female: Other	$43,590	$50,780	$55,120	$89,780	$103,760
Male: Hispanic	$57,270	$67,390	$71,930	$103,640	$125,920
Male: White	$64,810	$76,230	$83,960	$134,770	$146,990
Male: Other	$54,470	$65,350	$68,450	$110,140	$122,120
Weighted average	$52,940	$61,520	$66,730	$101,440	$115,060
Federal tax contributions:					
Female: Hispanic	$190	$230	$250	$370	$430
Female: White	$210	$240	$280	$420	$480
Female: Other	$200	$230	$250	$400	$470
Male: Hispanic	$260	$300	$320	$470	$570
Male: White	$290	$340	$380	$610	$660
Male: Other	$250	$290	$310	$500	$550
Weighted average	$240	$280	$300	$460	$520
State/local tax contributions:					
Female: Hispanic	$60	$70	$80	$110	$130
Female: White	$60	$70	$80	$130	$140
Female: Other	$60	$70	$70	$120	$140
Male: Hispanic	$80	$90	$100	$140	$170
Male: White	$90	$100	$110	$180	$200
Male: Other	$70	$90	$90	$150	$160
Weighted average	$70	$80	$90	$140	$160

Sources: Economic spillovers from Monaco and Yamarik (2015); Liu et al. (2020). Productivity rates from lifetime earnings (Appendix Table A2) and tax contributions (Appendix Table A3). Present values at age 18; discount rate 3%. 2026 dollars.

Table A8. Welfare Expenditure by Education Level (Lifetime)

POPULATION OR MEASURE	HS GRADUATE	SOME COLLEGE	AA DEGREE	BA DEGREE	ADVANCED DEGREE
Welfare federal:					
Female: Hispanic	$4,820	$3,500	$2,440	$1,950	$320
Female: White	$4,430	$2,870	$1,980	$810	$550
Female: Other	$7,280	$5,400	$4,250	$670	$340
Male: Hispanic	$1,730	$1,300	$850	$790	$1860
Male: White	$3,170	$1,220	$1,170	$500	$330
Male: Other	$4,900	$1,600	$2,390	$660	$280
Weighted average	$3,730	$2,400	$1,870	$1,000	$680
Welfare state:					
Female: Hispanic	$3,350	$2,440	$1,700	$1,360	$220
Female: White	$3,080	$1,990	$1,380	$560	$380
Female: Other	$5,060	$3,750	$2,950	$460	$230
Male: Hispanic	$1,200	$900	$590	$550	$1290
Male: White	$2,200	$850	$810	$340	$230
Male: Other	$3,410	$1,110	$1,660	$460	$190
Weighted average	$2,590	$1,670	$1,300	$700	$480
Welfare social:					
Female: Hispanic	$1,230	$890	$620	$500	$80
Female: White	$1,130	$730	$500	$210	$140
Female: Other	$1,850	$1,370	$1,080	$170	$90
Male: Hispanic	$440	$330	$220	$200	$470
Male: White	$810	$310	$300	$130	$80
Male: Other	$1,250	$410	$610	$170	$70
Weighted average	$950	$610	$480	$260	$170

Sources: Welfare receipt/expenditures: AZ Dept. of Economic Security, 2026. Federal proportions for SNAP, TANF and Section 8 housing. Social welfare as administrative/error cost rate at 18% (Brookings Policy Brief, 2016). Notes: Federal welfare payments assumed zero based on eligibility. Present values at age 18; discount rate 3%. 2026 dollars.

Table A9. Marginal Excess Tax Burdens by Education Level (Lifetime)

POPULATION OR MEASURE	HS GRADUATE	SOME COLLEGE	AA DEGREE	BA DEGREE	ADVANCED DEGREE
METB federal:					
Female: Hispanic	-$5,020	$2,050	$9,740	$22,910	$35,130
Female: White	-$8,120	$780	$10,010	$26,860	$38,980
Female: Other	-$4,720	$2,900	$7,310	$26,280	$38,010
Male: Hispanic	$3,420	$10,260	$16,860	$33,440	$54,310
Male: White	$2,190	$13,780	$20,590	$47,650	$59,870
Male: Other	$570	$9,210	$13,440	$38,900	$48,640
Weighted average	-$1,180	$6,610	$13,510	$31,760	$45,060
METB state:					
Female: Hispanic	-$5,090	-$1,000	$2,620	$5,210	$6,450
Female: White	-$5,310	-$440	$2,880	$8,010	$8,490
Female: Other	-$4,440	-$1,150	$1,580	$7,340	$7,920
Male: Hispanic	$2,850	$4,350	$6,640	$10,530	$11,890
Male: White	$2670	$5,920	$8,540	$15,470	$15,780
Male: Other	$1,480	$3,550	$5,240	$11,750	$10,990
Weighted average	-$770	$2,060	$4,790	$9,390	$9,990
METB aggregate:					
Female: Hispanic	-$10,110	$1,050	$12,360	$28,110	$41,570
Female: White	-$13,430	$340	$12,890	$34,870	$47,470
Female: Other	-$9,170	$1,750	$8,890	$33,620	$45,920
Male: Hispanic	$6,260	$14,600	$23,500	$43,970	$66,200
Male: White	$4,860	$19,700	$29,120	$63,120	$75,650
Male: Other	$2050	$12,760	$18,690	$50,650	$59,630
Weighted average	-$1,950	$8,680	$18,310	$41,150	$55,050

Sources: METB rates from Ghavari (2006); Tran and Wende (2021). Notes: METB adjusts for crime, health, welfare, and education burdens as per Appendix Tables A5-A8. Present values at age 18; discount rate 3%. 2026 dollars.

