American Academy of Allergy Asthma and Immunology Report on the Allergy and Immunology Physician Workforce, 1999-2009/10

March 2012

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The Center for Health Workforce Studies is a not-for-profit research organization whose mission is to provide timely, accurate data and conduct policy-relevant research about the health workforce. The Center's work assists health, professional, and education organizations; policy makers and planners; and other stakeholders to understand issues related to the supply, demand, distribution, and use of health workers.

Preface

The prevalence of asthma and allergy-related disorders in the U.S. continues to increase. Allergies affect as many as 50 million people in the U.S.[1] More than half of the U.S. population tests positive to one or more allergens.[2] The annual economic cost of asthma is 19.7 billion dollars. Direct costs make up 14.7 billion dollars of that total, and indirect costs such as lost productivity add another 5 billion dollars. Moreover, approximately 34 million people in the U.S. have been diagnosed with asthma.[3] Asthma is responsible for 13 million missed school days per year and 10 million missed work days per year.[4] Medical expenses associated with asthma increased from 48.6 billion dollars in 2002 to 50.1 billion dollars in 2007. About 2 in 5 (40%) uninsured people with asthma could not afford their prescription medicines and about 1 in 9 (11%) insured people with asthma could not afford their prescription medicines.[5] Finally, asthma accounts for 217,000 emergency room visits and more than 10 million physician office visits per year.[6]

Despite the breadth of asthma and allergy-related disorders in the U.S., a relatively small population of physicians practices in the medical specialty of Allergy and Immunology (A/I). In 1998, the American Academy of Allergy, Asthma and Immunology (the Academy) commissioned an investigation of the workforce issues surrounding the specialty. The investigation was a response to several disturbing trends anecdotally noted by stakeholders in the A/I community. The most notable trend was that while the total number of physicians in the U.S. had increased steadily for more than 40 years, between 1990 and 1998, the number of physicians training in A/I fellowship programs had declined from 322 to 214, a decrease of 34 percent. This decline in production coincided with a rapid rise in asthma and allergy-related disorders and growth in public concern and initiatives to prevent and treat asthma and allergic conditions.

Concerns about competition with physicians in other specialties, such as otolaryngology, pulmonology, and dermatology, as well as the primary care physicians (pediatricians, family physicians, and internists) due to increased managed care penetration reinforced the need to examine the A/I physician workforce systematically and comprehensively, focusing on trends in fellowship training, A/I physician practice, and plans to leave practice.

The Center for Health Workforce Studies (the Center) conducted the investigation of the production, supply, demand, and distribution of the A/I physician workforce beginning

in 1998. Through a series of reports, culminating in a summary report, *The Allergy and Immunology Physician Workforce 2000*,[7] the Center described the current state of the specialty, made projections of the supply of A/I physicians and demand for A/I services in the future, and developed a number of recommendations to respond to the projected shortfall of A/I physicians in the future.

One of the recommendations made in the comprehensive assessment of the adequacy of the supply of A/I physicians was to update the data on A/I physician supply, demand, and production periodically. In 2004/05, the Academy did so. Once again, the Center conducted the follow-up investigation. Using a very similar survey instrument, the Center collected data on A/I physician practice in the U.S. One notable change that had occurred was that the estimated number of A/I physicians practicing in the U.S. had declined slightly since 1999. However, those who were practicing were working longer hours than they had in the past, in effect, compensating for their decreased numbers. The other notable trend was a dramatic reversal of the decline in new A/I physician production observed in the 1990s, from 205 to 244 between 1999 and 2003.[8] The increased effort and the increased rate of production of new A/I physicians were not enough, however, to completely reduce the long-term forecast of shortage, although they did reduce the forecast shortage.[9]

Five years later, in 2009, the Academy sought to update the previous work again. Using a very similar survey instrument to collect information on A/I physician practice in the U.S., the Center was engaged to update the previous assessments. The current report describes the findings from the update of the comprehensive assessment of the A/I physician workforce, including a national survey of practicing A/I physicians. Comparisons are drawn between the data collected in 2009/10 and those collected in 2004 and 1999. The previous reports suggested that A/I was going to face the difficulties of a dwindling supply and growing demand for A/I services. Five years later, how has the A/I physician supply changed in order to cope with the situation? This report documents many of the workforce changes that have occurred in the specialty over the past five years. The goal of the report is to develop an understanding of how the A/I physician workforce has changed, continues to change, and may change in the future.

The work described in this report was conducted by the Center for Health Workforce Studies at the School of Public Health, University of Albany, State University of New York. This report was authored by Gaetano J. Forte, Director of Information

Management at the Center. The views expressed in this report are those of the Center for Health Workforce Studies and do not necessarily represent positions or policies of the School of Public Health, the University at Albany, the State University of New York, or the American Academy of Allergy, Asthma and Immunology.

The Center was established in 1996. It is a not-for-profit research organization whose mission is to provide timely, accurate data and conduct policy-relevant research about the health workforce. The Center's work assists health, professional, and education organizations; policy makers and planners; and other stakeholders to understand issues related to the supply, demand, distribution, and use of health workers. Today the Center is a national leader in the field of health workforce studies. It supports and improves health workforce planning and access to quality health care through its collection, tracking, analysis, interpretation, and dissemination of information about health professionals at the national, state, and local levels. Additional information about the Center can be found at http://chws.albany.edu.

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March 2012

Acknowledgments

The Center wishes to acknowledge the American Academy of Allergy, Asthma and Immunology's Workforce Committee, co-chaired by Dr. N. Franklin Adkinson and Dr. Stephen McGeady, for its helpful review and comments on earlier versions of this report as well as thoughtful guidance throughout the project. The Center also wishes to acknowledge Sheila Heitzig, Director of Practice and Policy, at the Academy for her help in coordinating this project. The project would not have been possible without the financial support of the Academy. The Center wishes to acknowledge the physicians who took the time to participate in the study and respond to our survey. Finally, the Center wishes to acknowledge Lyrysa Smith, Center editor, for her work in producing this report.

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Executive Summary

This report presents the results of the Survey of Physicians Providing Allergy and Immunology Services in the United States in 2009 and 2010. The survey focused on issues around the characteristics of physicians providing allergy and immunology (A/I) services, the provision of A/I services, practice characteristics, and impressions and perceptions of the current and future A/I practice market. The survey was sent to more than 4,500 physicians who identified themselves as allergists through membership in the American Academy of Allergy Asthma and Immunology. The survey achieved a response rate of 62 percent.

The survey conducted in 2009/10 was a follow-up to similar surveys conducted in 1999 and 2004. Where appropriate, this report presents comparisons between responses to the current survey and those conducted in 1999 and 2004.

Key Findings

1. Number of Practicing A/I Physicians

	1999	2004	2009/10
Active A/I physicians	4,368	4,245	4,446
Per 100,000 population	1.57	1.43	1.43

- It is estimated that in 2009/10 there were 4,446 physicians actively providing A/I services in the U.S. This number is slightly higher than the 4,245 physicians identified as providing A/I services in 2004. In terms of A/I physicians per 100,000 population, in 2009/10, there were 1.43 A/I physicians per 100,000 population in the U.S. In 2004, there were also 1.43 A/I physicians per 100,000 population in the U.S. In 1999, there were 1.57 A/I physicians per 100,000 population in the U.S.

2. Demographic Characteristics of A/I Physicians

	1999	2004	2009/10
Female	20%	25%	29%
Median age	50 yrs.	53 yrs.	52 yrs.
Age 65 and older	13%	16%	16%
Underrepresented minority physicians	5%	6%	5%

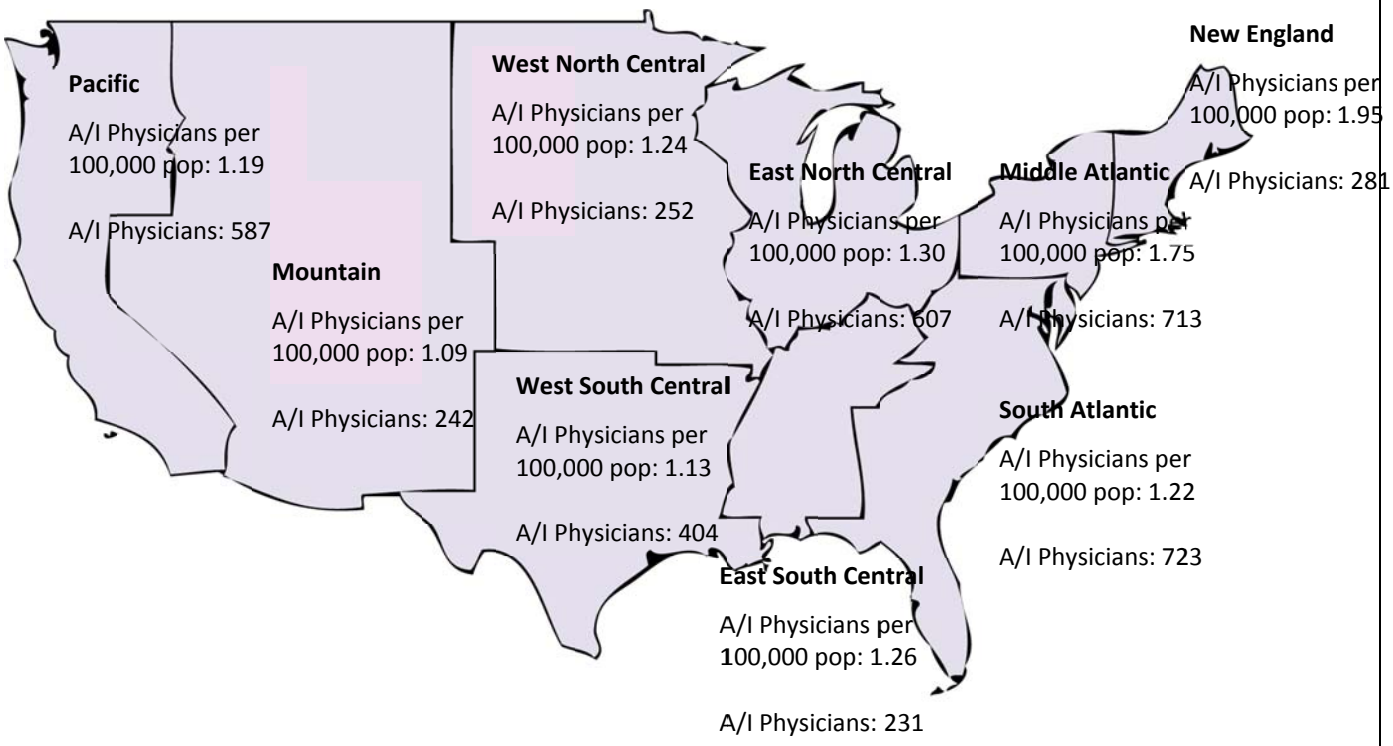
- In 2009/10, 29 percent of A/I physicians were women; in 2004, 25 percent of A/I physicians were women; in 1999, 20 percent of A/I physicians were women; in 1989 10 percent of A/I physicians were women.
- In 2009/10, the median age of an A/I physician was 52 years; in 2004, the median age was 53; in 1999, the median age was 50.
- In 2009/10, 16 percent of A/I physicians were age 65 or older; in 2004, 16 percent of A/I physicians were age 65 or older; in 1999, 13 percent of A/I physicians were age 65 or older.
- In 2009/10, underrepresented minority physicians (Blacks/African Americans, Hispanics/Latinos, American Indians, Native Hawaiians, and Alaska Natives) made up 5 percent of A/I physicians, the same as in 1999 and 2004.

3. Education, Training, and Certification of A/I Physicians

	1999	2004	2009/10
International medical graduate	20%	20%	18%
Completed formal A/I training program	86%	95%	97%
Board certified in A/I	90%	91%	94%

- In 2009/10, 82 percent of A/I physicians had graduated from a medical school in the U.S., while 18 percent had graduated from an international medical school. This figure was about the same in 1999 and 2004. In 1989, 82 percent of A/I physicians had graduated from a medical school in the U.S., and 18 percent had graduated from an international medical school.
- In 2009/10, 97 percent of A/I physicians reported having completed a formal A/I fellowship training program; in 2004, 95 percent of A/I physicians reported having completed such a training program; in 1999, 86 percent of A/I physicians reported having completed such a training program.
- In 2009/10, 94 percent of A/I physicians reported being certified by the American Board of Allergy and Immunology; in 2004, 91 percent of A/I physicians reported being board-certified; in 1999, 90 percent of A/I physicians reported being board-certified; in 1989, only 62 percent reported being certified by the board.

