ABSTRACT

Background: As the cost of attendance for US medical schools continues to increase faster than inflation, students can turn to alternative sources of funding beyond traditional educational loans. The Armed Forces Health Professions Scholarship Program (HPSP) pays for medical students’ tuition and fees as well as provides a stipend in exchange for an active-duty service commitment. The aim of this study was to compare the financial impact of an emergency physician joining the military versus taking student loans and going the civilian route.

Methods: Cash outflows (in the way of annual attendance costs) and cash inflows (in the form of salaries) were discounted using current student loan interest rates and then added together to calculate the net present values (NPVs) of HPSP versus the civilian route. The numbers for all assumptions were taken from the Association of American Medical Colleges, military pay tables, and physician salary surveys.

Results: The NPV of the HPSP for a physician with dependents after four years of practice was found to be $576,432, which is slightly higher than the NPV of civilian physicians, calculated to be $573,351 using a nationwide median annual salary of $300,000.

Conclusion: HPSP confers an NPV that is $3080 more than when students take the civilian route. However, any alterations in assumptions regarding pay grade, martial status, or years of service will cause great differences in final calculations. Furthermore, the financial impact of taking the scholarship is only one part of the larger decision-making process when considering to join the military.

Keywords: Student loans, scholarships, salary, income, personal financing, military personnel
BACKGROUND
Medical school tuition in the United States has risen by more than 50% over the past decade, far outpacing inflation, as well as training costs for other professional disciplines. The current annual median cost of attendance for a public school is over $57,000, while the cost for private schools is $78,000, resulting in many medical students accumulating debts of more than $200,000 prior to graduating. Studies of medical students and physicians demonstrate that these loans are often thought to be “exorbitant,” with some concern that indebtedness may influence specialty choice, or even whether to go to medical school at all.

One way students can pay for school is through the Armed Forces Health Professions Scholarship Program (HPSP). This program was signed into law in 1972 as a way to attract physicians to the military by paying for medical school in exchange for active-duty service. Currently, the scholarship pays for tuition and the required fees, gives a monthly stipend, and has a signing bonus of $20,000. While in school, students are commissioned as a second lieutenant (O-1) in the Army or Air Force or as an ensign in the Navy. Students then complete a 45-day active-duty tour every year to include service indoctrination and medical externships in military hospitals. Towards the end of medical school, students apply for residency positions through the Joint Services Graduation Medical Education Board (the military match) with the hope of getting specialty training in either a military hospital or a civilian program through deferment if not enough slots are available. After graduation, scholarship recipients are recommissioned as a captain in the Army or Air Force (O-3) or as a lieutenant in the Navy and then can begin residency training.

While there are many reasons someone may join the military, the financial incentive of graduating from medical school debt-free is enticing. This article will provide a financial analysis of the HPSP and compare it to the salaries and debts of civilian emergency physicians.

MATERIALS AND METHODS
To come up with a salary for military members, the 2016 data for scholarship stipend, basic pay, and incentive bonuses were used. In the military, the housing allowance is based on rank, geography, and presence of dependents. To maximize the amount of money received, this paper used allowances for non-prior service O-1 soldiers with dependents and a four-year commitment. The nationwide median for basic housing allowance was used. For residency, calculations were based on the assumption that service members go straight through training at a three-year emergency medicine military program. Residents then receive pay at the O-3 rate and an incentive bonus called Variable Special Pay.

Practicing physicians receive all of the pay listed above and are also eligible for annual bonuses called Additional Special Pay (ASP) and Incentive Special Pay (ISP). Of note, both bonuses require extending the active-duty service commitment by one year. The ASP is paid in July, while the ISP is paid in October. As service commitments typically end in July, physicians wishing to receive ISP extend their commitment by an additional three months. In this study, ISP was left out of last year calculations to prevent any extensions.

Additionally, attending physicians have board-certified pay available to them upon obtaining board certification. As the completion of the American Board of Emergency Medicine’s written and oral exams usually occurs a year after graduating residency, board-certified pay is not included in calculations until the second year of physician practice. This study assumes that physicians are promoted to rank O-4 six years after graduating medical school, which is fairly common.

On the civilian side, annual medical school cost of attendance was set to $57,821, which is the median for public schools according to the Association of American Medical Colleges (AAMC). An interest rate of 6.31% was carried throughout all calculations as it is the current federal rate for direct PLUS loans for graduate students. The average median stipend for residents was also taken from the AAMC.

For practicing emergency physicians, there are several sources that report annual income ranges across the country. Typical quoted salaries run from $200,000 to $400,000. Calculations in this study use $300,000, which is the median of most reported salaries.

Financial comparisons between civilian and military salaries were performed with the net present value (NPV) rule using the student loan interest rate provided earlier. NPV takes into account cash flows such as investments (in this case, tuition payments) and payouts (in this case, salaries). Working on the assumption that a dollar today is worth more than a dollar in the future, these cash flows were then discounted using interest rates and added together to create an NPV. Typically, the
Table 1. Salaries and stipends for various years for a military service member.

