

# Key Trends in Tracking Supply of and Demand for Oncologists

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**ASCO**<sup>®</sup>

AMERICAN SOCIETY OF CLINICAL ONCOLOGY

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## INTRODUCTION

The Workforce Information System (WIS) builds on ASCO's 2007 workforce study that projected significant shortages in U.S. oncologist supply by 2020.<sup>1</sup> The original study was a landmark analysis for assessing current supply and demand and predicting changes over time. One limitation, however, was that the study relied on a one-time snapshot of the oncologist workforce. In intervening years, significant political, economic, and healthcare system changes have influenced the relationship between the supply of and demand for cancer services in the United States. The WIS provides ASCO with an ongoing method for data collection and reporting on the current status of the oncologist workforce.

The WIS includes a database for storing data over time on the supply of oncologists, new entrants into the workforce, and projections of cancer incidence and prevalence. This report includes a series of figures and data tables showing trends over time in the supply of and demand for oncologists in the United States.

In general, the report focuses on three main oncology specialties—hematology, hematology/oncology, and medical oncology—but in some cases, data are shown for other oncology specialties and other subspecialties of internal medicine. Herein, this grouping of hematology, hematology/oncology, and medical oncology is presented as "Oncology (Composite)." In many figures and tables, data for the individual specialties are presented as well.

The report is designed so that it can be used in its entirety as one report, or as individual fact sheets. It is organized into three sections: 1) Supply; 2) New Entrants; and 3) Cancer Incidence and Prevalence.

Since 2014, ASCO has presented key findings from the WIS in its State of Cancer Care in America series. The series uses a data-driven approach to examine demographic, economic, and oncology practice trends to aid the oncology community, policymakers, and others in shaping the future of cancer care in America. Visit [asco.org/state-of-cancer-care](https://asco.org/state-of-cancer-care).

## SUPPLY

The data in the **Supply** section focus mainly on active oncologists practicing in one of three specialty areas: hematology, hematology/oncology, or medical oncology. Where informative, benchmark data on "all physicians" are included as a reference.

Figures 1-9 presented in the **Supply** section of this report use data analyzed from the American Medical Association's (AMA) Physician Masterfile. Permission was obtained from the AMA to use these data; however, the use and reference to AMA data by ASCO should not be construed as endorsement by the AMA, nor do the ideas or opinions expressed herein reflect the views of the AMA. Figures in this section with a source of "AMA Physician Masterfile" are custom tabulations of data from the Masterfile. It is important to note that the custom tabulations are based on the physicians' primary specialty listing only.

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1. Erikson C, Salsberg E, Forte G, et al: Future supply and demand for oncologists: Challenges to assuring access to oncology services. *J Oncol Pract* 3:79–86, 2007.

The remaining figures in the **Supply** section of the report (Figures 10-14) represent geographic analyses of practice addresses registered with the Medicare program and made available through Physician Compare, a data repository administered by the Centers for Medicare & Medicaid Services. Within the WIS, oncology practice locations include all addresses listed for providers who identify hematology, hematology/oncology, or medical oncology as their primary specialty. Several of the maps combine practice information with U.S. population data and other demographic attributes by geography provided by the U.S. Census Bureau. Specific data sources are listed under each figure. Detailed methodology is available elsewhere.<sup>2</sup>

The figures and data tables in the **Supply** section include data on:

- The total number of active oncologists by specialty
- Percentage female
- Percentage medical doctors (MDs)
- Percentage doctors of osteopathy (DOs)
- Percentage international medical graduates (IMGs)
- Percentage active in direct patient care
- Percentage patient care oncologists by employment setting
- Percentage under age 40 and age 64 or older
- Number of oncologists by state
- Oncologists per 100,000 residents 55 years and older by state
- Geographic distribution of oncology practices
- Rural and urban oncology practice locations

### NEW ENTRANTS

This section focuses on physicians in training, starting with the pipeline of residents who are eligible to enter training in hematology, hematology/oncology, medical oncology, gynecologic oncology, and pediatric hematology/oncology fellowship programs (i.e., residents who completed an internal medicine, obstetric/gynecology, or pediatric residency program) and continuing through to the number completing training in oncology fellowship programs. In addition to demographic comparisons (such as gender, race, and ethnicity), we provide data on the competitiveness of oncology fellowships relative to other internal medicine fellowship programs. Where appropriate, we have included benchmark references of all residents, internal medicine residents, and/or select internal medicine subspecialties.

Data from this section come from three primary sources: 1) the *Journal of the American Medical Association*'s (*JAMA*'s) Medical Education issues (published annually), 2) annual publications on the National Residency Match Program, and 3) data on first time board test-takers as published on the American Board of Internal Medicine (ABIM) website.

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2. Kirkwood MK, Bruinooge SS, Goldstein MA, et al: Enhancing the American Society of Clinical Oncology Workforce Information System With Geographic Distribution of Oncologists and Comparison of Data Sources for the Number of Practicing Oncologists. *Journal Oncol Pract* 10:32-38, 2014.

The figures and data tables in the **New Entrants** section include data on:

- Residents in pipeline programs
- Percentage of residents in pipeline programs who are female
- Percentage of residents in pipeline programs who are USMD
- Residents completing pipeline programs
- Applicants to an IM subspecialty fellowship
- USMD applicants to an IM subspecialty fellowship
- First year IM subspecialty fellows
- Percentage of IM subspecialty fellows who are female
- Percentage of IM subspecialty fellows who are IMG
- Percentage of oncology fellows who are Black or African American
- Percentage of oncology fellows who are Hispanic
- Fellows who complete oncology training and first-time board test-takers

### CANCER INCIDENCE AND PREVALENCE

The **Cancer Incidence and Prevalence** section presents the latest available data on cancer incidence and prevalence, showing the trends in the number of new cases and number of survivors. Survivor data is presented in terms of five-year survival rates as well as anyone with a history of cancer.

Data for the **Cancer Incidence and Prevalence** section come primarily from two sources: 1) National Cancer Institute (NCI) publications focusing on analysis of the Surveillance Epidemiology and End Results Cancer Statistics Review, and 2) the American Cancer Society's annual publication, Cancer Facts and Figures, which is jointly prepared with the NCI.

The figures and data tables in this section include data on:

- New cancer cases
- 5-year relative survival rates
- Population with a history of cancer

### LIMITATIONS OF THE DATA

Much of the data from the **Supply** section of this report come from the AMA Physician Masterfile. Although the Masterfile was not designed for workforce analysis, it is commonly used because it captures detailed demographic and practice information for AMA member and nonmember physicians. The AMA makes available to ASCO and other researchers the full Masterfile on an annual basis. The advantage to this is researchers are afforded the flexibility to create custom tabulations of the data. For instance, data on the percentage of oncologists who are age 64 or older are only obtainable by using the Masterfile itself.

Despite the flexibility of using the full Masterfile, there are disadvantages to using it as a source of data on oncologists. A physician's activity status comes from the AMA's Census of Physicians. A physician typically receives the AMA's Census every three to four years, which may result in a lag in changing a physician's status from active to inactive. Because much of the information is self-reported through the AMA Census, there are also issues with interpretation (e.g., which specialty field a physician chooses as his/her primary specialty) and with missing fields. In addition, physician board certification information is not available through the Masterfile.

In order to assess the geographic distribution of oncologists, we used a second data source for the **Supply** section: the CMS Physician Compare database. Physician Compare is a publicly available data set that stores information on U.S. healthcare providers, specifically those who have billed for Medicare reimbursement within the prior 12 months. The data are the most up-to-date available, to our knowledge, and provide individual-level addresses for physician practice locations (and secondary practice locations, where applicable). Physician Compare does not provide demographic and practice information important for workforce monitoring (e.g., age and employment setting), so cannot replace the AMA Masterfile as the primary Supply data source.

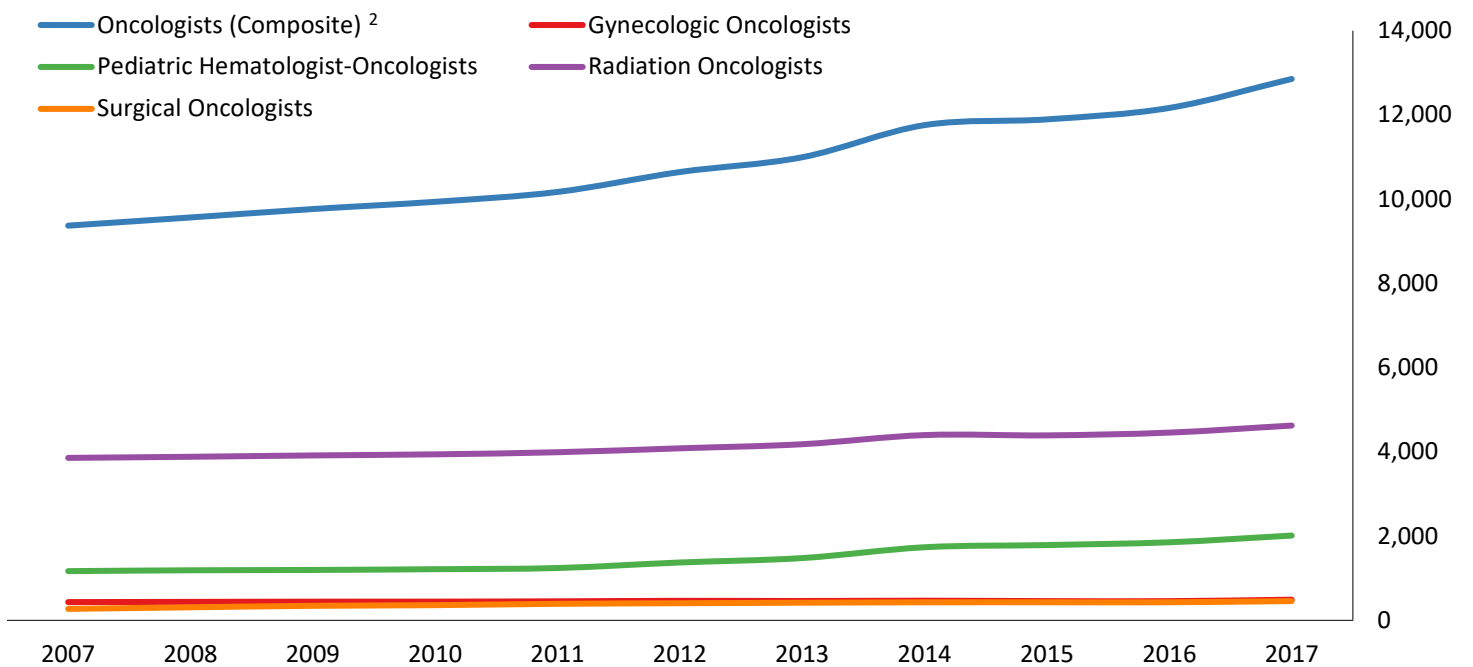
Much of the data from the **New Entrant** section come from *JAMA*. The published data in *JAMA* are derived from the AAMC/AMA National GME Census and represent an undercount of residents and fellows, as they do not account for late reporting. Furthermore, the GME Census represents ACGME programs only. However, there are less than 10 osteopathic GME programs in hematology and oncology, with fewer than 30 positions.

For purposes of annual tracking in the WIS, ASCO uses high-level data from the National Cancer Institute and the American Cancer Society for the **Cancer Incidence and Prevalence** section. ASCO acknowledges that these statistics do not adequately represent demand for cancer care services in the United States and is pursuing separate initiatives towards this end. In 2014, ASCO published an updated demand methodology and projections.<sup>3</sup>

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3. Yang W, Williams JH, Hogan PF, et al: Projected supply of and demand for oncologists and radiation oncologists through 2025: an aging, better-insured population will result in shortage. *J Oncol Pract* 10:39-45, 2014.

Figure 1a. Number of Oncologists Engaged in Patient Care<sup>1</sup>



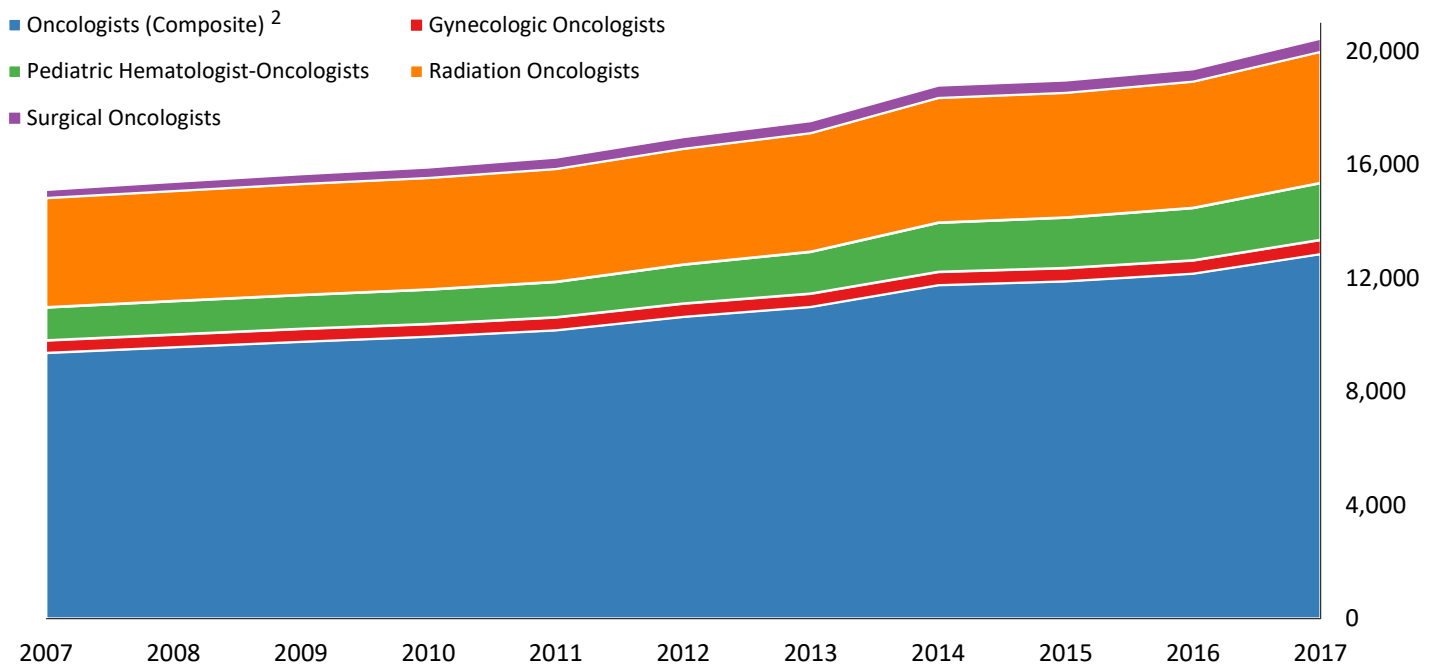
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Number of Oncologists (Composite) <sup>2</sup>	9,371	9,565	9,765	9,937	10,171	10,644	10,995	11,758	11,894	12,166	12,854
Hematologists	1,620	1,598	1,570	1,523	1,469	1,450	1,420	1,410	1,377	1,335	1,262
Hematologists/Oncologists	3,177	3,429	3,706	3,997	4,400	4,903	5,345	6,197	6,482	6,891	7,848
Medical Oncologists	4,574	4,538	4,489	4,417	4,302	4,291	4,230	4,151	4,035	3,940	3,744
Gynecologic Oncologists	433	438	443	444	451	463	459	466	456	455	490
Pediatric Hematologists/Oncologists	1,168	1,188	1,196	1,214	1,242	1,373	1,478	1,735	1,787	1,853	2,012
Radiation Oncologists	3,857	3,883	3,915	3,941	3,991	4,084	4,181	4,398	4,391	4,457	4,624
Surgical Oncologists	272	309	344	360	392	406	418	428	429	429	457
Annual percent change in number of											
Oncologists (Composite) <sup>2</sup>	1.7	2.1	2.1	1.8	2.4	4.7	3.3	6.9	1.2	2.3	5.7
Hematologists	-4.4	-1.4	-1.8	-3.0	-3.5	-1.3	-2.1	-0.7	-2.3	-3.1	-5.5
Hematologists/Oncologists	10.5	7.9	8.1	7.9	10.1	11.4	9.0	15.9	4.6	6.3	13.9
Medical Oncologists	-1.5	-0.8	-1.1	-1.6	-2.6	-0.3	-1.4	-1.9	-2.8	-2.4	-5.0
Gynecologic Oncologists	-1.6	1.2	1.1	0.2	1.6	2.7	-0.9	1.5	-2.1	-0.2	7.7
Pediatric Hematologist-Oncologists	0.3	1.7	0.7	1.5	2.3	10.5	7.6	17.4	3.0	3.7	8.6
Radiation Oncologists	0.5	0.7	0.8	0.7	1.3	2.3	2.4	5.2	-0.2	1.5	3.7
Surgical Oncologists	11.9	13.6	11.3	4.7	8.9	3.6	3.0	2.4	0.2	0.0	6.5

Source: AMA Physician Masterfile, October 2017 update

1 The data shown here represent the number of active physicians (MDs and DOs, excluding residents/fellows) whose major professional activity is direct patient care. The data refer to physicians active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.

2 The data for oncologists include all active physicians (MDs and DOs, excluding residents/fellows) who specified hematology (HEM), hematology/oncology (HO), or medical oncology (ON) as their primary specialty on the AMA Census of Physicians.

Figure 1b. Number of Oncologists Engaged in Patient Care<sup>1</sup>



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Number of Oncologists (Composite) <sup>1</sup>	9,371	9,565	9,765	9,937	10,171	10,644	10,995	11,758	11,894	12,166	12,854
Hematologists	1,620	1,598	1,570	1,523	1,469	1,450	1,420	1,410	1,377	1,335	1,262
Hematologists/Oncologists	3,177	3,429	3,706	3,997	4,400	4,903	5,345	6,197	6,482	6,891	7,848
Medical Oncologists	4,574	4,538	4,489	4,417	4,302	4,291	4,230	4,151	4,035	3,940	3,744
Gynecologic Oncologists	433	438	443	444	451	463	459	466	456	455	490
Pediatric Hematologist-Oncologists	1,168	1,188	1,196	1,214	1,242	1,373	1,478	1,735	1,787	1,853	2,012
Radiation Oncologists	3,857	3,883	3,915	3,941	3,991	4,084	4,181	4,398	4,391	4,457	4,624
Surgical Oncologists	272	309	344	360	392	406	418	428	429	429	457
Annual percent change in number of Oncologists (Composite) <sup>1</sup>	1.7	2.1	2.1	1.8	2.4	4.7	3.3	6.9	1.2	2.3	5.7
Hematologists	-4.4	-1.4	-1.8	-3.0	-3.5	-1.3	-2.1	-0.7	-2.3	-3.1	-5.5
Hematologists/Oncologists	10.5	7.9	8.1	7.9	10.1	11.4	9.0	15.9	4.6	6.3	13.9
Medical Oncologists	-1.5	-0.8	-1.1	-1.6	-2.6	-0.3	-1.4	-1.9	-2.8	-2.4	-5.0
Gynecologic Oncologists	-1.6	1.2	1.1	0.2	1.6	2.7	-0.9	1.5	-2.1	-0.2	7.7
Pediatric Hematologists/Oncologists	0.3	1.7	0.7	1.5	2.3	10.5	7.6	17.4	3.0	3.7	8.6
Radiation Oncologists	0.5	0.7	0.8	0.7	1.3	2.3	2.4	5.2	-0.2	1.5	3.7
Surgical Oncologists	11.9	13.6	11.3	4.7	8.9	3.6	3.0	2.4	0.2	0.0	6.5

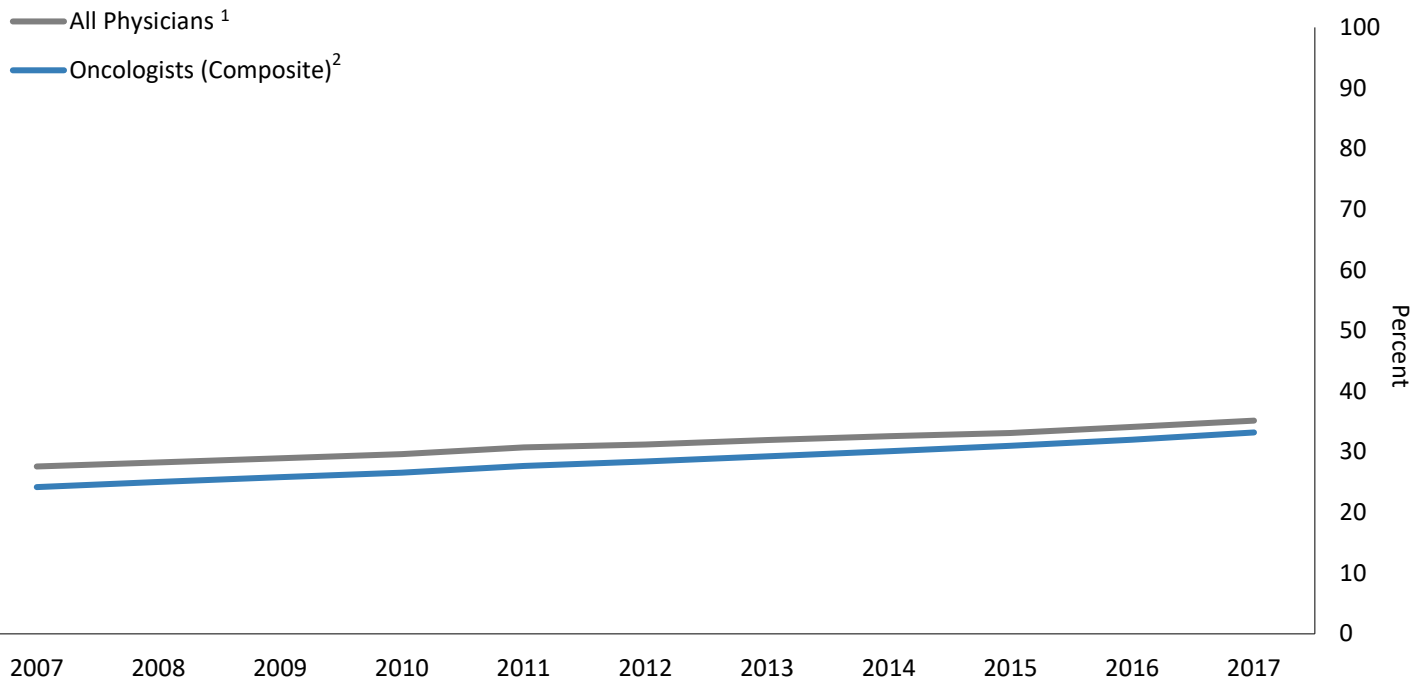
Source: AMA Physician Masterfile, October 2017 update

1 The data shown here represent the number of active physicians (MDs and DOs, excluding residents/fellows) whose major professional activity is direct patient care. The data refer to physicians active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.

2 The data for oncologists include all active physicians (MDs and DOs, excluding residents/fellows) who specified hematology (HEM), hematology/oncology (HO), or medical oncology (ON) as their primary specialty on the AMA Census of Physicians.