4. Geographical Distribution of A/I Physicians by Census Division



- A/I physicians were dispersed unevenly across the U.S. in 2009/10. The ratio of A/I physicians to 100,000 population ranged from a low of 1.09 in the Mountain Census division to a high of 1.95 in the New England Census division.
- While many parts of the country experienced a decline in the A/I physician supply between 2004 and 2009/10, the New England, East South Central, and Mountain Census divisions experienced the an increase in A/I physician supply.

5. A/I Practice Characteristics

A) Practice Organization

	1999	2004	2009/10
Group practice	45%	47%	53%
Solo practice	38%	34%	28%
Had ownership interest in practice	N/A	64%	58%

- More than half (53 percent) of A/I physicians worked in group practices in 2009/10, while 28 percent were in solo practice arrangements; fewer had group practice arrangements in 2004 and 1999, and more were in solo practice arrangements.
- In 2009/10, 58 percent of A/I physicians were owners or had ownership interest in their practices; in 2004, 64 percent were owners or had ownership interest in their practice.

B) Productivity

	1999	2004	2009/10
Median hours spent in patient care per week	33.4 hrs.	35.3 hrs.	36.9 hrs.
Median patient visits per week	55	57	56
Median new patient visits per week	12	13	14
A/I physician patient care Full-Time Equivalents	3,561	3,698	3,962

- In 2009/10, A/I physicians reported spending, on average, almost 37 hours in A/I patient care per week; in 2004, A/I physicians reported spending, on average, 35 hours in A/I patient care per week; in 1999, A/I physicians reported spending, on average, 33 hours in A/I patient care per week.
- Using a full-time equivalent (FTE) standard developed in 1999 (38.4 patient care hours per week = 1 FTE), it was estimated that there were 3,962 A/I patient care FTEs in the U.S. in 2009/10. This compared to 3,561 A/I patient care FTEs in 1999 and 3,698 A/I patient care FTEs in 2004.

- In 2009/10, the median number of patient visits per week reported by A/I physicians was 56; in 2004, the median number was 57; in 1999, the median number was 55. A/I physicians reported an average number of new patient visits per week of 14 in 2009/10; in 2004, the median was 13; in 1999, the median was 12.

C) Practice Capacity

	1999	2004	2009/10
Median wait time for appointment – existing, non-emergent patient	5 days	3 days	3 days
Median wait time for appointment – new patient	7 days	7 days	5 days
Characterize their practice as far from full	55%	62%	63%
Characterize their practice as growing	50%	46%	46%

	1999	2004	2009/10
Perceive some or many available practice opportunities in local area	33%	34%	24%
Perceive some or many available practice opportunities in their state	57%	63%	54%
Perceive some or many available practice opportunities in the U.S.	N/A	87%	83%

- For non-emergent, established patients the average wait time to see an A/I physician was three days in 2009/10, about the same as in 2004. In 1999, the wait time was five days. For new patients the average wait time to see an A/I physician was five days in 2009/10, about two days shorter than was reported in 1999 and 2004.
- In 2009/10, 63 percent of A/I physicians reported that their practices were far from full and they could accept many new patients, about the same percentage

as 2004 (62 percent); in 1999, 55 percent of A/I physicians reported that their practices were far from full.

- In 2009/10, 46 percent of A/I physicians reported that their practices were growing, the same percentage as observed in 2004. This was slightly lower than the 50 percent of A/I physicians who reported their practices were growing in 1999.
- Perceptions of current local (within 50 miles of respondents' practice locations) practice opportunities were reported to be bleak by A/I physicians. In 2009/10, 76 percent of A/I physicians reported few or no available practice opportunities at the local level. These perceptions were higher than in 2004 and 1999.
- Perceptions of the current availability of practice opportunities at the state level were more optimistic. In 2009/10, 54 percent of A/I physicians reported that there were some or many available practice opportunities at the state level. These perceptions were lower than observed in 2004, but consistent with the perceptions of A/I physicians in 1999.
- Perceptions of the current availability of practice opportunities at the national level were even more optimistic in 2009/10. Eighty-three percent of A/I physicians reported some or many available practice opportunities at the national level.

D) Medical Aspects of Practice

	1999	2004	2009/10
Median percentage of patients treated with immunotherapy	22%	19%	17%
Median percentage of patients that are children	35%	36%	39%
Treated patients with biologic immune response modifiers	N/A	N/A	84%

Note: Biologic immune response modifier question was not included on the 1999 and 2004 surveys.

- In 2009/10, the median percentage of patients treated with immunotherapy/ allergy shots reported by A/I physicians was 17 percent; in 2004, the median percentage was 19; in 1999, the median percentage was 22 percent. Use of immunotherapy/allergy shots was positively related to physician age (older physicians reported larger percentages of patients being treated with immunotherapy/allergy shots) in all three survey iterations.

- In 1999, 2004, and 2009/10, A/I physicians reported that more than one-third of their patients were children (younger than 16 years of age).
- In 2009/10, more than three-quarters (84 percent) of A/I physicians reported that they treated patients with biologic immune response modifiers.

E) Practice Satisfaction

	1999	2004	2009/10
Report being satisfied or very satisfied professionally with their A/I practice	70%	78%	78%
Report being satisfied or very satisfied economically with their A/I practice	44%	52%	48%
Increase in personal practice income in previous two years	31%	36%	31%

- In 2009/10, 78 percent of A/I physicians reported that they were satisfied or very satisfied professionally with their A/I practice, the same percentage observed in 2004; in 1999, 70 percent of A/I physicians reported similarly.
- In 2009/10, 48 percent of A/I physicians reported that they were satisfied or very satisfied economically with their A/I practice; in 2004, 52 percent of A/I physicians reported that they were satisfied of very satisfied economically; in 1999, 44 percent of A/I physician reported similarly.
- In 2009/10, 31 percent of A/I physicians reported increases in their personal practice incomes in the previous two years; in 2004, 36 percent reported increases; in 1999, 31 percent reported increases. In 2009/10, 37 percent reported decreased personal practice income in the previous two years; in 2004, 31 percent reported decreases; in 1999, 41 percent reported decreases.

F) Use of Electronic Resources in Practice

	1999	2004	2009/10
Use email in their A/I practices more than once daily	N/A	38%	51%
Use smartphone/PDA more than once daily	N/A	21%	34%
Use clinical applications (e.g., point of care electronic references, Asthma IQ) more than once daily	N/A	7%	9%

Note: Electronic resource use question was not included on the 1999 survey.

- In 2009/10, 84 percent of A/I physicians reported using email in their A/I practices, with 51 percent using it more than once daily. Both of these figures represented increases relative to 2004.
- In 2009/10, about one-third of A/I physicians reported using clinical applications in their A/I practices, about the same percentage observed in 2004.
- In 2009/10, more than half of A/I physicians reported using PDAs or smartphones in their A/I practices, with 34 percent using them more than once daily. Both of these figures represented increases relative to 2004.
- In 2009/10, half of A/I physicians reported using an electronic medical record in their A/I practice.
- Use of electronic resources by A/I physicians varied by age with younger A/I physicians reporting greater and more frequent use of these types of resources in their practices.

6. Recent Changes in Practice

A) Changes in Common Diagnoses over the Past Two Years

	1999	2004	2009/10
Increased food allergy cases	22%	42%	59%
Increased urticaria/ angioedema cases	45%	53%	52%
Increased chronic cough cases	44%	43%	38%
Increased sinusitis cases	55%	43%	34%
Increased atopic dermatitis cases	17%	30%	34%
Increased asthma cases	56%	42%	33%

- A/I physicians reported greater increases in the following types cases over time: food allergy, adverse drug reaction, atopic dermatitis, and contact dermatitis.
- A/I physicians reported a decreasing rate of growth in the following types of cases over time: asthma, sinusitis, rhinitis, and chronic cough.

B) Changes in Case Complexity over the Past Two Years

	1999	2004	2009/10
Increased case complexity	52%	56%	59%

- In 2009/10, 59 percent of A/I physicians reported increased case complexity over the previous two years; in 2004, 56 reported increased case complexity; in 1999, 52 percent reported increased case complexity.

C) Changes in Productivity over the Past Two Years

	1999	2004	2009/10
Treated more A/I patients	42%	34%	36%
Spent more hours in A/I patient care	41%	23%	29%

- In 2009/10, 37 percent of A/I physicians reported seeing the same amount A/I patients and 36 percent reported seeing more A/I patients over the previous two years; in 2004, 44 percent reported seeing the same amount of A/I patients and 34 percent reported seeing more A/I patients; in 1999, 42 percent reported seeing more A/I patients, while 36 percent reported seeing the same number of A/I patients.
- In 2009/10, 29 percent of A/I physicians reported spending more hours per week in A/I patient care over the previous two years; in 2004, 23 percent reported spending more time in A/I patient care per week; in 1999, 41 percent reported spending more time in A/I patient care per week.

D) Changes in Patient Insurance Coverage over the Past Two Years

	1999	2004	2009/10
Served more Medicaid patients	N/A	24%	43%
Served more Medicare patients	N/A	17%	24%
Served more privately insured patients	N/A	18%	17%
Served more uninsured patients	N/A	18%	30%

Note: Patient insurance coverage question was not included on the 1999 survey.

- In 2009/10, 43 percent of A/I physicians reported that they served more patients covered by Medicaid than they did two years before; in 2004, only 24 percent reported serving more patients covered by Medicaid.
- In 2009/10, 30 percent of A/I physicians reported that they served more uninsured patients than they did two years before; in 2004, only 18 percent reported serving more patients who were uninsured.
- Twenty-five percent of A/I physicians reported more referrals from physicians in the previous two years, while 22 percent reported fewer referrals from physicians.
- Twenty-seven percent of A/I physicians reported more referrals from nurse practitioners and physician assistants in the previous two years, while 14 percent reported fewer referrals from nurse practitioners and physician assistants.
- Thirty-eight percent of A/I physicians reported more self-referrals in the previous two years, while 11 percent reported fewer self-referrals.

7. Future Changes in Practice Expected over the Next Five Years

	1999	2004	2009/10
Expected new treatments and medications to increase demand for A/I services	40%	49%	51%
Expected incidence and prevalence of asthma and allergic conditions to increase demand for A/I services	N/A	68%	70%
Expected incidence and prevalence of immunologic conditions to increase demand for A/I services	N/A	31%	41%
Expected new practice parameters to increase demand for A/I services	25%	24%	25%
Expected health care reform to increase demand for A/I services	N/A	N/A	28%

Note: Questions on the expected effects of the incidence/prevalence of asthma and allergic conditions and immunologic conditions were asked differently on the 1999 survey and are not comparable. The question about the potential effect of health care reform was not included on the 1999 and 2004 survey.

A/I physicians reported expecting several important changes in their A/I practices in the near future:

- In 2009/10, 51 percent of A/I physicians reported expecting new treatments and medications to increase demand for A/I services in the next five years; 70 percent reported expecting the incidence and prevalence of asthma and allergic conditions to increase demand for A/I services; 41 percent reported expecting the incidence and prevalence of immunologic conditions to increase demand for A/I services; and 25 percent reported expecting new practice parameters to increase demand for A/I services.
- Twenty-eight percent of A/I physicians reported expecting health care reform to increase demand for A/I services, while 49 percent expected health care reform to decrease demand for A/I services.

	1999	2004	2009/10
Expected to retire within the next 10 years	41%	39%	39%
Expected to retire within the next 5 years	21%	17%	20%
Expected to increase number of hours spent providing A/I services in the next 12 months	N/A	14%	14%

- Twenty percent of A/I physicians reported expecting to retire from practice in the next five years. Almost two-thirds of A/I physicians did not anticipate retiring from practice for more than a decade. A/I physicians' retirement expectations did not change substantially between 1999 and 2009/10.
- In 2009/10, 14 percent of A/I physicians reported expecting to increase the number of hours they spend providing A/I services in the next 12 months.

