

# US Primary Care vs Specialty Care Trainee Positions and Physician Incomes: Trends From 2001 to 2019

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## ABSTRACT

**Background** Much of the Affordable Care Act (ACA) and subsequent US health care policies were designed to address deficiencies in health care access and enhance primary care services. How residency positions and physician incomes have changed in the post-ACA era is not well characterized.

**Objective** We evaluated the growth of US trainee positions and physician income, in the pre- vs post-ACA environment by specialty and among primary care vs specialty care.

**Methods** Total resident complement by specialty and year was extracted from the National Graduate Medical Education (GME) Census and stratified into primary care vs specialty care. Median incomes were extracted from Medical Group Management Association surveys. Piecewise linear regression with interaction terms (pre-ACA, 2001–2010, vs post-ACA, 2011–2019) assessed growth rate by specialty and growth rate differences between primary care and specialty care. Sensitivity analyses were performed by focusing on family medicine and excluding additional GME positions contributed by the introduction of the 2015 single GME accreditation system.

**Results** Resident complements increased for primary care (+0.16%/year pre-ACA to +2.06%/year post-ACA,  $P < .001$ ) and specialty care (+1.49%/year to +2.07%/year,  $P = .005$ ). Specialty care growth outpaced primary care pre-ACA ( $P < .001$ ) but not post-ACA ( $P = .10$ ). Family medicine had the largest increase in the pre- vs post-ACA era (-0.77%/year vs +2.09%/year,  $P < .001$ ). Excluding positions contributed by the single GME accreditation system transition did not result in any statistically significant changes to the findings. Income growth increased for primary care (+0.84%/year to +1.37%/year,  $P = .044$ ), but decreased for specialty care (+1.44%/year to +0.49%/year,  $P = .011$ ). Specialty care income growth outpaced primary care pre-ACA ( $P < .001$ ), but not post-ACA ( $P = .22$ ).

**Conclusions** We found significant growth differences in resident complement and income among primary care versus specialty care in the pre-/post-ACA eras.

## Introduction

The passing of the Affordable Care Act (ACA) in 2010 was a landmark moment in US health policy. Major provisions, including Medicaid expansion and individual and employer mandates, aimed to address deficiencies in health care access.<sup>1</sup> These may increase demand for primary care services. A 2010 analysis by the Association of American Medical Colleges (AAMC) estimated a 45 000 physician deficit in primary care by 2020.<sup>2</sup> Recognizing a need to enhance primary care, other primary care-related provisions of the ACA included increased reimbursement, scholarships, loan forgiveness, and graduate medical education (GME) training program

expansion.<sup>3</sup> These may further enable primary care career interest.

Continued health care reform followed in the wake of the ACA and additional major national health policy initiatives strengthened primary care relative to specialty care, such as the expansion of patient-centered medical homes and alternative payment models (eg, accountable care organizations).<sup>3,4</sup> Additionally, the introduction of the single GME accreditation system in 2015 may further bolster GME positions.<sup>5</sup>

It is not well known how the number of GME positions and physician incomes have responded to these policies, nor is it known whether US primary care was successfully strengthened, as measured by growth in GME primary care complements or by primary care physician income, as compared to specialty care. Therefore, we aim to fill this gap by evaluating the growth in the United States of trainee

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*Editor's Note: The online version of this article contains further details concerning the methods of this study.*

positions (ie, complements) and physician income, in the pre- versus post-ACA environment among primary care vs specialty care.

## Methods

Total resident complements by specialty by year were extracted from the National GME Census, a database of training programs accredited by the Accreditation Council for Graduate Medical Education (ACGME). It is updated annually and jointly sponsored by the American Medical Association and the AAMC; it accounts for greater than 97% of active trainees.<sup>6</sup> Combined specialties and specialties with less than 300 residents in the year 2000 were excluded for this analysis.

Median incomes by specialty by year were extracted from the Medical Group Management Association surveys, a widely used benchmarking resource for medical group practices.<sup>7,8</sup> Incomes were adjusted for inflation by conversion to 2019 dollars.

Primary care was defined as family medicine, internal medicine, and pediatrics, and specialty care as all others. Because many in internal medicine and pediatrics will go on to subspecialize, to isolate the effect on primary care, we ran a sub-analysis of family medicine only.