Figure 2. Percentage of Oncologists Who Are Female



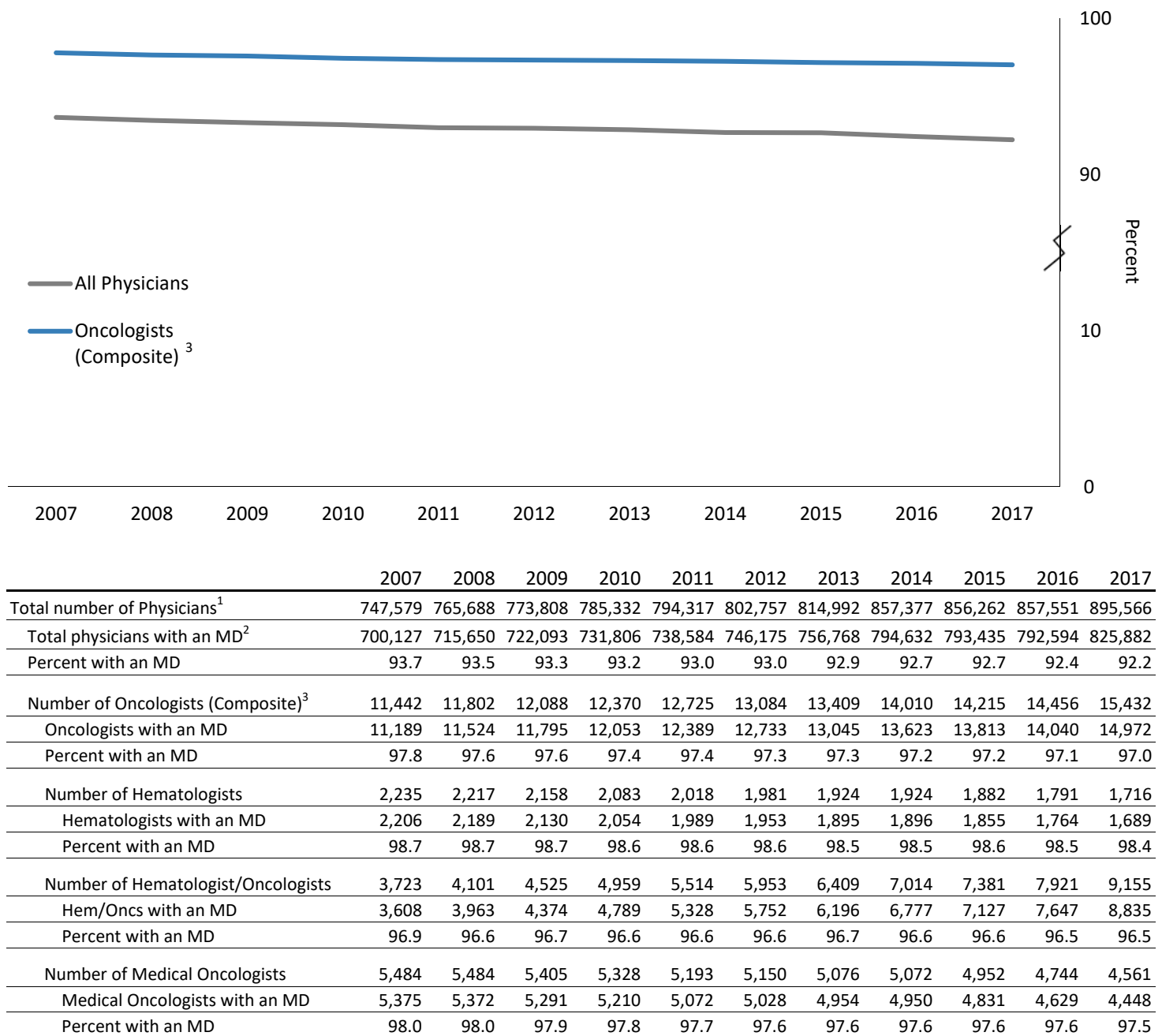
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Total number of Physicians<sup>1</sup></b>	746,858	764,783	772,810	784,227	793,453	801,684	813,895	856,280	855,172	856,465	894,478
Physicians who are female	206,130	216,095	223,852	232,381	243,842	250,318	260,274	279,040	283,113	292,177	314,455
Percent female	27.6	28.3	29.0	29.6	30.7	31.2	32.0	32.6	33.1	34.1	35.2
<b>Number of Oncologists (Composite)<sup>2</sup></b>	11,438	11,789	12,074	12,351	12,706	13,064	13,390	13,991	14,196	14,437	15,412
Oncologists who are female	2,768	2,952	3,122	3,280	3,515	3,716	3,917	4,210	4,403	4,622	5,118
Percent female	24.2	25.0	25.9	26.6	27.7	28.4	29.3	30.1	31.0	32.0	33.2
<b>Number of Hematologists</b>	2,234	2,215	2,155	2,080	2,015	1,978	1,922	1,922	1,880	1,789	1,713
Hematologists who are female	541	546	526	507	504	495	482	482	480	469	458
Percent female	24.2	24.7	24.4	24.4	25.0	25.0	25.1	25.1	25.5	26.2	26.7
<b>Number of Hematologist/Oncologists</b>	3,722	4,093	4,517	4,948	5,503	5,941	6,397	7,002	7,369	7,909	9,143
Hematologist/Oncologists who are female	1,134	1,281	1,472	1,641	1,892	2,089	2,296	2,573	2,763	3,013	3,534
Percent female	30.5	31.3	32.6	33.2	34.4	35.2	35.9	36.7	37.5	38.1	38.7
<b>Number of Medical Oncologists</b>	5,482	5,481	5,402	5,323	5,188	5,145	5,071	5,067	4,947	4,739	4,556
Medical Oncologists who are female	1,093	1,125	1,124	1,132	1,119	1,132	1,139	1,155	1,160	1,140	1,126
Percent female	19.9	20.5	20.8	21.3	21.6	22.0	22.5	22.8	23.5	24.1	24.7

Source: AMA Physician Masterfile, October 2017 update

1 The data shown here are based on the number of active physicians (MDs and DOs, excluding residents/fellows) whose sex is known. Physicians whose major professional activity is semi-retired, retired, temporarily not in practice, or not in practice for some other reason are not considered active and are excluded. The data refer to physicians active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.

2 The data for oncologists include all active physicians (MDs and DOs, excluding residents/fellows) who specified hematology (HEM), hematology/oncology (HO), or medical oncology (ON) as their primary specialty on the AMA Census of Physicians. This is a subset of total active physicians.

Figure 3. Percentage of Oncologists Who Are MDs



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total number of Physicians <sup>1</sup>	747,579	765,688	773,808	785,332	794,317	802,757	814,992	857,377	856,262	857,551	895,566
Total physicians with an MD <sup>2</sup>	700,127	715,650	722,093	731,806	738,584	746,175	756,768	794,632	793,435	792,594	825,882
Percent with an MD	93.7	93.5	93.3	93.2	93.0	93.0	92.9	92.7	92.7	92.4	92.2
Number of Oncologists (Composite) <sup>3</sup>	11,442	11,802	12,088	12,370	12,725	13,084	13,409	14,010	14,215	14,456	15,432
Oncologists with an MD	11,189	11,524	11,795	12,053	12,389	12,733	13,045	13,623	13,813	14,040	14,972
Percent with an MD	97.8	97.6	97.6	97.4	97.4	97.3	97.3	97.2	97.2	97.1	97.0
Number of Hematologists	2,235	2,217	2,158	2,083	2,018	1,981	1,924	1,924	1,882	1,791	1,716
Hematologists with an MD	2,206	2,189	2,130	2,054	1,989	1,953	1,895	1,896	1,855	1,764	1,689
Percent with an MD	98.7	98.7	98.7	98.6	98.6	98.6	98.5	98.5	98.6	98.5	98.4
Number of Hematologist/Oncologists	3,723	4,101	4,525	4,959	5,514	5,953	6,409	7,014	7,381	7,921	9,155
Hem/Oncs with an MD	3,608	3,963	4,374	4,789	5,328	5,752	6,196	6,777	7,127	7,647	8,835
Percent with an MD	96.9	96.6	96.7	96.6	96.6	96.6	96.7	96.6	96.6	96.5	96.5
Number of Medical Oncologists	5,484	5,484	5,405	5,328	5,193	5,150	5,076	5,072	4,952	4,744	4,561
Medical Oncologists with an MD	5,375	5,372	5,291	5,210	5,072	5,028	4,954	4,950	4,831	4,629	4,448
Percent with an MD	98.0	98.0	97.9	97.8	97.7	97.6	97.6	97.6	97.6	97.6	97.5

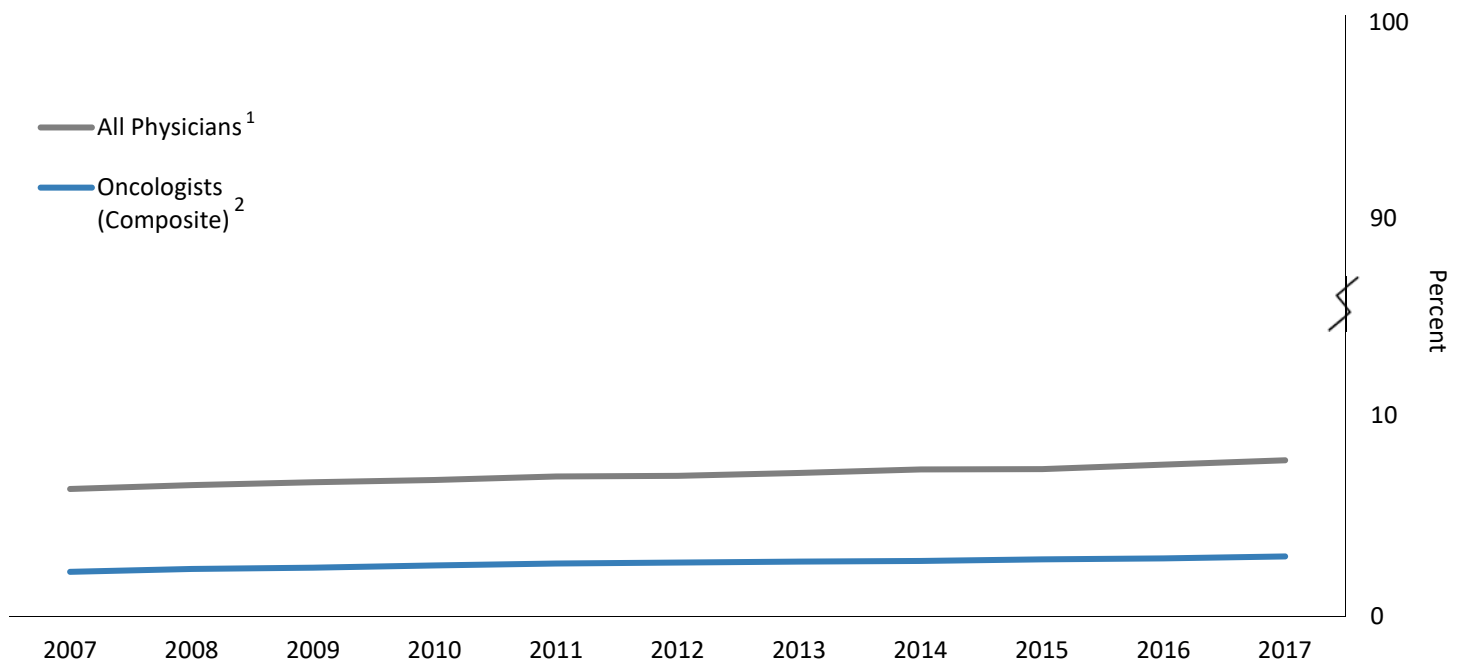
Source: AMA Physician Masterfile, October 2017 update

1 The data shown here are based on the number of active physicians (MDs and DOs, excluding residents/fellows) whose degree type is known. Physicians whose major professional activity is semi-retired, retired, temporarily not in practice, or not in practice for some other reason are not considered active and are excluded. The data refer to physicians active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.

2 The number with an MD include international medical graduates (IMGs).

3 The data for oncologists include all active physicians (MDs and DOs, excluding residents/fellows) who specified hematology (HEM), hematology/oncology (HO), or medical oncology (ON) as their primary specialty on the AMA Census of Physicians. This is a subset of total active physicians.

Figure 4. Percentage of Oncologists Who Are DOs



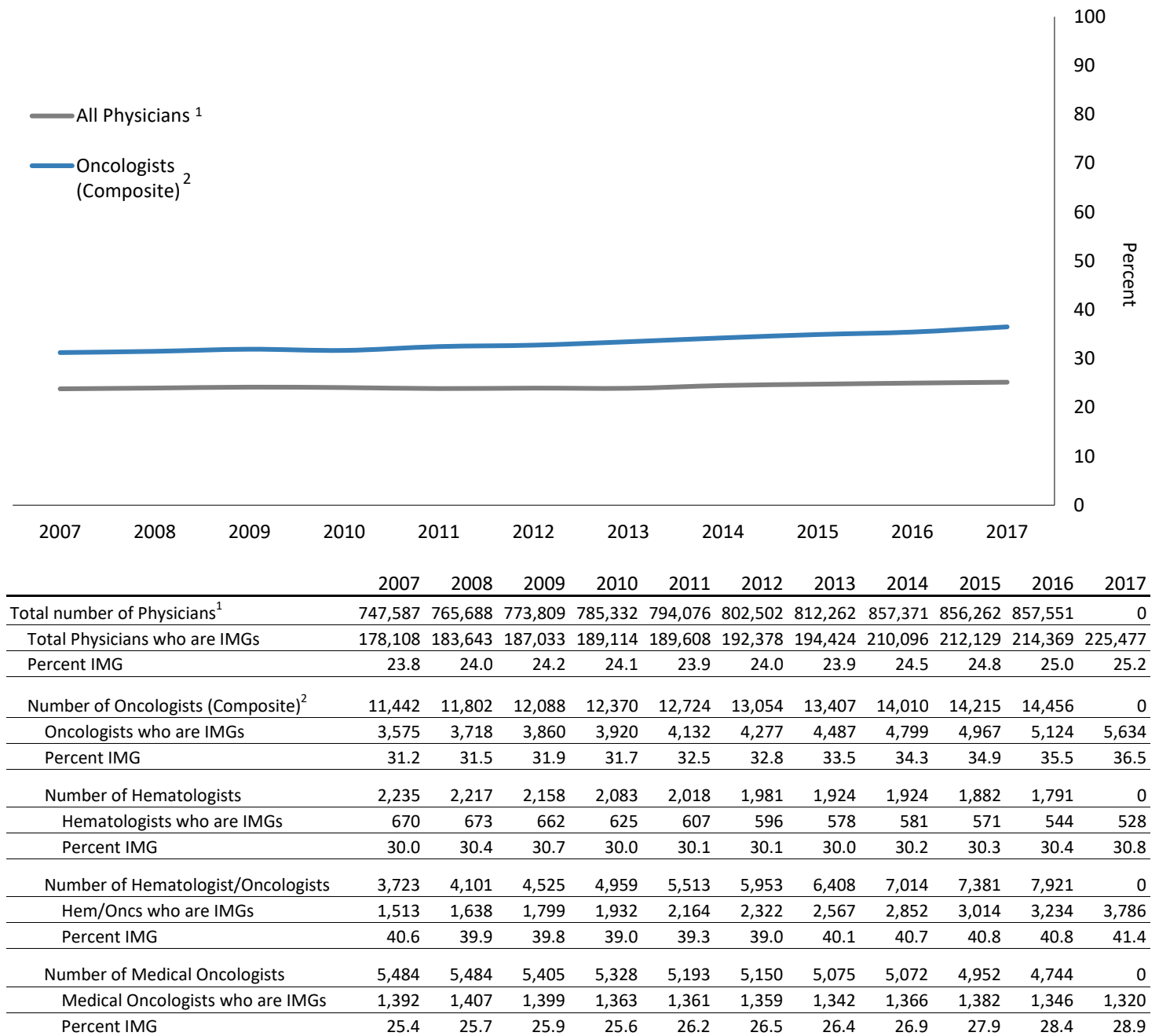
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Total Number of Physicians<sup>1</sup></b>	747,579	765,688	773,808	785,332	794,317	802,757	814,992	857,377	856,262	857,551	895,566
Total Physicians with a DO	47,452	50,038	51,715	53,333	55,390	56,230	58,224	62,745	62,827	64,957	69,684
Percent with a DO	6.3	6.5	6.7	6.8	7.0	7.0	7.1	7.3	7.3	7.6	7.8
<b>Number of Oncologists (Composite)<sup>2</sup></b>	11,442	11,802	12,088	12,370	12,725	13,084	13,409	14,010	14,215	14,456	15,432
Oncologists with an DO	253	278	293	314	334	350	364	387	402	416	460
Percent with an DO	2.2	2.4	2.4	2.5	2.6	2.7	2.7	2.8	2.8	2.9	3.0
<b>Number of Hematologists</b>	2,235	2,217	2,158	2,083	2,018	1,981	1,924	1,924	1,882	1,791	1,716
Hematologists with a DO	29	28	28	29	29	28	29	28	27	27	27
Percent with a DO	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.4	1.5	1.6
<b>Number of Hematologist/Oncologists</b>	3,723	4,101	4,525	4,959	5,514	5,953	6,409	7,014	7,381	7,921	9,155
Hematologist/Oncologists with a DO	115	138	151	168	184	200	213	237	254	274	320
Percent with an DO	3.1	3.4	3.3	3.4	3.3	3.4	3.3	3.4	3.4	3.5	3.5
<b>Number of Medical Oncologists</b>	5,484	5,484	5,405	5,328	5,193	5,150	5,076	5,072	4,952	4,744	4,561
Medical Oncologists with a DO	109	112	114	117	121	122	122	122	121	115	113
Percent with a DO	2.0	2.0	2.1	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.5

Source: AMA Physician Masterfile, October 2017 update

1 The data shown here are based on the number of active physicians (MDs and DOs, excluding residents/fellows) whose degree type is known. Physicians whose major professional activity is semi-retired, retired, temporarily not in practice, or not in practice for some other reason are not considered active and are excluded. The data refer to physicians active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.

2 The data for oncologists include all active physicians (MDs and DOs, excluding residents/fellows) who specified hematology (HEM), hematology/oncology (HO), or medical oncology (ON) as their primary specialty on the AMA Census of Physicians. This is a subset of total active physicians.

Figure 5. Percentage of Oncologists Who Are International Medical Graduates

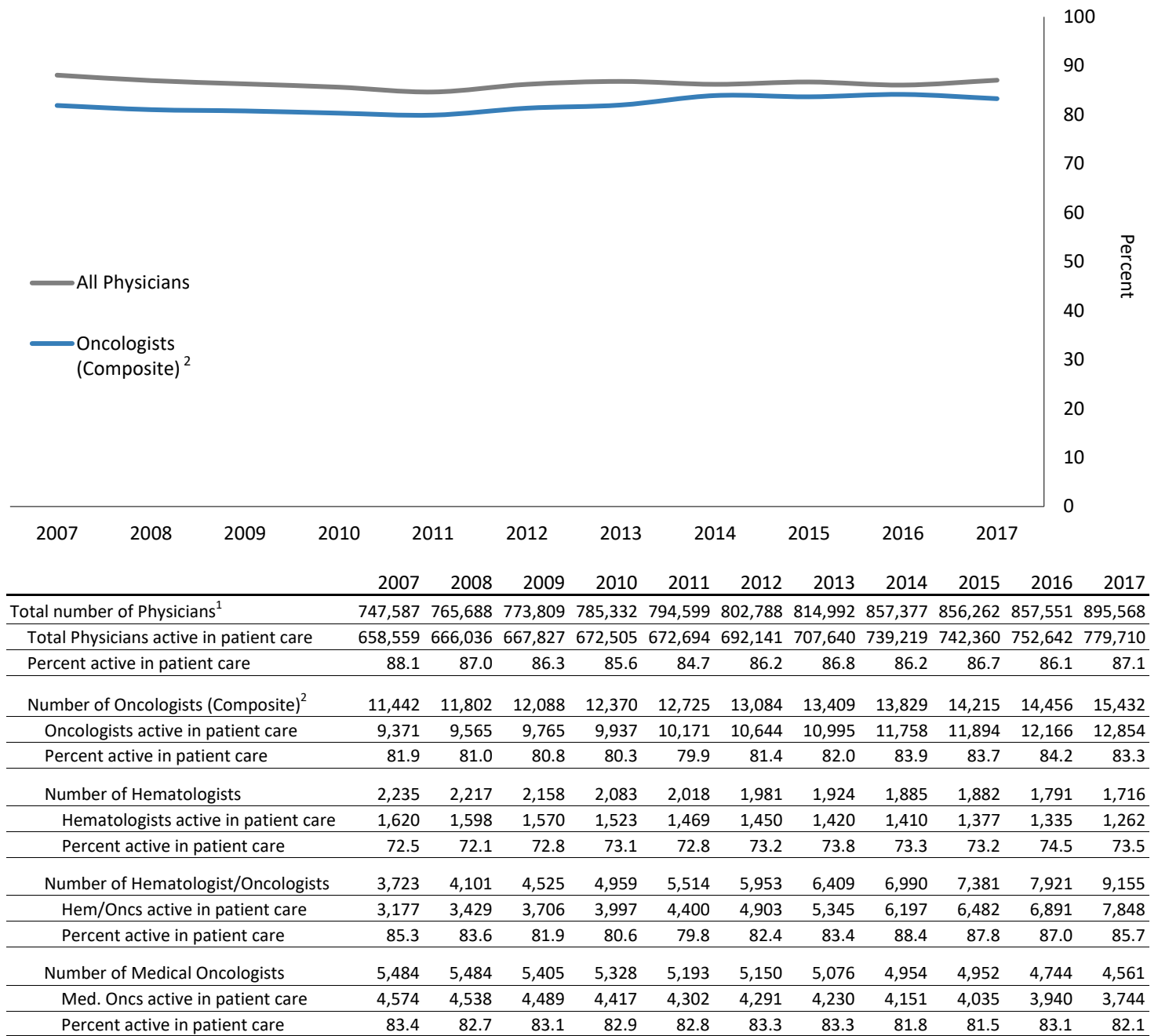


Source: AMA Physician Masterfile, October 2017 update

1 The data shown here are based on the number of active physicians (MDs and DOs, excluding residents/fellows) whose medical school of graduation is known. Physicians whose major professional activity is semi-retired, retired, temporarily not in practice, or not in practice for some other reason are not considered active and are excluded. The data refer to physicians active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used. Physicians who graduated from medical schools in the U.S., a U.S. territory, or Canada are not considered IMGs.

2 The data for oncologists include all active physicians (MDs and DOs, excluding residents/fellows) who specified hematology (HEM), hematology/oncology (HO), or medical oncology (ON) as their primary specialty on the AMA Census of Physicians. This is a subset of total active physicians.