Table A10. Lifetime Economic Profiles: Social Perspective (Present value per student)

MEASURE	STATUS QUO	COLLEGE ENROLLMENT +20%	COLLEGE COMPLETION +10%
Earnings	$1,648,270	$1,703,200	$1,683,560
Health Federal savings	-$28,640	-$26,690	-$27,540
Health State savings	-$10,790	-$10,010	-$10,360
Health Social gains	$47,220	$54,640	$48,910
Crime Federal savings	-$9,230	-$7,350	-$8,970
Crime State savings	-$14,310	-$11,390	-$13,900
Crime Social burdens [a]	-$37,210	-$29,620	-$36,130
Welfare Social burdens	-$580	-$510	-$560
College Social contributions [b]	-$52,330	-$58,300	-$55,530
METB savings	$18,570	$21,320	$19,940
Total	$1,560,970	$1,635,290	$1,599,420
Net v. status quo	-	$74,320	$38,450

Sources: Tables A2-A4, weighted by education, race, gender for Arizona high school cohort. Notes: [a] Burdens on victims of crime. [b] College spending includes tuition/fees. Present values at age 18 (δ = 3%), 2026 dollars (rounded to $10).

Table A11. Lifetime Economic Profiles: Student Perspective (Present Value Per Student)

MEASURE	STATUS QUO	COLLEGE ENROLLMENT +20%	COLLEGE COMPLETION +10%
Earnings	$1,648,270	$1,703,200	$1,683,560
Health Social	$47,220	$54,640	$48,910
College Tuition/Fees	-$28,440	-$31,650	-$30,170
Total	$1,667,050	$1,726,190	$1,702,300
Gain v. status quo	-	$59,140	$35,250

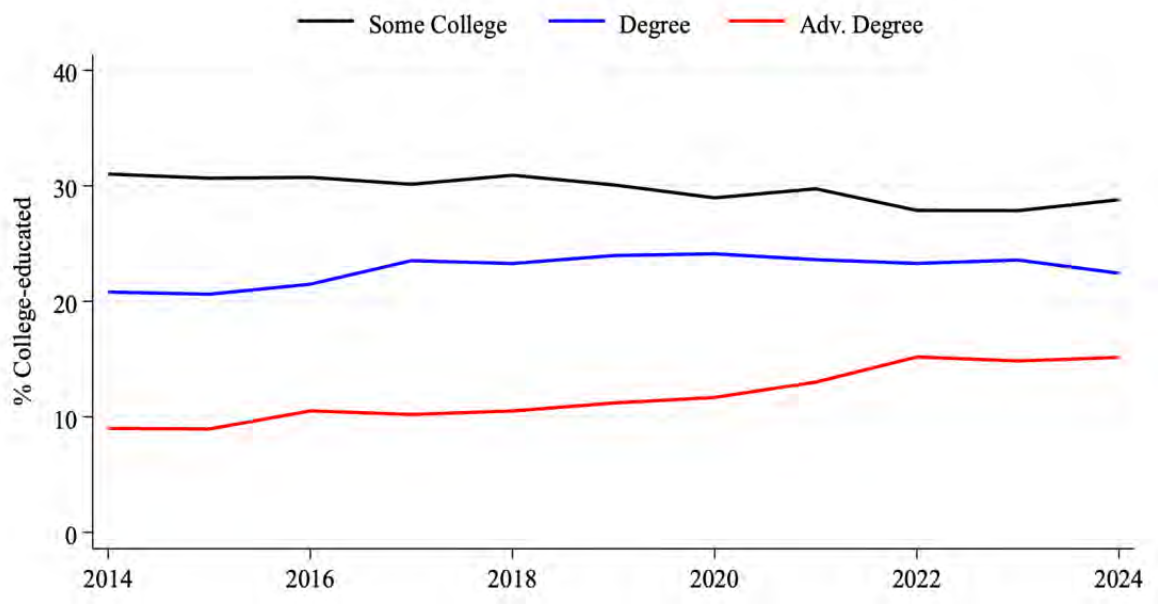
Sources: Tables A2-A4. Notes: Fees for private school not included. Present values at age 18 (δ = 3%), 2026 dollars (rounded to $10).

