

Differences in Lifetime Earning Potential Between Pediatric and Adult Physicians

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abstract

OBJECTIVES: Compare lifetime earning potential between academic pediatric and adult medicine generalists and subspecialists. Evaluate the effect of decreasing the length of training for pediatric subspecialties whose length of training is longer than that for the adult medicine counterpart.

METHODS: Using compensation and debt data from national physician surveys for 2019–2020, we estimated and compared the lifetime earning potential for academic pediatric and adult physicians.

RESULTS: Lifetime earning potential was higher for adult physicians than for pediatric physicians across all comparable areas of both general and subspecialty academic practice. The lifetime earning potentials for adult physicians averaged 25% more, or \$1.2 million higher, than those of the corresponding pediatric physicians. These differences predominantly were not attributable to unequal training length: when we modeled a shortened length of training for pediatric subspecialists, lifetime earning potential for adult subspecialists still averaged 19% more than that for pediatric subspecialists. For both pediatric and adult medicine, the primarily inpatient, procedure-oriented subspecialties had higher lifetime earning potential than the outpatient, less procedure-oriented subspecialties.

CONCLUSIONS: Wide differences in lifetime earning potential between pediatric and adult physicians reflected lower compensation in pediatrics, rather than any differences in training length. Inpatient-based, more procedure-oriented subspecialties had higher lifetime earning potential than outpatient-based, less procedure-oriented subspecialties. Interventions that improve the lifetime earning potential of general pediatrics and the pediatric subspecialties, as well as the less procedure-oriented subspecialties across both pediatric and adult medicine, have the potential to impact both clinical practice and access to care.



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Drs Catenaccio, Rochlin, and Simon conceptualized and designed the study, collected and analyzed the data, and drafted the manuscript, including all revisions; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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WHAT'S KNOWN ON THIS SUBJECT: The financial returns of pediatric subspecialty training vary widely, and differences in financial returns may contribute to workforce imbalances.

WHAT THIS STUDY ADDS: Pediatric academic physicians had lower lifetime earning potential compared with adult academic physicians in every subspecialty analyzed, reflecting, primarily, differences in salary rather than training length. Inpatient-based, more procedure-oriented subspecialties had higher lifetime earning potential than outpatient-based, less procedure-oriented subspecialties.

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We recently published a study in which we analyzed the lifetime financial impact of pediatric subspecialty training.¹ We found that, for the majority of pediatric subspecialties analyzed, pursuing fellowship training was a negative financial decision compared with entering practice as a general pediatrician immediately after residency. Furthermore, our report revealed wide differences in lifetime earning potential between the pediatric subspecialties themselves, with a trend toward higher compensation for the primarily inpatient-based, more procedure-oriented subspecialties, such as pediatric cardiology, compared with the primarily outpatient-based, less procedure-oriented subspecialties, such as pediatric endocrinology. The differences in lifetime earning potential between general pediatrics and the pediatric subspecialties and between the pediatric subspecialties themselves have become more pronounced over time.^{1,2}

It is generally known that pediatrics as a field is less well-compensated than adult medicine.³ Moreover, the adult medicine subspecialties often require a shorter length of training than do the pediatric subspecialties, which leads to the sooner realization of full compensation and debt repayment. One would expect that both of these factors would lead to higher lifetime earning potentials for adult medicine physicians. Poor compensation has been cited as a reason that pediatric subspecialists are leaving their practices.^{4–6} Thus, inequities in compensation may be potential targets to focus on to optimize workforce distribution.

In this study, we modeled lifetime earning potential for both pediatric and adult general physicians and subspecialists in academic practice. We also evaluated the effect of decreasing the length of training for those pediatric subspecialists who

practice in fields in which the length of training is longer than that for the comparable adult subspecialists.