	1999	2004	2009/10
Expected some or many available practice opportunities in local area over the next 5 years	40%	48%	36%
Expected some or many available practice opportunities in their state over the next 5 years	57%	68%	58%
Expected some or many available practice opportunities in the U.S. over the next 5 years	N/A	84%	79%

Note: Future national practice opportunity assessment was not included on the 1999 survey.

- Expectations of future local practice opportunities were more optimistic than assessments of current local practice opportunities. In 2009/10, 36 percent of A/I

physicians reported expecting some or many practice opportunities to be available over the next five years within 50 miles of their current practice location. In 2004, 48 percent of A/I physicians reported similarly. In 1999, 40 percent of A/I physicians reported similarly.

- Expectations of future practice opportunities at the state level were also more optimistic than assessments of current practice opportunities. In 2009/10, 58 percent of A/I physicians reported expecting some or many practice opportunities to be available over the next five years at the state level. In 2004, 68 percent of A/I physicians reported similarly. In 1999, 57 percent of A/I physicians reported similarly.
- Expectations of future practice opportunities at the national level were also positive. In 2009/10, 79 percent of A/I physicians reported expecting some or many practice opportunities to be available over the next five years. In 2004, 84 percent of A/I physicians reported similarly.

8. A/I Practice Marketplace

	1999	2004	2009/10
Experienced local competition with Otolaryngologists	47%	37%	46%
Experienced local competition with other A/I physicians	47%	29%	37%
Experienced local competition with Pulmonologists	45%	32%	30%

	1999	2004	2009/10
Experienced local cooperation with Dermatologists	26%	42%	51%
Experienced local cooperation with Pediatricians	26%	43%	52%
Experienced local cooperation with Internists	27%	40%	47%
Experienced local cooperation with Family physicians	32%	49%	52%

- In 2009/10, A/I physicians reported experiencing local competition from a number of physicians. Otolaryngologists (46 percent), other A/I physicians (37

percent), and pulmonologists (30 percent), were the most frequently reported as competitive.

- Levels of competition also varied by regions. While otolaryngologists were still the chief competitors for most regions, there were fewer A/I physicians reporting competition with otolaryngologists in the Pacific Census division, and more reporting competition with otolaryngologists in the East South Central and Mountain Census divisions.

	1999	2004	2009/10
Perceived that A/I physician supply greater than A/I physician demand	35%	37%	38%
Perceived that A/I physician supply equal to A/I physician demand	55%	52%	50%
Perceived that A/I physician supply less than A/I physician demand	10%	10%	12%

- In 2009/10, 50 percent of A/I physicians perceived that the supply of A/I physicians and demand for A/I services were balanced in their practice locales. Thirty-eight percent perceived that the supply of A/I physicians exceeded demand for A/I services. Twelve percent perceived that the supply of A/I physicians was falling short of the demand for A/I services. These perceptions were not substantially different from those reported by A/I physicians in 1999 and 2004.
- Aggregate perceptions of the relationship between A/I physician supply and demand for A/I services did vary regionally. In 2009/10, A/I physicians in the New England Census division were most likely to report that the local A/I physician supply was inadequate to meet demand for A/I services. A/I physicians in the East North Central and West South Central Census divisions were most likely to report that the local supply of A/I physicians exceeded the demand for A/I services. Regional changes between 2004 and 2009/10 were also observed. A/I physicians in the Mountain Census divisions showed the greatest increase in the percentage of physicians who perceived that the supply of A/I physicians exceeded the demand for A/I services. On the other hand, A/I physicians in the New England and Middle Atlantic Census divisions showed the greatest increase in the percentage of physicians who perceived that A/I physicians were in short supply.

Background: Allergy and Immunology Physician Workforce Studies

In order to place the data collected in 2009/10 in an appropriate context, it is important to recall the work done earlier related to the Allergy and Immunology (A/I) physician workforce. Starting in 1998, the Center for Health Workforce Studies (the Center) investigated a wide range of issues consulting a number of primary and secondary data sources in order to develop a comprehensive understanding of the dynamics affecting the supply of and demand for A/I physicians.

The Center's work began at a time when the number of physicians training in A/I had been declining for the better part of a decade. Concomitant to the decline in production was a national push by policy planners to reduce health care costs by encouraging the growth of managed care and promoting the expansion of the role of the primary care physicians. Many specialists were concerned about how these trends might affect their practices in the future. A number of specialty-specific physician workforce projects were undertaken nationally, including one commissioned by the American Academy of Allergy, Asthma and Immunology (the Academy).

To understand and determine the potential effects these trends were going to have on the A/I physician workforce, the Center initially conducted a comprehensive workforce study. The study entailed: 1) analysis of existing data obtained from the Academy membership database and the American Medical Association's (AMA) Masterfile of Physicians;[10] 2) a survey of the A/I physician workforce in the U.S.; 3) a survey of A/I fellowship program directors in 1999; and 4) a survey of A/I fellows completing training in 1999. The Center followed up by continuing the fellowship program directors and fellows completing training surveys through 2002;[11,12,13] conducting a brief analysis of the impact of managed care on A/I practice;[14] conducting a survey of second-year pediatrics and internal medicine residents on the factors they found influential when choosing a specialty;[15] and conducting two additional sample surveys of the A/I physician workforce related to issues of volunteerism[16] and the use of non-physician clinicians (nurse practitioners and physician assistants).[17]

The initial comprehensive workforce report, published in 2000, contained a number of interesting and important findings. Among them:

1. ***Since 1990, there has been a large swing in number of fellows training in A/I with a precipitous decline from 322 in 1990 to 209 in 1999 (35 percent) followed by a rapid increase from 207 in 2000 to 294 in 2009 (42 percent).***

In 1999, 41 percent of A/I fellowship program directors reported reducing the number of fellows in their programs in the prior three years. The most commonly cited reasons for reducing program size were reduced financial support for the program and difficulty attracting qualified applicants.[7] At the lowest point, it was estimated that just 84 physicians completed an A/I fellowship program in 1999. Production has increased to about 140 physicians completing A/I training annually in recent years.

Background Figure 1. Number of Graduate Medical Education Programs in Allergy and Immunology and Selected Specialties with Partially-Overlapping Scopes of Practice, 1990 – 2009

	Allergy and Immunology		Otolaryngology		Dermatology		Pulmonary Disease	
Year	Programs	Annual Percent Change	Programs	Annual Percent Change	Programs	Annual Percent Change	Programs	Annual Percent Change
1990	**86**	**0.0%**	107	0.9%	100	0.0%	176	-3.8%
1991	**86**	**0.0%**	106	-0.9%	101	1.0%	177	0.6%
1992	**85**	**-1.2%**	105	-0.9%	101	0.0%	177	0.0%
1993	**85**	**0.0%**	105	0.0%	101	0.0%	176	-0.6%
1994	**85**	**0.0%**	106	1.0%	103	2.0%	169	-4.0%
1995	**84**	**-1.2%**	108	1.9%	105	1.9%	170	0.6%
1996	**80**	**-4.8%**	105	-2.8%	101	-3.8%	177	4.1%
1997	**79**	**-1.3%**	105	0.0%	101	0.0%	162	-8.5%
1998	**77**	**-2.5%**	104	-1.0%	102	1.0%	159	-1.9%
1999	**73**	**-5.2%**	103	-1.0%	104	2.0%	158	-0.6%
2000	**72**	**-1.4%**	103	0.0%	105	1.0%	156	-1.3%
2001	**71**	**-1.4%**	103	0.0%	106	1.0%	153	-1.9%
2002	**70**	**-1.4%**	102	-1.0%	107	0.9%	152	-0.7%
2003	**71**	**1.4%**	102	0.0%	109	1.9%	152	0.0%
2004	**72**	**1.4%**	102	0.0%	111	1.8%	153	0.7%
2005	**72**	**0.0%**	103	1.0%	112	0.9%	153	0.0%
2006	**71**	**-1.4%**	104	1.0%	112	0.0%	154	0.7%
2007	**71**	**0.0%**	103	-1.0%	109	-2.7%	158	2.6%
2008	**73**	**2.8%**	103	0.0%	111	1.8%	155	-1.9%
2009	**73**	**0.0%**	103	0.0%	112	0.9%	155	0.0%
Change 2000-2009	***+ 1***	***1.4%***	*0*	*0.0%*	*+ 7*	*6.7%*	*-1*	*-0.6%*

Source: Medical Education Theme Issues of JAMA, 1991-2010.

Background Figure 2. Number of Graduate Medical Education Programs in Allergy and Immunology and Primary Care Specialties, 1990 – 2009

	Allergy and Immunology		Pediatrics		Internal Medicine		Family Medicine	
Year	Programs	Annual Percent Change	Programs	Annual Percent Change	Programs	Annual Percent Change	Programs	Annual Percent Change
1990	**86**	**0.0%**	215	-4.9%	426	-3.2%	383	0.0%
1991	**86**	**0.0%**	217	0.9%	427	0.2%	393	2.6%
1992	**85**	**-1.2%**	214	-1.4%	418	-2.1%	395	0.5%
1993	**85**	**0.0%**	215	0.5%	416	-0.5%	407	3.0%
1994	**85**	**0.0%**	215	0.0%	415	-0.2%	430	5.7%
1995	**84**	**-1.2%**	215	0.0%	416	0.2%	455	5.8%
1996	**80**	**-4.8%**	216	0.5%	417	0.2%	474	4.2%
1997	**79**	**-1.3%**	216	0.0%	415	-0.5%	489	3.2%
1998	**77**	**-2.5%**	209	-3.2%	410	-1.2%	502	2.7%
1999	**73**	**-5.2%**	208	-0.5%	403	-1.7%	502	0.0%
2000	**72**	**-1.4%**	209	0.5%	394	-2.2%	501	-0.2%
2001	**71**	**-1.4%**	208	-0.5%	390	-1.0%	497	-0.8%
2002	**70**	**-1.4%**	207	-0.5%	392	0.5%	481	-3.2%
2003	**71**	**1.4%**	202	-2.4%	388	-1.0%	477	-0.8%
2004	**72**	**1.4%**	204	1.0%	387	-0.3%	469	-1.7%
2005	**72**	**0.0%**	204	0.0%	388	0.3%	465	-0.9%
2006	**71**	**-1.4%**	201	-1.5%	386	-0.5%	464	-0.2%
2007	**71**	**0.0%**	197	-2.0%	384	-0.5%	463	-0.2%
2008	**73**	**2.8%**	194	-1.5%	382	-0.5%	457	-1.3%
2009	**73**	**0.0%**	196	1.0%	379	-0.8%	452	-1.1%
Change 2000-2009	***+ 1***	***1.4%***	*-13*	*-6.2%*	*-15*	*-3.8%*	*-49*	*-9.8%*

Source: Medical Education Theme Issues of JAMA, 1991-2010.

The decline in the number of fellows in A/I training programs lasted from 1991 through 1999. Since 2000, however, the trend has reversed, with a dramatic increase of 42 percent through 2009, from 207 fellows in training in 2000 to 294 in 2009.

A similar decline was also observed in the number of A/I training programs between 1991 and 1999, with the number of programs decreasing from 86 to 73. The decline in the number of programs entailed the closure of some programs and the merging of other programs. After 1999, the number of A/I training programs continued to decline for several years. But after 2002, the number of A/I training programs began to increase so that by 2009, there were, once again, 73 accredited A/I training programs in the U.S. The change in the number in A/I training programs since 2000 is similar to the trend observed in otolaryngology. Other specialties, including primary care specialties, have experienced a decline in the number of specialties over the same time period. On the

other hand, dermatology, a specialty observed to be in high demand nationally,[18,19] has seen an increase in the number of training programs over the previous decade.

