Economics Of Healthcare

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Executive summary

Healthcare labor markets are shaped by a multi-stage economic pipeline in which individuals incur upfront education and training costs, experience delayed earnings due to long time-to-practice, and then face elevated risks of early-career attrition and long-term retention challenges. These dynamics interact: high debt and long training horizons raise the "risk premium" required to keep talent in the field; turnover and burnout reduce realized returns on education investments for individuals, employers, and public funders; and persistent churn forces systems into repeated cycles of costly recruitment, onboarding, and productivity ramp-up.

Across key U.S. health professions, the most quantifiable economic pressures in 2019–Jan 2026 public data are concentrated in medicine and pharmacy. U.S. physicians' median education debt for indebted graduates rose from roughly $200,000 (2019–2023) to $205,000 (Class of 2024) and $215,000 (Class of 2025), while mean debt increased to $223,130 in the Class of 2025. [1] Pharmacists show persistently high borrowing to finance PharmD education in AACP Graduating Student Survey national summaries, with all-institution medians near $160,000–$175,000 across 2019–2025 and private-school medians at $200,000 in multiple years. [2]

For physician assistants, nationally published tuition and debt are available but not as continuous annual series through 2025. The PAEA Program Report (2021 program survey) reports median total tuition of $56,718 for public resident/in-state students and $96,960 for private "standard" tuition. [3] For debt, PAEA Student Report 6 (data from 2022 surveys) shows a distribution where the cumulative share exceeds 50% in the $100,000 to $124,999 anticipated total debt bracket, indicating a median bracket rather than a single median dollar figure. [4]

For RNs and allied health (e.g., DPT), publicly comparable debt and cost series are fragmented across survey programs and professions. Where profession-specific national debt series are not consistently reported annually, peer-reviewed economic modeling provides a partial bridge: an interprofessional analysis in BMC Medical Education (2023) uses national debt estimates by profession and repayment scenarios, including a modeled undergraduate debt figure for registered nurses ($29,096) and a mean total educational debt for physical therapy from an actual profession-specific graduate questionnaire sample ($99,592 total; $16,804 undergraduate plus $82,788 PT school debt). [5] The report explicitly identifies affordability risk for some DPT graduates and emphasizes unequal debt burdens by minoritized status within physical therapy. [6]

Association of American Medical Colleges (AAMC). Physician Education Debt and the Cost to Attend Medical School: 2020 Update. [14]
AAMC FIRST. Medical Student Education: Debt, Costs, and Loan Repayment Fact Card for the Class of 2020–2025. [15]
American Association of Colleges of Pharmacy (AACP). Graduating Student Survey National Summary Reports (2019–2025). [16]

Executive summary (continued)

Time-to-practice materially differs across professions. BLS Occupational Outlook Handbook descriptions imply that physicians and surgeons generally require a bachelor's degree plus four years of medical school and 3–9 years of internship and residency depending on specialty, creating an 11–17 year path post high school, with fellowships adding 1–3 years. [7] Physical therapists typically require a Doctor of Physical Therapy degree; RNs typically enter through bachelor's, associate, or diploma programs; PAs typically need a master's; and pharmacists typically need a PharmD that generally requires at least two years of undergraduate prerequisites. [8]

Turnover and retention pressures are measurable at the industry level and in profession-focused surveys. U.S. JOLTS annual average rates show that Health Care and Social Assistance maintained quits around 2.1%–2.6% (2020–2024) and total separations around 3.0%–3.8% (2020–2024). [9] HRSA's analysis of the 2022 National Sample Survey of Registered Nurses finds very high self-reported burnout (82.3%), substantial intent to leave the primary position within the next year (23.2%), and a sizable share planning retirement within five years (19.4%). [10] Peer-reviewed research links burnout to nurses leaving or considering leaving (JAMA Network Open) and demonstrates extremely high nursing home nursing staff turnover rates using auditable payroll-based staffing data (Health Affairs). [11]

Internationally, WHO and OECD-linked sources indicate workforce scarcity and distribution issues. WHO's State of the World's Nursing 2020 emphasizes global nursing workforce gaps and policy options to expand education capacity, jobs, and leadership. [12] World Bank workforce indicators drawing from WHO/OECD sources place OECD-member nurse and midwife density at 9.1 per 1,000 people (2021). [13]

Physician Assistant Education Association (PAEA). Program Report 36 (2021 program survey). [3]

PAEA. Student Report 6: Data from the 2022 Matriculating Student and End of Program Surveys. [4]

U.S. Bureau of Labor Statistics (BLS). Job Openings and Labor Turnover Survey: Annual average rates. [9]

Health Resources and Services Administration (HRSA). Job Satisfaction Among Registered Nurses: Data from the 2022 National Sample Survey of Registered Nurses. [10]

Shields RK, et al. "Healthcare educational debt in the United States." BMC Medical Education (2023). [5]

Data sources and measurement approach

Data architecture and comparability

This report uses only publicly available and verifiable sources released 2019 through Jan 2026 (inclusive), prioritizing official datasets and peer-reviewed journals, and labels U.S.-only measures explicitly. Core quantitative inputs come from: AAMC FIRST fact cards and AAMC reports for physician debt and cost of attendance; AACP GSS national summaries for PharmD borrowing; PAEA program and student reports for PA tuition and debt distributions; BLS JOLTS annual rates for turnover at the Health Care and Social Assistance industry level; HRSA's NSSRN 2022 analysis for RN wellbeing and retention indicators; NCES Digest/IPEDS tables for undergraduate cost proxies; and international WHO/OECD-linked indicators where explicitly used. [17]

The principal cross-profession comparability challenge is that "student debt" is not uniformly measured or consistently reported annually across all professions in public, standardized formats:

> Medical education debt is reported annually with clear definitions in AAMC FIRST materials, including both median and mean for indebted graduates and distinction between public and private medical schools; it includes premedical and medical school debt. [18] Pharmacy borrowing is reported by AACP as amounts borrowed to finance PharmD education, with median and mean and stratification by public vs private institutions. [19] Physician assistant debt is publicly presented mainly as distributions of ranges rather than consistently publishing a single mean/median dollar figure across years, which limits trend comparability. [20] Nursing and allied health debt is not consistently published in annual profession-specific national series in the same way as AAMC or AACP; therefore, this report uses HRSA NSSRN for retention and burnout indicators, NCES for undergraduate cost proxies (not nursing-specific), and peer-reviewed interprofessional economic analysis for debt affordability context. [21]