METHODS

For this study, we obtained information on fellowship stipends, subspecialty-specific mean compensation, and educational debt for the academic year of July 2019 to June 2020 from national physician surveys, including the Association of American Medical Colleges annual Survey of Resident/Fellow Stipends and Benefits⁷; Debt, Costs, and Loan Repayment Fact Card⁸; and Faculty Salary Report.⁹ We used Association of American Medical Colleges compensation data because the majority of pediatric subspecialists practice in academic-affiliated environments.^{10–12} With respect to training length, as per the American Board of Pediatrics, the majority of pediatric subspecialties require an additional 3-year fellowship after completion of a 3-year pediatric residency.¹³

Exceptions to this include pediatric neurology, which is typically a 5-year combined program, and pediatric allergy-immunology, which is often a 2-year fellowship after a 3-year residency and which usually shares considerable overlap in training and eventual practice with adult allergy-immunology. The length of adult training is more variable and may include stand-alone programs, such as adult emergency medicine (3–4 years in total). We obtained typical training lengths for the adult subspecialties from the American College of Physicians.¹⁴ With respect to educational debt, we assumed that loan repayment was deferred during residency and fellowship and then was repaid over 25 years and that the accrued interest was capitalized once training was completed. We used an interest rate of 6.08% based on the rate of federal Stafford education loans for 2019–2020.¹⁵

Using these data, we estimated age- and academic rank-specific net incomes for pediatric and adult general physicians and subspecialists over a working lifetime. We used the concept of the net present value (NPV), a standard financial technique to analyze the value of different investments over time,^{2,16} to compare the lifetime earning potential between pediatric and adult physicians by specialty. The NPV is used to address the issue that income obtained today is more valuable than future income because today's income can be invested to yield an immediate return. The formula for NPV is

$$\sum_{t=1}^n \frac{NI_t}{(1+r)^t},$$

where *NI* is annual net income, which we defined as annual compensation minus annual debt-repayment costs.¹⁶ The formula takes the sum of the annual net incomes over time (from *t* = 1 to *n* years) and discounts them back to the present at a discount rate (*r*), which was set at 3.0% on the basis of the discount rate in July of 2019.¹⁷ From this calculation, one is able to compare the current value of future net income streams. We defined the lifetime NPV as the present value of the net income generated from a career in general practice or in a subspecialty over the working lifetime. The lifetime NPV represents an estimate of the financial returns that a graduating resident might expect from either entering general practice right after residency or pursuing fellowship training followed by a career as a subspecialist.

Because we used publicly available, aggregated, and deidentified data, this study did not meet the criteria for human subject research and did not require institutional review board approval.

We performed a sensitivity analysis to assess the degree to which training length impacted the difference in lifetime NPV between pediatric and adult subspecialists. For this analysis, we shortened the length of pediatric fellowship training from 3 years to 2 years in those subspecialties in which the length of training is traditionally longer for pediatric physicians than for their adult medicine counterparts.

RESULTS

Our study included compensation data from 9915 pediatric and 28 622 adult physicians. Figure 1 shows the direct comparison between the lifetime earning potential of pediatric (dark gray bars) and adult (light gray bars) physicians. Adult physicians had higher lifetime earning potentials than pediatric physicians both in general pediatrics and internal medicine and in every subspecialty analyzed. As an example, adult gastroenterology had a lifetime NPV that was \$2.2 million higher than that of pediatric gastroenterology. The smallest

difference, ~\$220 000, was seen for allergy-immunology. In fact, the adult lifetime NPVs averaged 25% more, or \$1.2 million higher, than the pediatric lifetime NPVs for the corresponding subspecialty.

Figure 2 shows the lifetime NPV for each subspecialty in rank order. Overall, the adult subspecialties had higher lifetime NPVs than the pediatric subspecialties; the top 5 subspecialties were all adult-based, whereas the bottom 8 subspecialties were all pediatric-based. Only 4 pediatric subspecialties fell above the median lifetime NPV of \$4.8 million; these were cardiology, critical care, emergency medicine, and gastroenterology, all of which are primarily inpatient-based and more procedure-oriented.