Figure 6. Percentage of Oncologists Whose Primary Activity is Direct Patient Care

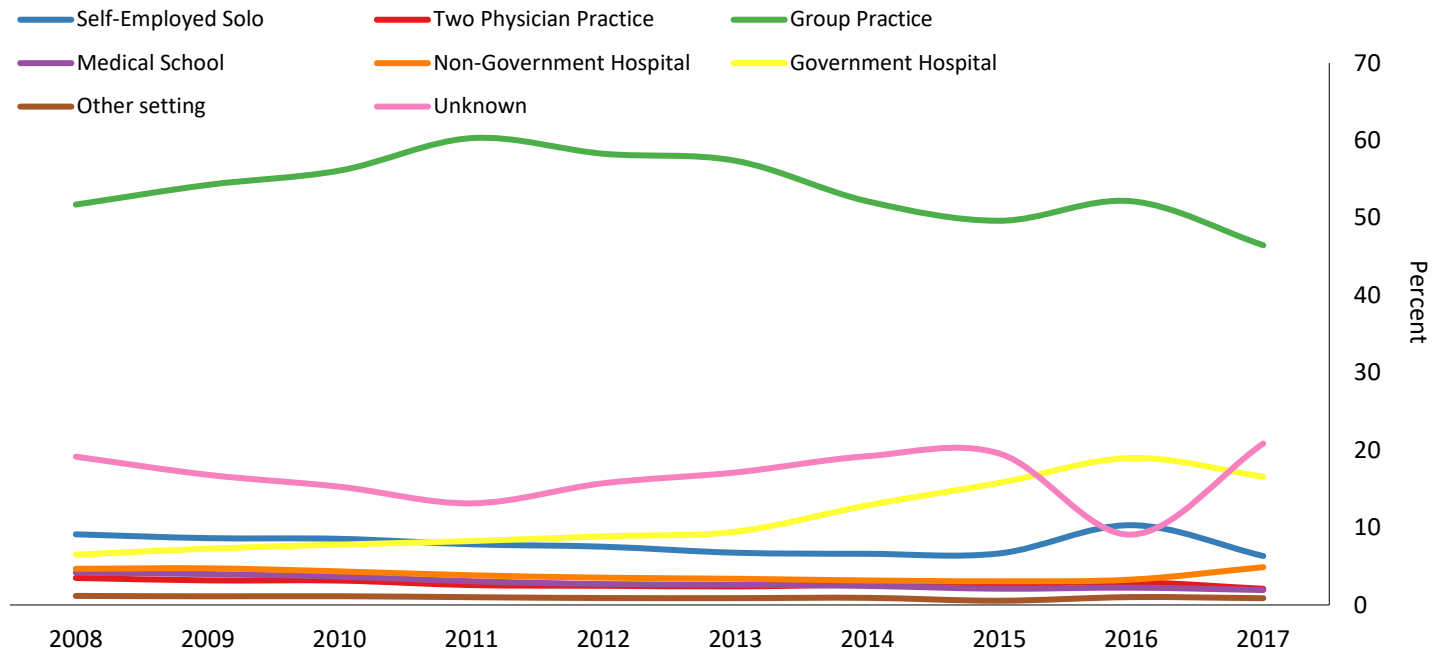


Source: AMA Physician Masterfile, October 2017 update

1 The data shown here represent the number of active physicians (MDs and DOs, excluding residents/fellows) whose major professional activity is direct patient care. The data refer to physicians active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.

2 The data for oncologists include all active physicians (MDs and DOs, excluding residents/fellows) who specified hematology (HEM), hematology/oncology (HO), or medical oncology (ON) as their primary specialty on the AMA Census of Physicians. This is a subset of total active physicians.

Figure 7. Percentage of Oncologists Engaged in Patient Care by Employment Setting

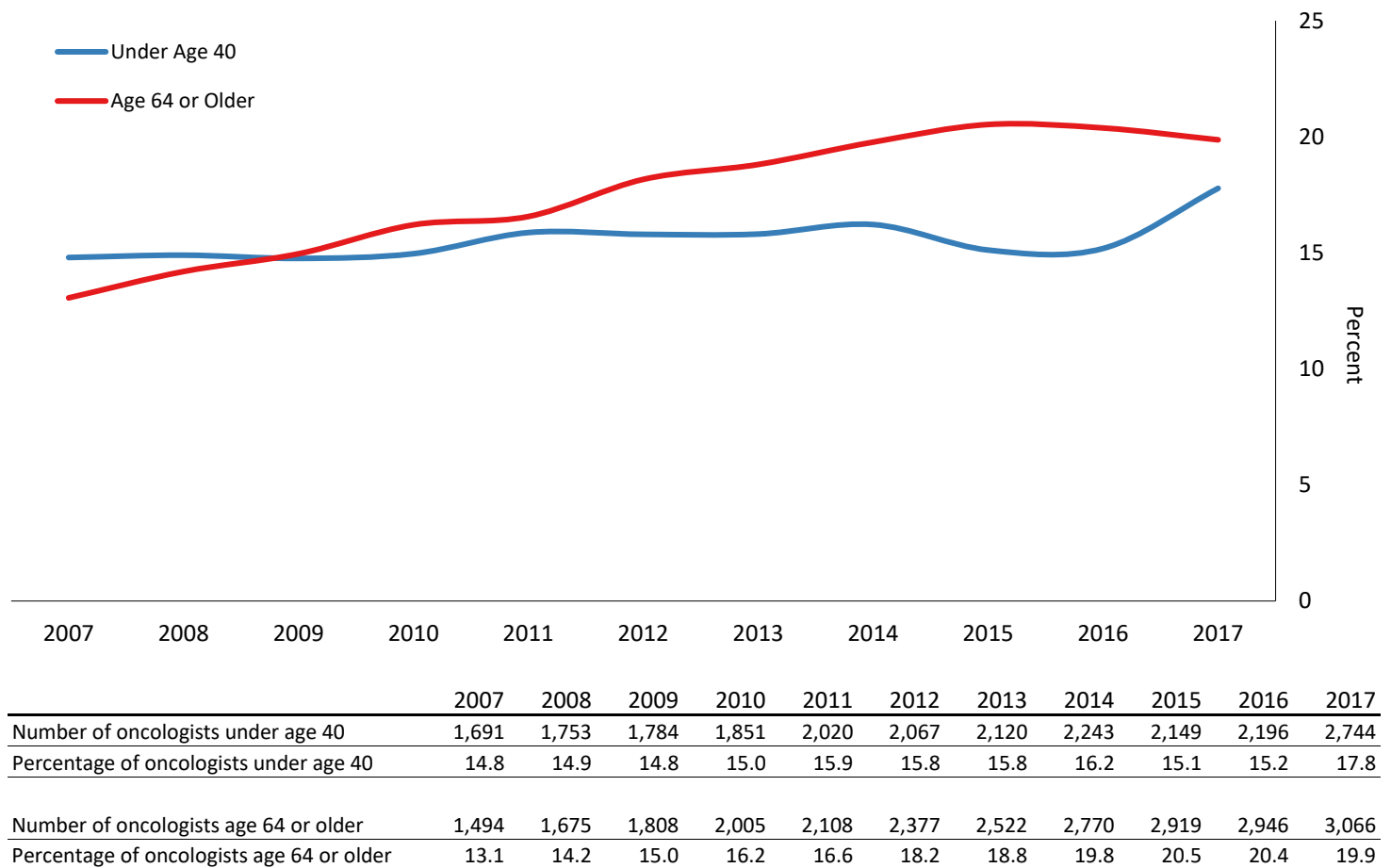


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Oncologists (Composite) <sup>1</sup> in patient care	9,371	9,565	9,765	9,937	10,171	10,644	10,995	11,758	11,894	12,166	12,854
Number in self-employed solo practice <sup>2</sup>	897	873	843	849	797	801	742	777	792	814	813
Percent in self-employed solo practice	9.6	9.1	8.6	8.5	7.8	7.5	6.7	6.6	6.7	10.3	6.3
Number in two physician practices	358	334	310	313	261	264	264	308	317	283	268
Percent in two physician practices	3.8	3.5	3.2	3.1	2.6	2.5	2.4	2.6	2.7	2.9	2.1
Number in group practices	4,662	4,947	5,299	5,576	6,134	6,204	6,309	6,131	5,903	5,808	5,973
Percent in group practices	49.7	51.7	54.3	56.1	60.3	58.3	57.4	52.1	49.6	52.2	46.5
Number in medical schools	404	399	390	363	312	287	288	289	250	223	248
Percent in medical schools	4.3	4.2	4.0	3.7	3.1	2.7	2.6	2.5	2.1	2.2	1.9
Number in non-government hospitals	463	447	462	431	390	375	372	372	364	371	628
Percent in non-government hospitals	4.9	4.7	4.7	4.3	3.8	3.5	3.4	3.2	3.1	3.3	4.9
Number in government hospitals	523	621	710	775	840	944	1,041	1,513	1,876	2,063	2,131
Percent in government hospitals	5.6	6.5	7.3	7.8	8.3	8.9	9.5	12.9	15.8	19.0	16.6
Number in some other setting	102	112	109	112	102	95	97	108	65	86	112
Percent in some other setting <sup>2</sup>	1.1	1.2	1.1	1.1	1.0	0.9	0.9	0.9	0.5	1.0	0.9
Number whose employment is unknown	1,962	1,832	1,642	1,518	1,335	1,674	1,882	2,260	2,327	2,518	2,681
Percent whose employment is unknown	20.9	19.2	16.8	15.3	13.1	15.7	17.1	19.2	19.6	9.1	20.9

Source: AMA Physician Masterfile, October 2017 update

1 These figures represent the number of active physicians (MDs and DOs, excluding residents/fellows) who specified hematology (HEM), hematology/oncology (HO), or medical oncology (ON) as their primary specialty on the AMA Census of Physicians and whose type of practice is direct patient care. Physicians whose major professional activity is semi-retired, retired, temporarily not in practice, or not in practice for some other reason are not considered active and are excluded. The data refer to physicians active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used. The employment setting refers to the physician's primary employer from the AMA Census of Physicians. The number in "some other setting" include physicians whose primary employer is "locum tenens," "other patient care," "HMO," or "city/county/state government-other than hospital."

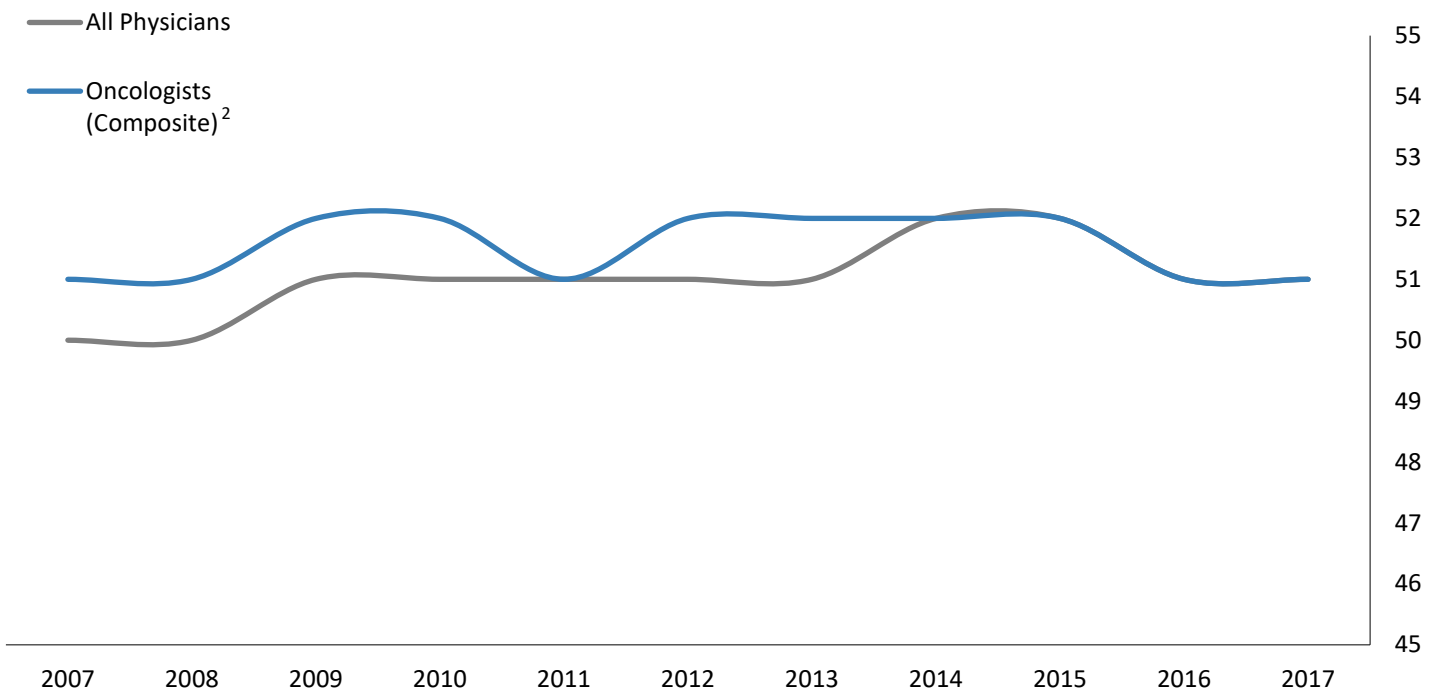
Figure 8. Percentage of Oncologists<sup>1</sup> by Age Group



Source: AMA Physician Masterfile, October 2017 update

1 These figures represent the number of active physicians (MDs and DOs, excluding residents/fellows) who specified hematology (HEM), hematology/oncology (HO), or medical oncology (ON) as their primary specialty on the AMA Census of Physicians and whose age is known. Physicians whose major professional activity is semi-retired, retired, temporarily not in practice, or not in practice for some other reason are not considered active and are excluded. The data refer to physicians who are active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.

**Figure 9. Median Age of Oncologists**



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Median age of all physicians <sup>1</sup>	50	50	51	51	51	51	51	52	52	51	51
Median age of oncologists (Composite) <sup>2</sup>	51	51	52	52	51	52	52	52	52	51	51

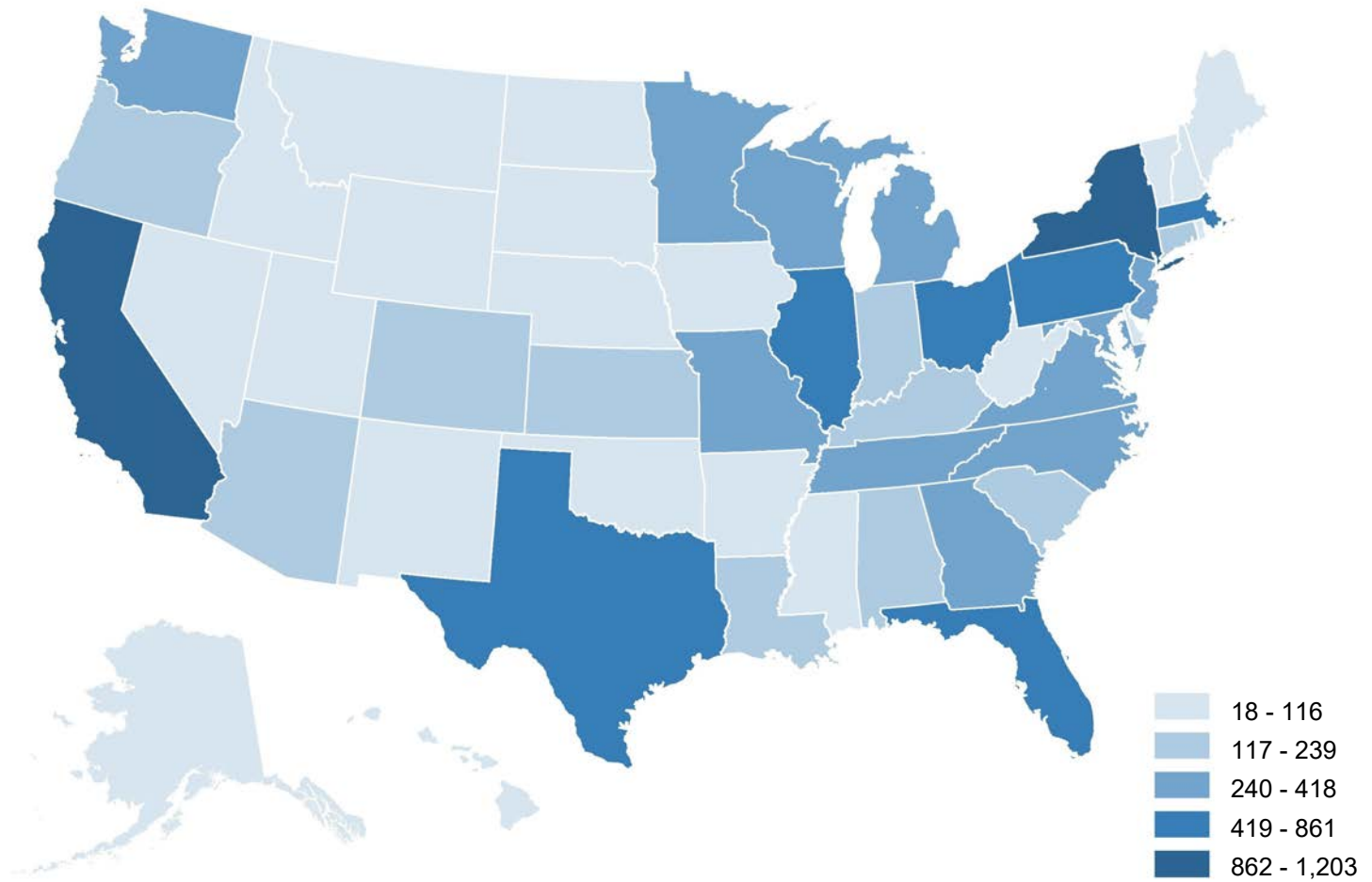
Source: AMA Physician Masterfile, October 2017 update

1 The data shown here represent the number of active physicians (MDs and DOs, excluding residents/fellows). Physicians whose major professional activity is semi-retired, retired, temporarily not in practice, or not in practice for some other reason are not considered active and are excluded. The data refer to physicians active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.

2 These figures represent the number of active physicians (MDs and DOs, excluding residents/fellows) who specified hematology (HEM), hematology/oncology (HO), or medical oncology (ON) as their primary specialty on the AMA Census of Physicians and whose age is known. Physicians whose major professional activity is semi-retired, retired, temporarily not in practice, or not in practice for some other reason are not considered active and are excluded. The data refer to physicians who are active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.



Figure 10. Number of Oncologists by State<sup>1</sup>

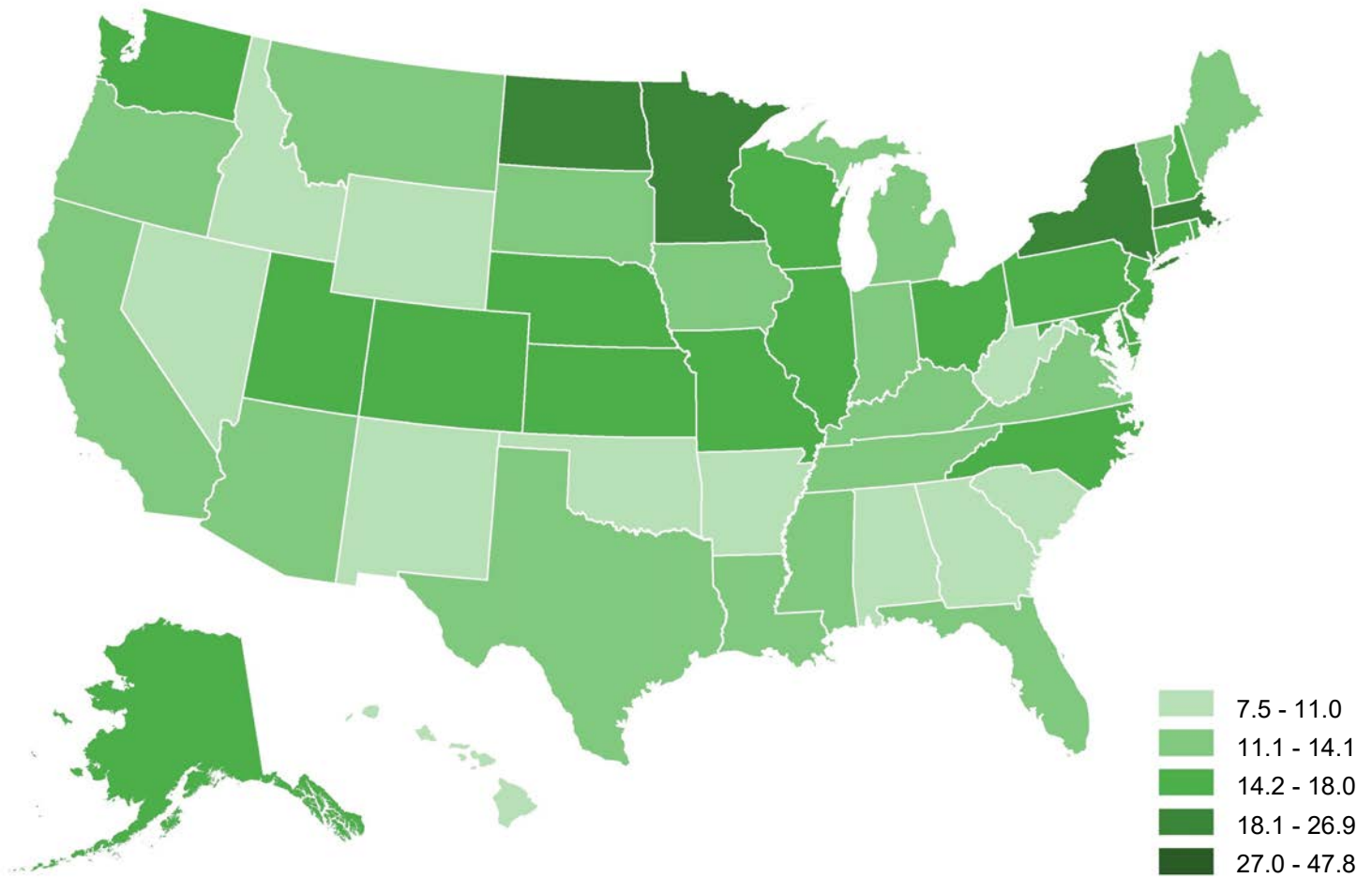


Source: CMS Physician Compare, April 2017 update

State (Number of Oncologists): Alabama (140), Alaska (28), Arizona (235), Arkansas (88), California (1,203), Colorado (217), Connecticut (195), Delaware (45), District of Columbia (71), Florida (794), Georgia (287), Hawaii (42), Idaho (44), Illinois (535), Indiana (239), Iowa (116), Kansas (126), Kentucky (175), Louisiana (155), Maine (60), Maryland (297), Massachusetts (537), Michigan (407), Minnesota (339), Mississippi (111), Missouri (283), Montana (39), Nebraska (79), Nevada (61), New Hampshire (74), New Jersey (380), New Mexico (62), New York (1,102), North Carolina (418), North Dakota (46), Ohio (534), Oklahoma (100), Oregon (175), Pennsylvania (673), Rhode Island (51), South Carolina (156), South Dakota (34), Tennessee (266), Texas (861), Utah (89), Vermont (29), Virginia (279), Washington (323), West Virginia (63), Wisconsin (272), Wyoming (18)

<sup>1</sup> The data for oncologists include physicians who specified hematology, hematology/oncology, or medical oncology as their primary specialty in the CMS Physician Compare. Data were accessed from [data.medicare.gov](http://data.medicare.gov). Oncologists were grouped according to the state field of their practice address(es). Oncologists were counted once per state, with 494 of 12,423 oncologists (4.0%) represented in more than one state. Breaks were determined by natural junks in the data.