BLS JOLTS. Table 22 annual average quits rates by industry: Table 20 annual average total separations rates. [9]

HRSA. Job Satisfaction Among Registered Nurses: Data from the 2022 NSSRN. [10]

NCES. Digest of Education Statistics 2023, Table 330.10. [27]

AAMC FIRST fact cards (classes 2020–2025) for consistent definitions. [29]

Metrics and operational definitions

Student debt and borrowing are treated as "pipeline financial friction" and are analyzed in three layers:

Direct debt at graduation (or borrowing to finance education) as reported by professional organizations or surveys, focusing on median and mean when available. [22] Training costs captured as cost of attendance (medical school) or total tuition (PA programs) where directly reported, or as undergraduate cost proxies where profession-specific training cost series are unavailable. [23] Time-to-practice is operationalized as typical training years from entry into postsecondary education to initial independent practice, using BLS Occupational Outlook Handbook education and training requirements. [24]

For retention and attrition, the report uses:

Industry-level turnover signals: annual average quits rate and total separations rate for Health Care and Social Assistance from BLS JOLTS (2020–2024 available in the cited annual tables). [9] Profession-level wellbeing and intent-to-leave: HRSA's NSSRN 2022 analysis for RNs and peer-reviewed evidence for nurses and physicians where available. [25] Facility-level turnover examples: peer-reviewed nursing home turnover analyses using auditable staffing data. [26]

Data coverage and explicit gaps

This report includes trend charts only where public time series exist in cited sources. Notable gaps include:

BLS JOLTS annual industry tables cited here cover 2020–2024 and do not provide 2019 in the same annual table format; monthly 2019 values exist in BLS archives but are not used here because the requirement is to rely on publicly released sources through Jan 2026 and avoid inferring missing months. [9] NCES Digest Table 330.10 provides undergraduate cost data through academic year 2022–23; later academic-year values (2023–24 onward) are not present in the cited table. [27] PA tuition trends in PAEA Program Report 36 are shown through 2020–21 in the reported trend table, with a note that 2019–20 tuition data were not collected. [3] Profession-wide, nationally standardized annual debt series for RNs and many allied health doctorates are not uniformly reported in the same way as AAMC or AACP, so cross-profession debt trend comparability is incomplete. [28]

AACP GSS national summary reports (2019–2025) for PharmD borrowing medians/means. [30]

PAEA Program Report 36 and Student Report 6 for tuition and debt distributions. [31]

Integrated analysis by topic

Student debt

U.S. healthcare student debt is economically significant because it shifts workforce supply curves, changes specialty and setting choices, and increases the required wage and nonwage compensation (loan repayment, flexible scheduling) needed to retain workers. In medicine, AAMC data show the median education debt among indebted graduates was $200,000 for multiple cohorts and increased to $215,000 for the Class of 2025; mean debt among indebted graduates increased to $223,130 for the Class of 2025. [32] This level of debt sits alongside the structural delay of residency and fellowship training, which affects debt servicing capacity during early career. [7]

For PharmD graduates, the AACP GSS national summaries show that most respondents borrow to finance their PharmD education, and "amounts borrowed" remain high. For the 2019 cohort, the all-institution median was $170,000 and mean $172,329; for the 2025 cohort, all-institution median was $170,000 and mean $178,642, with private-institution median $200,000 and mean $216,188. [33] The persistence of high medians in pharmacy, coupled with heterogeneous labor market demand across regions and settings, can compress the perceived return on investment for some subgroups, raising the risk of occupational exit or reduced hours.

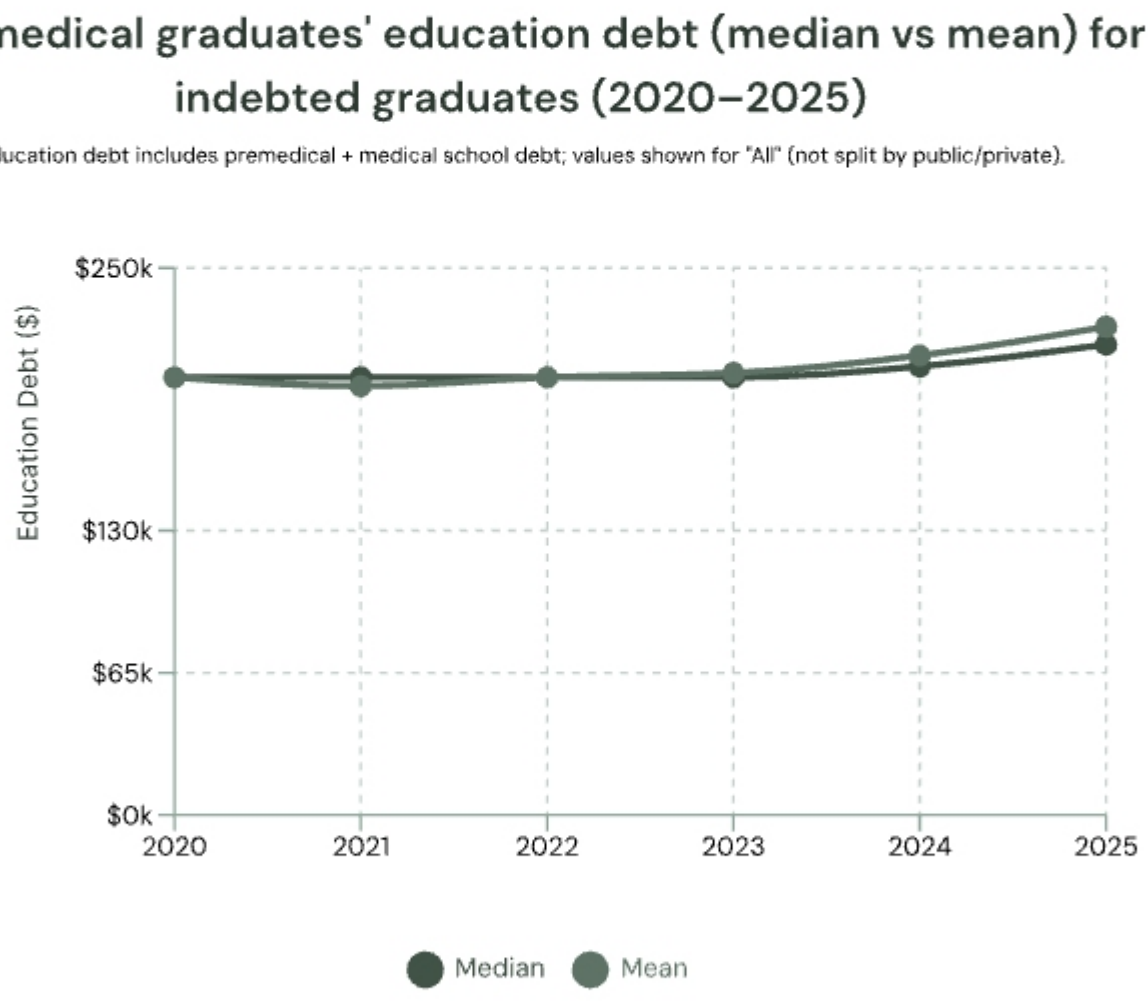
For physician assistants, PAEA's 2022 End of Program Survey distribution implies a median anticipated total debt bracket of $100,000 to $124,999, since the cumulative percentage exceeds 50% in that range. [4] The same report shows a high share of students relying on loans (83.8% indicating loans as a financing source for graduate PA education costs). [4] Limited public reporting of a single national mean debt figure restrains consistent year-over-year trend analysis for PA debt in the public domain, and the most defensible interpretation is via reported ranges rather than computed point estimates. [4]