Background Figure 3. Number of Physicians Training in Allergy and Immunology and Selected Specialties with Partially-Overlapping Scopes of Practice, 1990 – 2009

	Allergy and Immunology		Otolaryngology		Dermatology		Pulmonary Disease	
Year	Physicians in Training	Annual Percent Change	Physicians in Training	Annual Percent Change	Physicians in Training	Annual Percent Change	Physicians in Training	Annual Percent Change
1990	322	29.3%	1,002	-2.7%	824	-0.1%	725	-8.7%
1991	298	-7.5%	1,061	5.9%	859	4.2%	881	21.5%
1992	281	-5.7%	1,071	0.9%	861	0.2%	911	3.4%
1993	316	12.5%	1,192	11.3%	912	5.9%	948	4.1%
1994	297	-6.0%	1,221	2.4%	876	-3.9%	1,045	10.2%
1995	254	-14.5%	1,211	-0.8%	850	-3.0%	969	-7.3%
1996	214	-15.7%	1,197	-1.2%	851	0.1%	959	-1.0%
1997	205	-4.2%	1,171	-2.2%	853	0.2%	966	0.7%
1998	214	4.4%	1,149	-1.9%	840	-1.5%	984	1.9%
1999	209	-2.3%	1,113	-3.1%	870	3.6%	1,031	4.8%
2000	207	-1.0%	1,077	-3.2%	858	-1.4%	1,024	-0.7%
2001	219	5.8%	1,045	-3.0%	883	2.9%	1,072	4.7%
2002	255	16.4%	1,093	4.6%	932	5.5%	1,109	3.5%
2003	244	-4.3%	1,071	-2.0%	994	6.7%	1,104	-0.5%
2004	255	4.5%	1,090	1.8%	1,026	3.2%	1,150	4.2%
2005	244	-4.3%	1,208	10.8%	1,028	0.2%	1,184	3.0%
2006	274	12.3%	1,292	7.0%	1,069	4.0%	1,261	6.5%
2007	280	2.2%	1,329	2.9%	1,072	0.3%	1,317	4.4%
2008	288	2.9%	1,372	3.2%	1,069	-0.3%	1,347	2.3%
2009	294	2.1%	1,406	2.5%	1,080	1.0%	1,349	0.1%
Change 2000-2009	*+ 87*	*42.0%*	*+ 329*	*30.5%*	*+ 197*	*23.0%*	*+ 325*	*31.7%*

Source: Medical Education Theme Issues of JAMA, 1991-2010.

Background Figure 4. Number of Physicians Training in Allergy and Immunology and Primary Care Specialties, 1990 – 2009

	Allergy and Immunology		Pediatrics		Internal Medicine		Family Medicine	
Year	Physicians in Training	Annual Percent Change	Physicians in Training	Annual Percent Change	Physicians in Training	Annual Percent Change	Physicians in Training	Annual Percent Change
1990	322	29.3%	6,115	-4.4%	18,734	0.0%	6,680	-5.8%
1991	298	-7.5%	6,233	1.9%	18,662	-0.4%	6,610	-1.0%
1992	281	-5.7%	6,680	7.2%	19,191	2.8%	6,976	5.5%
1993	316	12.5%	7,460	11.7%	20,603	7.4%	7,976	14.3%
1994	297	-6.0%	7,394	-0.9%	20,693	0.4%	8,587	7.7%
1995	254	-14.5%	7,354	-0.5%	21,081	1.9%	9,261	7.8%
1996	214	-15.7%	7,618	3.6%	21,298	1.0%	10,049	8.5%
1997	205	-4.2%	7,613	-0.1%	21,714	2.0%	10,501	4.5%
1998	214	4.4%	7,728	1.5%	21,130	-2.7%	10,607	1.0%
1999	209	-2.3%	7,715	-0.2%	21,237	0.5%	10,533	-0.7%
2000	207	-1.0%	7,629	-1.1%	21,173	-0.3%	10,127	-3.9%
2001	219	5.8%	7,650	0.3%	20,914	-1.2%	9,799	-3.2%
2002	255	16.4%	7,699	0.6%	21,136	1.1%	9,603	-2.0%
2003	244	-4.3%	7,773	1.0%	21,351	1.0%	9,529	-0.8%
2004	255	4.5%	7,811	0.5%	21,322	-0.1%	9,373	-1.6%
2005	244	-4.3%	7,965	2.0%	21,885	2.6%	9,394	0.2%
2006	274	12.3%	7,964	0.0%	22,099	1.0%	9,465	0.8%
2007	280	2.2%	8,052	1.1%	22,026	-0.3%	9,330	-1.4%
2008	288	2.9%	8,089	0.5%	22,132	0.5%	9,353	0.2%
2009	294	2.1%	8,124	0.4%	22,292	0.7%	9,391	0.4%
Total Change								
2000-2009	*+ 87*	*42.0%*	*+ 495*	*6.5%*	*+ 1,119*	*5.3%*	*- 736*	*-7.3%*

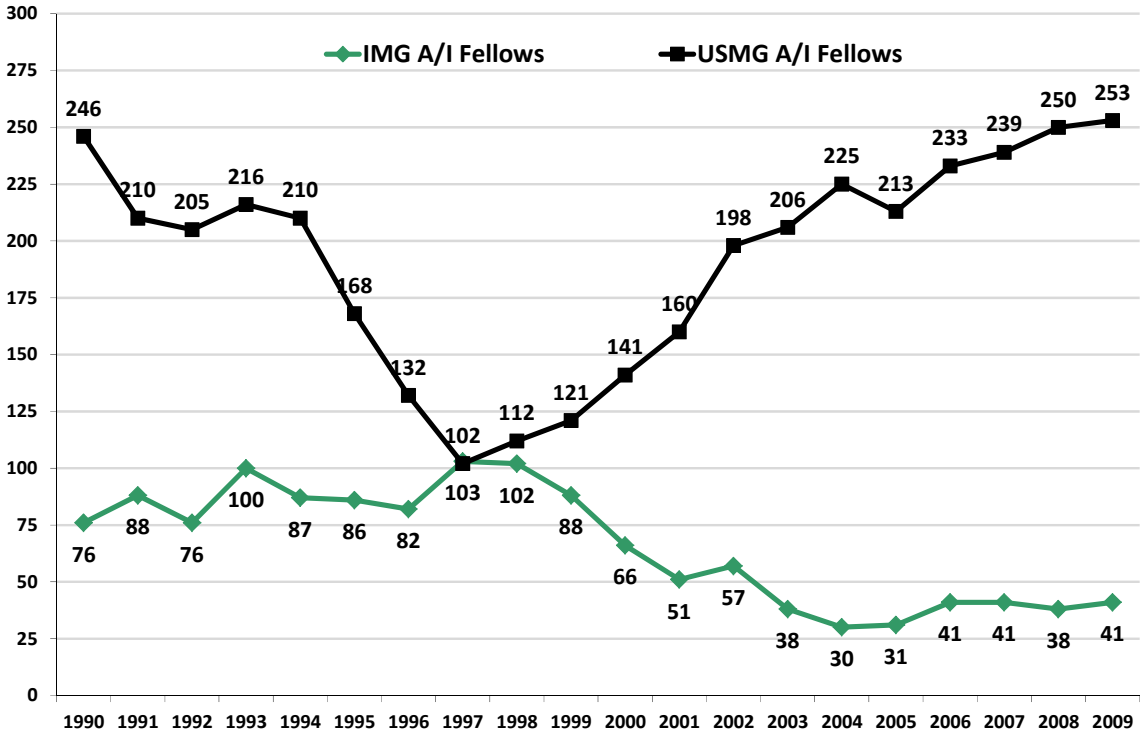
Source: Medical Education Theme Issues of JAMA, 1991-2010.

2. The composition of physicians training in A/I fellowship programs also experienced dramatic changes since 1990. The number of U.S. medical school graduates (USMGs) training in A/I fellowship programs declined drastically between 1990 and 1998, decreasing from 246 in 1990 to 102 in 1997 (59 percent decline). Since then, the number of USMGs training in A/I has increased each year. By 2009, there were 253 USMGs training in A/I fellowship programs.

The decline of USMGs training in the specialty had a number of important implications for the workforce. First, as the proportion of USMGs decreased, the proportion of international medical graduates (IMGs) increased. This was particularly problematic as it was found that as many as 25 percent of the IMG fellows had temporary visas, which when they expire require the physicians to return to their native country for a specified period of time before being eligible to return, thus reducing the effective production of A/I physicians even more. It was estimated that the 84 fellows completing A/I training in

1999 translated into 54 new full-time equivalent (FTE) A/I physicians with much of the loss due to IMG graduates leaving the country after completing training.[7]

Background Figure 5. Number of USMG and IMG Fellows Training in Allergy and Immunology, 1990 – 2009



Source: Graduate Medical Education Issues of JAMA, 1991-2010.

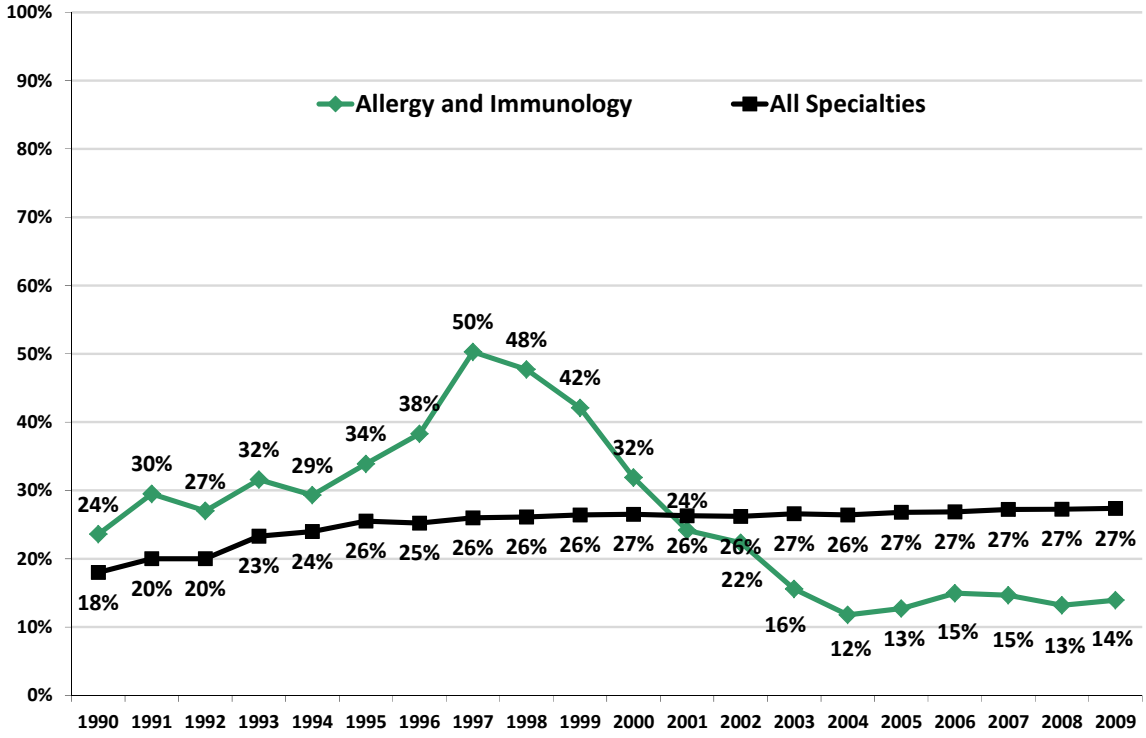
At the same time, there were a number of indications that interest in A/I fellowship programs by USMGs was beginning to increase. Program directors reported that potential fellows (pediatric and internal medicine residents) held positive and improving views of A/I. Program directors also predicted that practice opportunities would be more numerous in the future. Few fellows completing training in A/I reported difficulties finding satisfactory practice positions.[7]

Beginning in 1997, a dramatic turnaround in the composition of fellows training in A/I occurred. In that year, more than half of the fellows training in A/I were IMGs. After 1997, however, the number of IMGs training in the specialty decreased each year through 2004 when just 12 percent of the fellows training in A/I were IMGs. For the last five years, the number of IMGs training in A/I has remained at approximately 40.