Table A12. Lifetime Economic Profiles: Fiscal Perspective (Present Value Per Student)

MEASURE	STATUS QUO	COLLEGE ENROLLMENT +20%	COLLEGE COMPLETION +10%
Federal:			
Tax contributions	$166,260	$179,540	$174,060
Health spending	-$28,640	-$26,690	-$27,540
Crime savings	-$9,230	-$7,350	-$8,970
Welfare spending	-$2,280	-$2,020	-$2,220
Productivity taxes	$330	$340	$340
College subsidies	-$4,590	-$5,100	-$4,870
METB savings	$14,620	$16,650	$15,700
Total	$136,470	$155,370	$146,500
Gain v. status quo	-	$18,900	$10,030
State:			
Tax contributions	$78,770	$83,180	$81,530
Health spending	-$10,790	-$10,010	-$10,360
Crime spending	-$14,310	-$11,390	-$13,900
Welfare spending	-$1,580	-$1,400	-$1,540
Productivity taxes paid	$100	$100	$100
College subsidies	-$19,300	-$21,550	-$20,500
METB savings	$3,950	$4,670	$4,240
Total	$36,840	$43,600	$39,570
Gain v. status quo	-	$6,760	$2,730
Total Gain v. status quo	-	$25,660	$12,760

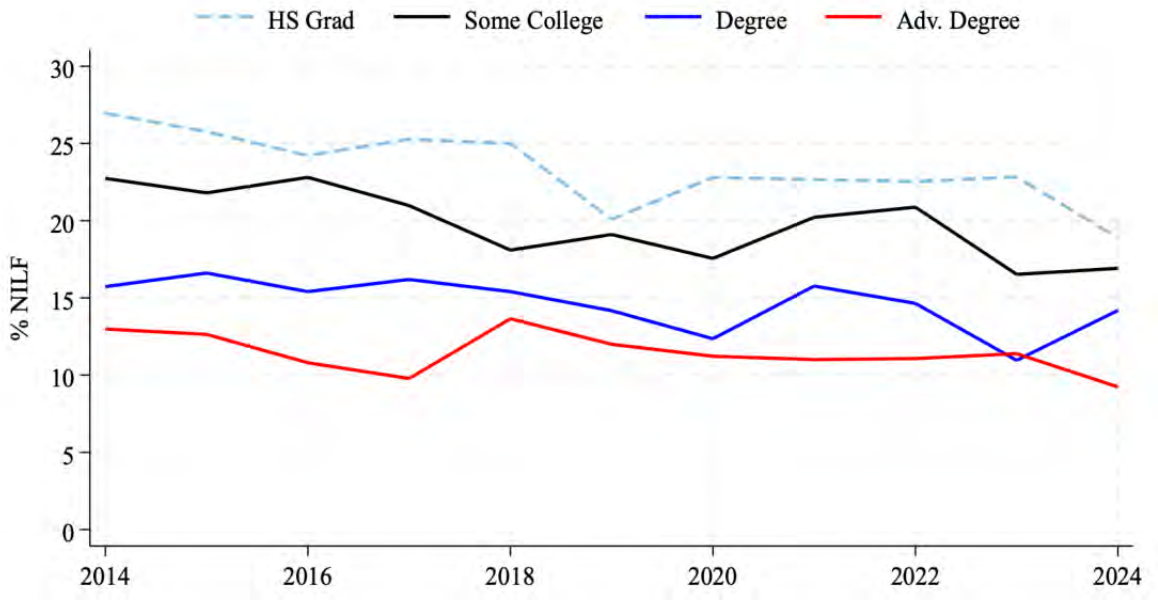
Sources: Tables A3-A4. Notes: Present values at age 18 (δ = 3%), 2026 dollars (rounded to $10).

Figure A1. Arizona: College-Educated Workforce



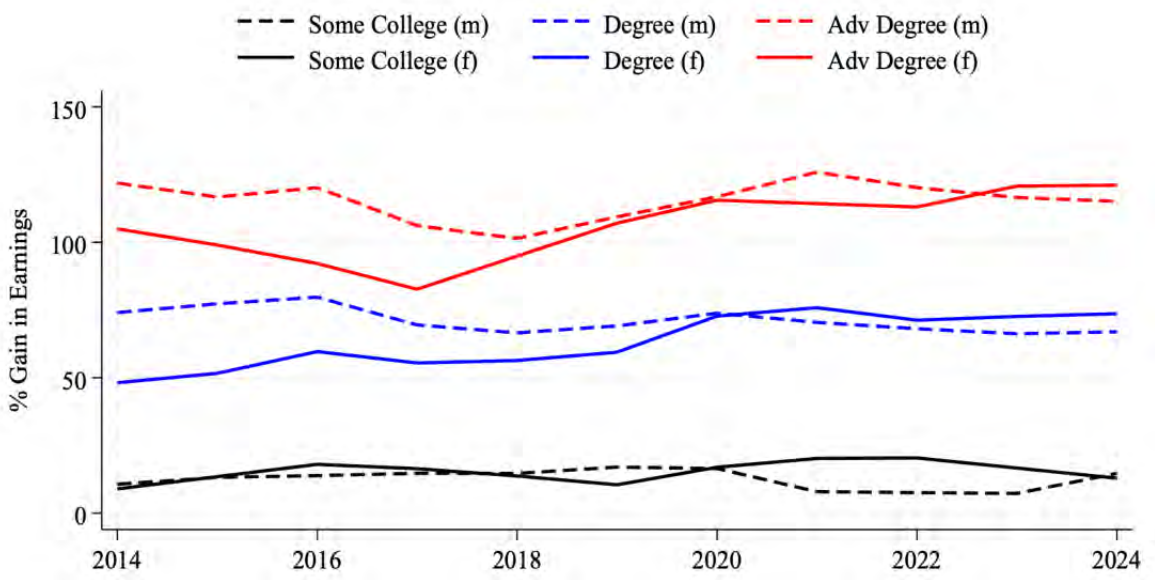
Source: CPS ORG. Sample: ages 22–57. Note: Percent of all workforce.

