# A Closer Look at the Relationship Between Education Debt and Income Among New Physicians

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## ABSTRACT

**Research Objective:** While a number of studies have examined the education debt of new physicians, few have considered it in relationship to income. The impact of education debt on a new physician's lifestyle may vary greatly by their income level. The main purpose of this study is to learn the trend of new physicians' education debt to income ratio over the last 10 years and understand how a new physician's education debt to income ratio varies by demographic and educational characteristics.

**Study Design:** This study focused on 6 variables: annual income, education debt, race, gender, education type (MD and DO) and specialty. The ratio of education debt to annual income (written as "debt-to-income ratio" below) is calculated by dividing a physician's education debt by their annual income. The first part of this study is a trend analysis investigating the relationship between education debt and income over the last 10 years. The second part of this study is a bivariate analysis between the debt-to-income ratio and each of the 4 demographic and educational variables. The third part of this study is a multilevel regression analysis (with the year variable as a random intercept) using the debt-to-income ratio as the dependent variable and the four demographic and educational variables as explanatory variables.

**Population Studied:** The primary data source for this study was the New York Resident Exit Survey between 2008 and 2017. This annual survey of physicians completing residency or fellowship training in New York has been conducted since 1998 and has an annual response rate of approximately 60%. Only US Citizens (native born and naturalized) with confirmed practice plans were included in the study.

**Principal Findings:** Both the income and education debt of new physicians grew between 2018 and 2017, but education debt grew at a faster pace. The debt-to-income ratio was higher for primary care physicians than for non-primary care physicians. Female physicians also had higher debt-to-income ratios than male physicians. This was mainly because the annual income of male physicians was about 20% higher than female physicians. Black/African American physicians had the highest debt-to-income ratios, while Asian physicians had the lowest. In addition, DOs had higher debt-to-income ratios than MDs. This was mainly because the education debt of DOs is about 25% higher than MDs.

**Conclusions:** The financial burdens of new physicians are increasing because of rising education debt. In 2017, the average education debt of new physicians passed their average annual income for the first time since the Exit Survey has been conducted. This problem is more serious for female physicians, African American physicians, primary care physicians, and DOs.

**Implications for Policy:** Measures should be taken to reduce medical students' education debt.

## CONTACT

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## INTRODUCTION

- While a number of studies have examined the education debt of new physicians, few have considered it in relationship to income.
- The impact of education debt on a new physician's lifestyle may vary greatly by their income level.
- This study examines the relationship between a new physician's education debt and income over the last 10 years, and investigates how this relationship varies by demographic and educational characteristics.

## METHODS

**Data Source**: *NY Resident Exit Survey* which collects extensive information on new physicians' demographic and educational backgrounds, post-training plans, and job market experiences.

- The last 10 years (2008-2017) of survey data were included in the analysis (N= 6,485).
- Only US citizens with confirmed practice plans were included in the study, since many non-citizens have financial assistance from their home countries.

Table 1. Variables in the Study

| |
|---|
| **Target Variables** |
| Education Debt |
| Annual Income: *Base income + incentive income* |
| Debt-to-Income Ratio: *Calculated by dividing a physician's education debt by his/her annual income* |
| **Predictor Variables** |
| Specialty Group: *Primary care, internal medicine subspecialties, surgical subspecialties* |
| Gender: *female, male* |
| Race/Ethnicity: *Asian, Black/African American, Hispanic/Latino, White, Other* |
| Education type: *Allopathic (MD), osteopathic (DO)* |
| **Control Variables** |
| Medical School Location: *New York, other US state, Canada, other country* |
| Demographics of Practice Area: *Inner city, other area within major city, suburban, small city, rural* |
| Hours Per Week Worked: *Direct patient care, research, teaching, administration, volunteering/community service* |

Figure 1. Methods and Procedures

Performed a trend analysis to demonstrate the relationship between education debt and income over the last 10 years

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Performed a bivariate analysis to investigate the relationships between the debt-to-income ratio and each predictor variables

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Performed a multilevel linear regression (with 'year' as a random intercept) on debt-to-income ratio for predictor variables and control variables

## RESULTS

Figure 2. Trend of Education Debt, Annual Income and Debt-to-Income Ratio, 2008-2017