Relative growth by specialty by era (pre-ACA, 2001–2010 [N = 10 years], vs post-ACA, 2011–2019 [N = 9 years]) were calculated and absolute trends graphed over time. After implementation of the Balanced Budget Act in 1997, GME growth did not resume until 2001.<sup>9</sup> The Balanced Budget Act capped the number of Medicare-supported residency positions at 1996 levels, which resulted in a temporary halt in GME growth. Changes in growth rate for resident complement and income by specialty from 2001–2010 versus 2011–2019 were assessed using piecewise linear regression, with a change point (or knot value) midway between 2010 and 2011. The ACA was enacted on March 23, 2010. Differences in growth rates between primary care and specialty care were also assessed using piecewise linear regression by fitting an additional interaction between year and subgroup (primary versus specialty care). Differences were assessed by comparing slopes for the time periods 2001–2010 and 2011–2019 separately, for both resident complement and income. Annual percent change for each time frame was calculated using the model parameter estimates, which enabled prediction of income or resident complement at the start and end of each slope. Statistical significance was assessed at the 0.05 level; analysis performed using SAS 9.4 (SAS Institute Inc, Cary, NC). The online supplementary data contains additional details.

### Objectives

To evaluate the growth of US trainee positions and physician income in the pre- versus post-Affordable Care Act (ACA) environment by specialty and among primary care versus specialty care.

### Findings

Growth in US trainee positions and physician income for specialty care outpaced that of primary care before ( $P < .001$ ) but not after the passage of the ACA.

### Limitations

Limitations to this study include the inability to account for combined specialties or for trainees who subspecialize after their primary care residency through subsequent fellowship training.

### Bottom Line

While primary care lost ground to specialty care regarding growth in trainee positions and physician income in the decade preceding the ACA, those trends slowed in the decade following the ACA.

To probe the impact of the single GME accreditation system on the analysis of ACGME accredited specialty growth, we applied the following assumptions and sensitivity test. The single GME accreditation system brought the American Osteopathic Association (AOA) and the American Association of Colleges of Osteopathic Medicine (AACOM) under the ACGME accreditation system. AOA-approved training programs could begin applying for ACGME accreditation on July 1, 2015.

In 2015, there were 5312 DO graduates, of which 40.5% matched in the AOA match.<sup>10</sup> By 2019, 81% of the AOA's 2015 training positions had transitioned to ACGME accreditation.<sup>5</sup> Of those, we assumed 47.8% would have been expected to match in primary care (with 24.5% to family medicine) and 36.2% into specialty care,<sup>11</sup> as defined by this study. Thus, to remove the effect of the single GME accreditation system, we ran the analysis excluding these estimated primary care and specialty care position contributions for years 2016 to 2019.

No Institutional Review Board approval was required to report publicly available information; informed consent was not required because no human participants were involved.

## Results

We found that all specialties' resident complements grew (2001–2019; +29.1% overall), except pathology, with primary care +20.8% vs specialty care +37.0%. Overall growth increased from +0.87%/year (pre-ACA) to +2.07%/year (post-ACA;  $P < .001$ ; TABLE). Growth increased for primary care (+0.16%/year pre-ACA to +2.06%/year post-ACA,  $P < .001$ ) and specialty care (+1.49%/year to +2.07%/year,  $P = .005$ ). Specialty care growth outpaced primary

TABLE

Predicted Annual Percent Change in Resident Complement and Median Compensation by Specialty Before (2001–2010) and After (2011–2019) the Affordable Care Act