Figure A2. Arizona: Not in Labor Force



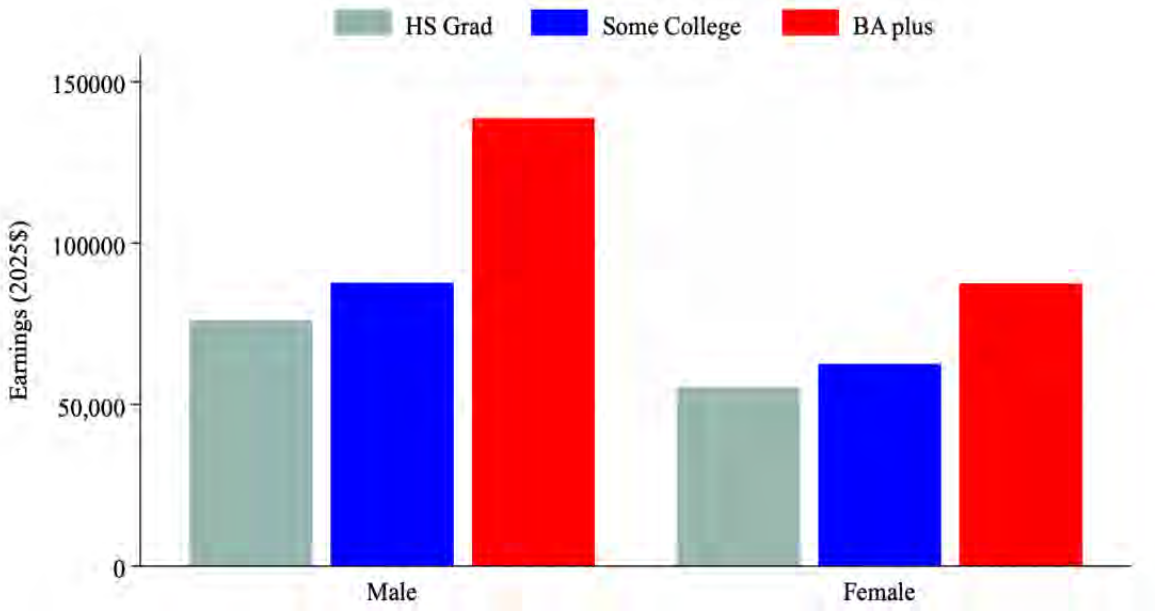
Source: CPS ORG. Sample: ages 22–57.

Figure A3. Arizona: Earnings Gain over HS Graduate



Source: CPS ORG. Sample: ages 22–57; non-zero earnings. Notes: Three-year MA coefficients from annual Mincerian earnings functions (4 race × sex categories).

Figure A4. Annual Earnings by Education: Arizona



Source: Quarterly Workforce Indicators, Arizona 2017–2024; stable employment category.