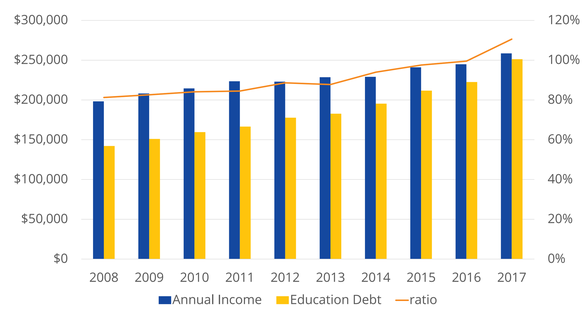



Figure 3. Debt-to-income Ratio by Specialty Group

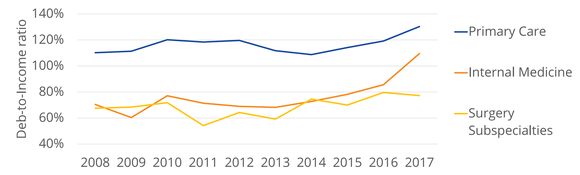



Figure 4. Debt-to-income Ratio by Gender

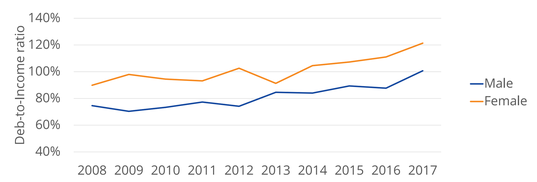



Figure 5. Debt-to-income Ratio by Race/Ethnicity

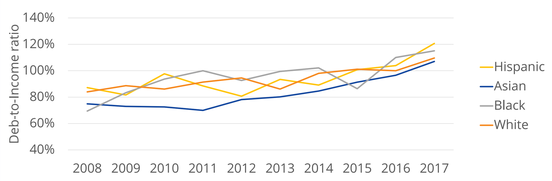
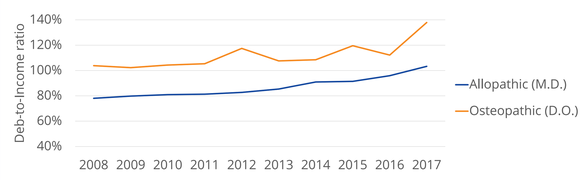



Figure 6. Debt-to-income Ratio by Education Type




## RESULTS (cont.)

Table 2. Results from Debt-to-Income Regression Model

| | β | t | Sig. |
|---|---|---|---|
| Hispanic/ Latino | -0.00499 | -0.15945 | 0.873324 |
| Asian | -0.13542 | -7.12529 | 1.18E-12 |
| Black/ African American | -0.01944 | -0.60177 | 0.547357 |
| Other Race | -0.06215 | -1.84808 | 0.064649 |
| Female | 0.162506 | 10.00117 | 2.46E-23 |
| Osteopathic | 0.232508 | 10.09989 | 9.21E-24 |
| Internal Medicine Specialties | -0.33744 | -12.8835 | 2.11E-37 |
| Surgical Specialties | -0.38688 | -11.2467 | 5.24E-29 |
| Other Specialties | 0.29255 | -14.5569 | 4.53E-47 |

- Reference Category: White male physicians in primary care with MD degree
- Hispanic/Latino, Black/African American, and Other Race are not significant ($P>0.05$)
- Results are consistent with findings from bivariate analysis

## KEY FINDINGS

- Both average income and average education debt grew for new physicians from 2008 to 2017, but education debt grew at a faster pace.
- The debt-to-income ratio was higher for primary care physicians than for non-primary care physicians, mainly because primary care physicians' annual income was about 40% lower.
- Female physicians also had higher debt-to-income ratios than male physicians, mainly because male physicians' annual income was about 20% higher.
- Asian physicians had the lowest debt-to-income ratio, mainly because they had more financial support from their families and they finished school faster.
- DOs had higher debt-to-income ratios than MDs, mainly because DOs' education debt was about 25% higher.

## IMPLICATIONS

- The financial burdens of new physicians are increasing because of rising education debt.
- The financial burden is more problematic for female physicians, primary care physicians, and Dos.
- Measures should be taken to reduce medical students' education debt.