AAMC. Physician Education Debt and the Cost to Attend Medical School: 2020 Update (2019 focus). [36]
AAMC FIRST. Debt, Costs, and Loan Repayment Fact Cards (Classes 2020–2025). [15]

For RNs and allied health doctorates, the most policy-relevant debt issue is often not only the level of debt but the interaction between debt and early-career working conditions. HRSA's NSSRN 2022 analysis indicates very high reported burnout among RNs and substantial near-term intent to leave the primary position. [10] A peer-reviewed interprofessional economic analysis models debt service sustainability and reports a national undergraduate debt estimate of $29,096 for registered nurses, contrasting with higher graduate-debt professions. [34] For physical therapy, the same paper leverages actual sample data and reports mean total educational debt of $99,592 and notes that a sizeable share exceed a $150,000 benchmark that strains repayment sustainability. [6]

Figure 1: U.S. medical graduates' education debt

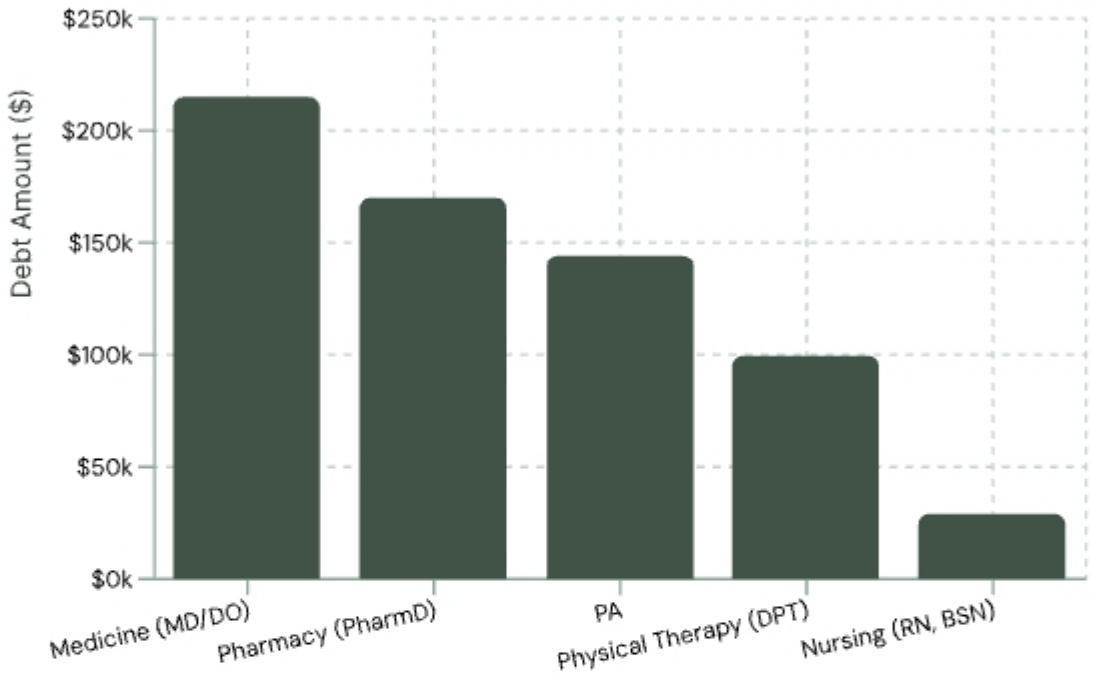
Median vs mean for indebted graduates (2019–2025)



Source: AAMC, Physician Education Debt and the Cost to Attend Medical School: 2020 Update (2019 median).
AAMC FIRST, Medical Student Education: Debt, Costs, and Loan Repayment Fact Cards (Classes of 2020–2025; mean+median for 2020–2025).

Figure 2: Cross-profession comparison of debt or borrowing at completion

Latest public values within scope



Interpretation note: PA is shown as a reported median bracket range, not a point estimate, to avoid introducing non-published inferred values.