Figure A5. Arizona Earnings Growth Post-Award

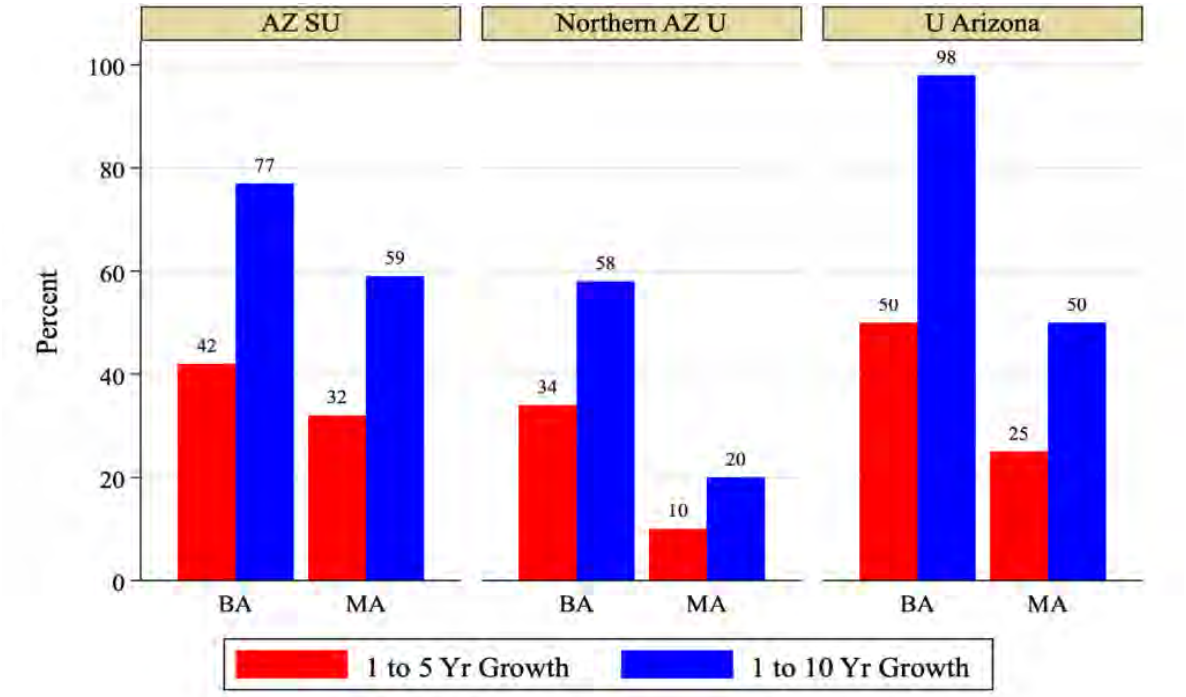
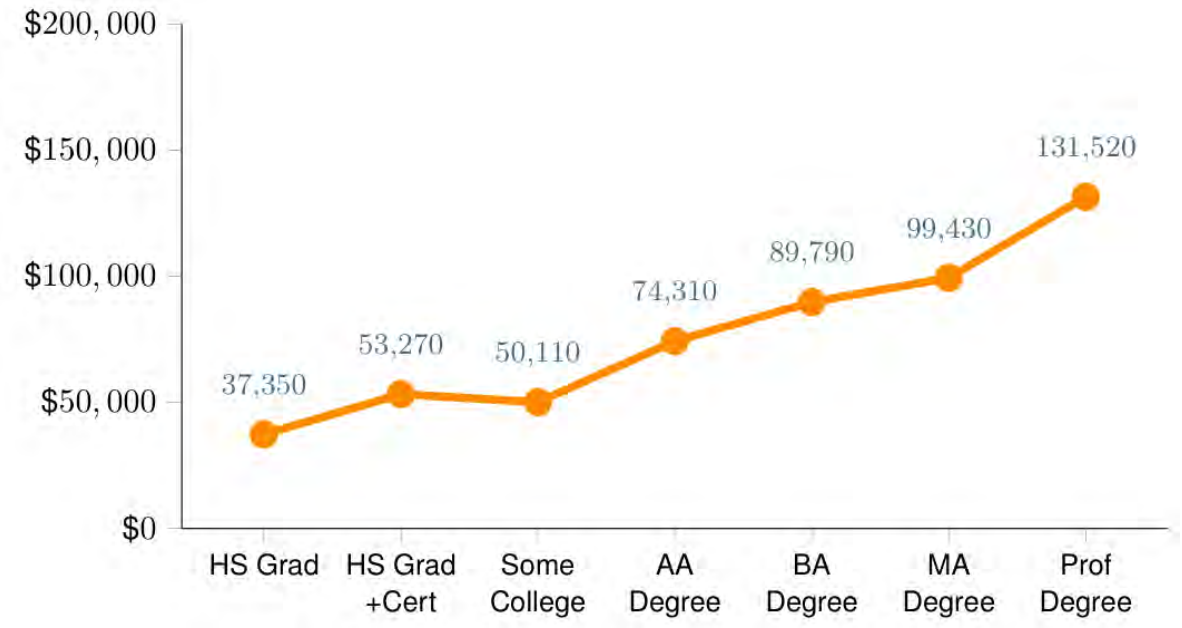
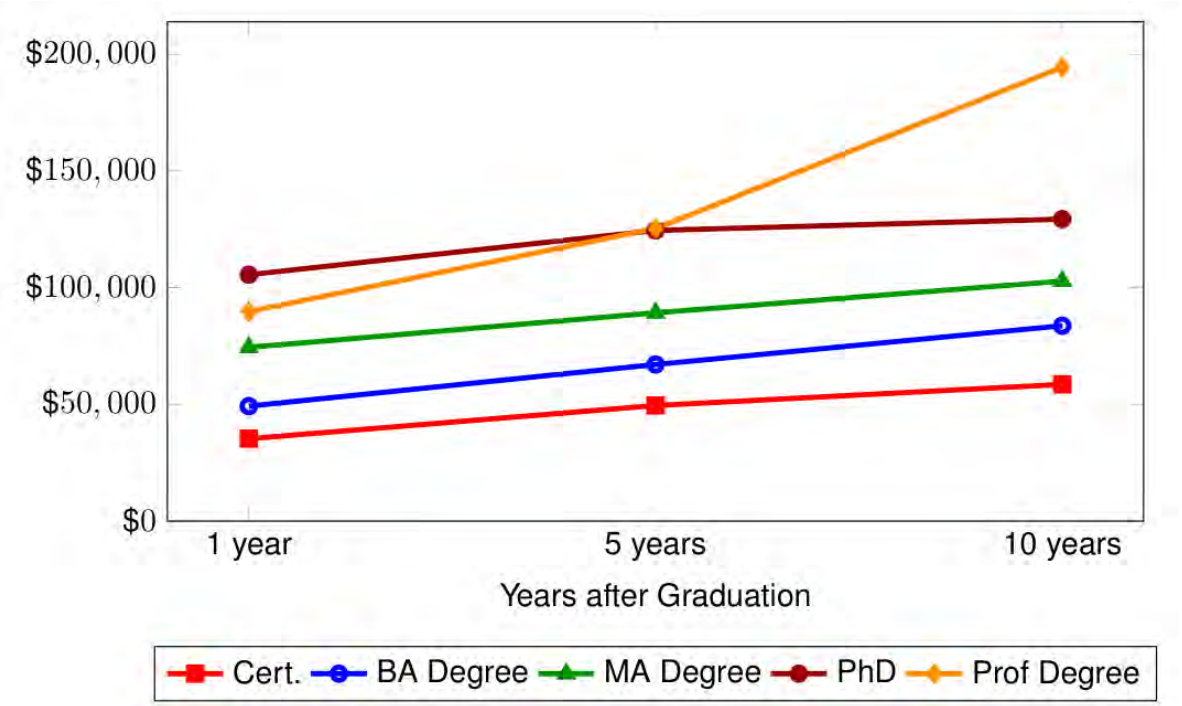