Specialty	Residency Growth (%/year)				Median Compensation Growth (%/year) <sup>a</sup>			
	2001–2010	2011–2019	Absolute Difference	P Value	2001–2010	2011–2019	Absolute Difference	P Value
Primary care	0.16	2.06	1.90	< .001	0.84	1.37	0.54	.044
Family medicine	-0.77	2.90	3.67	< .001	0.43	1.87	1.45	< .001
Internal medicine	0.37	2.05	1.68	< .001	1.12	1.44	0.32	.07
Pediatrics	0.72	1.10	0.38	< .001	0.95	0.81	-0.14	.87
Specialty care	1.49	2.07	0.57	.005	1.44	0.49	-0.94	.011
Plastic surgery	3.23	6.70	3.46	< .001	1.20	1.68	0.48	.33
Urology	0.47	3.20	2.73	< .001	0.35	0.50	0.14	.79
General surgery	0.01	1.93	1.92	< .001	0.05	0.06	0.01	.35
Psychiatry	0.53	2.32	1.80	.002	0.33	2.39	2.06	< .001
Emergency medicine	3.18	4.81	1.63	.001	0.92	1.65	0.73	.027
OB-GYN	0.32	1.26	0.93	< .001	0.21	0.52	0.32	.43
Ophthalmology	0.10	0.84	0.74	.09	1.00	0.43	-0.57	.51
Orthopedics	1.49	1.84	0.35	.033	1.71	1.29	-0.42	.52
Dermatology	2.36	2.65	0.29	.10	4.44	-0.14	-4.59	< .001
Neurology	4.67	4.92	0.25	.002	0.97	1.47	0.51	.09
Neurological surgery	4.54	3.93	-0.61	.20	1.45	1.64	0.19	.56
Pathology	0.44	-0.50	-0.94	< .001	0.18	-1.13	-1.31	.23
Anesthesiology	2.47	1.30	-1.17	.009	2.00	-0.73	-2.73	< .001
Radiation oncology	3.88	2.33	-1.55	.10	2.00	-1.35	-3.36	< .001
Otorhinolaryngology	3.54	1.53	-2.02	.016	1.89	0.87	-1.02	.08
Radiology	2.15	-0.49	-2.65	< .001	2.45	-1.30	-3.75	< .001
Total	0.87	2.07	1.20	< .001	1.38	0.57	-0.81	.017

Abbreviation: OB-GYN, obstetrics and gynecology.

<sup>a</sup> The median compensation growth (%/year) is adjusted for inflation.

care pre-ACA ( $P < .001$ ) but not post-ACA ( $P = .10$ ; FIGURE 1). Family medicine had the largest growth increase (-0.77%/year pre-ACA; +2.09%/year post-ACA;  $P < .001$ ; FIGURE 2). On sensitivity analysis, excluding positions contributed to the ACGME

complement by the single GME accreditation system transition did not result in any statistically significant changes to our findings.

All specialties' median incomes grew (2001–2019, +19.6% overall) except pathology (-7.6%). Overall

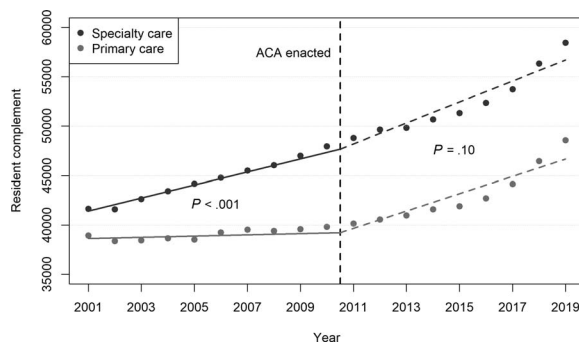


FIGURE 1  
Trainee Complement by Year Among Primary Care vs Specialty Care

Note: P values represent differences (interaction) in trainee complement growth rates between primary care versus specialty care for the given time frames (pre-ACA, 2001–2010, and post-ACA, 2011–2019).

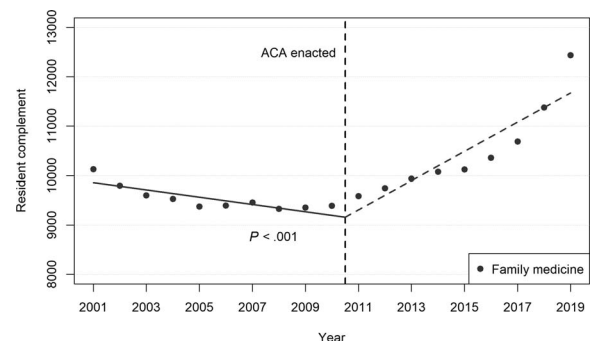
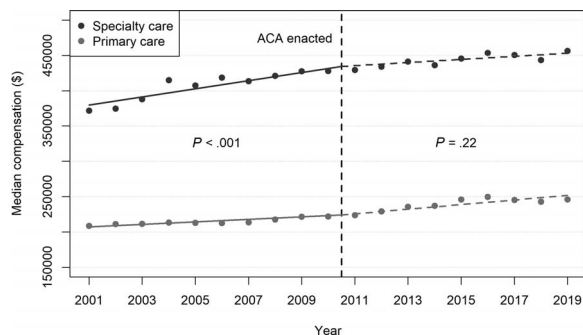


FIGURE 2  
Trainee Complement by Year Among Family Medicine Alone With Estimated Regression Lines

Note: P values represent the difference in growth rates for family medicine between pre- vs post-ACA eras.