Figure 11a. Oncologists per 100,000 Residents Age 55 Years or Older by State<sup>1,2</sup>

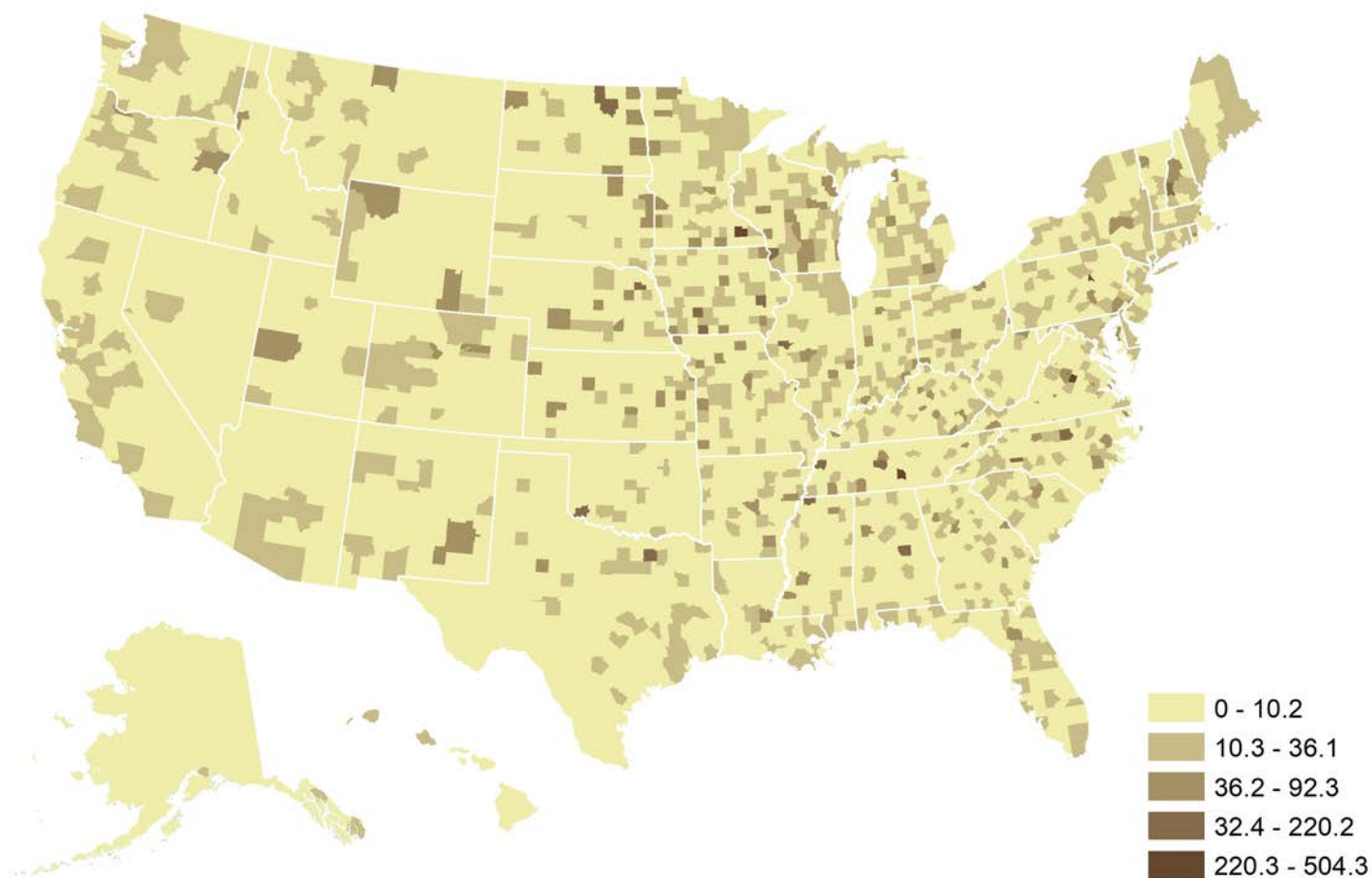


Sources: CMS Physician Compare (April 2017 update), U.S. Census Bureau TIGER/Line® Shapefiles

1 The data for oncologists include physicians who specified hematology, hematology/oncology, or medical oncology as their primary specialty in the CMS Physician Compare. Data were accessed from [data.medicare.gov](http://data.medicare.gov). Oncologists were grouped according to the state field of their practice address(es). Oncologists were counted once per state, with 494 of 12,423 oncologists (4.0%) represented in more than one state.

2 The data were normalized using 2016 population estimates from the U.S. Census Bureau. Geographic shapefiles of these data were accessed from [census.gov/geo/maps-data/data/tiger-line.html](http://census.gov/geo/maps-data/data/tiger-line.html). Residents age 55 years and older were chosen because they account for more than 75% of new cancer cases (see [seer.cancer.gov/statfacts/html/all.html](http://seer.cancer.gov/statfacts/html/all.html)). Breaks were determined by natural junks in the data.

Figure 11b. Oncologists per 100,000 Residents Age 55 Years or Older by County<sup>1,2</sup>

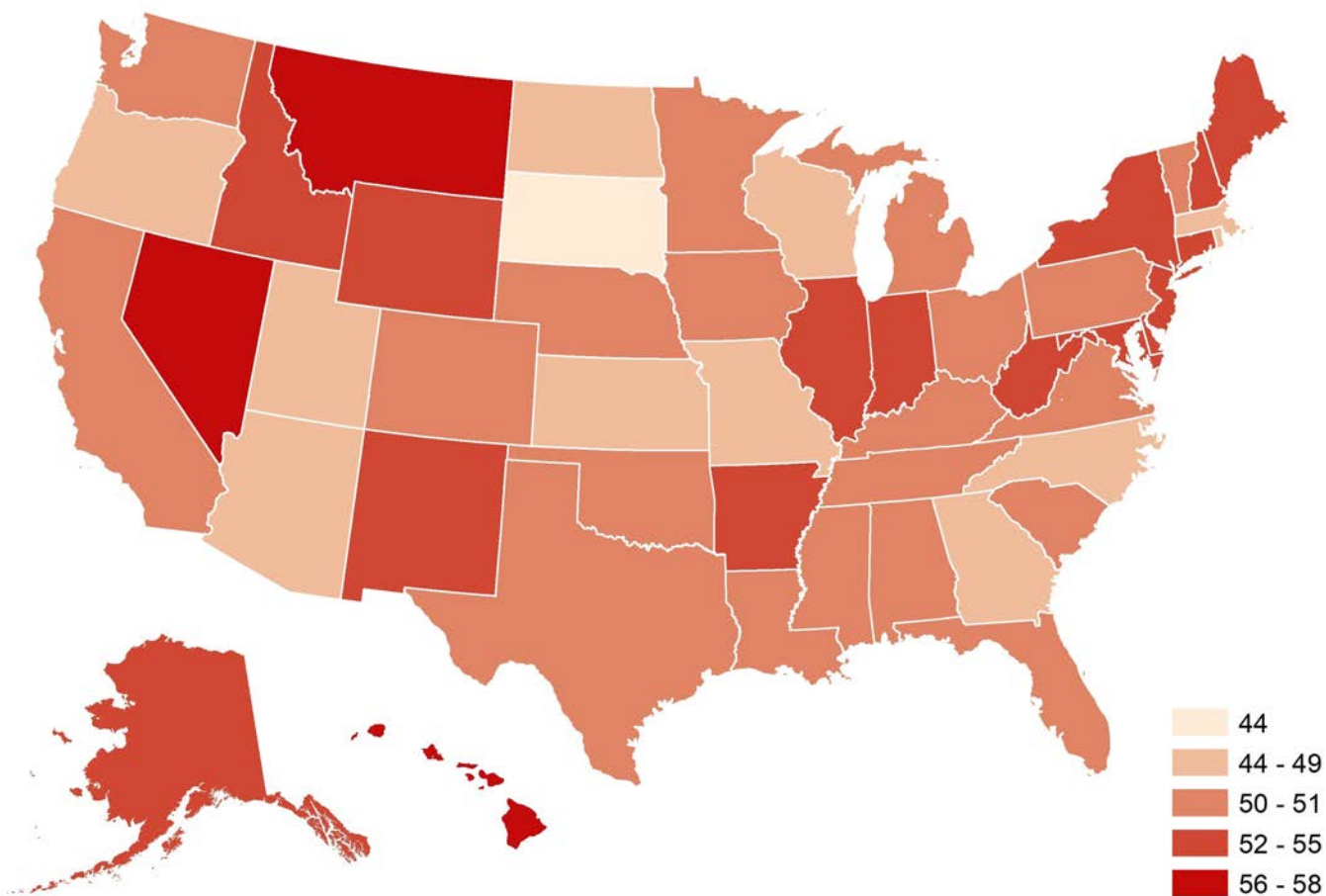


Sources: CMS Physician Compare (April 2017 update), U.S. Census Bureau TIGER/Line® Shapefiles

1 The data for oncologists include physicians who specified hematology, hematology/oncology, or medical oncology as their primary specialty in the CMS Physician Compare. Data were accessed from [data.medicare.gov](http://data.medicare.gov). Oncologists were counted once per county, with 2,139 of 12,423 oncologists (17.2%) represented in more than one county.

2 The data were normalized using 2016 population estimates from the U.S. Census Bureau. Geographic shapefiles of these data were accessed from [census.gov/geo/maps-data/data/tiger-line.html](http://census.gov/geo/maps-data/data/tiger-line.html). Residents age 55 years and older were chosen because they account for more than 75% of new cancer cases (see [seer.cancer.gov/statfacts/html/all.html](http://seer.cancer.gov/statfacts/html/all.html)). Breaks were determined by natural jenks in the data.

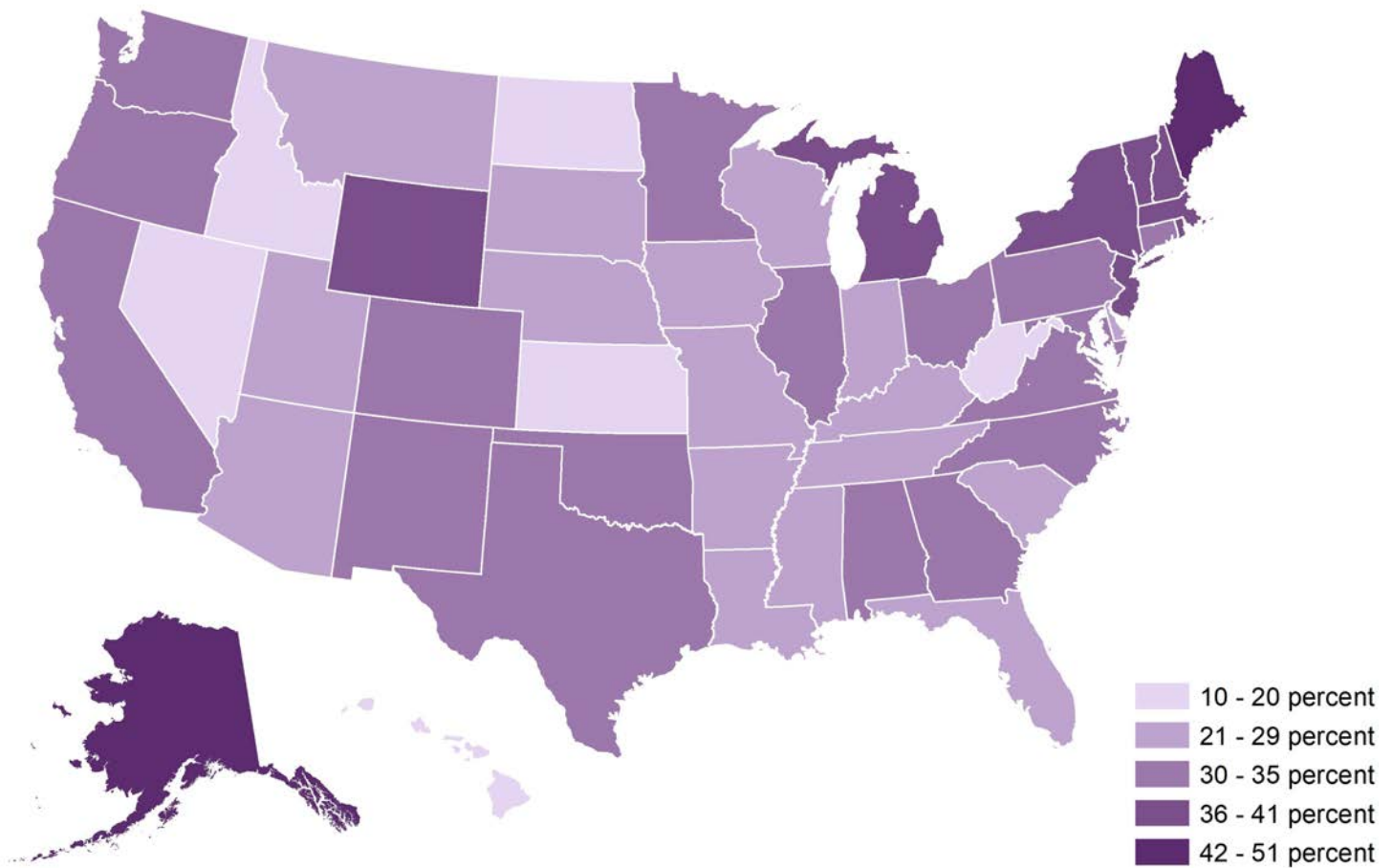
Figure 12. Median Age of Oncologists<sup>1</sup>



Source: AMA Physician Masterfile, October 2017 update

<sup>1</sup> These figures represent the number of active physicians (MDs and DOs, excluding residents/fellows) who specified hematology, hematology/oncology, or medical oncology as their primary specialty on the AMA Census of Physicians, whose major professional activity is direct patient care, and whose age is known. The data refer to physicians who are active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.

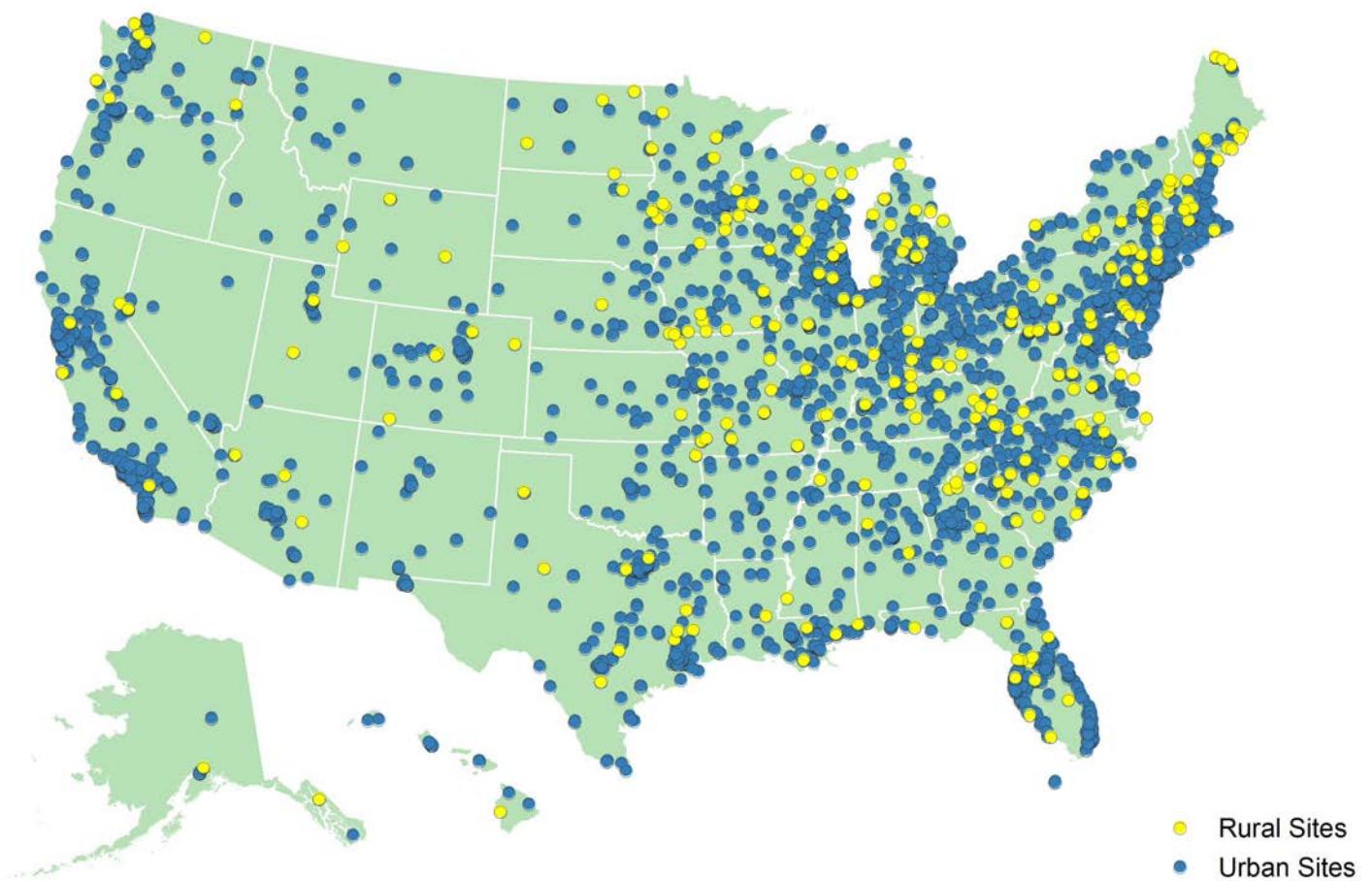
Figure 13. Percentage of Oncologists<sup>1</sup> Who Are Female by State



Source: AMA Physician Masterfile, October 2017 update

<sup>1</sup> These figures represent the number of active physicians (MDs and DOs, excluding residents/fellows) who specified hematology, hematology/oncology, or medical oncology as their primary specialty on the AMA Census of Physicians, whose major professional activity is direct patient care, and whose age is known. The data refer to physicians who are active in the US only. In cases where a physician's office state was missing, the state from the preferred mailing address was used.

Figure 14. Rural and Urban Oncology Practice Locations<sup>1,2</sup>

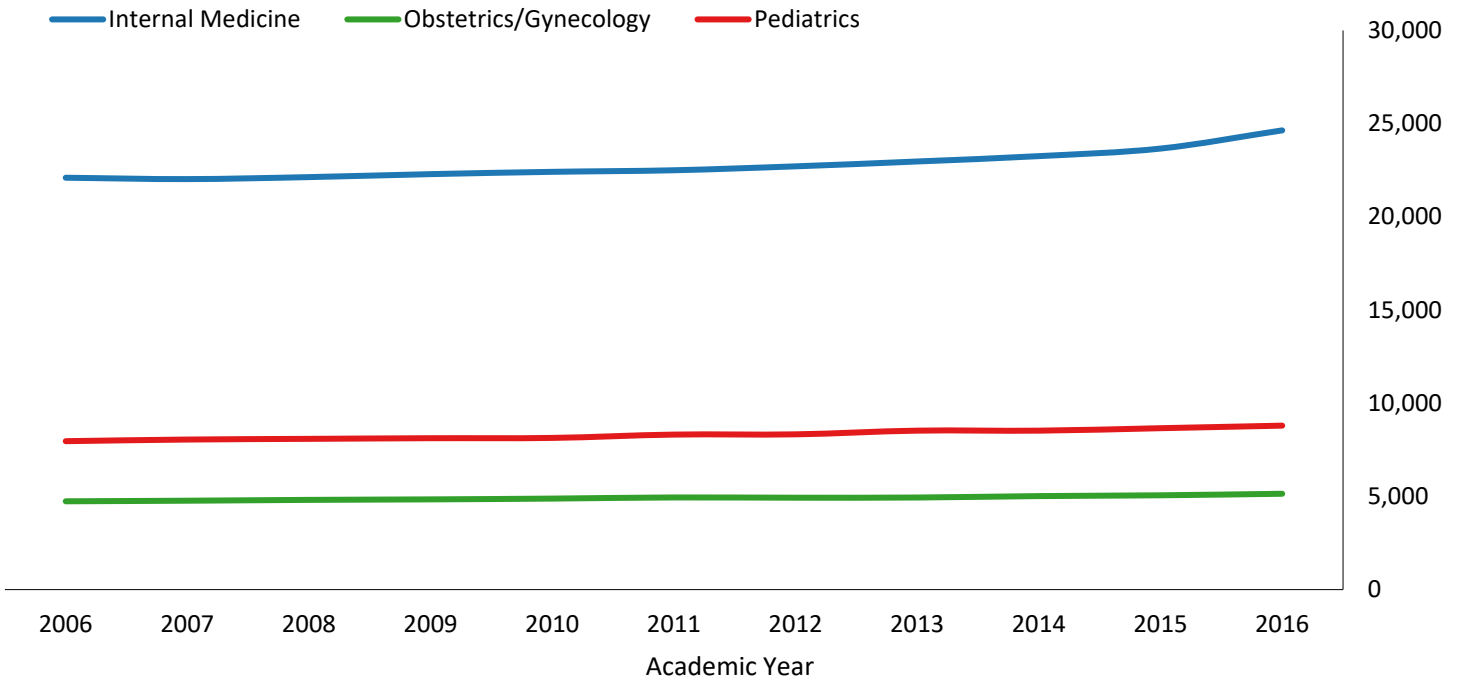


Sources: CMS Physician Compare (April 2017 update), U.S. Census Bureau TIGER/Line® Shapefiles

1 Oncology practice locations consist of practice locations cited by physicians who specified hematology, hematology/oncology, or medical oncology as their primary specialty in the CMS Physician Compare. Data were accessed from [data.medicare.gov](https://data.medicare.gov).

2 Geocoded practice addresses were overlaid with 2010 Decennial Census data, administered by the U.S. Census Bureau, to assign rural/urban status to each practice location. Geographic shapefiles of these data were accessed from [census.gov/geo/maps-data/data/tiger-line.html](https://census.gov/geo/maps-data/data/tiger-line.html).