Figure B1. Healthcare Sector: Mean Earnings



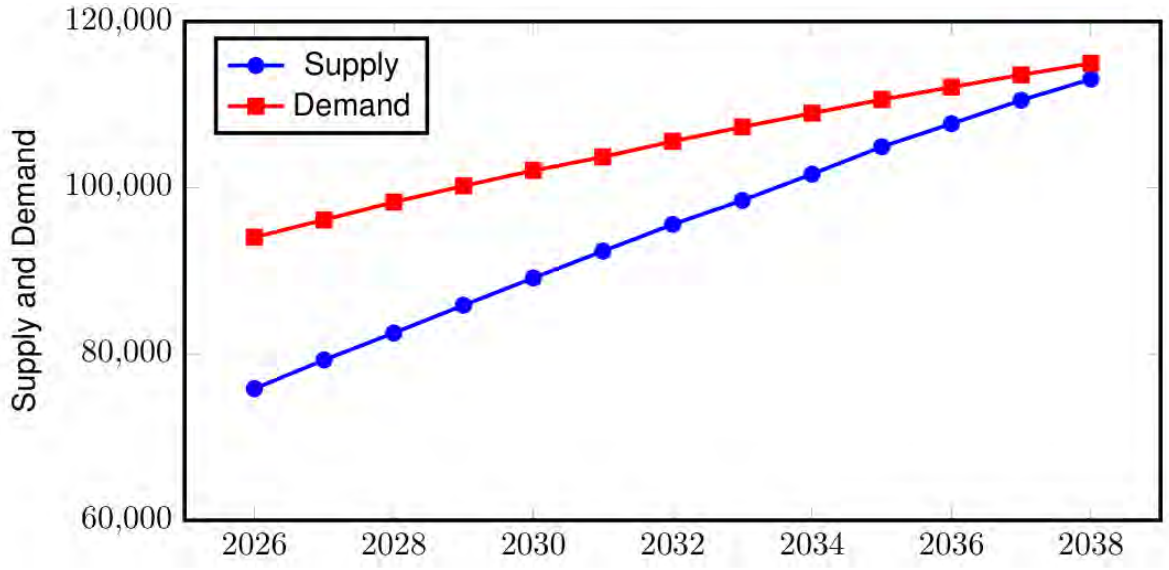
Source/Notes: OEWS national data, 2026 dollars.

Figure B2. Healthcare Awards: Earnings Growth



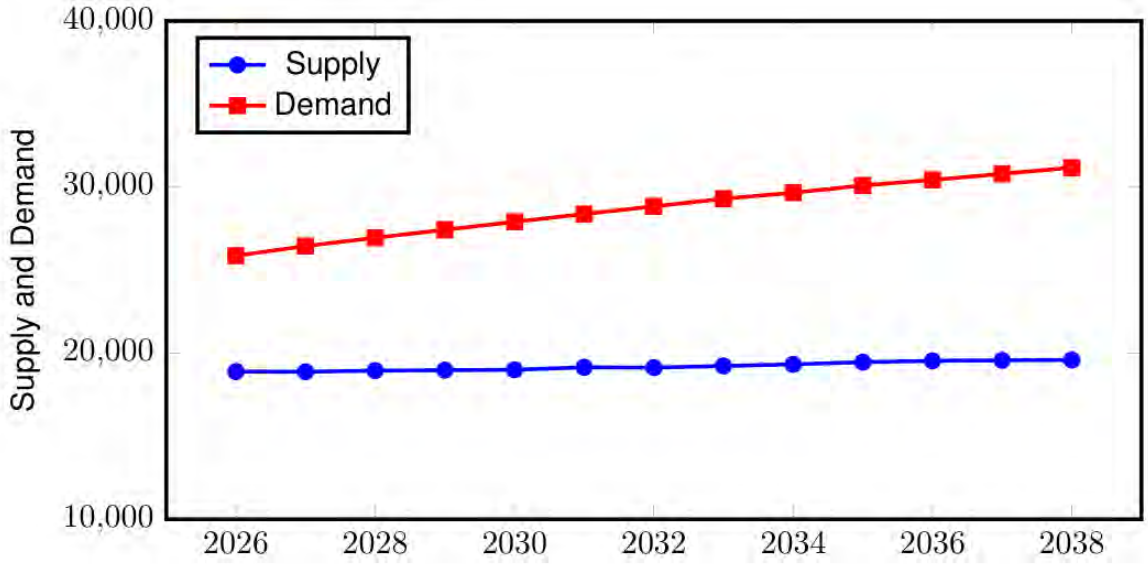
Source/Notes: PSEO data, AZ public universities, 2026 dollars.