The results of our sensitivity analysis evaluating the effects of training length on lifetime NPV are revealed in Fig 3. Although shortening the length of pediatric fellowship training from 3 years to 2 years in the applicable subspecialties did increase the lifetime NPV of the pediatric

subspecialties, the impact did not appreciably close the gap between the pediatric and adult fields. The lifetime earning potential for adult subspecialists was still an average of 19% more, or \$875 104 higher, than that for pediatric subspecialists.

DISCUSSION

We used standard financial techniques to estimate the career-long financial returns of pediatric and adult medicine. Our results revealed wide disparities in lifetime earning potential between each pediatric field and its adult medicine counterpart. The majority of these differences cannot be attributed to unequal training length; even when we modeled a shortened length of training for the applicable pediatric subspecialists, large disparities in lifetime earning potential between the pediatric and adult subspecialties persisted. Thus, the primary driver for our results likely was differences in annual compensation after the completion of training.

Diminished compensation for pediatric physicians is likely the result of a number of addressable factors, including lower reimbursements for pediatric services. Approximately 39% of children in the United States are insured through 2 governmental insurance programs: Medicaid and Children's Health Insurance Program.¹⁸ These programs historically have reimbursed physician services at much lower rates than Medicare, the largest insurer for the adult population. Improving reimbursement for Medicaid patients can improve access to care. The Affordable Health Care Act, passed by Congress in 2010, included a program that increased Medicaid payments for certain services, including primary and subspecialty pediatrics, to match those of Medicare in 2013

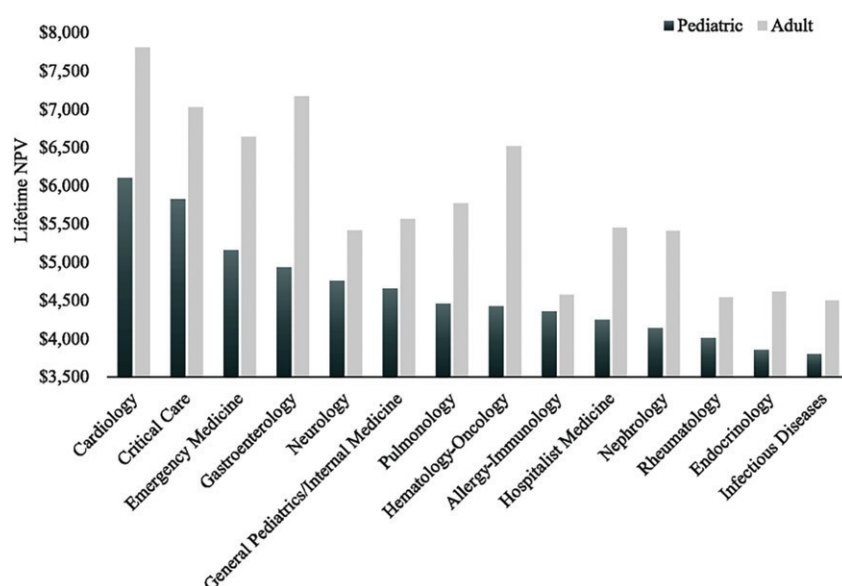


FIGURE 1
Lifetime NPV: Pediatric versus adult medicine.

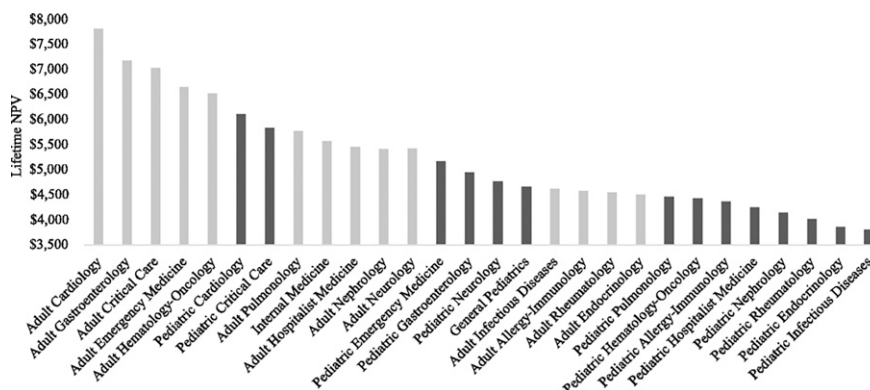


FIGURE 2
Lifetime NPV: Pediatric and adult medicine in rank order.