Sources: MD (AAMC FIRST Class of 2025); PharmD (AACP GSS 2025 national summary, chart); PA (PAEA Student Report 6, Table 42 distribution); RN and DPT debt proxies (Shields et al., BMC Medical Education 2023). [35]

AAMC FIRST Class of 2025 fact card (Medicine). [1]

AACP 2025 GSS national summary (Pharmacy). [2]

Shields RK, et al. BMC Medical Education (2023) (Physical Therapy, Nursing). [5]

PAEA Student Report 6, 2022 EOPS (PA). [4]

Training costs

Training costs include direct educational charges and the broader economic costs required to produce a licensed practitioner, including supervised clinical education capacity and, for physicians, publicly subsidized graduate medical education. The most consistently published U.S. profession-level training cost series in public sources within scope is medical school "cost of attendance" from AAMC FIRST, which includes tuition, fees, and living expenses. [38] For the medical graduating Class of 2026, the median 4-year COA is $297,745 for public in-state students and $408,150 for private schools. [39] These totals represent household-level financing requirements and influence who can enter and persist in training, especially when combined with the post-graduate training delay in physician earnings trajectories. [7]

PA education costs are measured differently but still show high tuition levels. PAEA Program Report 36 reports 2021 median total tuition of $56,718 for public resident/in-state tuition and $96,960 for private standard tuition (with means higher: $57,955 and $100,212, respectively). [3] The same report includes a long-run trend table for average PA school tuition through 2020–21, with a note that tuition data were not collected for the 2019–20 academic year, limiting continuous time-series inference. [3]

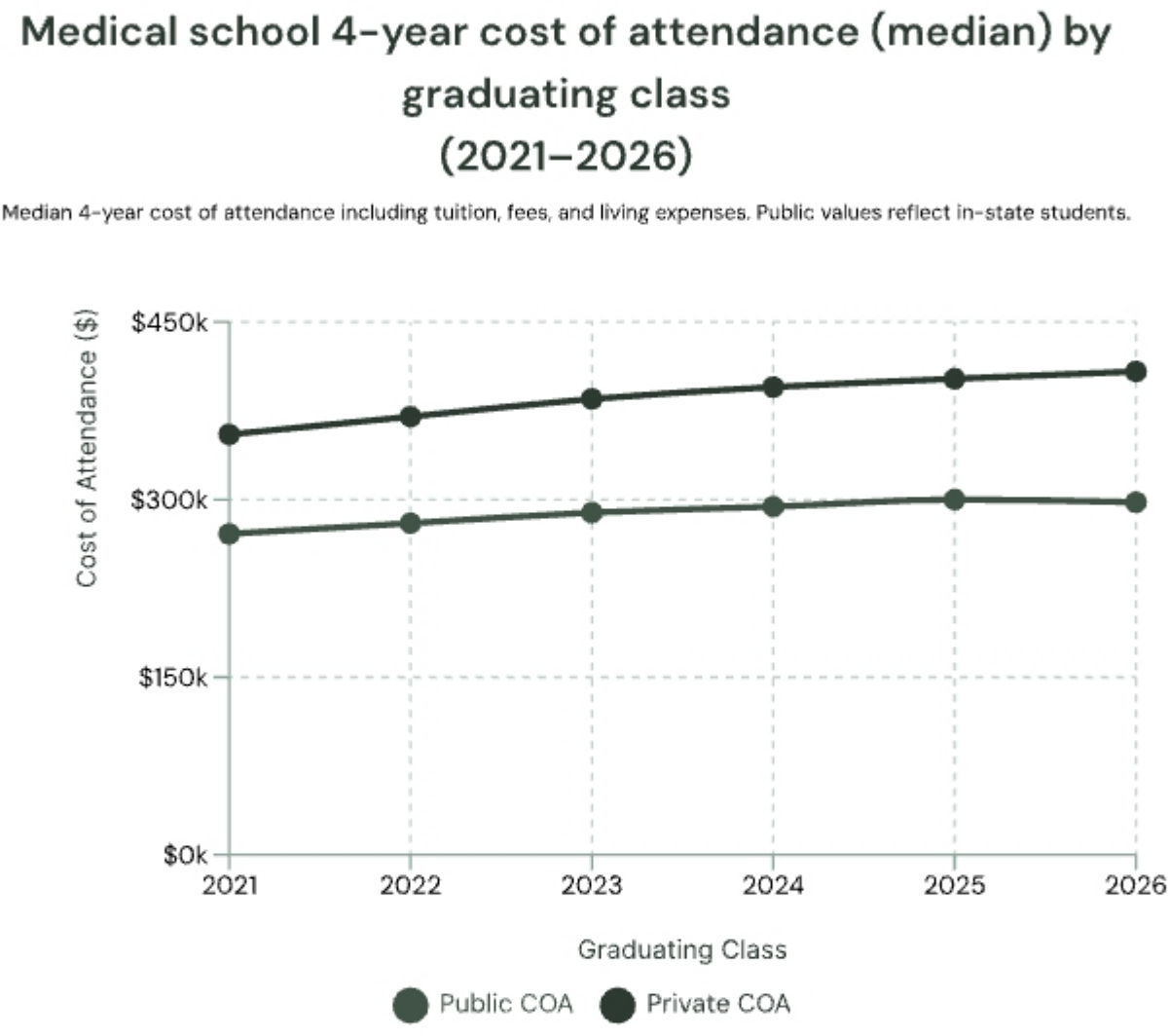
Pharmacy training costs are indirectly observable through the amounts borrowed to finance PharmD education. In 2025, AACP reports median borrowed amounts of $140,000 (public), $200,000 (private), and $170,000 (all institutions). [40] While borrowing is not identical to total educational cost (it is influenced by family resources, scholarships, and savings), it is a high-salience economic indicator for workforce supply because it approximates the portion of training cost pushed onto graduates' balance sheets. [41]

For nursing, no nursing-specific national "cost of attendance" series is consistently reported in a single professional body report analogous to AAMC or AACP across 2019–Jan 2026. As a transparent proxy, NCES Digest Table 330.10 reports average undergraduate charges (tuition, fees, room, and board) for full-time undergraduates through 2022–23, including an "all institutions 4-year" figure (for 2022–23: $30,884 in current dollars). [42] This proxy is not nursing-specific and should be treated as an upper-bound indicator of general undergraduate cost exposure rather than a precise estimate of RN program cost. [43]