Figure B3. Supply Shortages: Arizona Nursing Workforce



Source/Notes: HRSA Arizona data.

Figure B4. Supply Shortages: Arizona Physician Workforce



Source/Notes: HRSA Arizona data.

Figure B5. Health Care Workforce in 2026 and 2034

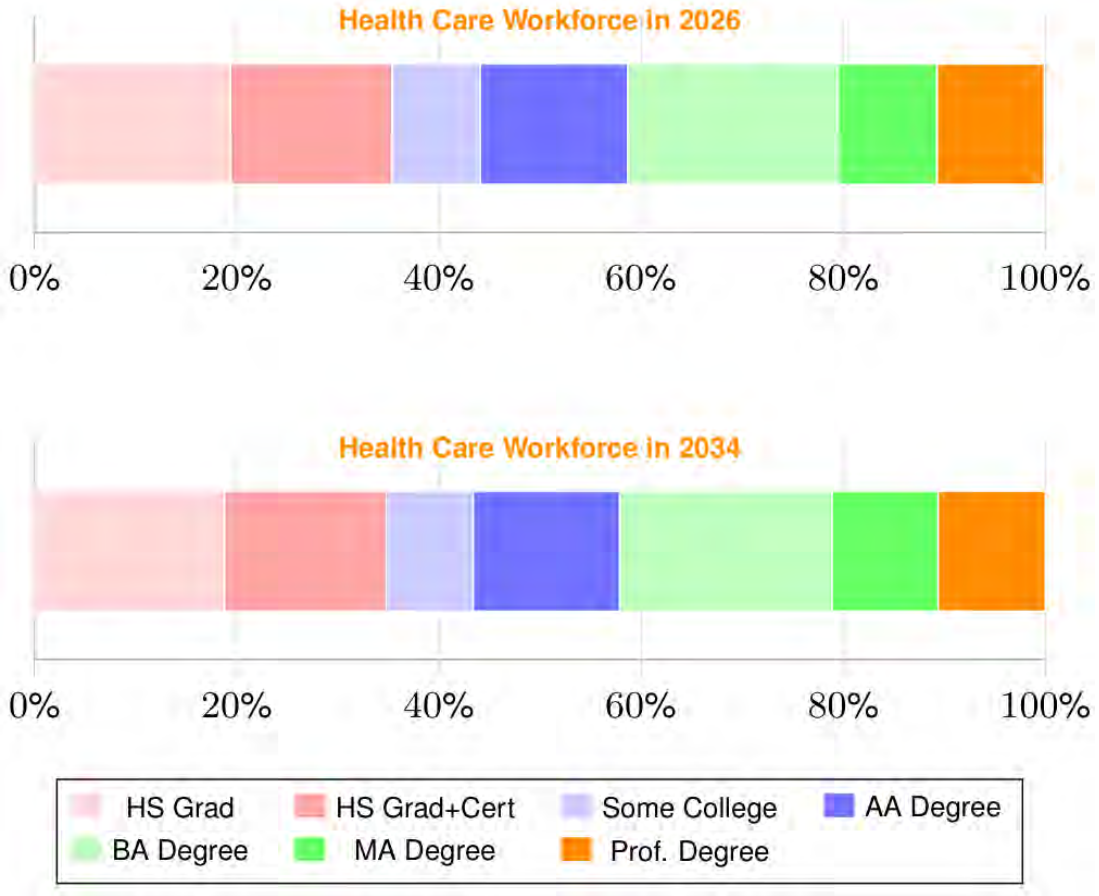


Table C1. Postsecondary Awards: Per Semiconductor Field (Annual Count)

AWARD	COMPUTING	ENGINEERING	TECHNICAL
Certificate: < 12 weeks	280	80	1240
Certificate: 12 weeks – 1 year	1990	590	1890
Certificate: 1–2 years	170	500	2030
Certificate: 2–4 years	0	0	80
Associate's degree	1430	410	2120
Bachelor's degree	3490	2980	200
Post-baccalaureate certificate	80	40	0
Master's degree	3100	2340	0
Doctoral degree	40	210	0