and 2014. While this provision was in place, Medicaid subscribers had improved access to primary care, with the largest increases in appointment availability seen in those states with the largest increases in Medicaid reimbursements.¹⁹ Additionally, even after the expiration of the program, states with higher Medicaid fees had improved access to new appointments and shorter wait times for Medicaid patients.²⁰ Thus, programs that improve reimbursement for Medicaid and

Children's Health Insurance Program subscribers may lead to improved health care access for pediatric patients.

Moreover, the process by which reimbursements are determined may disadvantage pediatric physicians. The Centers for Medicare and Medicaid Services sets the physician fee schedule on the basis of a system of relative value units for billing codes. Relative value units are determined with the input of a multispecialty Relative Value Scale

Update Committee that comprises members from 25 specialties.²¹ Pediatrics has only 1 seat on this committee. Furthermore, although pediatric subspecialists may be represented in part by their adult subspecialist counterparts, pediatric physicians are a minority of subspecialty society members. Thus, this system of representation may contribute to higher reimbursements for services predominantly performed by adult medicine providers.

Finally, lower rates of standard and well-compensated procedures in pediatrics may contribute to the observed discrepancies in lifetime earning potential. One of the largest differences was seen between pediatric and adult gastroenterology. In adults, colonoscopies are routinely used as a screening tool²²; in pediatrics, colonoscopies are performed much less frequently because the majority are for diagnostic purposes.²³ Nephrology, which was a relatively high-earning subspecialty for adults but a relatively low-earning subspecialty for pediatrics, may be impacted by similar factors: the varied frequency that dialysis is used between the adult and pediatric populations, as well as the differing use of hemodialysis and lower cost peritoneal dialysis,²⁴ which is the preferred modality for children with end-stage renal disease. The increases in the valuation of outpatient evaluations and management Current Procedural Terminology codes, which took effect in January 2021,²⁵ have been predicted to benefit the less procedure-oriented subspecialties, but further data will be needed to assess their ultimate impact.

Financial incentives serve as important policy levers to adjust both compensation and clinical practice. However, higher reimbursements do not translate directly into higher salaries,²⁶ and this may be particularly true in

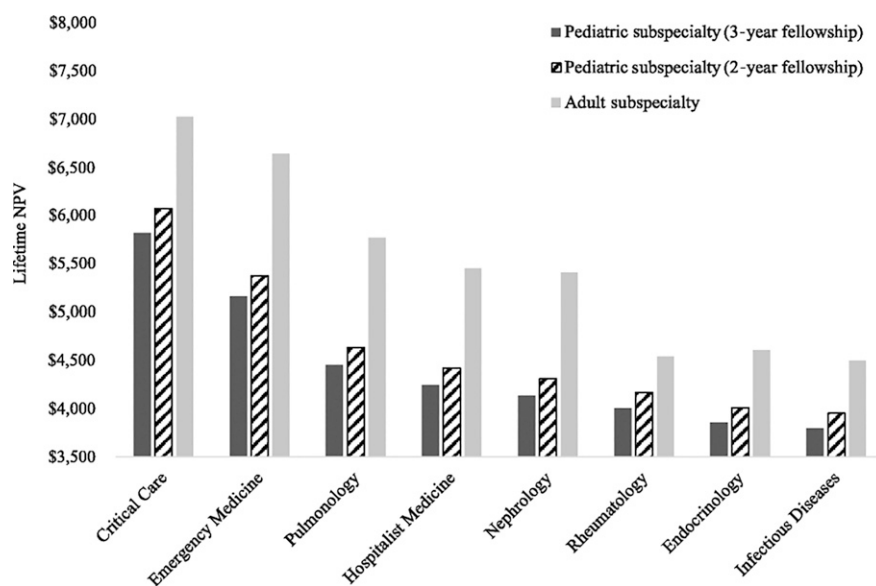


FIGURE 3
Impact of shortening pediatric fellowship training length in subspecialties with longer training length for pediatric physicians than for their adult medicine counterparts.

academic settings, in which compensation reflects multiple factors in addition to clinical productivity, such as research output, administrative workload, and teaching responsibilities.