Two other trends are important to note while examining the decline of IMGs training in the specialty. First, considering all graduate medical education in the U.S., the

percentage of all residents/fellows who are IMGs has remained at between 25 percent and 27 percent since 1995. Against this national backdrop, the changes observed within A/I training are that much more dramatic. Second, as mentioned above, the number of fellows in A/I training has increased substantially over the past decade, from its lows in the late 1990s to 294 in 2009. Thus, the observed decline in the percentage of fellows who are IMGs training in A/I is important as an indication of the renewed interest in the specialty by USMGs, as well as a boost to the effective production of A/I physicians who will practice in the U.S. This trend was also influential in decreasing the level of future A/I physician shortages forecast in 1999 and later updated in 2005 (see point 4 below).

Background Figure 6. Percentage of Residents/Fellows who are IMGs in Allergy and Immunology and All Specialties, 1990 – 2009



Source: Graduate Medical Education Issues of JAMA, 1991-2010.

3. The supply of A/I physicians has been undergoing demographic changes that have significant implications for the future of the specialty. These changes include an increase in the average age of A/I physicians and an increase in the participation of women in the specialty.

In terms of age, the previous workforce studies indicated that the A/I physician workforce was older, on average, than the general physician population in the U.S. In 1999, the age of the A/I physician supply was particularly important because production

of new A/I physicians was at such a low level. An older population of physicians indicated that, on average, A/I physicians were closer to retirement than the general physician population in the U.S. In fact, in 1999, 37 percent of core A/I physicians reported that they planned to stop providing A/I services within the next 10 years. Non-core A/I physicians reported even earlier plans to retire.[7] In 2004, the situation remained largely the same with the A/I physician supply still somewhat older than all physicians practicing in the U.S.[8]

Women have made (and continue to make) great strides in their participation in the physician profession. Between 1990 and 2004, the proportion of A/I physicians who were women increased from 10 percent to 25 percent. Moreover, representing nearly half of the A/I fellows in training for almost a decade and being the majority since 2007, women will continue to make up a larger proportion of A/I physicians over time. While the increase is welcomed and is a reflection of greater equity and opportunities for women and a broader choice for patients, the growing participation of women could lead to a decline in the availability of A/I services. Historically, female physicians work fewer hours than male physicians,[20,21,22,23] so as women increase among the supply of A/I physicians, there may be a decline in the availability of A/I services. At the same time, more recent research suggests that among the newest cohort of physicians, lifestyle issues are of concern to both women and men,[24,25,26,27] so the difference between their work hours is less among the newest cohort of physicians than it has been historically.

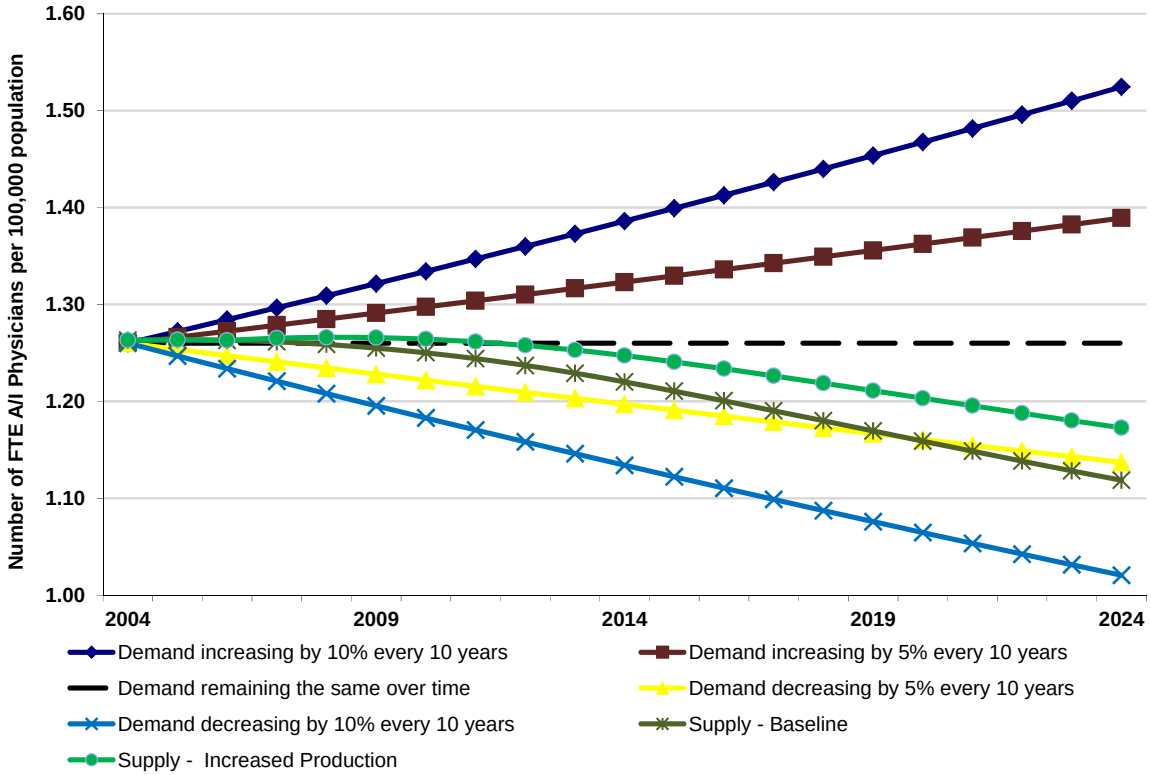
4. ***In light of the decrease in the number of new A/I physicians completing training observed in the 1990s and the aging of the current A/I physician supply, it was expected that the absolute number of A/I physicians and the ratio of A/I physicians to population would begin to decrease in the years subsequent to the study, leading to a decline in access to A/I physicians.***

In 1999, using data collected from A/I physicians, A/I fellowship program directors, and physicians completing training in the specialty, the Center forecast that there would be a significant decline in the supply of A/I physicians if the observed trends remained constant. Under the assumptions that demand remained constant and that the supply of A/I physicians in 1999 was slightly higher than demand, the conclusion drawn from the forecast was that there would be a shortage of A/I physicians within 10 years. Because the effective production rate was not keeping up with the retirement rate of

practicing A/I physicians, the supply of A/I physicians would soon drop below demand for A/I services. If demand for A/I services were to increase over time, the shortage would likely occur even sooner.

The Center revisited its forecasts considering the data collected in 2004 and the increase in production of new A/I physicians subsequent to 1999. The Center's forecasting models suggested that the supply of A/I physicians was likely to fall below demand levels in the future. While the updated forecasts indicated a brighter future than the 1999 forecasts, in the sense that the updated predicted shortages were smaller, it was still the case that the A/I physician supply was predicted to fall short of the level of the demand in the future. The factors driving the change in the forecasts were: 1) an increase in the number of fellows in training; 2) a decline in the number of IMGs among A/I fellows, generally, and specifically, a decline in the number of temporary visa-holding IMGs in training; 3) an increase in the number of hours spent in patient care per week by current A/I physicians; and 4) a slight reduction in the rate of anticipated separation from the A/I workforce.[9]

Background Figure 7. Allergy and Immunology Physician Supply and Demand Forecasts, 2004 – 2024



5. ***A trend toward increasing board certification of A/I physicians and greater access to similarly-trained, certified A/I physicians has been observed.***

As the specialty of allergy and immunology matured within medicine with establishment of the American Board of Allergy and Immunology (ABAI) in 1971 and growth in formalized fellowship training programs from the 1970s through the 1990s, etc., there has been a steady, long-term growth trend in the number of A/I physicians with formal training and who are certified by ABAI. As a result, patients with allergy and asthma-related conditions have greater access to formally-prepared specialists than ever before. In 1999, 86 percent of A/I physicians had completed a formal A/I fellowship program and 90 percent were board-certified in the specialty.[7] By 2004, 95 percent of A/I physicians had completed a formal A/I fellowship program and 91 percent were board-certified in the specialty.[8] Each year, the nation has experienced growth in access to high quality care from physicians providing A/I services.

6. ***Practice patterns among A/I physicians have been changing, and the Center observed significant differences between the practice patterns of older and younger A/I physicians.***

In the past, A/I physicians, like physicians in other specialties, were solo practitioners. While solo practice arrangements were still frequent among A/I physicians in 1999, like the general physician population, other practice arrangements (such as group practice) were becoming more common among A/I physicians. This was especially the case among younger A/I physicians who were much more likely to practice in group practice arrangements than older A/I physicians.[7] By 2004, nearly half of A/I physicians were practicing in groups and a fewer were working in solo practices compared to five years earlier. Among the youngest A/I physicians, 75 percent were working in group practices.[8]

Another A/I practice characteristic observed to change was the use of immunotherapy. Older A/I physicians were more likely to report treating higher percentages of their patients with allergy shots than younger A/I physicians were. Moreover, A/I physicians who had not completed an A/I fellowship program were much more likely to employ immunotherapy than those who had completed an A/I fellowship program.[7] These observations suggested that as the number of A/I physicians who had completed A/I fellowship programs increased, the use of immunotherapy might decrease. Data collected in 2004 showed a continuation of this trend, with older physicians more likely

to report treating higher percentages of their patients with allergy shorts than younger A/I physicians. At the same time, however, it was observed that use of immunotherapy across all age groups declined related to 1999.[8]

7. ***Finally, A/I physicians have been observed to be generally satisfied with their professional practice and see the future as holding more practice opportunities for A/I physicians.***

While a majority of A/I physicians reported limited practice opportunities available in their local communities in 1999, they were more optimistic about practice opportunities outside their local areas and future practice opportunities. That A/I physicians reported more numerous opportunities outside their local practice areas was indicative of the slight pressure they were feeling from local competition with other physicians and suggested that they were not overly concerned that demand for their services would shrink below supply levels or, conversely, that the supply of A/I physicians would swell above demand levels. Similar observations were made in 2004. There was some geographic variation in assessments of practice opportunities, with the A/I physicians in the Midwest seemingly less optimistic about current and future opportunities. Moreover, almost three-quarters of A/I physicians reported being satisfied professionally with their practices in 1999. By 2004, that figure had grown to 78 percent.

Results of the Survey of Physicians Providing Allergy and Immunology Services in the United States in 2009/10

1. Introduction

This section of the report is organized around a number of key issues in physician workforce research including: current practice status, demographics, training experiences, practice characteristics, competition with other physicians, employment opportunities, and plans for retirement. All results have been adjusted for response bias. See Appendices A and B for complete technical and methodological details regarding the conduct of the survey. See Appendix C for a copy of the 2009/10 survey instrument.

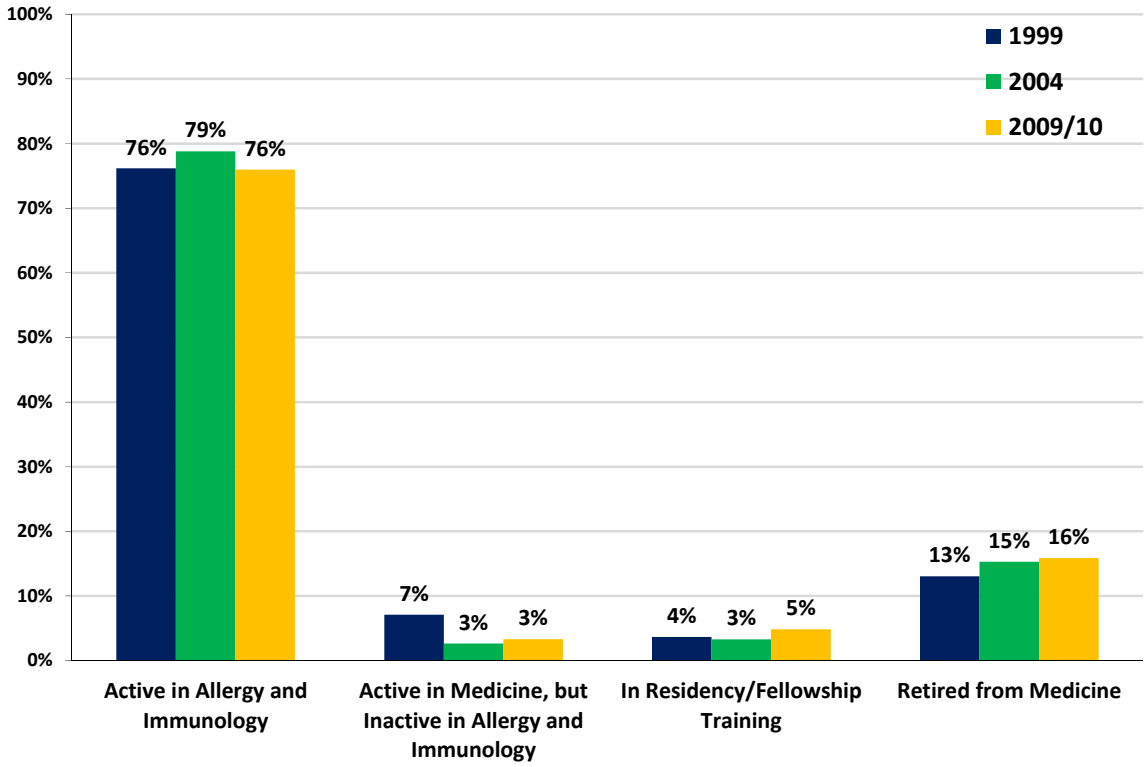
This section of the report also presents a number of comparisons with similar surveys conducted in 1999 and 2004. Where possible, comparisons are made with the general physician population in the U.S. and with A/I physicians in 1989.