AAMC FIRST. Debt, Costs, and Loan Repayment Fact Card. Class of 2025 (COA for Class of 2026 shown). [39]
PAEA. Program Report 36 (tuition and tuition trends through 2020–21). [3]
AACP. GSS National Summary Reports (borrowing to finance PharmD education). [19]
NCES. Digest 2023, Table 330.10 (undergraduate charges through 2022–23). [27]

Figure 3: Medical school 4-year COA (median)

By graduating class (2021–2026)



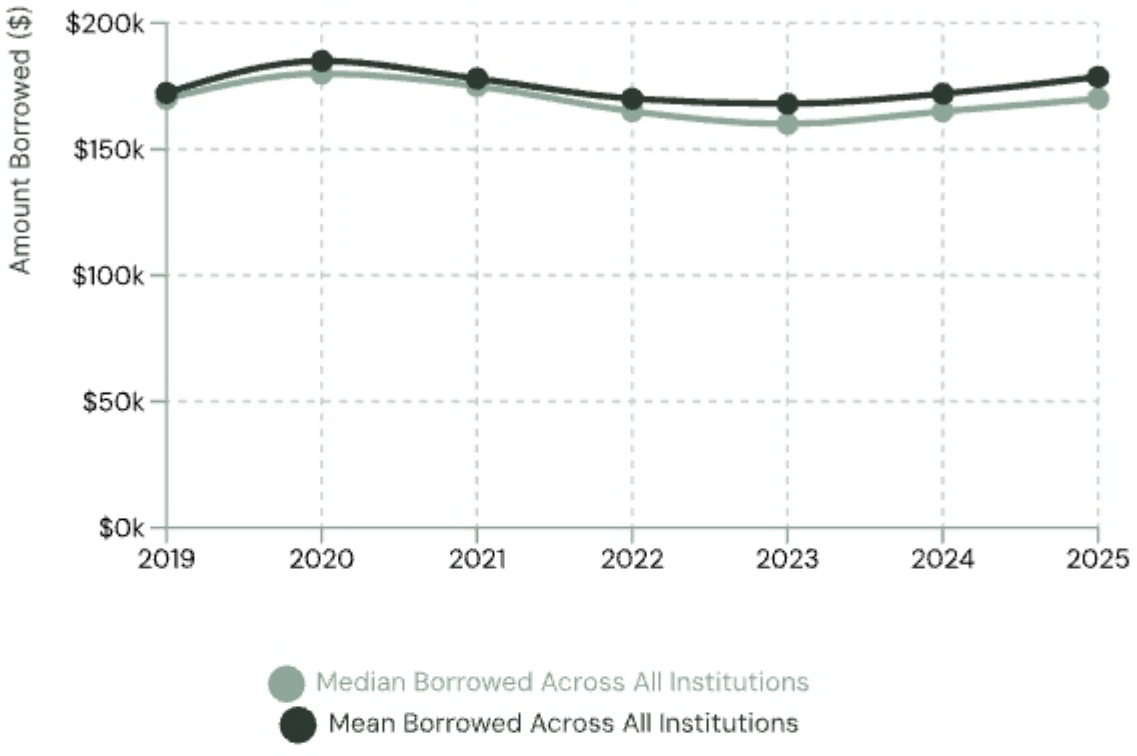
Source: AAMC FIRST, Medical Student Education: Debt, Costs, and Loan Repayment Fact Cards (Classes of 2020–2025; reporting COA for Classes 2021–2026). Values represent cumulative 4-year median cost of attendance as reported in AAMC FIRST fact cards for each graduating class.

Sources: AAMC FIRST fact cards: Class of 2020–2025 fact cards. [15]

AAMC FIRST fact cards: Class of 2020–2025 fact cards. [15]

Figure 4: PharmD borrowing to finance education

Median vs mean, all institutions (2019–2025)



Source: American Association of Colleges of Pharmacy (AACP), Graduating Student Survey (GSS) National Summary Reports, 2019–2025 — "Amounts Borrowed to Finance Pharm.D. Education." • "Borrowed" reflects amounts borrowed to finance PharmD education as reported by survey respondents; it is not identical to total educational cost and may exclude non-loan funding sources (savings, scholarships, family support).

Sources: AACP Graduating Student Survey national summary reports (2019–2025). [2]

Shields RK, et al. BMC Medical Education (2023) (debt affordability modeling). [37]

Figure 5: Comparative table

Training cost and debt metrics by profession (best-available public sources)

Training cost and debt metrics by profession

Measures reflect the most defensible publicly reported training cost and education debt indicators available within scope. Metrics are not fully standardized across professions.

Profession	Training Cost Metric	Training Cost Values	Debt Metric	Debt Values
Physician (MD)	4-year COA median (Class of 2026)	Public in-state $297,745; Private $408,150	Education debt of indebted graduates (Class of 2025)	Median: $215,000; Mean: $223,130
Pharmacist (PharmD)	Borrowed to finance PharmD education (2025)	All: Median $170,000; Mean $178,642; Public: Median $140,000; Private: Median $200,000	Borrowing (debt proxy)	Same as training cost measure
Physician Assistant (PA)	Total tuition median (2021 survey)	Public resident median $56,718; Private median $96,960	Anticipated total debt distribution (2022 EOPS)	Median bracket $100,000 to $124,999 (mean not publicly reported)
Registered Nurse (RN)	Undergraduate annual charges proxy (2022–23, NCES)	All institutions 4-year annual: $30,884	Modeled undergraduate debt estimate	$29,096
Physical Therapist (DPT)	No single national public tuition series in scope	Data gap noted	Mean total educational debt (PT-GQ sample)	$99,592 total; repayment-risk share >$150k noted

Source: AAMC FIRST Class of 2025; AACP GSS 2025 national summary; PAEA Program Report 36; PAEA Student Report 6; NCES Digest Table 330.10; Shields et al., BMC Medical Education (2023). • RN training cost shown as undergraduate proxy from NCES Table 330.10 (2022–23); proxy is not nursing-specific; later academic years are not available in cited table.