Recently, there has been increasing recognition of the importance of transitioning care between pediatric and adult providers, especially for children and young adults with complex medical issues (eg, patients with cystic fibrosis, congenital heart disease, etc).²⁷ There are many barriers to satisfactory transition of care, including patient complexity, lack of care coordination services, and a perceived lack of adult specialists interested in caring for youth with pediatric-onset conditions. If providing poorly reimbursed pediatric services or working with or at pediatric-focused centers, in which compensation is less competitive, deters adult physicians from offering these critical and already understaffed services, the health care of these vulnerable populations will suffer. Thus, discrepancies in reimbursement between pediatric and adult physicians, which indirectly may be reflected in salary and lifetime earning potential, may contribute to insufficient health care access, particularly for those children, adolescents, and young adults requiring subspecialty care.

Our study has several limitations. The results are dependent on the assumptions inherent to our models, which include those regarding continuity of training, timing of academic promotion, and rates of debt repayment.¹ For the purposes of this report, we only used data reflecting practice at academic centers on the basis of the fact that the majority of pediatric subspecialists

practice in academic-affiliated environments.^{10–12} This allowed for the best direct comparison between pediatric and adult physicians in a common practice environment. However, adult physicians in private practice typically would be even more highly compensated than in an academic environment. Thus, our model, in fact, may underestimate the overall differences in lifetime earning potential between pediatric and adult physicians. Additionally, our results reflect national mean compensation data; regional variations, for example, in areas of the country with a low proportion of pediatric physicians and where some pediatric care may be provided by adult subspecialists, could impact our models, potentially in either direction.

Our results reveal wide differences in lifetime earning potential between pediatric and adult physicians and between the primarily inpatient-based, procedure-oriented subspecialties and the outpatient-based, less procedure-oriented subspecialties. Training length contributes to the discrepancies between pediatric and adult physicians' lifetime earning potential, but the primary driver is differences in annual salaries. Addressing these discrepancies is important to establish equity between health care providers and to ensure appropriate workforce distribution and access to care. Recent data suggest that compensation strongly correlates with the proportion of women in a specialty, with pediatrics being a prime example of a poorly compensated, increasingly woman-predominant field.^{3,28} In future studies, researchers examining race, ethnicity, and previous socioeconomic status may find similar patterns of low compensation for minority or disadvantaged groups. Furthermore, lifetime earning potential may

impact workforce distribution if medical students take net income into account when deciding in which area to train (or more importantly, in which area not to train) and if compensation affects workforce retention and/or participation in part-time practice. Clearly, many nonfinancial factors influence trainees' decisions regarding the particular field of medicine in which to practice. However, in a system in which a longer length of training does not garner an increased earning potential, medical students with high burdens of debt or other financial obligations may be driven away from areas of interest or need. In fact, just deciding on a career in pediatrics compared with adult medicine appears universally to be a financially negative decision, even between directly comparable subspecialties.

It is imperative that the US health care system provide high-quality and accessible general and subspecialty care to patients and families across the entire life continuum. This should not be disrupted by discrepancies in lifetime earning potential that may influence present and future trainees' career choice or provider accessibility. Interventions that improve the lifetime earning potential of pediatrics and the pediatric subspecialties, as well as the primarily outpatient-based and less procedure-oriented subspecialties across both pediatric and adult medicine, have the potential to impact not only career choice but also access to care.

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ABBREVIATION

NPV: net present value

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