**FIGURE 3**  
Median Income by Year Among Primary Care vs Specialty Care

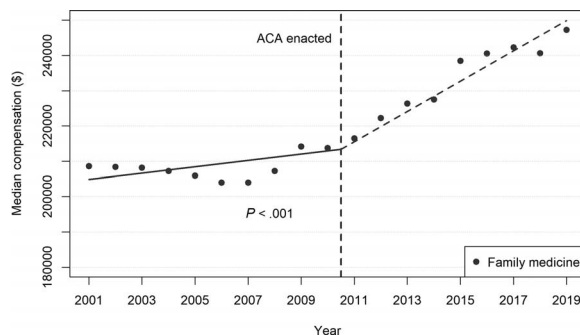
Note: *P* values represent differences (interaction) in median income growth rates between primary care and specialty care for the given time frames (pre-ACA, 2001–2010, and post-ACA, 2011–2019).

income growth slowed from +1.38%/year pre-ACA to +0.57%/year post-ACA ( $P = .017$ ; TABLE). Income growth increased for primary care (+0.84%/year to +1.37%/year,  $P = .044$ ) but decreased for specialty care (+1.44%/year to +0.49%/year,  $P = .011$ ). Specialty care income growth outpaced primary care pre-ACA ( $P < .001$ ) but not post-ACA ( $P = .22$ ; FIGURE 3). Family medicine had the second-largest income growth increase (+0.43%/year pre-ACA; +1.87%/year post-ACA;  $P < .001$ ; FIGURE 4), behind only psychiatry.

## Discussion

We found significant growth differences in resident complement and income among primary care versus specialty care in the pre- vs post-ACA eras. While primary care lost ground in both resident complement and income pre-ACA, those trends slowed in the post-ACA environment. These findings were pronounced in family medicine.

The findings are significant because they contrast with earlier reports showing specialty training was growing faster than primary care.<sup>12</sup> These observations should also be interpreted in the context of prior reports showing a correlation between specialty growth and specialty income.<sup>8</sup> Our findings are supported by a recent report showing primary care compensation growth outpacing specialty care compensation growth following the ACA.<sup>13</sup> These results suggest that the US health policy environment of the past decade (2011–2019) may have mitigated the steady erosion of primary care relative to specialty care in the United States in the preceding decade (2001–2010). While US medical student interest<sup>14</sup> and specialty income for primary care still lags behind specialty care (the 2019 median income was \$246,092 for primary care versus \$456,450 for specialty care),



**FIGURE 4**  
Median Income by Year Among Family Medicine Alone With Estimated Regression Lines

Note: *P* values represent the difference in growth rates for family medicine between pre- vs post-ACA eras.

how much and which policy provisions contributed to our observations deserves further investigation. These findings suggest that strengthening certain provisions, either in the ACA and/or as part of other national health policy initiatives (eg, patient-centered medical homes or alternative payment models), may further enhance the primary care workforce.

Of note, on sensitivity analysis, we did not find excluding positions contributed by the single GME accreditation system transition impacted our results, likely because the transition would have only affected years 2016–2019 of this study, and because the AOA match was substantially smaller than the National Resident Matching Program (eg, 2012 total matches of 1766 vs 22 934 positions, respectively).

Limitations to this study include the inability to account for combined specialties or for those trainees who subspecialize after their primary care residency through subsequent fellowship training. This is mitigated by the sensitivity sub-analysis looking at family medicine only, which demonstrated consistent results. Additionally, the Medical Group Management Association data may have underrepresentation from smaller medical groups, certain geographies or local marketplaces, smaller specialties, and academic physicians, so analyzing relative trends in the data are more meaningful than extrapolating absolute numbers to any individual.

## Conclusions

We found growth differences in resident complement and income among primary care versus specialty care in the decades preceding and following the ACA. The differences in complement growth persisted even when accounting for the single GME accreditation system. While primary care lost ground in both in the decade preceding the ACA, those trends slowed in the

decade following the ACA. These findings were pronounced in family medicine.

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