**Figure 15. Residents in Oncology Pipeline Programs<sup>1</sup>**

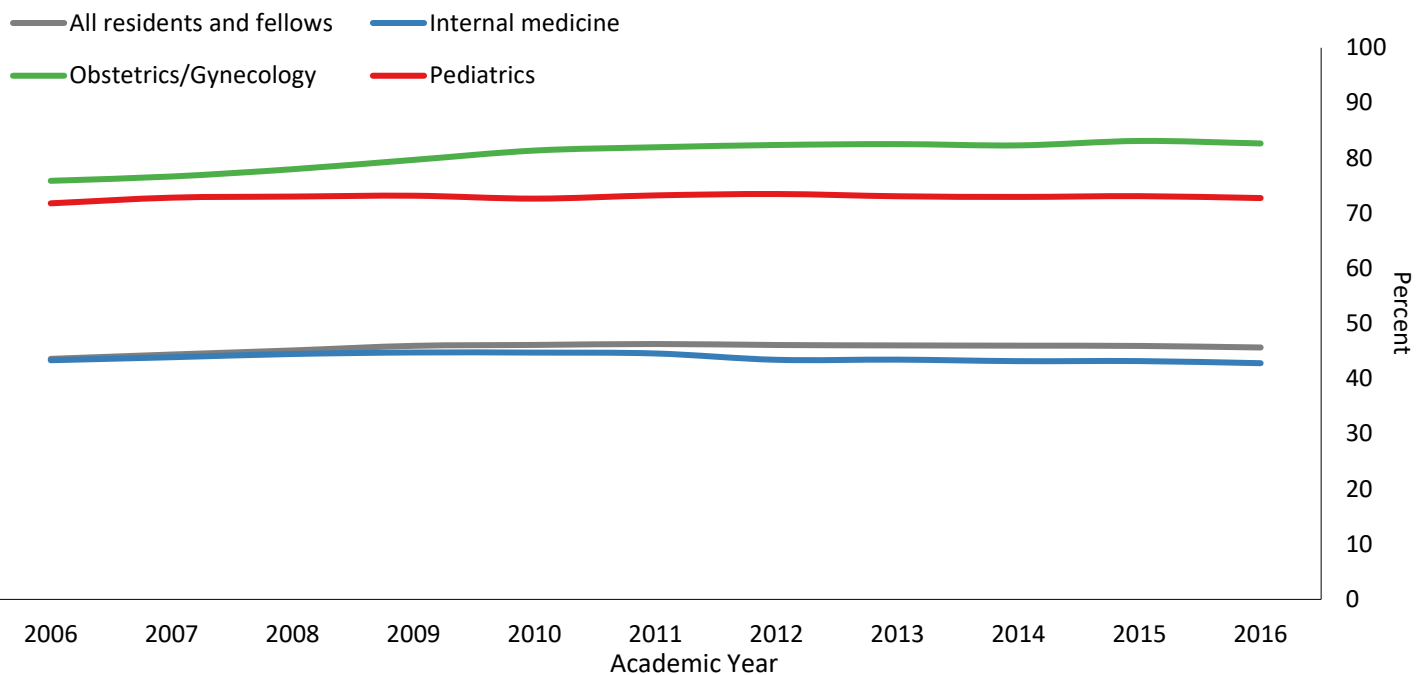


	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Internal Medicine	22,099	22,026	22,132	22,292	22,415	22,500	22,710	22,971	23,258	23,664	24,640
Obstetrics/Gynecology	4,739	4,770	4,815	4,842	4,884	4,945	4,931	4,942	5,018	5,061	5,143
Pediatrics	7,964	8,052	8,089	8,124	8,140	8,318	8,332	8,529	8,529	8,661	8,798

Source: JAMA Medical Education Issues

<sup>1</sup> The figures here represent the total number of residents in oncology pipeline programs that are accredited by the ACGME.

**Figure 16. Percentage of Residents in Oncology Pipeline Programs Who Are Female<sup>1</sup>**



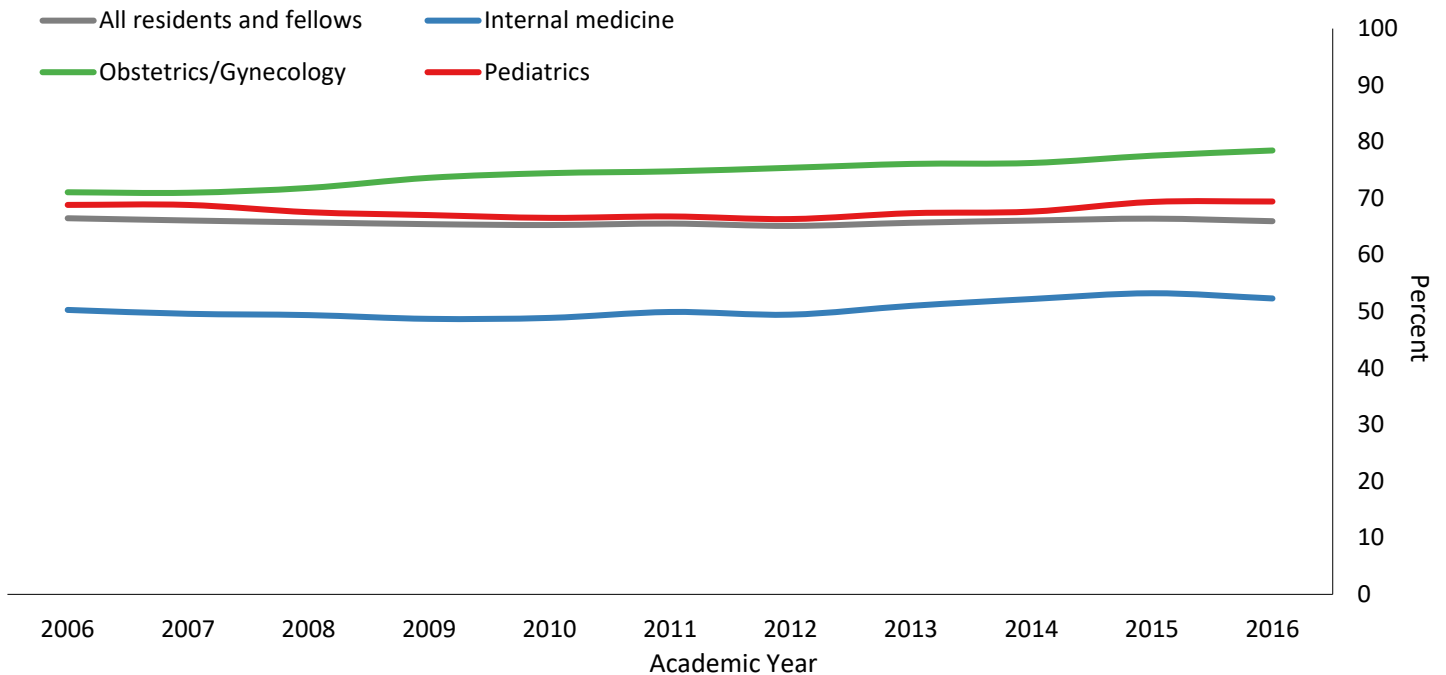
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Total number of residents and fellows</b>	104,879	106,012	108,176	109,840	111,586	113,427	115,111	117,427	118,366	120,598	124,096
Residents and fellows who are female	45,732	47,059	48,823	50,485	51,475	52,512	53,083	54,065	54,445	55,410	56,667
Percent female	43.6	44.4	45.1	46.0	46.1	46.3	46.1	46.0	46.0	45.9	45.7
<b>Internal medicine residents</b>	22,099	22,026	22,132	22,292	22,415	22,500	22,710	22,971	23,258	23,664	24,640
Internal med residents who are female	9,581	9,669	9,845	9,978	10,028	10,030	9,863	9,984	10,045	10,223	10,550
Percent female	43.4	43.9	44.5	44.8	44.7	44.6	43.4	43.5	43.2	43.2	42.8
<b>Obstetrics/Gynecology residents</b>	4,739	4,770	4,815	4,842	4,884	4,945	4,931	4,942	5,018	5,061	5,143
Ob/Gyn residents who are female	3,596	3,657	3,755	3,858	3,974	4,053	4,062	4,079	4,130	4,206	4,251
Percent female	75.9	76.7	78.0	79.7	81.4	82.0	82.4	82.5	82.3	83.1	82.7
<b>Pediatrics residents</b>	7,964	8,052	8,089	8,124	8,140	8,318	8,332	8,529	8,529	8,661	8,798
Pediatrics residents who are female	5,718	5,864	5,907	5,945	5,914	6,092	6,123	6,233	6,223	6,331	6,401
Percent female	71.8	72.8	73.0	73.2	72.7	73.2	73.5	73.1	73.0	73.1	72.8

Source: JAMA Medical Education Issues

<sup>1</sup> The percentage of residents who are female is based on the total number of residents. For example, the percentage of internal medicine residents who are female is based on the total number of internal medicine residents. The denominator may include residents whose sex is not known.



**Figure 17. Percentage of Residents in Oncology Pipeline Programs Who Are USMDs<sup>1</sup>**

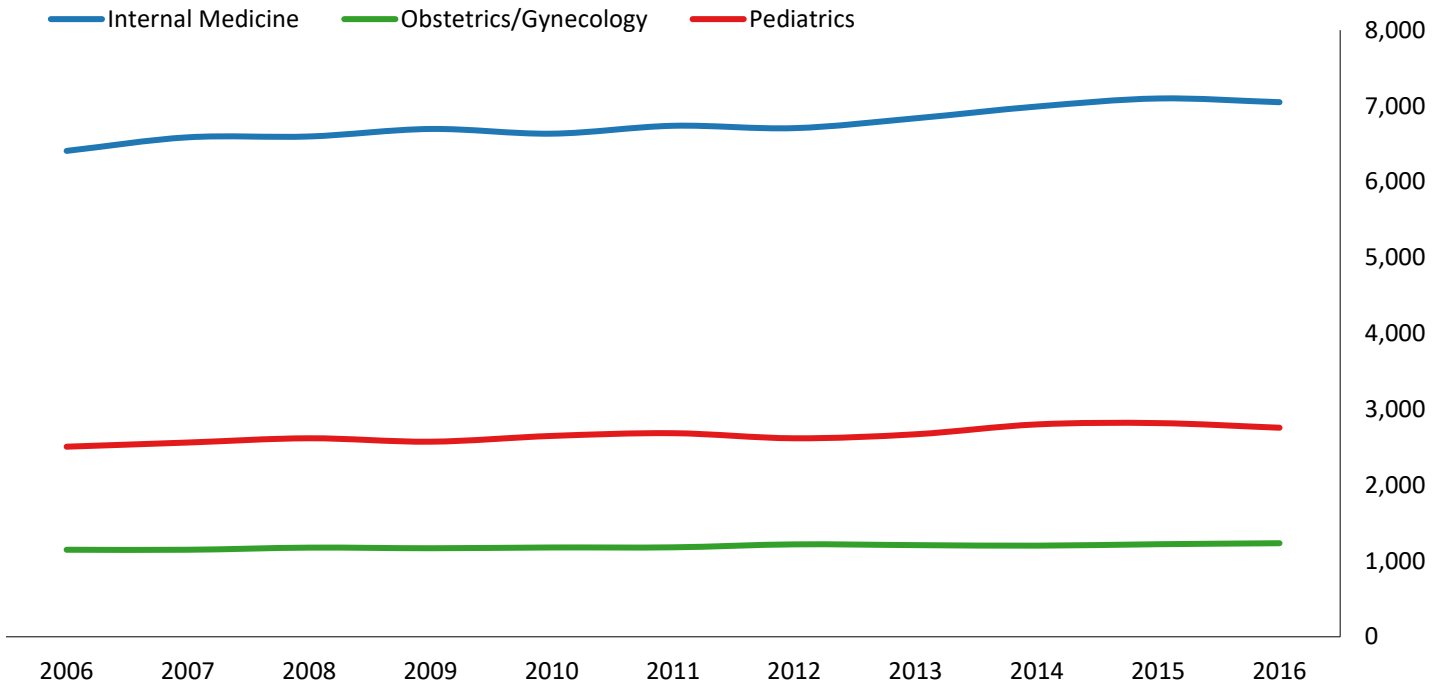


	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total number of residents and fellows	104,879	106,012	108,176	109,840	111,586	113,427	115,111	117,427	118,366	120,598	124,096
Residents and fellows who are USMDs	69,721	70,056	71,119	71,871	72,840	74,328	74,963	77,118	78,206	80,084	81,849
Percent USMDs	66.5	66.1	65.7	65.4	65.3	65.5	65.1	65.7	66.1	66.4	66.0
Internal medicine residents	22,099	22,026	22,132	22,292	22,415	22,500	22,710	22,971	23,258	23,664	24,640
Internal med residents who are USMDs	11,110	10,922	10,924	10,855	10,953	11,230	11,228	11,714	12,141	12,594	12,887
Percent USMDs	50.3	49.6	49.4	48.7	48.9	49.9	49.4	51.0	52.2	53.2	52.3
Obstetrics/Gynecology residents	4,739	4,770	4,815	4,842	4,884	4,945	4,931	4,942	5,018	5,061	5,143
Ob/Gyn residents who are USMDs	3,368	3,386	3,459	3,565	3,636	3,697	3,718	3,760	3,826	3,924	4,035
Percent USMDs	71.1	71.0	71.8	73.6	74.4	74.8	75.4	76.1	76.2	77.5	78.5
Pediatrics residents	7,964	8,052	8,089	8,124	8,140	8,318	8,332	8,529	8,529	8,661	8,798
Pediatrics residents who are USMDs	5,482	5,542	5,464	5,446	5,417	5,556	5,527	5,746	5,770	6,007	6,109
Percent USMDs	68.8	68.8	67.5	67.0	66.5	66.8	66.3	67.4	67.7	69.4	69.4

Source: JAMA Medical Education Issues

<sup>1</sup> The percentage of residents who are USMDs is based on the total number of residents. For example, the percentage of internal medicine residents who are USMDs is based on the total number of internal medicine residents. The denominator may include residents whose medical school is not known.

**Figure 18. Number of Physicians Who Completed an Oncology Pipeline Program<sup>1</sup>**

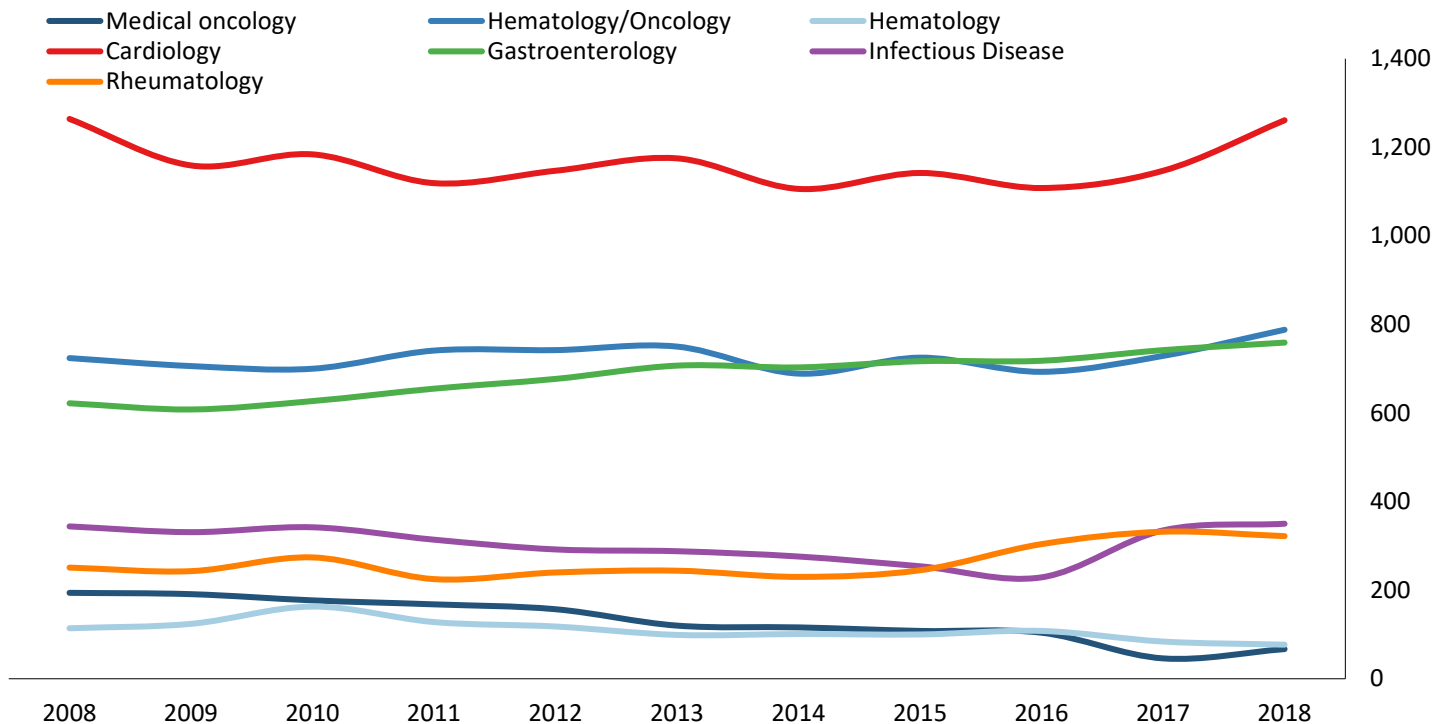


	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Internal Medicine	6,408	6,587	6,598	6,697	6,635	6,739	6,708	6,838	6,993	7,099	7,050
Obstetrics/Gynecology	1,148	1,148	1,176	1,168	1,178	1,180	1,219	1,209	1,202	1,221	1,234
Pediatrics	2,507	2,562	2,618	2,573	2,649	2,685	2,618	2,671	2,801	2,818	2,757

Source: JAMA Medical Education Issues

<sup>1</sup> These data represent the number of residents who completed a program in a given academic year. For example, data for 2016 correspond to residents who completed the program during the 2015-2016 academic year.

**Figure 19. Number of Physicians Who Applied for an Internal Medicine Subspecialty Fellowship**



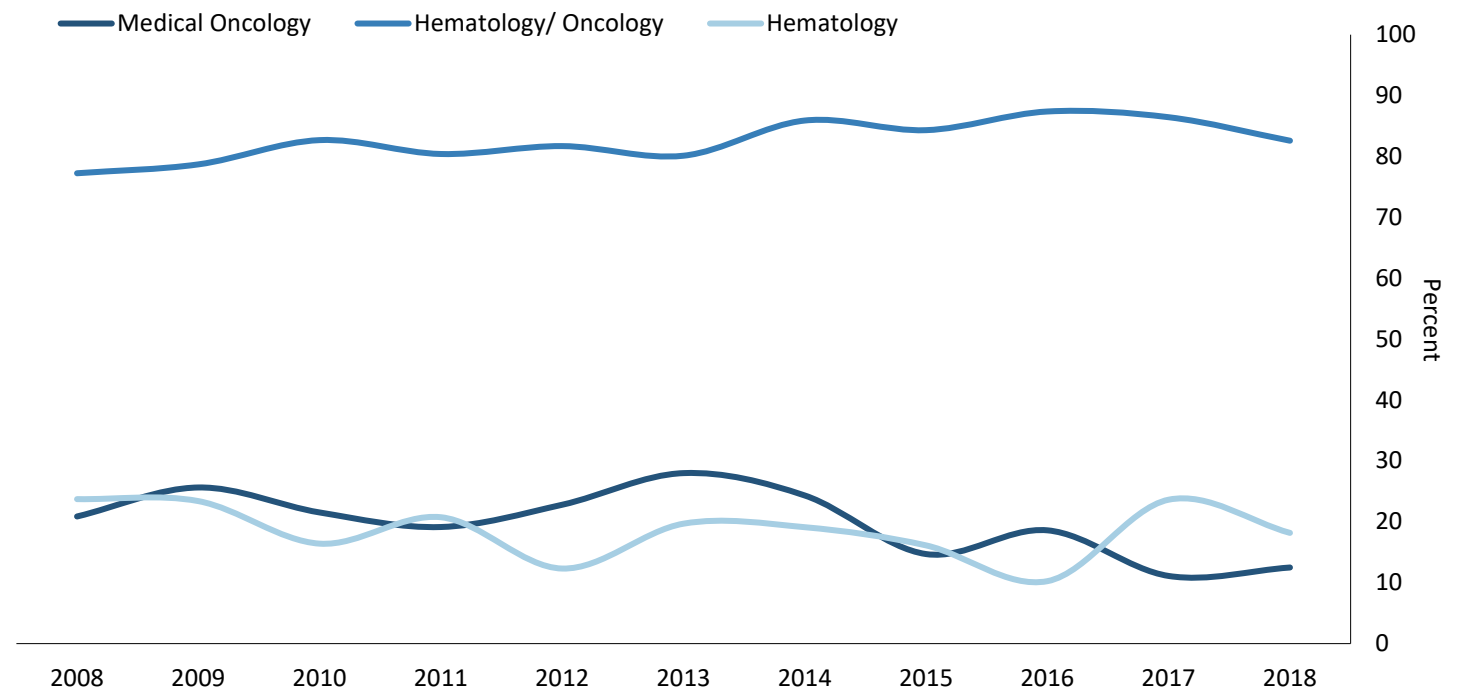
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Total active fellowship applicants<sup>1</sup></b>	6,543	7,344	7,627	7,774	8,249	8,653	9,297	10,032	10,337	10,873	11,277
<b>Oncology<sup>2</sup></b>											
Medical oncology	194	191	177	168	157	120	116	108	104	46	67
Hematology	114	124	163	128	118	99	101	100	108	84	77
Hematology/Oncology	724	706	700	741	742	750	689	725	693	729	788
<b>Other IM Subspecialty<sup>2</sup></b>											
Cardiology	1,264	1,159	1,184	1,119	1,147	1,175	1,106	1,142	1,108	1,147	1,261
Gastroenterology	622	608	627	655	677	707	703	717	718	742	759
Infectious Disease	344	331	342	314	292	288	276	254	229	335	350
Pulmonary Disease	100	86	65	72	81	96	95	83	101	100	110
Pulm. Disease and Critical Care I	569	607	590	616	599	700	753	780	689	742	789
Rheumatology	251	243	274	225	240	244	230	245	304	332	322

Source: Results and Data: Specialties Matching Service. National Resident Matching Program. Accessed online at [nrmp.org/fellowship-match-data](http://nrmp.org/fellowship-match-data).

1 The data here represent the number of physicians who registered for the NRMP's Specialties Matching Service (SMS) and submitted a rank order list of fellowship programs. The total number of applicants is affected by the number of programs that participate in the Match. To the extent that the number of programs participating increases, a corresponding increase in the total number of applicants might be expected. Data for 2018 represent the 2018 appointment year.

2 Please note that it is not possible to sum the number of applicants in one subspecialty to applicants in another subspecialty, as some applicants apply to more than one subspecialty. In other words, the same applicant may be counted in medical oncology and in hematology/oncology; summing those could result in double counting.