2. Overview of Respondents

As Figure 1 indicates, in 2009/10 the vast majority (76 percent) of the population of physicians surveyed was actively practicing in the specialty. A significant percentage (16 percent) responded that they were retired from medicine. Five percent indicated that they were in graduate training, and 3 percent reported actively practicing medicine in a specialty other than A/I. In terms of numbers of physicians, of the physicians who met the criteria to receive the survey (see Appendix A), it is estimated that 4,446 were practicing A/I, 193 were practicing medicine in a specialty other than A/I, 285 were in graduate medicine training, and 928 were retired from medicine.

While not directly comparable due to differences in how physicians were selected to receive the survey, examining this distribution over time, more physicians reported being retired in 2009/10 than in previous iterations of the survey, more reported being in graduate training, and slightly more reported being in active A/I practice. The remainder of the report presents the survey responses of those currently practicing in the specialty. These physicians represent the A/I physician workforce (A/I physicians).

Figure 1. Current Professional Status of A/I Physicians, 1999 – 2009/10

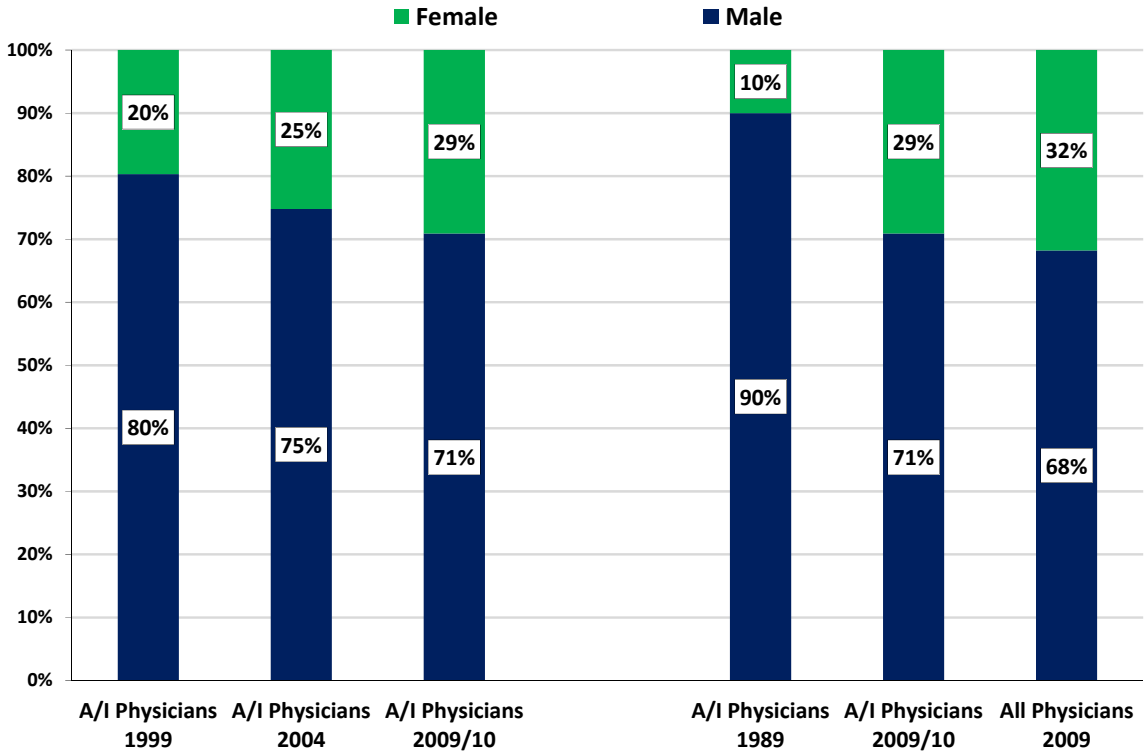


The following sections of the report analyze the responses of physicians currently practicing in A/I in terms of demographics, geographic location, practice characteristics and patterns, perspectives on the specialty, and the job market for physicians like themselves, as well as issues of competition with physicians from other specialties and medical liability insurance premiums. Where possible, the survey results are compared with a previously conducted, similar survey of physicians providing A/I services, as well as all physicians practicing in the U.S.

3. Demographic Characteristics of the A/I Physician Workforce

In 2009/10, 29 percent of the A/I physician workforce was female. As indicated in Figure 2, the relative proportion of women among the A/I physician workforce grew substantially between 1999 and 2009/10, from 20 percent to 29 percent. Looking back slightly further, in 1989, only 10 percent of the A/I physician workforce was female.28 Over the past 20 years, the relative proportion of women in the specialty has nearly tripled. The A/I physician workforce lags behind all physicians in terms of gender representation, as in 2009, about 32 percent of the physicians in the U.S. were women,[29] having increased from 25 percent in 1999 to 32 percent in 2009.[30]

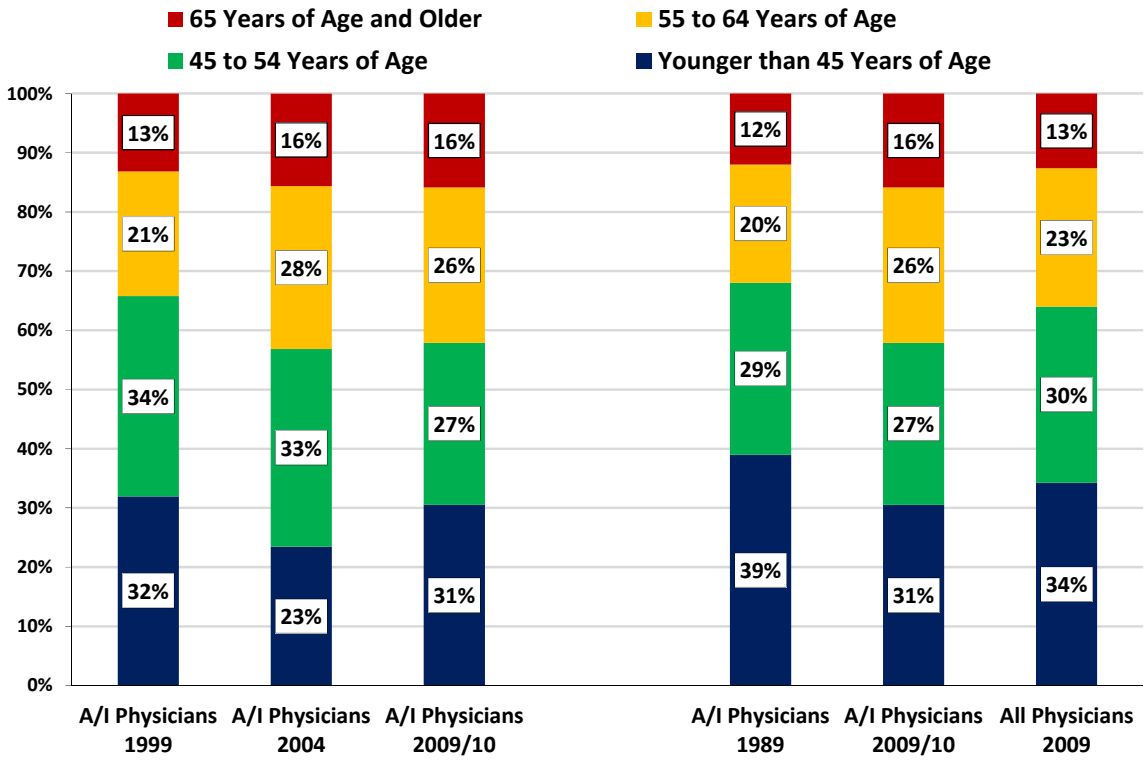
Figure 2. Gender Distribution of A/I Physicians, 1999 – 2009/10



The A/I physician workforce aged slightly between 1999 and 2009/10, with a median age of 52 years of age in 2009/10 compared to 50 years of age in 1999. Figure 3 shows changes in the age distribution over three iterations of the workforce survey. In 2009/10, 31 percent of the A/I physician workforce was younger than age 45, while 16 percent was age 65 or older. In 1999, 32 percent of the A/I physician workforce was younger than age 45, and 13 percent was age 65 or older. Moreover, the data also demonstrated the ramifications of the changes in the number of new A/I physicians produced each year. In the years 1999 and 2004, a dramatic change in the percentage of A/I physicians younger than age 45 was evident (32 percent compared to 23 percent, respectively). Between 2004 and 2009/10, the percentage of A/I physicians younger than age 45 increased as the number of new A/I physicians produced each year increased.

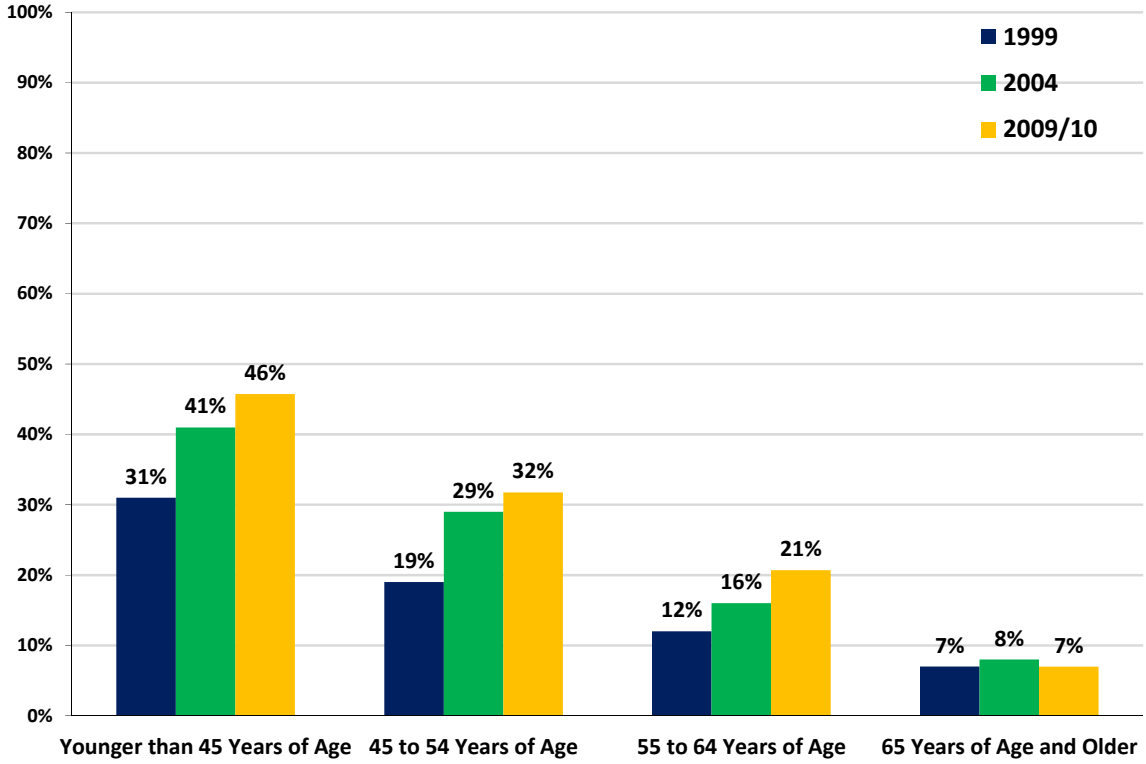
A/I physicians remain somewhat older than all physicians practicing in the U.S., with fewer physicians younger than age 55 (58 percent compared to 64 percent among all physicians) and more physicians age 55 or older (42 percent compared to 36 percent among all physicians).