Sources: AAMC FIRST Class of 2025 fact card; AACP 2025 GSS national summary; PAEA Program Report 36 Table 27; PAEA Student Report 6 Table 42; NCES Digest Table 330.10; Shields et al. (2023). [45]

NCES. Digest 2023, Table 330.10 (undergraduate charges through 2022–23). [44]

Time-to-practice

Time-to-practice operates as an implicit cost because it delays earnings, increases uncertainty, and amplifies the economic impact of early-career attrition. It also creates system-level bottlenecks: clinical training slots and supervision capacity become rate-limiting steps in workforce production.

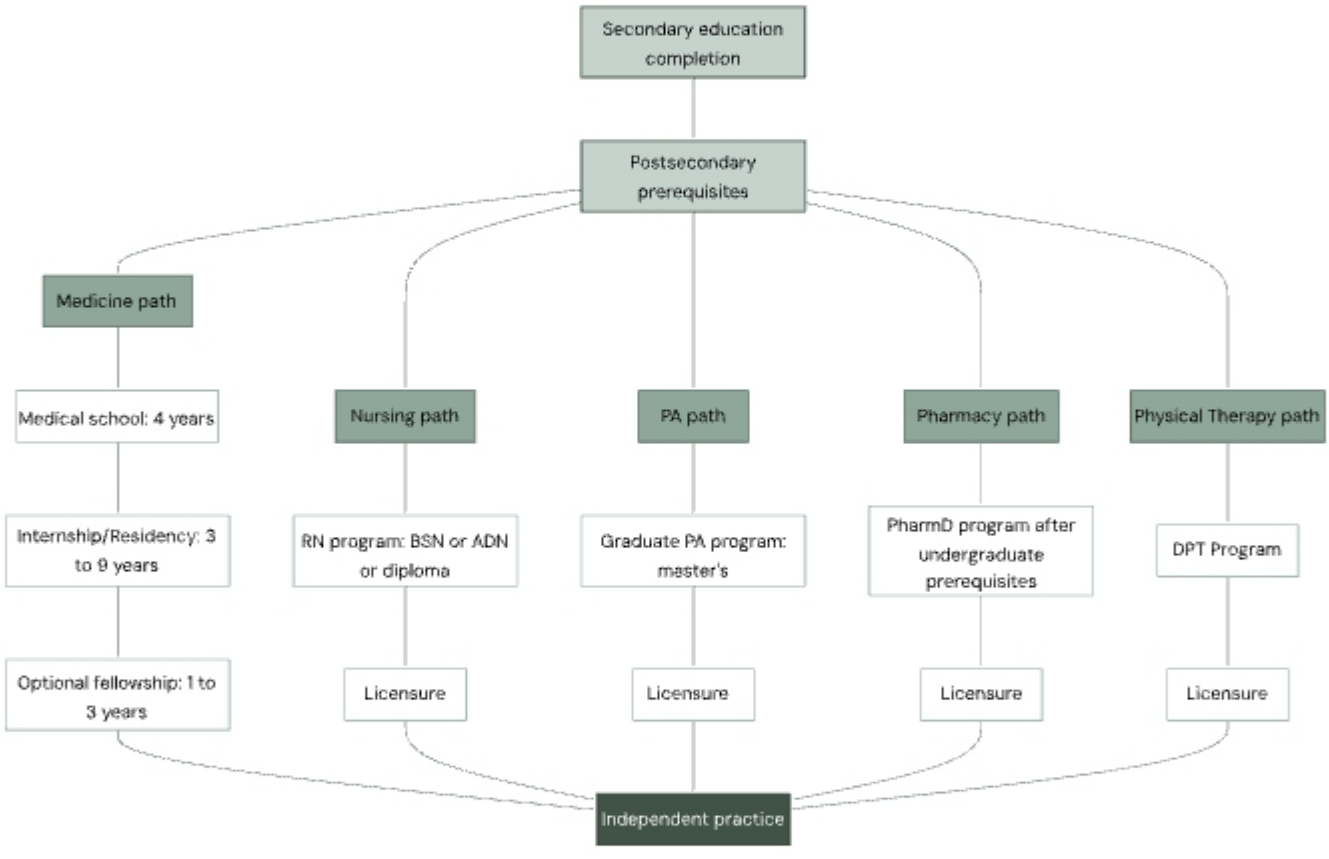
BLS Occupational Outlook Handbook indicates physicians and surgeons typically need a bachelor's degree plus four years of medical school and then 3–9 years in internship and residency depending on specialty; subspecialization may require a fellowship of 1–3 additional years. [7] In contrast, registered nurses typically enter through three educational paths: bachelor's, associate's, or diploma programs, and must be licensed. [46] Physician assistants typically need a master's degree from an accredited program and state licensure. [47] Pharmacists typically need a PharmD; PharmD programs typically require at least two years of prerequisite undergraduate coursework, and pharmacists must be licensed. [48] Physical therapists typically need a DPT and state licensure. [49]

Qualitatively, longer pathways increase exposure to "pipeline risk": the cumulative probability of leaving a path rises with time. Long training also shifts the economics of retention, because the workforce's replacement time is long. This is one reason why high turnover and burnout in nursing and physician roles are systemically costly: replacement is not instantaneous even if there is applicant interest, because training capacity is constrained. [50]

BLS Occupational Outlook Handbook: Physicians and Surgeons; Registered Nurses; Physician Assistants; Pharmacists; Physical Therapists. [51]
WHO. State of the World's Nursing 2020 (training capacity and workforce planning context). [52]

Figure 6: Time-to-practice stages by profession

Educational pathways and training requirements (U.S.)