<table>
<thead>
<tr>
<th></th>
<th>MS-1</th>
<th>MS-2</th>
<th>MS-3</th>
<th>MS-4</th>
<th>PGY-1</th>
<th>PGY-2</th>
<th>PGY-3</th>
<th>Att-1</th>
<th>Att-2</th>
<th>Att-3</th>
<th>Att-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly pays (in $)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stipend</td>
<td>2179</td>
<td>2179</td>
<td>2179</td>
<td>2179</td>
<td>3964</td>
<td>4693</td>
<td>4869</td>
<td>5287</td>
<td>5287</td>
<td>5967</td>
<td></td>
</tr>
<tr>
<td>Base pay</td>
<td>2972</td>
<td>2972</td>
<td>2972</td>
<td>2972</td>
<td>3964</td>
<td>3964</td>
<td>4693</td>
<td>4869</td>
<td>5287</td>
<td>5287</td>
<td></td>
</tr>
<tr>
<td>BAH</td>
<td>1385</td>
<td>1385</td>
<td>1385</td>
<td>1385</td>
<td>1715</td>
<td>1715</td>
<td>1715</td>
<td>1715</td>
<td>1715</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAS</td>
<td>254</td>
<td>254</td>
<td>254</td>
<td>254</td>
<td>254</td>
<td>254</td>
<td>254</td>
<td>254</td>
<td>254</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VSP</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>100</td>
<td>417</td>
<td>417</td>
<td>417</td>
<td>1000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCP</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>208</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearly pays (in $)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sign-on</td>
<td>29,794</td>
<td>29,794</td>
<td>29,794</td>
<td>29,794</td>
<td>72,381</td>
<td>82,531</td>
<td>86,808</td>
<td>94,564</td>
<td>94,564</td>
<td>112,890</td>
<td></td>
</tr>
<tr>
<td>ASP</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>15,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISP</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>26,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearly total (in $)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yearly total</td>
<td>49,794</td>
<td>49,794</td>
<td>49,794</td>
<td>49,794</td>
<td>72,381</td>
<td>82,531</td>
<td>86,808</td>
<td>127,808</td>
<td>135,564</td>
<td>135,564</td>
<td>127,890</td>
</tr>
</tbody>
</table>

MS – medical student year; PGY – postgraduate year; Att – attending year; BAH – basic allowance for housing; BAS – basic allowance for subsistence; VSP – variable special pay; BCP – board-certified pay; ASP – additional special pay; ISP – incentive special pay.
NPV is used by businesses when weighing financial decisions. All calculations were performed using Microsoft Excel 2013 (Redmond, WA).

RESULTS
At the time of this writing, military medical students received a $20,000 sign-on bonus, a $2178 monthly stipend for 10.5 months, and an active-duty pay of $4610 for 1.5 months for someone with dependents, which gives a first-year salary of $49,794 and subsequent annual salaries of $29,794. Table 1 lists the salaries and stipends for all years of a military service member’s training and service obligation. The NPV of joining the military was calculated as $576,432.

If the medical school cost of attendance holds steady at $57,821 per year with an interest rate of 6.31%, the present value becomes $211,495. Median resident salaries taken from the AAMC demonstrate that for PGY-1 to PGY-3, the annual cash inflows would be $52,200, $53,900, and $56,000, respectively. Using $300,000 as the yearly income of an attending emergency physician, after four years of practice the NPV of the civilian route becomes $573,351, which is slightly less than the military value. Once the annual salary increases more than $301,400, the civilian route has a higher NPV. The Excel chart used in these calculations is available at www.phys.ufl.edu/~aycock/npv. Users can change the assumptions such as medical school cost of attendance and salary earned as a practicing physician to see the changes in NPV. For the annual civilian calculations, information on direct payment to physicians such as sign-on and productivity bonuses should be included.

DISCUSSION
This study demonstrates that married students who attend public medical schools and later become emergency physicians will have a slightly higher NPV by taking the Armed Forces Health Professions Scholarship four years into practice versus taking on student loans and going the civilian route. A similar analysis previously performed for neurosurgeons who take the HPSP scholarship concluded that surgeons do better financially by forgoing the military route and taking out loans instead.

Several important caveats must be considered with monetary generalizations. As demonstrated by the Excel chart used for calculations, changing any variables such as cost of attendance, civilian salary, prior military service, geographic location, or presence/absence of dependents can greatly change the results. Each user may therefore have a different financial outcome.

This calculator also only demonstrates the direct cash flows for the physician and does not take into account indirect benefits such as health insurance (which may not be paid by some civilian groups), tuition assistance (either paid for directly by an academic group or by the military’s G.I. Bill), or matching retirement systems like 401(k) or the government’s Thrift Savings Plan. Calculations may be further complicated by the possibility of a spouse’s lost wages that can come from frequent moving or relocating to a geographically isolated area.

Finally, any discussion on salary can only use quantifiable numbers. Each individual must make their own decision for accepting or declining the scholarship based on a number of factors. Specialty choice, desired practice location, and plans for career growth do not easily come with price tags, but they are important factors to be considered when deciding whether or not to join the military. In the end, the best advice may still be “Don’t do it for the money.”

CONCLUSION
On average, an emergency physician who joins the military via the HPSP can expect an NPV of just over $576,000 after four years of service. When compared to civilian practice, a physician going the military route may come out financially ahead if the expected civilian salary is less than $301,400 a year.

Conflicts of interest
The author has no financial disclosures and no conflicts of interest to report.

Funding sources
This work was not funded by any external sources.

Acknowledgment
There are no acknowledgments.
REFERENCES