Figure 3. Age Distribution of A/I Physicians, 1999 – 2009



The varied age distributions and increases in the representation of women in the A/I physician workforce come together more clearly in Figure 4 which presents the percentage of women in each of four age groups between 1999 and 2009/10. At every time point, the younger age groups of A/I physicians had significantly greater proportion of women than the older age groups. Examining the trend across the previous 10 years, it is clear that the representation of women continues to increase.

Figure 4. Representation of Women Among A/I Physicians by Age Group, 1999 – 2009/10

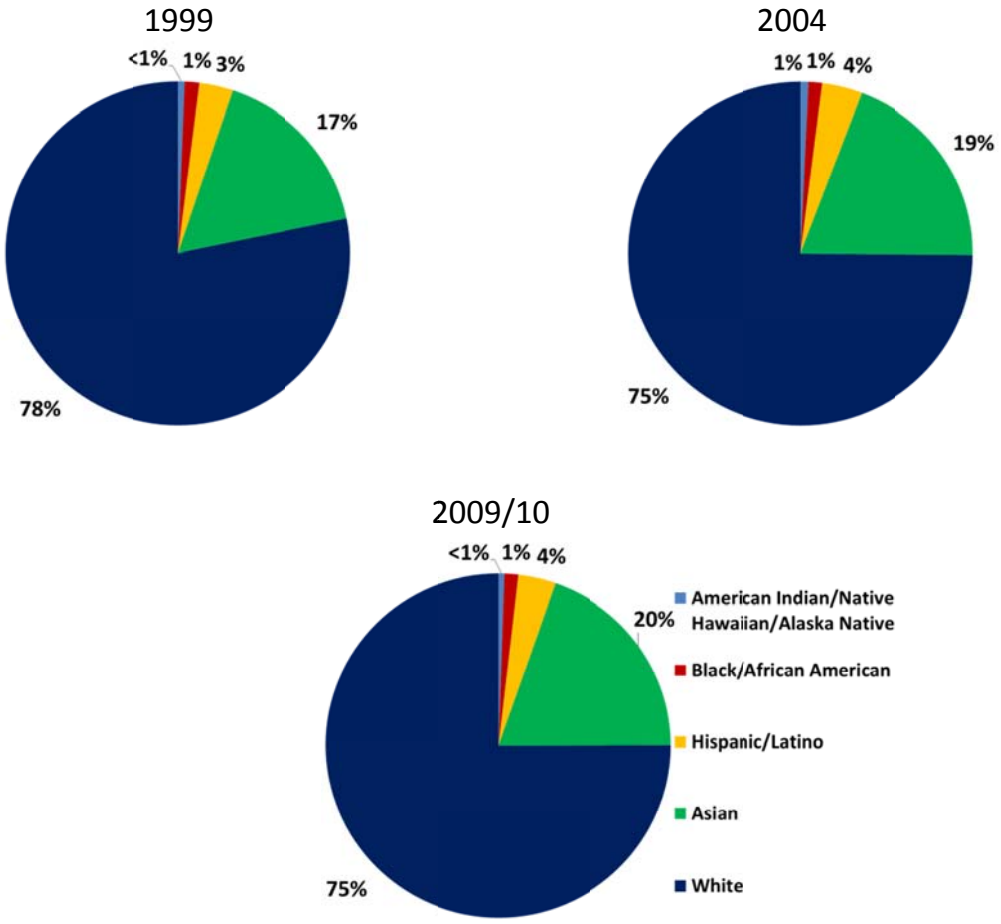


The workforce implications of this growth are debatable as there exists evidence[20,21,22,23] that women practice quantitatively less than their male counterparts. At the same time, there exists evidence[24,25,26,27] that the more recent cohorts of new physicians expect and are practicing medicine with more concern for lifestyle issues (e.g., more time with family, a more balanced work-to-leisure ratio, etc.). The Center's previous work suggested that A/I is a specialty that offers a more balanced lifestyle for physicians than other specialties. Thus, while certainly speculative, it may turn out that the specialty is more attractive than others for this reason, especially among the newer cohorts of physicians. The resurgence in interest and the increase in the number of fellows training in the specialty provide evidence that supports this speculation.

In terms of race/ethnicity (Figure 5), in 2009/10, three-quarters (75 percent) of the A/I physician workforce was White. Of the non-White A/I physicians, more than half were Asian. There were few underrepresented minorities (Blacks/African Americans, Hispanics/Latinos, American Indians, Native Hawaiians, and Alaska Natives) among the A/I physician workforce. Comparing 2009/10 to 1999, the A/I physician has become slightly more diverse: there were more Asian physicians in 2009/10 than in 1999.

Further, there were slightly more underrepresented minorities among the A/I physician workforce in 2009/10 (5 percent) than in 1999 (3 percent). Between 2004 and 2009/10, the data did not indicate any significant changes.

Figure 5. Race/Ethnicity Distribution of A/I Physicians, 1999 – 2009/10



There were approximately 1.43 A/I physicians per 100,000 population in the U.S. in 2009/10, unchanged from 2004. The A/I physician workforce, however, was not distributed evenly across the country. Figures 6 and 7 show the A/I physician-to-population ratios for the nation and for the nine Census divisions. The northeastern part of the country (New England and Middle Atlantic Census divisions) had higher ratios of A/I physicians to population than other parts of the country. In the West South Central Census division (Arkansas, Louisiana, Oklahoma, and Texas) and in the Mountain Census division (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming), there were fewer A/I physicians per population than in other parts of the country.

Figure 6. Geographic Distribution of A/I Physician Workforce in the U.S., 2009/10

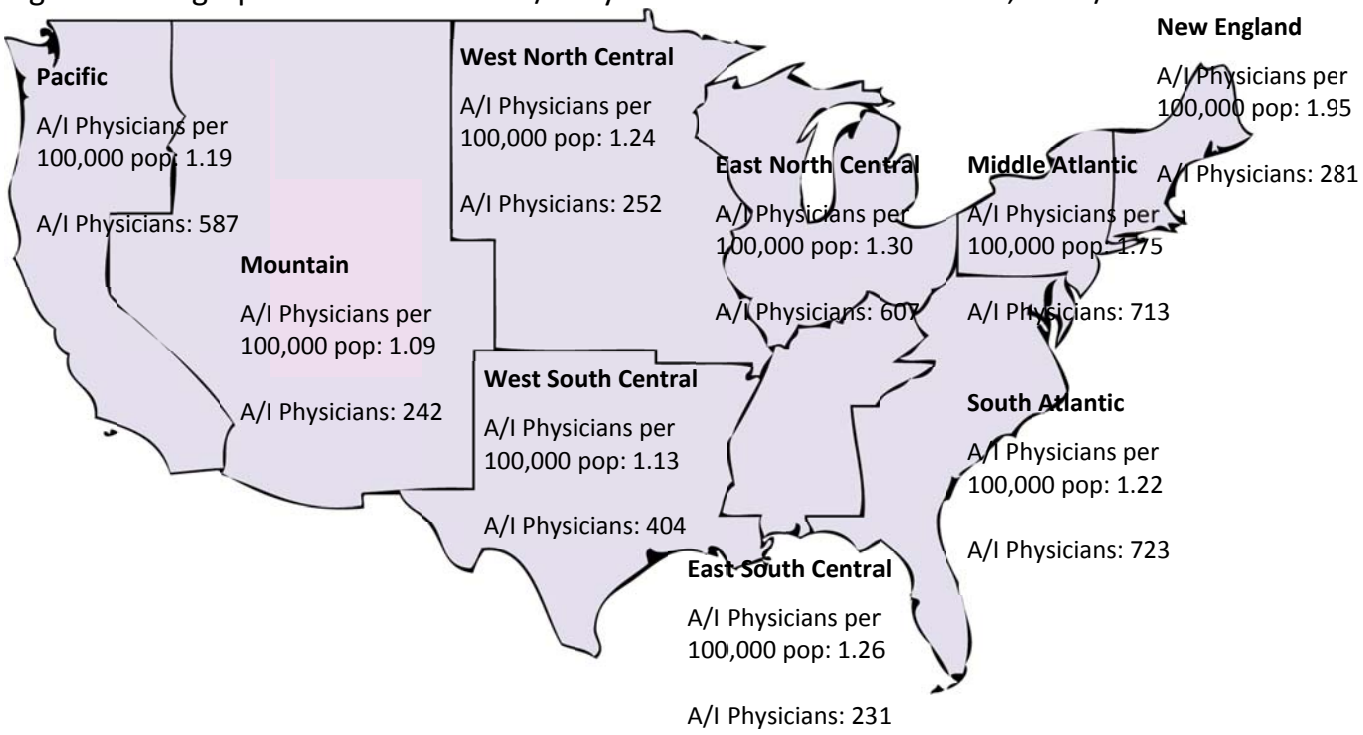


Figure 7. A/I Physician to Population Ratios by Census Division, 1999 – 2009/10

	Population (000s)			A/I Physicians per 100k Pop		
	1999	2004	2009/10	1999	2004	2009/10
New England	13,430	14,239	14,430	2.01	1.52	1.95
Middle Atlantic	38,292	40,332	40,854	2.16	2.00	1.75
East North Central	44,195	46,032	46,501	1.40	1.36	1.30
West North Central	18,695	19,698	20,336	1.49	1.31	1.24
South Atlantic	48,945	55,183	59,196	1.51	1.33	1.22
East South Central	16,471	17,480	18,271	1.34	1.12	1.26
West South Central	30,014	33,282	35,851	1.47	1.29	1.13
Mountain	16,813	19,799	22,123	1.46	1.04	1.09
Pacific	43,444	47,610	49,445	1.49	1.27	1.19
Other U.S. Territories	380	389	397	0.47	0.49	0.44
United States	**274,099**	**297,550**	**310,974**	**1.59**	**1.43**	**1.43**

The ratio of A/I physicians to population declined between 1999 and 2004, and remained at approximately the same level through 2009/10. Overall, the supply of A/I physicians declined from 1.59 per 100,000 population in 1999 to 1.43 in 2009/10. The parts of the country most affected by the decline were the Mountain Census division, the West South Central Census division, and the Pacific Census division (Alaska, California, Hawaii, Oregon, and Washington), each losing more than 20 percent of their respective A/I physician supply between 1999 and 2009/10. The observed decline in

supply was the effect of the decline of A/I fellowship training in the 1990s described previously. Consequently, when older A/I physicians left practice between 1999 and 2004, there were not enough newly-trained A/I physicians to replace them. Since 2000, the number of fellows-in-training has increased markedly and it appears to have been enough to stabilize the supply of A/I physicians.

Demographically, the supply of A/I physicians varied by region as well. Figure 8 presents the age, gender, and medical school location distributions for A/I physicians in 1999, 2004, and 2009/10. Overall, in 2009/10, 29 percent of A/I physicians were women, 18 percent were graduates of international medical schools, and the mean age of the A/I physician workforce was 52. In each of these characteristics, there was regional variation. First, A/I physicians in the Pacific Census division and in the Middle Atlantic Census division (New Jersey, New York, Pennsylvania) were the oldest, both in terms of the mean age of the A/I physicians practicing in those divisions and the percentage of A/I physicians age 65 or older. A/I physicians in the Middle Atlantic Census division were most likely to be women, while A/I physicians in the East North Central (Illinois, Indiana, Michigan, Ohio, and Wisconsin) Census division were most likely to be IMGs. The New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) Census division, the West South Central Census division, and the Pacific Census division had the lowest percentage of IMGs.