**Figure 20. Percentage of USMD Oncology Fellowship Applicants Who Matched to an Oncology Fellowship**

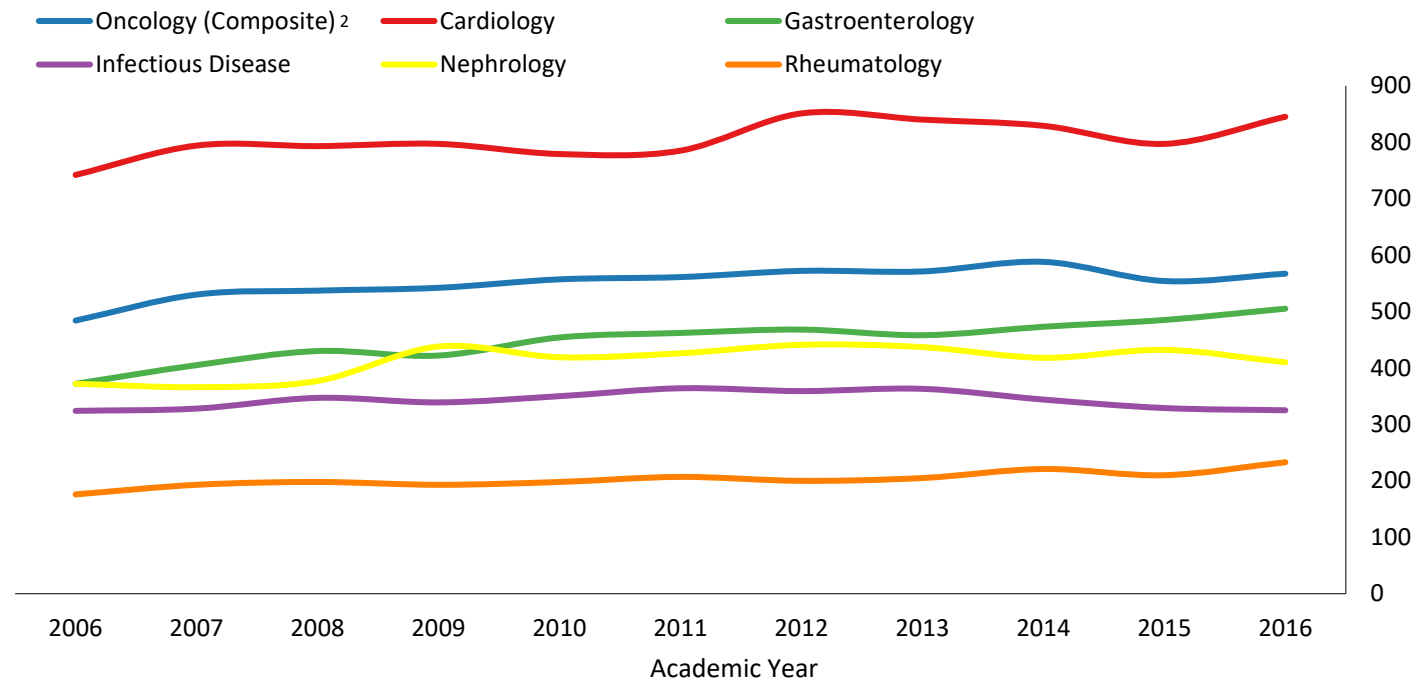


	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
USMDs who applied for a medical oncology fellowship	91	78	65	47	57	25	37	34	43	9	8
Number of USMDs who matched	19	20	14	9	13	7	9	5	8	1	1
Percent of USMDs who matched	20.9	25.6	21.5	19.1	22.8	28.0	24.3	14.7	18.6	11.1	12.5
USMDs who applied for a hematology fellowship	59	47	67	53	73	66	68	62	78	55	66
Number of USMDs who matched	14	11	11	11	9	13	13	10	8	13	12
Percent of USMDs who matched	23.7	23.4	16.4	20.8	12.3	19.7	19.1	16.1	10.3	23.6	18.2
USMDs who applied for a hematology/oncology fellowship	312	277	283	296	317	322	305	338	325	332	402
Number of USMDs who matched	241	218	234	238	259	258	262	285	284	287	332
Percent of USMDs who matched	77.2	78.7	82.7	80.4	81.7	80.1	85.9	84.3	87.4	86.4	82.6

Source: Results and Data: Specialties Matching Service. National Resident Matching Program. Accessed online at [nrmp.org/fellowship-match-data](http://nrmp.org/fellowship-match-data).

1 The figures here represent the number of USMDs who applied for a hematology, hematology/oncology, or clinical oncology fellowship in the the NRMP's Specialties Match and the percentage who matched to a hematology, hematology/oncology, or oncology program. The number of applicants is affected by the number of programs that participate in the Match. To the extent that the number of programs participating increases, a corresponding increase in the number of applicants might be expected. Data for 2018 represent the 2018 appointment year.

Figure 21. Number of First Year Fellows in Internal Medicine Subspecialties<sup>1</sup>



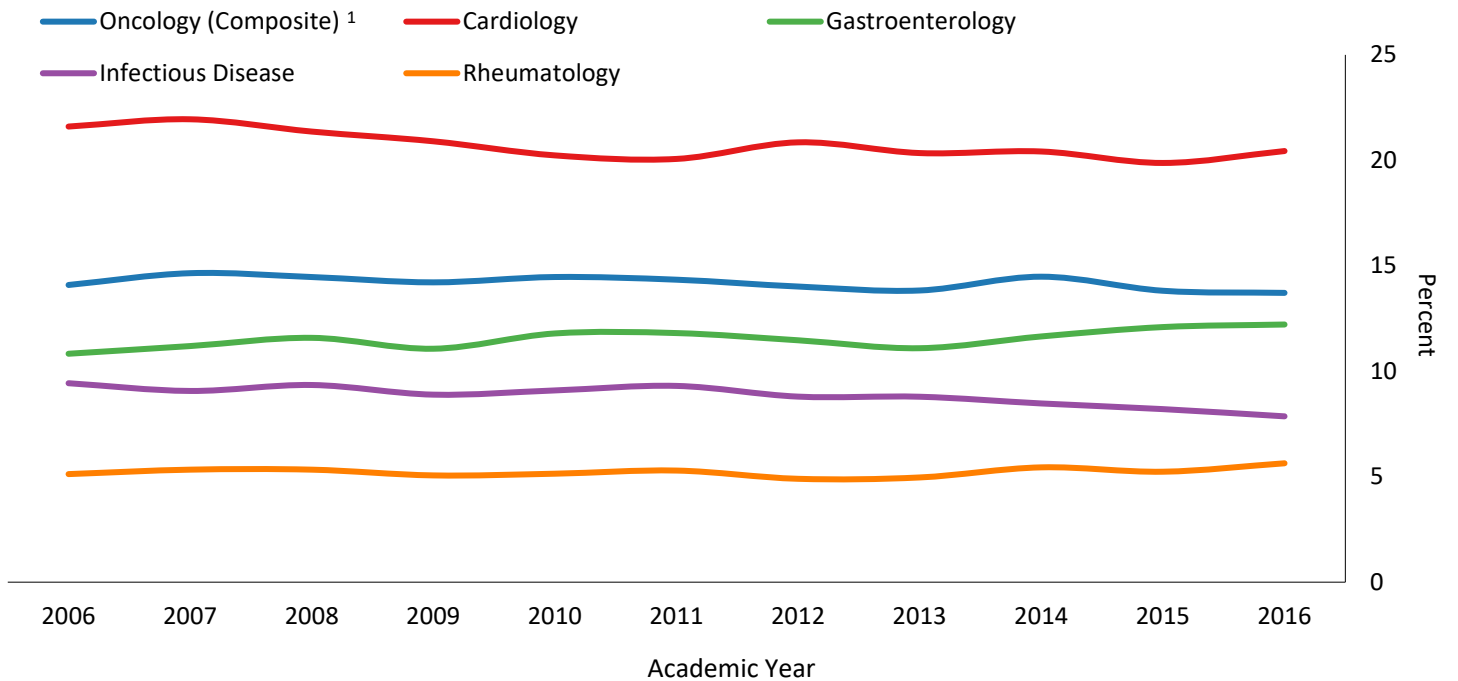
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Oncology (Composite) <sup>2</sup>	484	530	537	542	557	561	572	571	588	554	567
Hematology	18	21	17	20	20	19	10	13	12	15	10
Hematology/Oncology	410	451	470	473	497	501	516	520	547	509	540
Medical Oncology	56	58	50	49	40	41	46	38	29	30	17
Select Other IM Subspecialty											
Cardiology	742	794	793	797	779	785	851	840	829	797	845
Clinical Cardiac Electrophysiology	124	137	125	142	129	128	134	136	132	124	127
Critical Care Medicine	82	91	87	100	121	103	116	121	127	107	128
Endocrinology, Diabetes, Metabolism	232	235	246	273	258	277	274	299	266	282	306
Gastroenterology	372	405	430	422	454	462	468	458	473	485	505
Geriatric Medicine	211	218	230	220	215	195	236	256	231	192	206
Infectious Disease	324	328	347	339	350	364	359	363	344	329	325
Interventional Cardiology	225	220	229	226	229	202	288	272	270	259	278
Nephrology	372	366	377	438	419	426	441	437	418	432	410
Pulmonary Disease	39	38	38	40	34	38	43	37	33	34	29
Pulm. Disease and Critical Care Med.	400	417	416	434	449	473	490	511	496	553	544
Rheumatology	176	193	198	193	198	207	200	205	221	210	233
Transplant Hepatology	0	3	13	15	16	21	31	31	34	35	36

Source: JAMA Medical Education Issues

1 The data here represent the number of fellows in PY1 positions in internal medicine subspecialty programs accredited by the ACGME.

2 The data represent the total number of fellows (MDs and DOs) in hematology, hematology/oncology, and clinical oncology GME programs accredited by the ACGME.

**Figure 22. Percentage of First Year IM Subspecialty Fellows by Subspecialty**

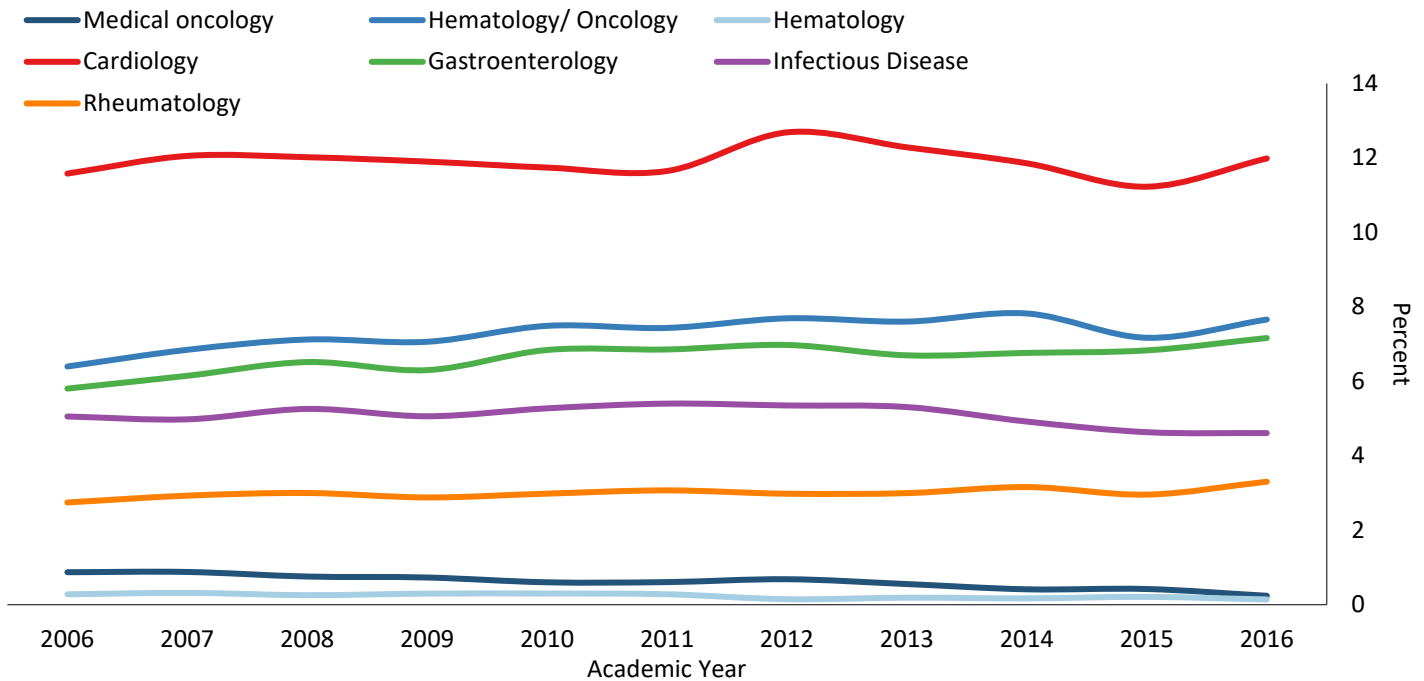


	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Oncology (Composite)<sup>1</sup></b>	14.1	14.6	14.5	14.2	14.5	14.3	14.0	13.8	14.5	13.8	13.7
Medical oncology	1.6	1.6	1.3	1.3	1.0	1.0	1.1	0.9	0.7	0.7	0.4
Hematology	0.5	0.6	0.5	0.5	0.5	0.5	0.2	0.3	0.3	0.4	0.2
Hematology/Oncology	11.9	12.5	12.7	12.4	12.9	12.8	12.6	12.6	13.5	12.7	13.1
<b>Select Other IM Subspecialty</b>											
Cardiology	21.6	21.9	21.4	20.9	20.2	20.1	20.9	20.3	20.4	19.9	20.4
Gastroenterology	10.8	11.2	11.6	11.1	11.8	11.8	11.5	11.1	11.7	12.1	12.2
Infectious Disease	9.4	9.1	9.3	8.9	9.1	9.3	8.8	8.8	8.5	8.2	7.9
Pulmonary Disease	1.1	1.1	1.0	1.0	0.9	1.0	1.1	0.9	0.8	0.8	0.7
Pulm. Disease and Critical Care Med.	11.6	11.5	11.2	11.4	11.7	12.1	12.0	12.4	12.2	13.8	13.2
Rheumatology	5.1	5.3	5.3	5.1	5.1	5.3	4.9	5.0	5.4	5.2	5.6

Source: JAMA Medical Education Issues

<sup>1</sup> The data represent the total number of fellows (MDs and DOs) in hematology, hematology/oncology, and clinical oncology GME programs accredited by the ACGME.

**Figure 23. Estimated Percentage of Internal Medicine Completers Entering IM Subspecialty Fellowships<sup>1</sup>**

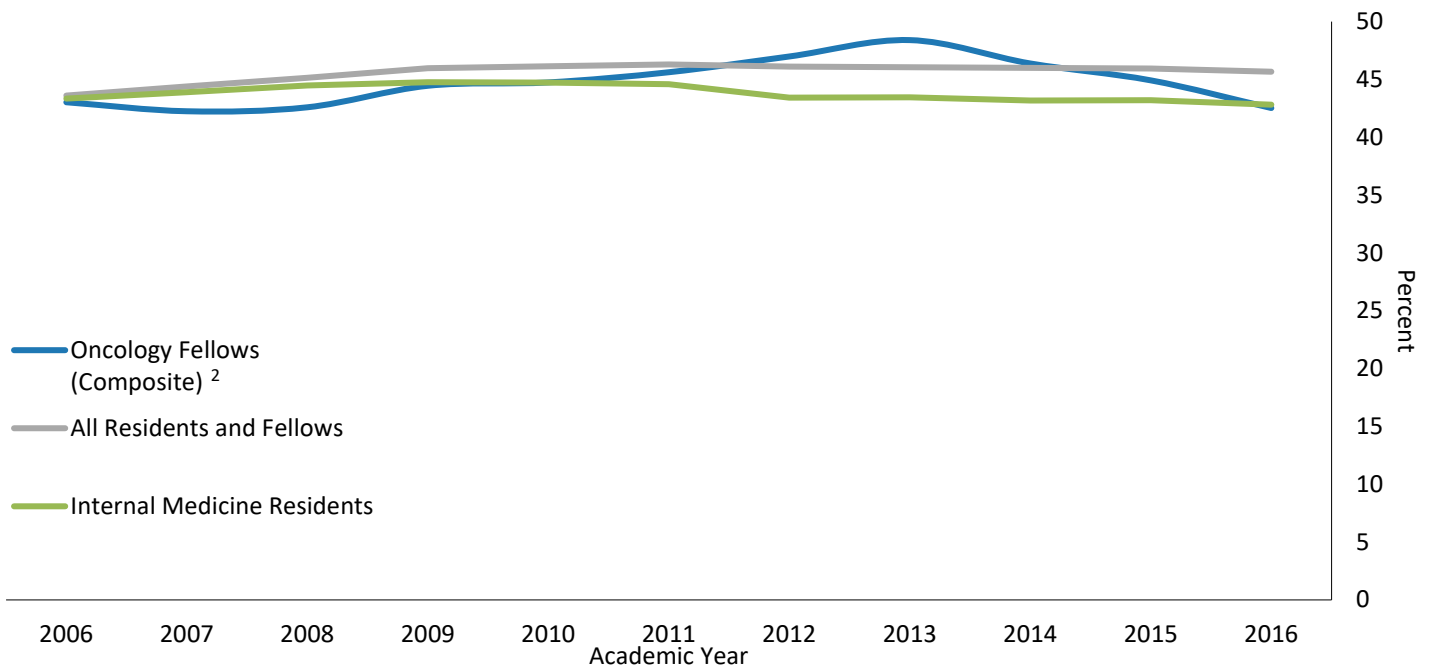


	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Oncology (Composite)</b>	7.6	8.0	8.1	8.1	8.4	8.3	8.5	8.4	8.4	7.8	8.0
Medical oncology	0.9	0.9	0.8	0.7	0.6	0.6	0.7	0.6	0.4	0.4	0.2
Hematology	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.2	0.2	0.2	0.1
Hematology/Oncology	6.4	6.8	7.1	7.1	7.5	7.4	7.7	7.6	7.8	7.2	7.7
<b>Other IM Subspecialty</b>											
Cardiology	11.6	12.1	12.0	11.9	11.7	11.6	12.7	12.3	11.9	11.2	12.0
Gastroenterology	5.8	6.1	6.5	6.3	6.8	6.9	7.0	6.7	6.8	6.8	7.2
Infectious Disease	5.1	5.0	5.3	5.1	5.3	5.4	5.4	5.3	4.9	4.6	4.6
Pulmonary Disease	0.6	0.6	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.5	0.4
Pulm. Disease and Critical Care Med.	6.2	6.3	6.3	6.5	6.8	7.0	7.3	7.5	7.1	7.8	7.7
Rheumatology	2.7	2.9	3.0	2.9	3.0	3.1	3.0	3.0	3.2	3.0	3.3

Source: JAMA Medical Education Issues

<sup>1</sup> The figures shown here are estimates of subspecialization. Using 2007 as an example, this measure is derived by dividing the number of residents who completed a residency program in internal medicine in academic year 2006-2007 by the number of fellows starting an internal medicine fellowship program in academic year 2007-08. This is an estimate because the physicians who start a fellowship do not all begin the fellowship immediately after completing a residency. In addition, these figures are derived from aggregate numbers and do not represent each physician's individual pathway through GME.

**Figure 24. Percentage of Trainees Who Are Female**



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All residents and fellows <sup>1</sup>	43.6	44.4	45.1	46.0	46.1	46.3	46.1	46.0	46.0	45.9	45.7
Internal medicine	43.4	43.9	44.5	44.8	44.7	44.6	43.4	43.5	43.2	43.2	42.8
Oncology (Composite) <sup>2</sup>	43.0	42.2	42.6	44.5	44.7	45.6	47.0	48.4	46.4	44.9	42.5
Hematology	38.9	34.9	36.0	49.0	34.9	42.2	38.1	47.1	51.4	48.4	33.3
Hematology/Oncology	43.3	43.3	43.3	44.5	45.4	45.9	47.2	48.5	46.8	45.2	42.9
Medical Oncology	42.3	33.6	37.1	42.2	39.2	43.3	48.0	46.6	35.6	38.8	34.5

Source: JAMA Medical Education Issues

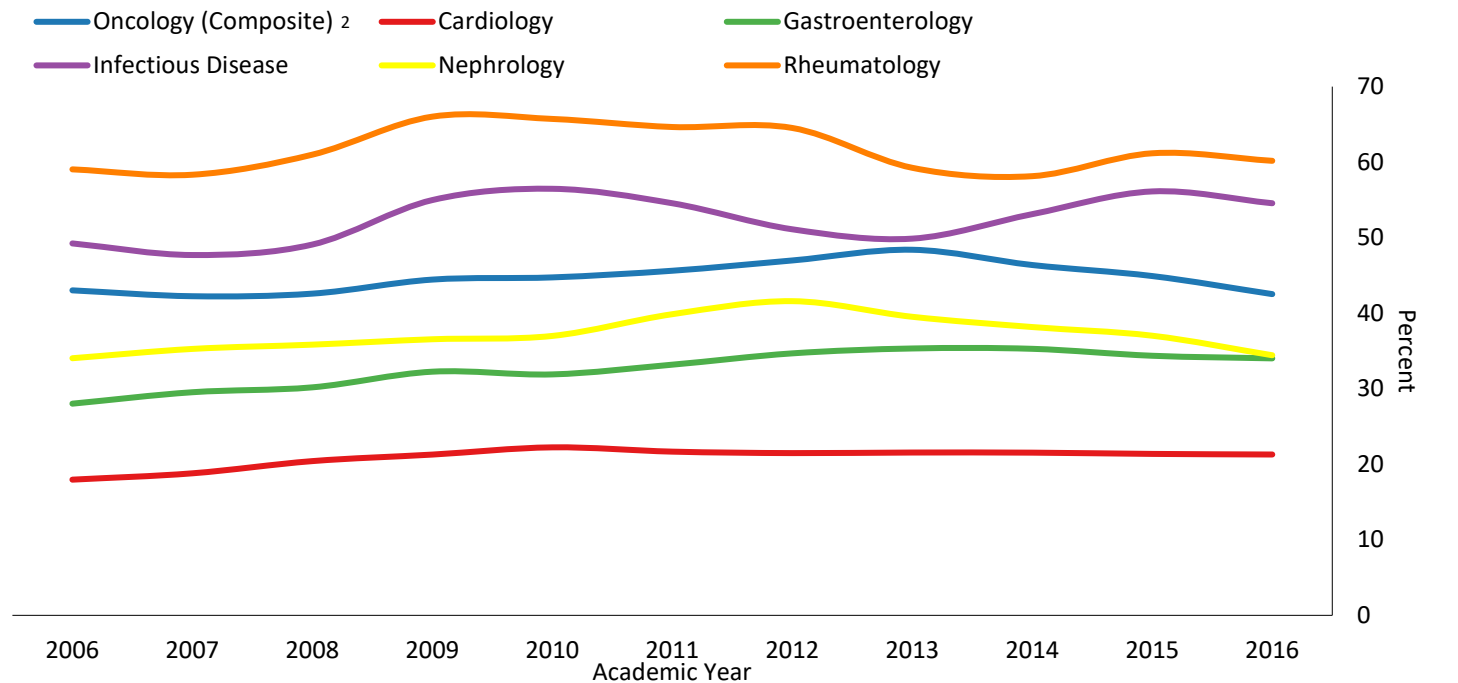
1 The percentages are based on the number of fellows for whom sex is known.

2 The data represent the total number of fellows (MDs and DOs) in hematology, hematology/oncology, and clinical oncology GME programs accredited by the ACGME.