Source basis: BLS Occupational Outlook Handbook "How to Become" sections for physicians and surgeons, registered nurses, physician assistants, pharmacists, and physical therapists. [51]

BLS Occupational Outlook Handbook: Physicians and Surgeons; Registered Nurses; Physician Assistants; Pharmacists; Physical Therapists. [51]

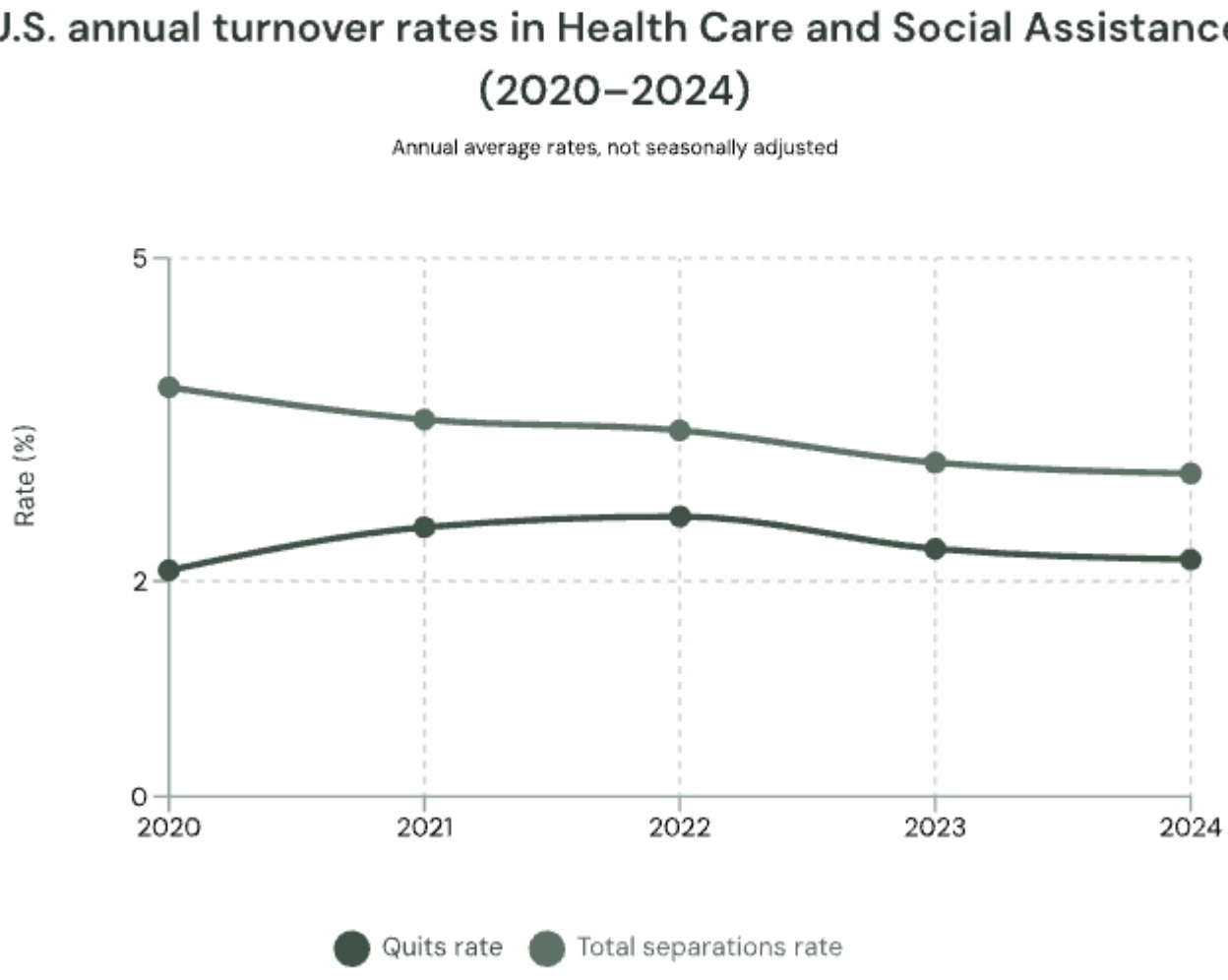
Early-career attrition

Early-career attrition is economically consequential because it produces a "leaky pipeline" in which education and onboarding costs are sunk while expected service years are not realized. It also erodes team stability and raises supervision burdens for remaining staff.

The most consistent cross-sector quantitative indicator for early attrition pressure is labor turnover. BLS JOLTS annual averages show Health Care and Social Assistance quits rates of 2.1% (2020), rising to 2.6% (2022), then easing to 2.2% (2024), while annual total separations rates in the same industry were 3.8% (2020) and 3.0% (2024). [9] Although this is an industry aggregate and not profession-specific, it indicates persistent churn even after pandemic-era peaks.

Figure 7: U.S. annual turnover rates

Health Care and Social Assistance (2020–2024)



For physicians, early-career attrition is shaped by training intensity and burnout, and is visible in "intention to leave" measures. A large cross-sectional study of academic physicians published in JAMA Network Open reports that approximately one-third reported moderate or greater intention to leave their current institution within the next two years and finds associations with burnout and professional fulfillment metrics. [54] While intention to leave is not identical to realized turnover, it is a validated risk marker that employers can use to target interventions.

Long-term retention challenges

Long-term retention is structurally challenged by demographics, accumulated workload burden, and the mismatch between professional demands and sustainable career design. The economic relevance is that retention problems force the system into high-frequency replacement cycles, reducing experience depth and increasing cost per delivered unit of care.

In nursing, HRSA's NSSRN 2022 analysis provides direct evidence of retirement pipeline pressure and job dissatisfaction signals: 19.4% of RNs planned to retire within five years, and a majority evaluated job aspects such as staffing and administrative support as important to job satisfaction (reported in the HRSA analysis narrative and tables). [10] Combined with burnout prevalence, these indicators imply that retention policies that ignore work design, staffing, and scheduling will remain economically inefficient because they fail to address the dominant drivers of exit. [55]

Facility-level research in long-term care demonstrates how turnover can become a structural quality and cost problem. A Health Affairs analysis using auditable payroll-based staffing data (PBJ) calculates a turnover metric representing the percentage of hours of nursing staff care that turns over annually across 15,645 facilities, with mean and median annual turnover rates for total nursing staff roughly 128% and 94%, respectively, and argues that publishing turnover could provide meaningful quality information and incentives to reduce turnover. [26] These turnover levels imply that many facilities effectively replace their nursing hours nearly once per year or more, creating chronic onboarding and continuity burdens that wage increases alone may not solve.