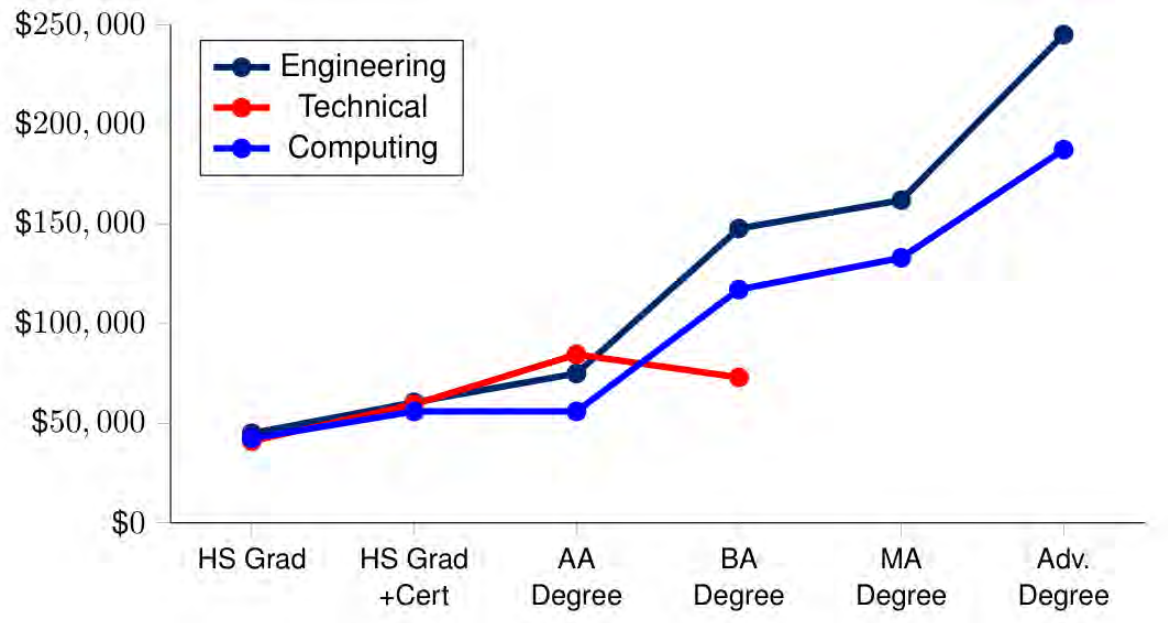
Source: IPEDS 2024; all public/private Arizona colleges. Notes: CIP codes 11, 14, 15, 41, 47.

Table C2. Postsecondary Costs: Per Semiconductor Field (Present Value Cost)

AWARD	COMPUTING	ENGINEERING	TECHNICAL
Certificate: < 12 weeks	$24,890	$5,010	$27,640
Certificate: 12 weeks – 1 year	$36,340	$6,160	$23,060
Certificate: 1–2 years	$39,900	$13,860	$23,080
Certificate: 2–4 years	-	-	$33,580
Associate's degree	$110,730	$154,480	$72,210
Bachelor's degree	$246,230	$345,420	$305,290
Post-baccalaureate certificate	$279,070	$352,380	$319,780
Master's degree	$264,800	$413,750	-
Doctoral degree	$343,620	$520,700	-

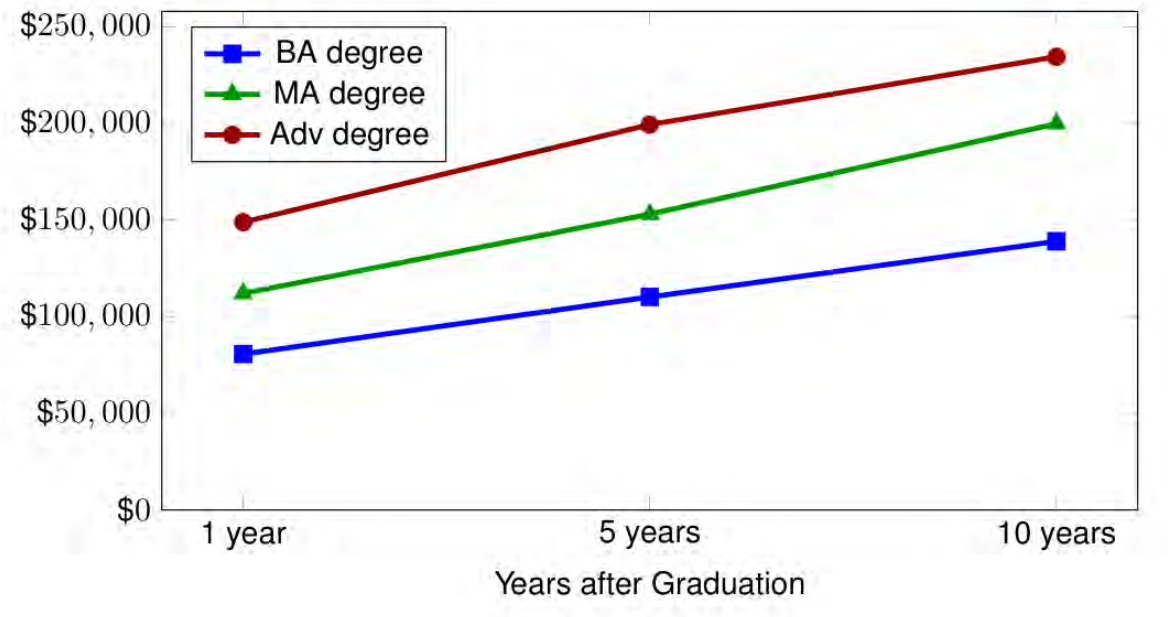
Source: IPEDS 2024; all public/private Arizona colleges. Notes: Cost includes all years of Postsecondary education to obtain award (tuition/fees+subsidies). Cost weighted per college×award. Subject-specific weighting from Hemelt et al. (2021). CIP codes 11, 14, 15, 41, 47. Present Value at program entry; discount rate 3%; 2026 dollars.

Figure C1. Semiconductor Fields: Mean Earnings



Source/Notes: OEWS national data, 2026 dollars.

Figure C2. Semiconductor Fields: Earnings Growth



Source/Notes: Census PSEO, AZ public universities, CIP codes 11, 14, 15, 41, 47. 2026 dollars.

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