3 Transplant hepatology was newly accredited in 2007.



**Figure 25. Percentage of Fellows in Internal Medicine Subspecialties Who Are Female**



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All residents and fellows <sup>1</sup>	43.6	44.4	45.1	46.0	46.1	46.3	46.1	46.0	46.0	45.9	45.7
Internal medicine	43.4	43.9	44.5	44.8	44.7	44.6	43.4	43.5	43.2	43.2	42.8
Oncology (Composite) <sup>2</sup>	43.0	42.2	42.6	44.5	44.7	45.6	47.0	48.4	46.4	44.9	42.5
Hematology	38.9	34.9	36.0	49.0	34.9	42.2	38.1	47.1	51.4	48.4	33.3
Hematology/Oncology	43.3	43.3	43.3	44.5	45.4	45.9	47.2	48.5	46.8	45.2	42.9
Medical Oncology	42.3	33.6	37.1	42.2	39.2	43.3	48.0	46.6	35.6	38.8	34.5
Other IM Subspecialty											
Cardiology	18.0	18.8	20.4	21.3	22.2	21.7	21.5	21.6	21.5	21.4	21.3
Clinical Cardiac Electrophysiology	11.8	12.1	7.1	13.5	13.5	11.6	9.8	11.4	17.2	8.1	15.0
Critical Care Medicine	22.0	18.9	17.6	31.9	26.5	26.1	27.9	30.2	25.1	26.9	29.3
Endocrinology, Diabetes, Metabolism	67.4	67.4	66.8	66.0	66.9	68.2	67.9	67.9	72.9	73.1	71.3
Gastroenterology	28.0	29.5	30.2	32.3	31.9	33.2	34.7	35.3	35.3	34.4	34.0
Geriatric Medicine	58.8	55.3	57.8	62.8	57.0	57.1	62.6	62.2	65.8	58.9	67.9
Infectious Disease	49.2	47.7	49.1	55.0	56.5	54.6	51.1	49.9	53.1	56.1	54.6
Interventional Cardiology	7.2	5.6	6.3	8.4	8.8	10.5	8.7	8.8	9.8	9.1	9.9
Nephrology	34.0	35.3	35.8	36.6	37.0	39.9	41.6	39.5	38.2	37.0	34.4
Pulm Dis, Pulm Dis and Crit Care Med	2.5	2.3	3.6	2.8	2.8	3.2	2.6	1.7	1.8	2.3	2.7
Rheumatology	59.0	58.3	61.0	66.0	65.7	64.7	64.5	59.3	58.1	61.2	60.2
Transplant Hepatology <sup>3</sup>				26.7	50.0	38.1	43.8	41.9	48.6	42.9	44.4

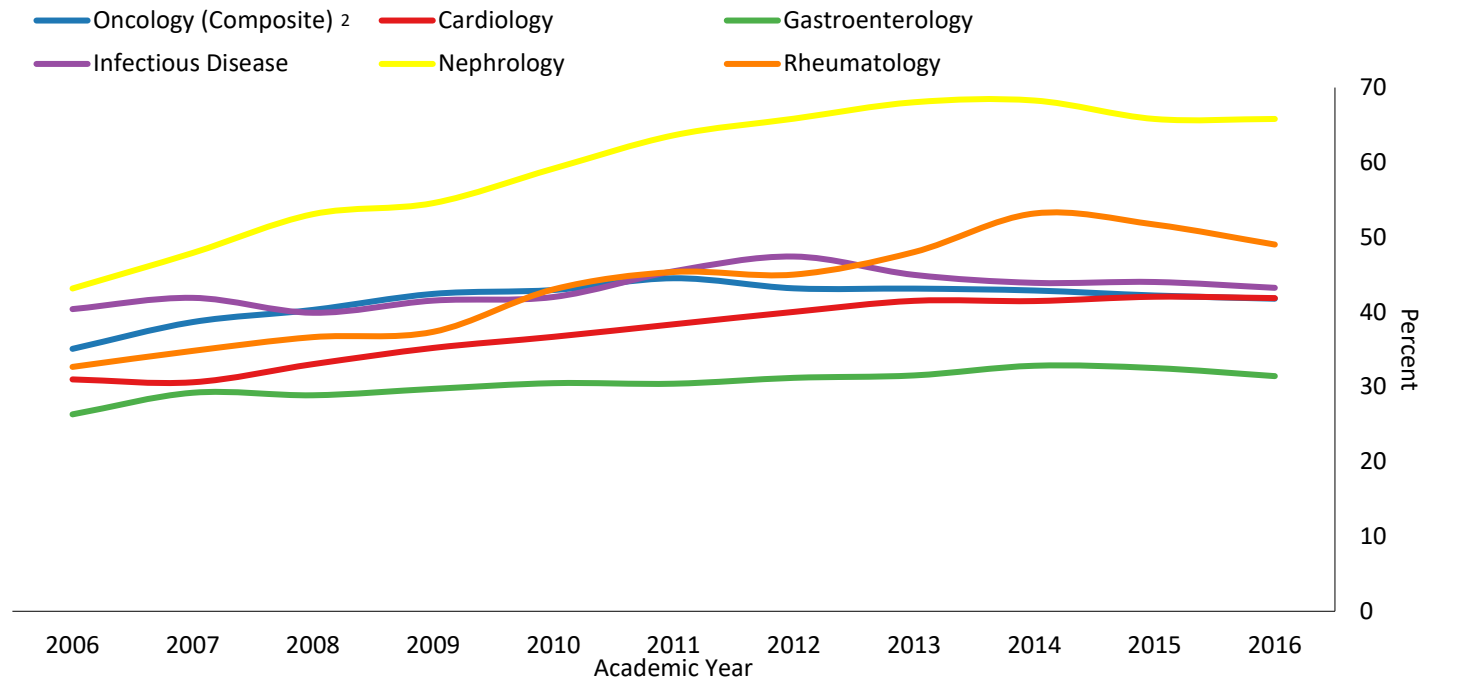
Source: JAMA Medical Education Issues

1 The percentages are based on the number of fellows for whom sex is known.

2 The data represent the total number of fellows (MDs and DOs) in hematology, hematology/oncology, and clinical oncology GME programs accredited by the ACGME.

3 Transplant hepatology was newly accredited in 2007.

**Figure 26. Percentage of Fellows in Internal Medicine Subspecialties Who Are IMGs**



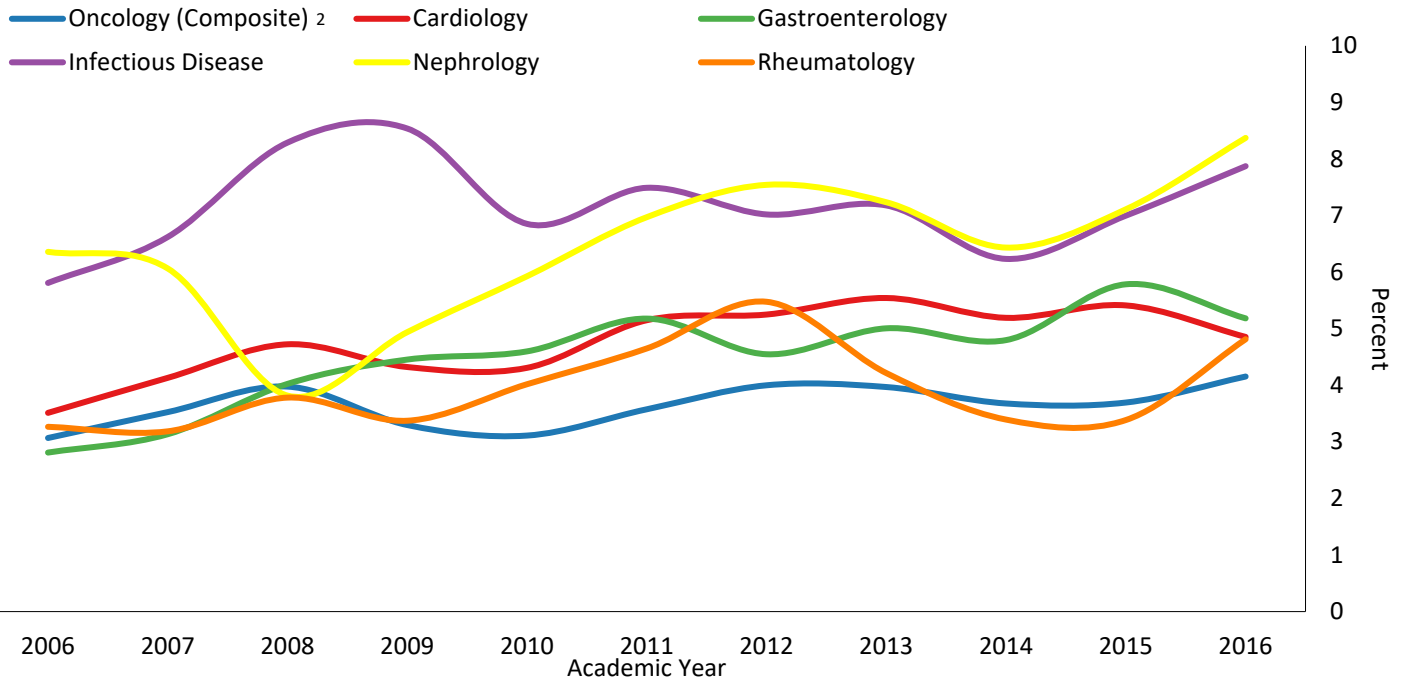
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All residents and fellows <sup>1</sup>	26.9	27.2	27.3	27.4	27.3	26.7	26.7	25.9	25.3	24.6	23.9
Internal medicine	44.1	44.5	44.6	45.2	44.6	43.3	43.2	41.4	40.3	39.2	38.4
Oncology (Composite) <sup>2</sup>	35.1	38.7	40.3	42.4	42.9	44.5	43.2	43.1	42.9	42.2	41.8
Hematology	40.7	46.5	42.0	30.6	41.9	37.8	26.2	26.5	17.1	32.3	23.8
Hematology/Oncology	34.0	37.1	39.1	42.0	42.4	44.0	42.5	42.3	42.7	41.9	42.1
Medical Oncology	43.1	51.9	54.3	52.6	51.0	55.7	60.8	63.6	58.9	51.3	40.0
Select Other IM Subspecialty											
Cardiology	31.0	30.6	33.0	35.2	36.7	38.4	40.0	41.5	41.5	42.0	41.9
Clinical Cardiac Electrophysiology	32.7	36.3	31.0	23.3	33.3	37.2	43.4	42.2	43.6	43.8	44.9
Critical Care Medicine	66.7	61.5	64.0	64.4	69.2	65.6	60.4	56.6	66.2	61.1	57.7
Endocrinology, Diabetes, Metabolism	32.7	33.8	37.2	42.3	47.1	48.4	50.6	53.9	56.6	53.0	49.9
Gastroenterology	26.3	29.2	28.9	29.7	30.5	30.4	31.2	31.5	32.8	32.5	31.4
Geriatric Medicine	66.3	68.7	66.8	66.1	69.2	66.2	62.2	65.5	55.6	59.9	49.3
Infectious Disease	40.4	41.9	39.9	41.5	42.0	45.4	47.4	45.0	43.9	44.0	43.2
Interventional Cardiology	45.8	40.7	43.3	47.9	41.4	48.4	47.0	45.8	47.7	51.6	52.4
Nephrology	43.1	47.9	53.1	54.6	59.2	63.6	65.8	68.0	68.3	65.8	65.8
Pulm Dis, Pulm Dis and Crit Care Med	43.9	45.0	45.3	45.2	45.6	46.8	47.5	47.6	44.4	44.0	43.2
Rheumatology	32.7	34.8	36.6	37.3	43.0	45.3	45.0	48.0	53.2	51.7	49.0

Source: JAMA Medical Education Issues

1 The percentages are based on fellows whose medical school is known. Physicians who graduated from medical schools in the U.S. territories or Canada are not considered IMGs.

2 The data represent the total number of fellows (MDs and DOs) in hematology, hematology/oncology, and clinical oncology GME programs accredited by the ACGME.

**Figure 27a. Percentage of Fellows in Internal Medicine Subspecialties Who Are Black or African American**



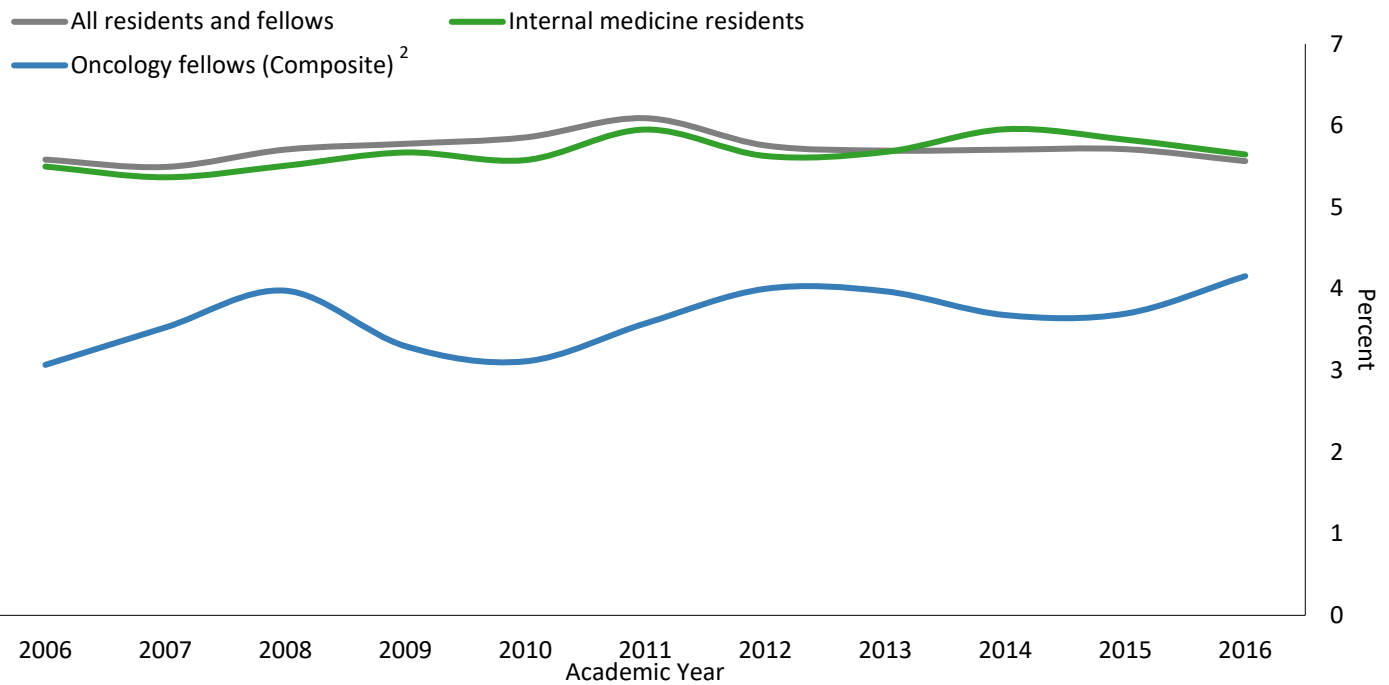
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All residents and fellows <sup>1</sup>	5.6	5.5	5.7	5.8	5.9	6.1	5.8	5.7	5.7	5.7	5.6
Internal Medicine residents	5.5	5.4	5.5	5.7	5.6	6.0	5.6	5.7	6.0	5.8	5.6
Oncology (Composite) <sup>2</sup>	3.1	3.5	4.0	3.3	3.1	3.6	4.0	4.0	3.7	3.7	4.2
Hematology	7.4	9.3	4.0	4.1	4.7	4.4	7.1	2.9	0.0	0.0	0.0
Hematology/Oncology	2.9	3.4	4.0	3.4	3.2	3.8	4.0	4.1	3.8	3.9	4.3
Medical Oncology	2.9	3.1	3.4	1.7	1.0	0.0	2.9	2.3	2.7	1.3	1.8
Select Other IM Subspecialty											
Cardiology	3.5	4.1	4.7	4.3	4.3	5.2	5.3	5.5	5.2	5.4	4.9
Clinical Cardiac Electrophysiology	5.2	4.5	3.9	1.8	3.5	6.7	4.0	3.0	2.5	4.4	3.6
Critical Care Medicine	8.9	6.1	4.4	5.6	6.5	6.7	4.6	3.4	4.3	6.2	5.3
Endocrinology, Diabetes, Metabolism	3.5	2.6	4.5	4.6	4.8	5.8	3.9	2.7	4.5	4.6	4.6
Gastroenterology	2.8	3.1	4.0	4.5	4.6	5.2	4.5	5.0	4.8	5.8	5.2
Geriatric Medicine	9.5	8.5	6.3	7.0	3.8	7.3	4.5	6.4	6.2	8.9	7.7
Infectious Disease	5.8	6.6	8.3	8.5	6.9	7.5	7.0	7.2	6.2	7.0	7.9
Interventional Cardiology	3.4	3.9	4.2	3.4	5.4	4.1	5.3	6.0	7.0	5.1	4.8
Nephrology	6.4	6.1	3.8	4.9	5.9	7.0	7.5	7.2	6.4	7.1	8.4
Pulm Dis, Pulm Dis and Crit Care Me	3.1	2.6	2.8	3.0	3.0	3.0	3.6	3.9	4.3	4.1	4.5
Rheumatology	3.3	3.2	3.8	3.4	4.0	4.7	5.5	4.2	3.4	3.4	4.8

Source: JAMA Medical Education Issues

<sup>1</sup> These figures represent the percentage of residents and fellows who are Black or African American. This includes people who are non-Hispanic and Black, as well as those who are Hispanic and Black. In 2014, the National GME Census imported self-designated race/ethnicity from Association of American Medical Colleges databases where available and thus introduced a "multiracial" category. Individuals citing more than one race are not included herein.

<sup>2</sup> The data represent the total number of fellows (MDs and DOs) in hematology, hematology/oncology, and clinical oncology GME programs accredited by the ACGME.

**Figure 27b. Percentage of Residents/Fellows Who Are Black or African American**



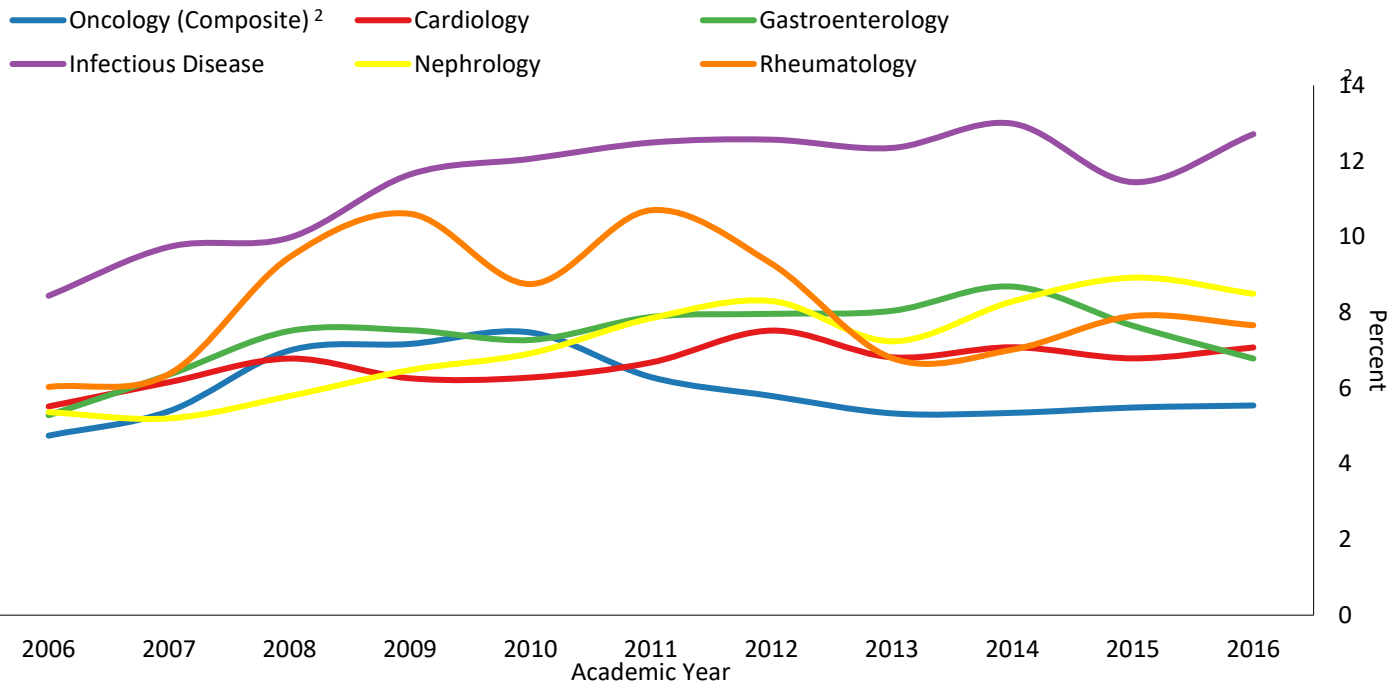
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Total residents and fellows</b>	104,879	106,012	108,176	109,840	111,586	113,427	115,111	117,427	118,366	120,598	124,096
Residents and fellows who are Black <sup>1</sup>	5,855	5,823	6,172	6,345	6,533	6,908	6,626	6,685	6,752	6,887	6,905
Percent Black	5.6	5.5	5.7	5.8	5.9	6.1	5.8	5.7	5.7	5.7	5.6
<b>Internal Medicine residents</b>	22,099	22,026	22,132	22,292	22,415	22,500	22,710	22,971	23,258	23,664	24,640
IM residents who are Black	1,215	1,182	1,219	1,264	1,250	1,339	1,278	1,304	1,385	1,379	1,391
Percent Black	5.5	5.4	5.5	5.7	5.6	6.0	5.6	5.7	6.0	5.8	5.6
<b>Oncology fellows (Composite)<sup>2</sup></b>	1,434	1,503	1,559	1,577	1,607	1,622	1,675	1,688	1,740	1,732	1,733
Oncology fellows who are Black	44	53	62	52	50	58	67	67	64	64	72
Percent Black	3.1	3.5	4.0	3.3	3.1	3.6	4.0	4.0	3.7	3.7	4.2
<b>Hematology fellows</b>	54	43	50	49	43	45	42	34	35	31	21
Hematology fellows who are Black	4	4	2	2	2	2	3	1	0	0	0
Percent Black	7.4	9.3	4.0	4.1	4.7	4.4	7.1	2.9	0.0	0.0	0.0
<b>Hematology/Oncology fellows</b>	1,243	1,329	1,393	1,412	1,462	1,480	1,531	1,566	1,632	1,621	1,657
Hem/Onc fellows who are Black	36	45	56	48	47	56	61	64	62	63	71
Percent Black	2.9	3.4	4.0	3.4	3.2	3.8	4.0	4.1	3.8	3.9	4.3
<b>Medical Oncology fellows</b>	137	131	116	116	102	97	102	88	73	80	55
Medical Onc. fellows who are Black	4	4	4	2	1	0	3	2	2	1	1
Percent Black	2.9	3.1	3.4	1.7	1.0	0.0	2.9	2.3	2.7	1.3	1.8

Source: JAMA Medical Education Issues

<sup>1</sup> These figures represent the percentage of residents and fellows who are Black or African American. This includes people who are non-Hispanic and Black, as well as those who are Hispanic and Black. In 2014, the National GME Census imported self-designated race/ethnicity from Association of American Medical Colleges databases where available and thus introduced a "multiracial" category. Individuals citing more than one race are not included herein.

<sup>2</sup> The data represent the total number of fellows (MDs and DOs) in hematology, hematology/oncology, and clinical oncology GME programs accredited by the ACGME.