Trockel MT, et al. "Well-Being Parameters and Intention to Leave Current Institution Among Academic Physicians." JAMA Network Open (published 2023). [54]
HRSA. NSSRN 2022 analysis: burnout, intent-to-leave, and retirement planning indicators. [10]
Grabowski DC, et al. "High Nursing Staff Turnover In Nursing Homes Offers Important Quality Information." Health Affairs (2021). [26]

Internationally, long-term retention pressures are reinforced by structural scarcity and uneven distribution. WHO's State of the World's Nursing 2020 describes global nursing workforce gaps and emphasizes investment in nursing jobs and leadership, which is partially a retention agenda (creating sustainable roles and career progression). [56] OECD-linked indicators show OECD-member nurse and midwife density at 9.1 per 1,000 population (2021), but these averages mask cross-country variation and do not resolve within-country geographic maldistribution, a well-known driver of retention stress in underserved areas. [57]

Policy and employer recommendations

The actionable objective is to reduce the total cost per retained clinician-year by targeting the highest-friction points in the pipeline: debt burden, clinical training capacity constraints, and modifiable drivers of attrition (staffing, scheduling, work design, and administrative burden). Recommendations are organized by mechanism and linked to the strongest cited evidence.

Reduce debt-related supply constraints without relying on wage inflation alone

Expand and normalize employer-based educational loan repayment and service-linked scholarships as retention tools, not just recruiting perks. PAEA Student Report 6 shows large shares of PA students plan to participate in employer-based programs and public service loan forgiveness pathways, signaling that financial support is a salient lever in employment choice. [4] Employers should treat these programs as multi-year retention contracts with explicit pathways (e.g., 2–5 year commitments) rather than one-time sign-on bonuses.

Target debt interventions to high-debt professions and settings with the longest replacement times. For physicians and pharmacists, debt magnitudes are consistently high in AAMC and AACP data, so marginal debt relief may reduce the probability of relocation or setting change, especially for early-career stages when financial constraints are binding. [59] In practice, employers can prioritize repayment support for shortage specialties, rural facilities, and safety-net systems where replacement risk is most costly.

WHO. State of the World's Nursing 2020: investing in education, jobs and leadership (April 2020). [58]

World Bank Data (WHO/OECD-derived). "Nurses and midwives (per 1,000 people) – OECD members" (2021: 9.1). [13]

Increase training throughput by addressing the supervised clinical capacity bottleneck

Invest in paid clinical placements and structured preceptorship capacity. The economic constraint is not only tuition but also access to clinical training slots, which determines time-to-practice. This is particularly important in professions with clinical rotation requirements and limited placement supply. [60]

For physicians, treat residency capacity and residency working conditions as retention infrastructure. BLS notes multi-year residency as a required stage; employers who rely on physicians should consider residency program participation and supportive training environments as part of long-range workforce strategy. [7]

Reduce early-career attrition by designing for sustainable work, not just resilience

Implement staffing and shift design interventions directly linked to burnout and leaving. HRSA reports very high burnout prevalence among RNs (82.3%) alongside measurable intent-to-leave. [10] Peer-reviewed evidence in JAMA Network Open indicates that nurses who left or considered leaving due to burnout frequently reported inadequate staffing and stressful environments, implying that operational changes are not optional if retention is the goal. [53]

Use "intention to leave" as an early warning indicator for physicians, with proactive retention packages and workflow redesign. The JAMA Network Open study of academic physicians suggests intention-to-leave is prevalent and associated with burnout and professional fulfillment measures. [54] Employers can deploy confidential, periodic well-being and workload assessments and link the results to concrete workflow changes, such as reducing nonclinical administrative burden and increasing team-based task delegation.

Address chronic turnover in long-term care as a quality and cost crisis

Publish and manage turnover as a quality metric in long-term care and related settings. Health Affairs evidence indicates very high nursing staff turnover rates in nursing homes and argues that turnover disclosure could provide quality information and incentives to reduce turnover. [26] Policymakers can incorporate turnover into public reporting and value-based purchasing frameworks, while employers can integrate turnover targets into management accountability dashboards.

PAEA. Student Report 6. [4]
HRSA. NSSRN 2022 analysis. [10]
Shah MK, et al. JAMA Network Open (2021). [53]
Trockel MT, et al. JAMA Network Open (2023). [54]
Grabowski DC, et al. Health Affairs (2021). [26]

Align national workforce policy with retention-oriented workforce planning

Adopt retention-first workforce planning: expand education capacity only in parallel with retention improvements. WHO's State of the World's Nursing 2020 emphasizes investment in education, jobs, and leadership; scaling education without improving job quality risks producing graduates who exit early, which is economically inefficient. [56]

Improve data infrastructure to measure career-stage attrition by profession and region. Public data gaps limit precise attribution of early-career exit drivers across professions. Policymakers should fund standardized longitudinal workforce surveys to link education cost, debt, time-to-practice, work conditions, and retention outcomes. [61]

Conclusion

The economics of healthcare workforce supply and retention is best understood as a coupled system: education debt and training costs raise the required compensation and reduce flexibility in early career, while long time-to-practice increases exposure to pipeline attrition and makes replacement structurally slow. Public evidence through Jan 2026 demonstrates that physicians and pharmacists carry very high debt burdens at graduation, that PAs face substantial tuition and typically high debt distributions, and that nursing and long-term care settings experience powerful retention headwinds measurable through burnout, intent-to-leave indicators, and high turnover metrics. [68]

For employers and policymakers, the key implication is that "pipeline investments" and "retention investments" are economic complements. Programs that expand training output without addressing retention drivers will yield low realized returns because churn dissipates human capital. Conversely, retention strategies that ignore debt constraints and early-career financial binding can fail to stabilize staffing in high-need settings. Evidence-supported actions include aligning debt relief with multi-year retention commitments, investing in supervised clinical capacity, and targeting the operational environment drivers of burnout and exit. [69]

WHO. State of the World's Nursing 2020. [56]
BLS JOLTS annual averages. [61]

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