**Figure 28a. Percentage of Fellows in Internal Medicine Subspecialties Who Are Hispanic or Latino**



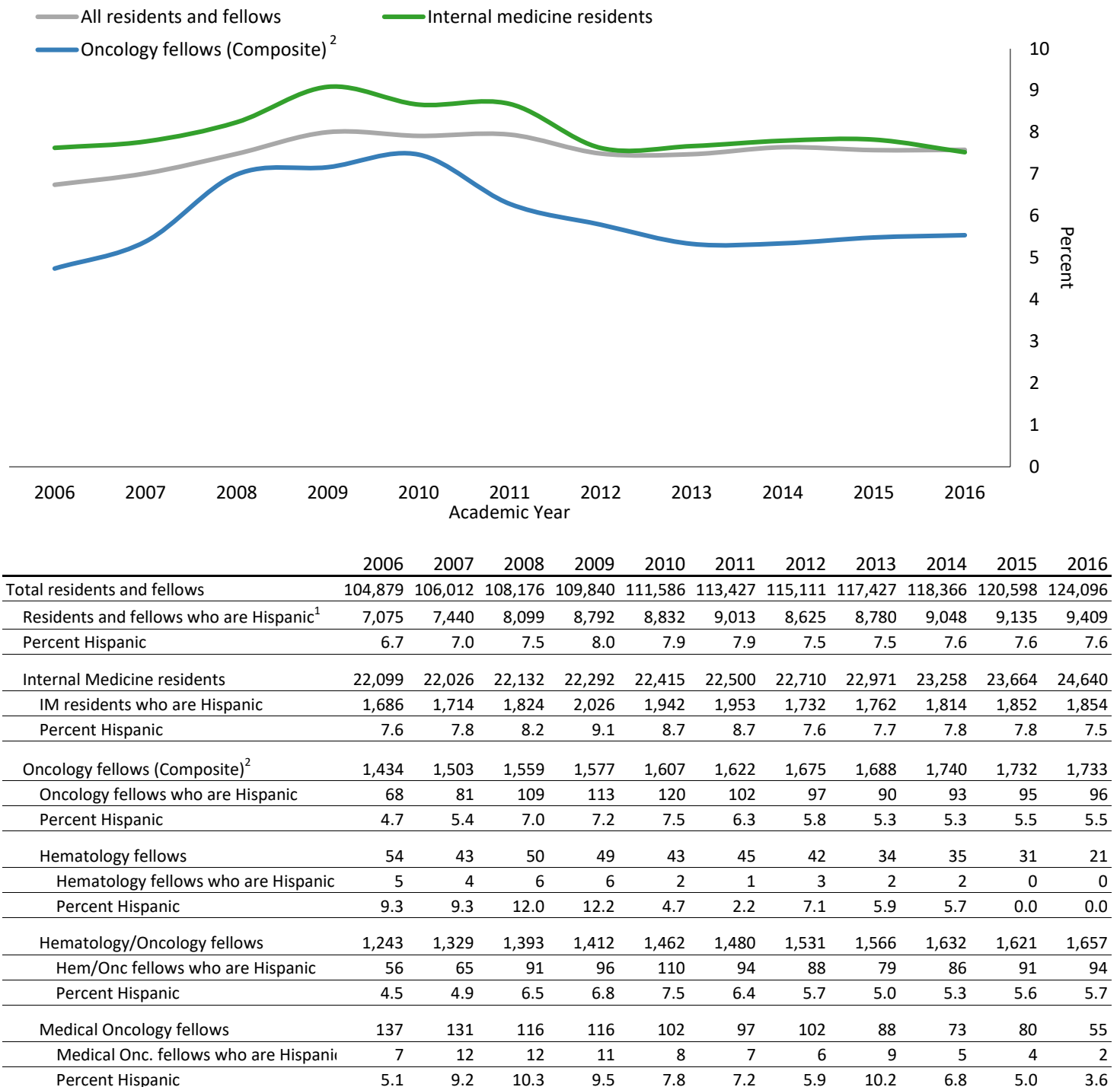
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All residents and fellows <sup>1</sup>	6.7	7.0	7.5	8.0	7.9	7.9	7.5	7.5	7.6	7.6	7.6
Internal Medicine residents	7.6	7.8	8.2	9.1	8.7	8.7	7.6	7.7	7.8	7.8	7.5
Oncology (Composite) <sup>2</sup>	4.7	5.4	7.0	7.2	7.5	6.3	5.8	5.3	5.3	5.5	5.5
Hematology	9.3	9.3	12.0	12.2	4.7	2.2	7.1	5.9	5.7	0.0	0.0
Hematology/Oncology	4.5	4.9	6.5	6.8	7.5	6.4	5.7	5.0	5.3	5.6	5.7
Medical Oncology	5.1	9.2	10.3	9.5	7.8	7.2	5.9	10.2	6.8	5.0	3.6
Other IM Subspecialty											
Cardiology	5.5	6.2	6.8	6.3	6.3	6.7	7.5	6.8	7.1	6.8	7.1
Clinical Cardiac Electrophysiology	4.6	3.2	6.5	4.3	7.6	8.5	5.8	7.2	6.1	5.6	7.2
Critical Care Medicine	7.3	13.5	7.4	10.0	10.3	11.1	7.6	8.8	8.2	5.2	8.7
Endocrinology, Diabetes, Metabolism	7.2	7.3	8.2	9.4	10.4	10.5	8.2	11.3	13.5	11.7	11.1
Gastroenterology	5.3	6.4	7.5	7.5	7.3	7.9	8.0	8.0	8.7	7.6	6.8
Geriatric Medicine	9.5	9.8	9.0	8.7	14.3	12.3	12.6	13.1	8.6	9.9	11.3
Infectious Disease	8.4	9.7	10.0	11.6	12.1	12.5	12.6	12.3	13.0	11.4	12.7
Interventional Cardiology	6.4	4.8	7.5	4.2	6.7	8.2	3.7	5.3	4.6	6.5	4.8
Nephrology	5.4	5.2	5.8	6.5	6.9	7.8	8.3	7.2	8.3	8.9	8.5
Pulm Dis, Pulm Dis and Crit Care Med	7.1	7.8	8.8	10.6	10.2	10.4	9.4	8.9	8.2	6.4	6.2
Rheumatology	6.0	6.4	9.5	10.6	8.7	10.7	9.3	6.8	7.0	7.9	7.7

Source: JAMA Medical Education Issues

1 These figures represent the proportion of residents and fellows in ACMGE-accredited programs who are Hispanic or Latino. People who are Hispanic or Latino can be of any race.

2 The data represent the total number of fellows (MDs and DOs) in hematology, hematology/oncology, and clinical oncology GME programs accredited by the ACGME.

Figure 28b. Percentage of Residents and Fellows Who Are Hispanic or Latino

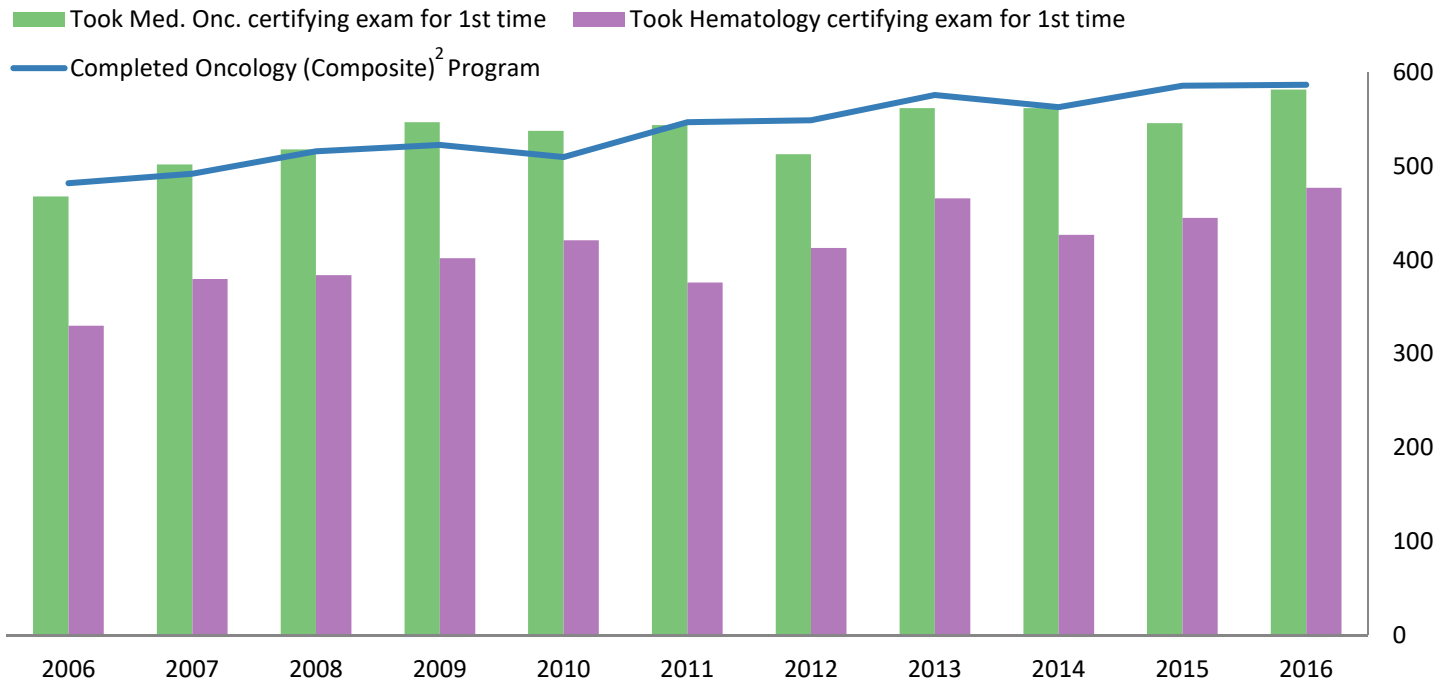


Source: JAMA Medical Education Issues

1 These figures represent the proportion of residents and fellows in ACMGE-accredited programs who are Hispanic or Latino. People who are Hispanic or Latino can be of any race.

2 The data represent the total number of fellows (MDs and DOs) in hematology, hematology/oncology, and clinical oncology GME programs accredited by the ACGME.

**Figure 29. New Entrants to the Oncology Workforce (Fellows Completing GME and Board Exam Test Takers)**



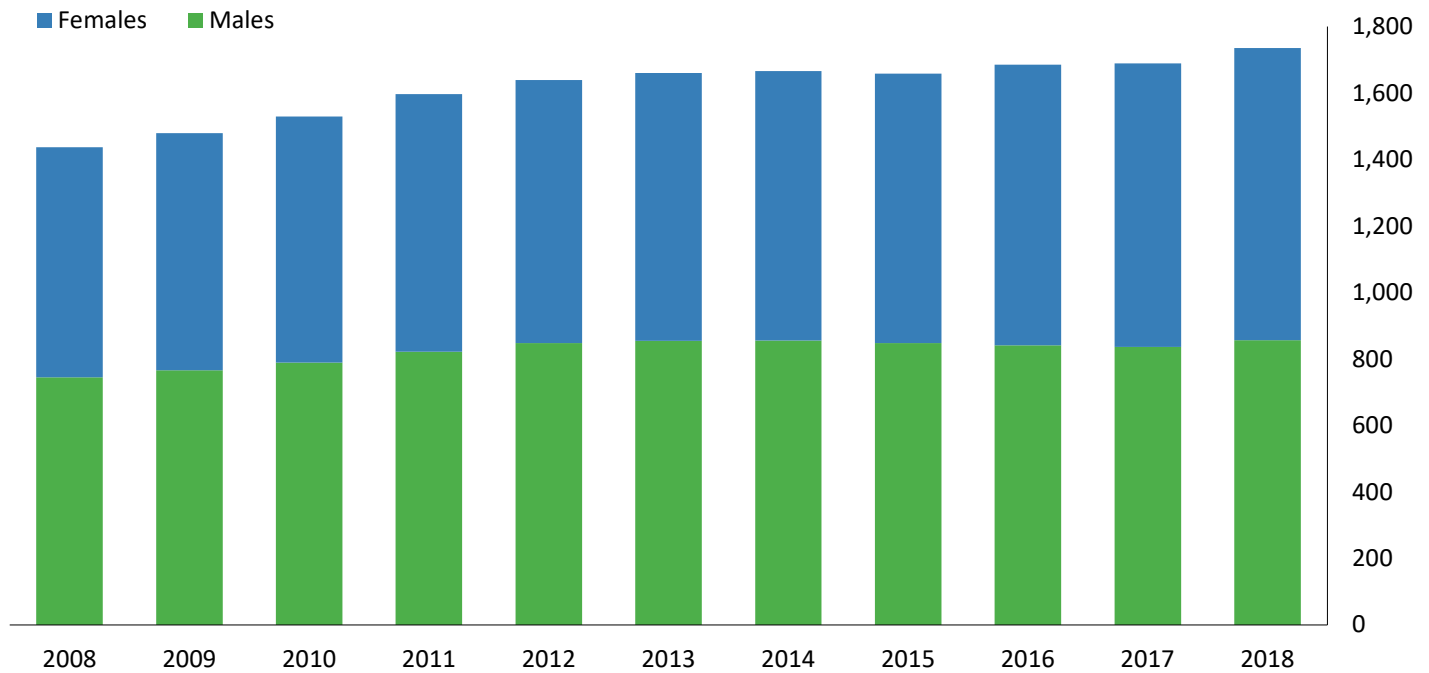
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fellows who completed an oncology program	482	492	516	523	510	547	549	576	563	586	587
Hematology	24	20	16	21	13	9	13	10	13	18	5
Hematology/Oncology	389	423	448	453	456	497	480	529	516	539	562
Medical Oncology	69	49	52	49	41	41	56	37	34	29	20

Physicians who took certifying exam for first time <sup>2</sup>	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Hematology	330	380	384	402	421	376	413	466	427	445	477
Medical Oncology	468	502	518	547	538	544	513	562	562	546	582

1 The number of fellows completing a hematology, hematology/oncology, or oncology program were obtained from the ACGME website, accessed from [acgme.org/acgmeweb/tabid/259/Publications/GraduateMedicalEducationDataResourceBook.aspx](http://acgme.org/acgmeweb/tabid/259/Publications/GraduateMedicalEducationDataResourceBook.aspx). The year corresponds to the year of graduation. For example, fellows graduating after the 2015-2016 Academic Year are represented in 2016.

2 The number of first time test-takers in Hematology and Medical Oncology were obtained from the American Board of Internal Medicine website, available at [abim.org/about/statistics-data/exam-pass-rates.aspx](http://abim.org/about/statistics-data/exam-pass-rates.aspx).

**Figure 30. Estimated Number of New Cancer Cases (in 1000s) by Sex<sup>1</sup>**

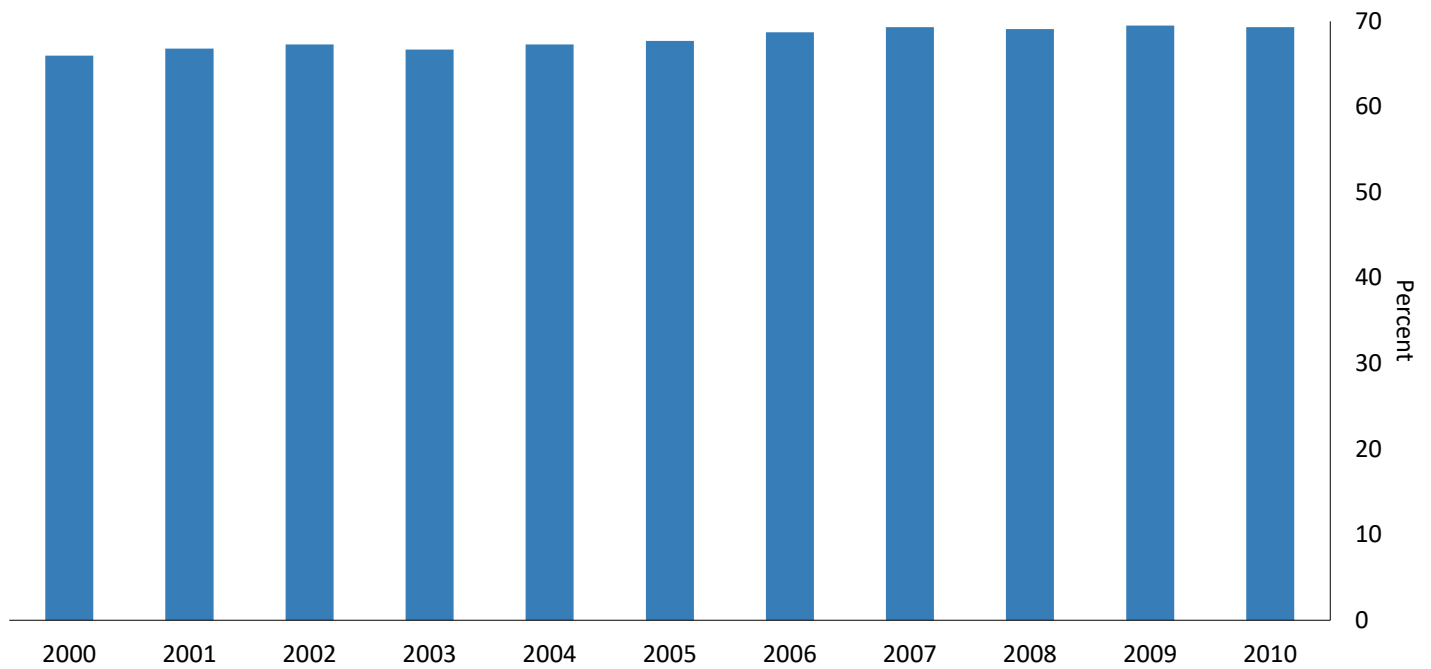


	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimated new cancer cases - Males	745	766	790	822	848	855	855	848	841	836	856
Estimated new cancer cases - Femal	692	713	740	774	791	806	810	810	844	853	879

1 The estimated number of new cases comes from the American Cancer Society. Cancer Facts and Figures. Accessed online at [www.cancer.org/docroot/STT/STT\\_0.asp](http://www.cancer.org/docroot/STT/STT_0.asp). The number of estimated new cancer cases exclude basal and squamous cell skin cancers and in situ carcinomas except urinary bladder. Estimated new cases are rounded to the nearest 10th and are based on incidences rates from 41 states and the District of Columbia as reported by the North American Association of Central Cancer Registries, representing about 85% of the US population. Beginning with Cancer Facts & Figures 2007, estimated new cancer cases were computed using a new, more accurate method developed by researchers at the National Cancer Institute and the American Cancer Society. Improvements in the new model include use of data from a much larger percentage of the US population, allowance for geographical variation in cancer incidence, adjustment for delays in reporting, and the inclusion of many socio-demographic, medical facility, lifestyle, and cancer screening behavior variables. Comparisons of estimates produced by the old and new methods were generally similar for all cancers combined but differ substantially for some sites.



**Figure 31. Five-Year Relative Cancer Survival Rates by Year of Diagnosis**

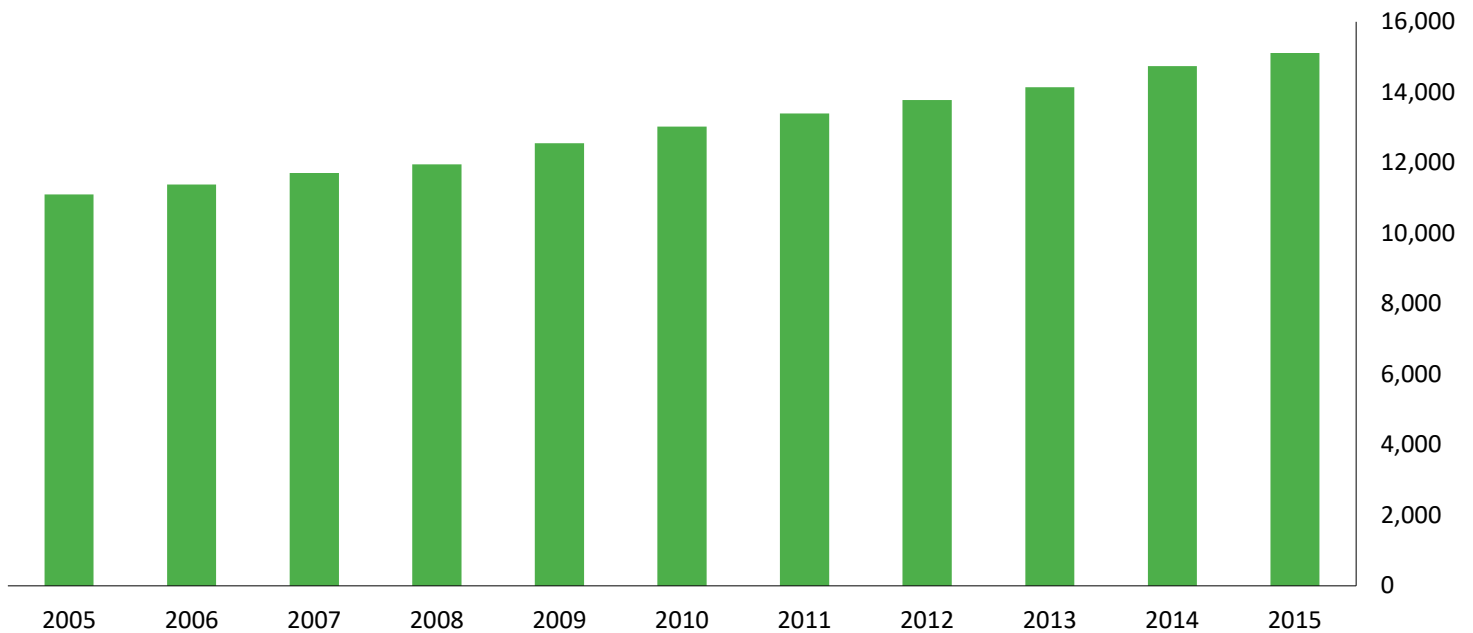


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Five-year relative survival rates by year of diagnosis	66.0	66.8	67.3	66.7	67.3	67.7	68.7	69.3	69.1	69.5	69.3

Source: Noone AM, Howlader N, Krapcho M, Miller D, Brest A, Yu M, Ruhl J, Tatalovich Z, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds). SEER Cancer Statistics Review, 1975-2015, National Cancer Institute. Bethesda, MD, [https://seer.cancer.gov/csr/1975\\_2015/](https://seer.cancer.gov/csr/1975_2015/), based on November 2017 SEER data submission, posted to the SEER web site, April 2018.

1 The five-year cancer survival rates represent the proportion of patients surviving cancer 5 years after diagnosis, adjusted to remove all causes of death except cancer. These rates are from the SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).

**Figure 32. Number of People With a History of Cancer (in 1000s)**



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
People with a history of cancer (in 1000s)	11,098	11,385	11,714	11,958	12,553	13,028	13,397	13,776	14,140	14,739	15,113
Cancer survivors, 5-year limited duration	4,048	4,077	4,129	4,250	4,357	4,511	4,595	4,660	4,684	5,327	5,364

Source: Noone AM, Howlader N, Krapcho M, Miller D, Brest A, Yu M, Ruhl J, Tatalovich Z, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds). SEER Cancer Statistics Review, 1975-2015, National Cancer Institute. Bethesda, MD, [https://seer.cancer.gov/csr/1975\\_2015/](https://seer.cancer.gov/csr/1975_2015/), based on November 2017 SEER data submission, posted to the SEER web site, April 2018.

1 These figures represent the number of people with a history of cancer who were alive in the corresponding year. Some of these individuals were cancer-free, while others still had evidence of cancer.

2 The number of cancer survivors (5-year limited duration) represents the US cancer prevalence counts based on cancer prevalence proportions from the SEER 9 registries and US population estimates. Prevalence estimates here refer to the first invasive tumor ever that was diagnosed within the prior 5 years.