Figure 8. Regional Demographics of A/I Physicians, 1999 – 2009/10

	Mean Age			% Female			% IMG			% 65 + Years of Age		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
New England	52	54	53	13%	18%	24%	16%	18%	12%	14%	11%	17%
Middle Atlantic	51	54	54	25%	32%	33%	29%	30%	24%	15%	17%	19%
East North Central	51	52	51	23%	27%	30%	26%	26%	26%	15%	12%	12%
West North Central	50	53	53	17%	20%	28%	16%	11%	13%	9%	15%	17%
South Atlantic	49	51	50	18%	24%	30%	18%	17%	17%	9%	13%	13%
East South Central	50	51	50	19%	24%	31%	11%	11%	15%	11%	13%	10%
West South Central	51	55	50	20%	24%	29%	19%	16%	12%	15%	22%	13%
Mountain	52	54	52	13%	19%	27%	14%	18%	17%	12%	17%	15%
Pacific	52	55	54	18%	23%	27%	16%	17%	12%	13%	18%	24%
United States	51	53	52	20%	25%	29%	20%	20%	18%	13%	16%	16%

Comparing 2009/10 with 1999, each division experienced a growth in the relative proportion of women among the A/I physician workforce of between 7 percent and 14 percent. Between 1999 and 2009/10, the overall percentage of A/I physicians who were IMGs decreased from 20 percent to 18 percent. The greatest declines in the percentage of A/I physicians who were IMGs were in the New England, Middle Atlantic, and Pacific Census divisions. Increases in the percentage of A/I physicians who were IMGs were in the West South Central Census division. In terms of age, between 1999 and 2004, each

Census division experienced a similar aging of their A/I physician workforce. Between 2004 and 2009/10, while most Census divisions became younger, the Middle Atlantic and West North Central (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota) remained the same. The greatest decline in age between 2004 and 2009/10 was experienced in the West South Central division.

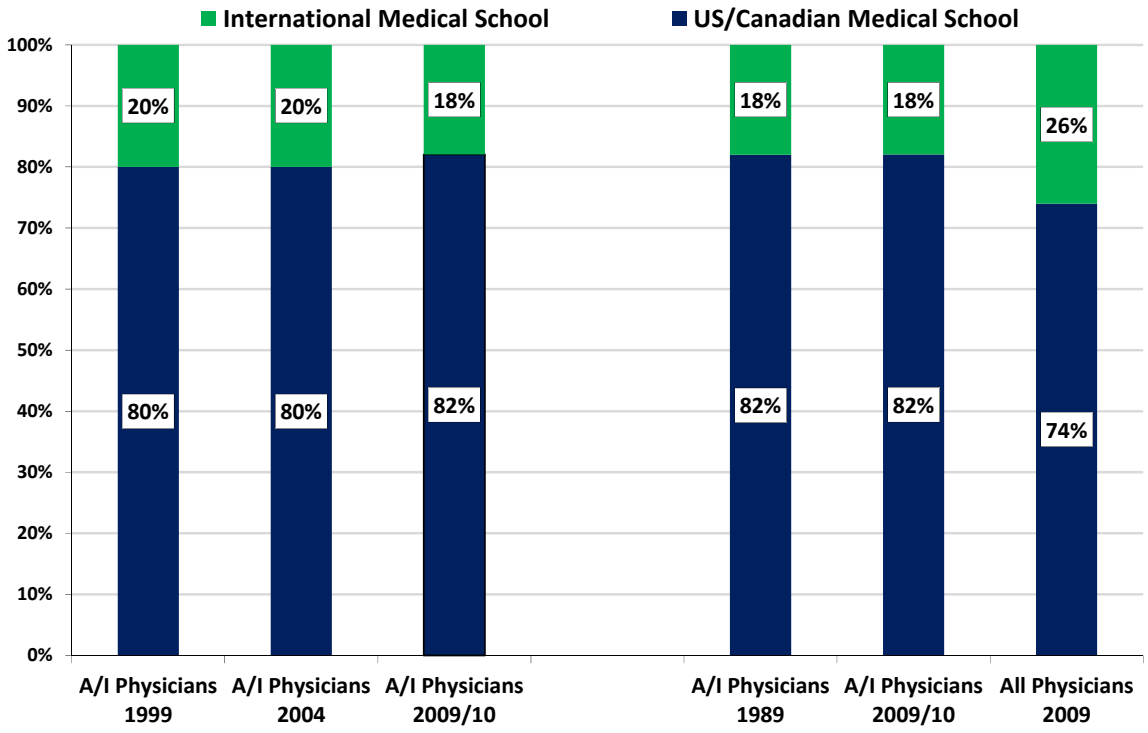
4. Professional Training Characteristics of the A/I Physician Workforce

In this section, data relating to A/I physicians' undergraduate medical education, graduate medical education, and board certification status are presented.

In 2009/10, 82 percent of A/I physicians had graduated from a medical school in the U.S. or Canada, and 18 percent had graduated from international medical schools (Figure 9). These percentages were slightly lower than in 1999 and 2004. Looking back even further in time, the percentage of A/I physicians who graduated from international medical schools has remained remarkably stable since 1989, with a small uptick in the late 1990s and early 2000s. The lack of change in the proportion of IMGs among the A/I physician workforce is somewhat surprising because in the mid to late 1990s, the decline in the number of fellows training in A/I was largely driven by an exodus of fellows from U.S. medical schools. In fact, in the late 1990s, a majority of the graduating fellows were IMGs. The recent surge in fellowship training, however, has reversed the trend with increases in the number of fellows overall and from U.S. medical schools and significant declines in the number of international medical school fellows.

Compared to all physicians practicing in the U.S., the percentage of IMGs among A/I physicians remains lower.

Figure 9. Medical School Location of A/I Physicians, 1999 – 2009/10



The vast majority of A/I physicians entered the specialty after completing a pediatric or internal medicine residency program. In 2009/10, more than half (51 percent) of A/I physicians had completed training in pediatrics and 49 percent had completed internal medicine training. The few remaining A/I physicians were trained in otolaryngology (less than 1 percent) and other specialties (1 percent). Between 1999 and 2009/10, the percentage of A/I physicians who were trained in internal medicine increased, while the percentage trained in pediatrics remained about the same. It should be noted that the declines in the percentages of A/I physicians with training in otolaryngology and other specialties between 2004 and 2009/10 were due to restrictions in the targeting of the workforce survey.

Figure 10. Initial Residency Training of A/I Physicians, 1999 – 2009/10

	Internal Medicine	Pediatrics	Otolaryngology	Other
A/I Physicians 1989	43%	48%	2%	7%
A/I Physicians 1999	41%	52%	3%	4%
A/I Physicians 2004	47%	52%	Less than 1%	2%
A/I Physicians 2009/10	49%	51%	Less than 1%	1%

Examining the initial residency training of A/I physicians more closely, Figure 11 presents the training experiences of A/I physicians by age group. There is a clear linear trend of smaller percentages of A/I physicians training in otolaryngology and other specialties over time, with the oldest groups of A/I physicians having the largest percentages of training in otolaryngology and other specialties and the youngest groups of A/I physicians have far smaller percentages. Moreover, comparing the 1999 and 2004 survey responses, evidence of this trend also appears, with smaller percentages of otolaryngology and other specialty training in each age group over time. Speculation based on these data suggests that eventually all A/I physicians will have completed training in pediatrics or internal medicine as the members of the A/I physician workforce who started practicing A/I prior to the requirements of initial pediatrics or internal medicine training age out of the workforce.

Figure 11. Initial Residency Training of A/I Physicians by Age Group, 1999 – 2009/10

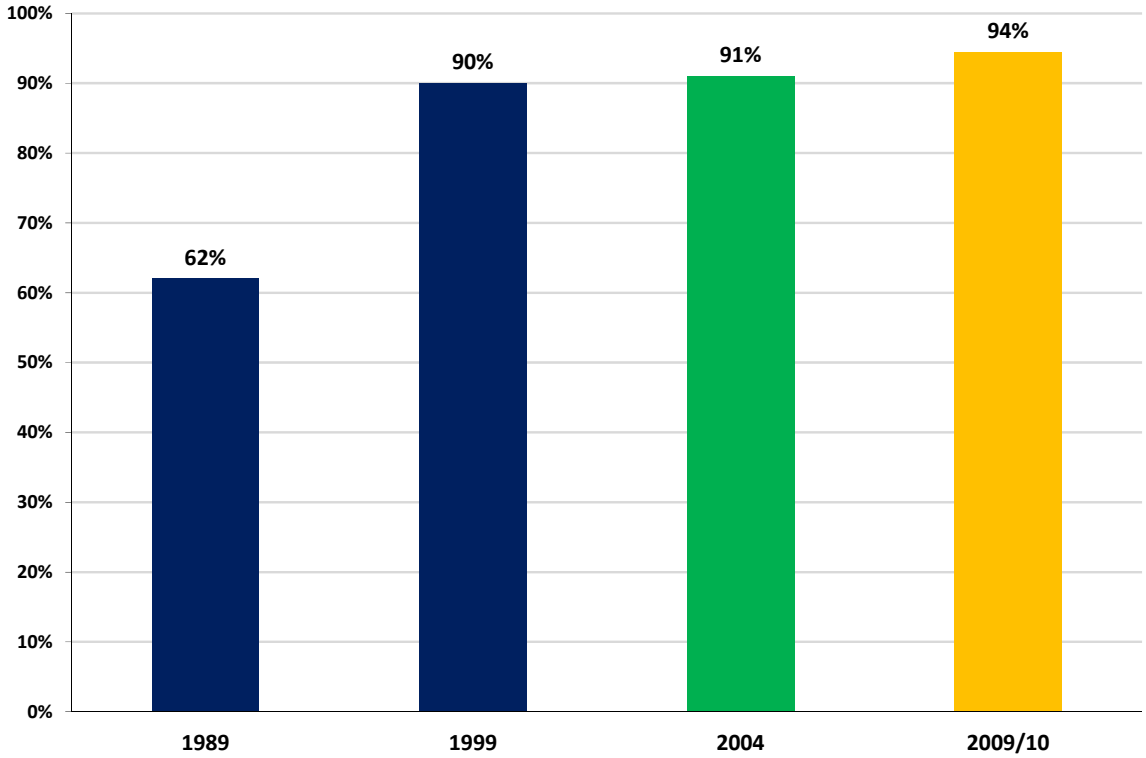
	Internal Medicine			Pediatrics			Otolaryngology			Other		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 Years of Age	50%	58%	59%	48%	44%	45%	1%	0%	0%	1%	0%	1%
45 to 54 Years of Age	37%	48%	54%	59%	53%	46%	2%	0%	0%	3%	1%	1%
55 to 64 Years of Age	38%	37%	37%	51%	62%	62%	5%	0%	0%	4%	2%	1%
65 Years of Age and Older	36%	49%	47%	48%	46%	52%	6%	1%	0%	10%	5%	2%

Figure 12. Source of A/I Physicians' Formal Allergy and Immunology Training, 1999 – 2009/10

	1999	2004	2009/10
A/I Fellowship/Residency	86%	95%	97%
Otolaryngology Fellowship/Residency	2%	0%	0%
Other Fellowship/Residency	6%	4%	3%
Short Courses	10%	3%	1%
None	1%	1%	1%

Figure 12 presents the distribution of the various sources of A/I training among current A/I physicians. In 2009/10, 97 percent of A/I physicians reported having completed a formal A/I fellowship training program. Three percent reported having received A/I training in the course of a residency or fellowship in another specialty. One percent reported having been trained through short courses. Only 1 percent reported no formal training in the specialty. Comparing the data over the entire time period, the trend suggests a continued movement toward a physician workforce with a more standardized set of training experiences, with more physicians reporting A/I fellowships and fewer reporting other specialty training or short courses.

Figure 13. Board Certification in Allergy and Immunology of A/I Physicians, 1999 – 2009/10



A/I physicians reported a high level of board certification in A/I (Figure 13). Ninety-four percent reported being board certified in 2009/10. This level represented a slight increase compared to 1999 and 2004. Moreover, the large increase in the percentage of A/I physicians who were board-certified since 1989 implied an overall increase in the quality of care provided by A/I physicians. Further, A/I physicians were also very likely to report being board certified in internal medicine (46 percent) or pediatrics (48 percent) (Figure 14).

Figure 14. Other Board Certifications of A/I Physicians, 1999 – 2009/10

	1999	2004	2009/10
Internal Medicine	36%	44%	46%
Pediatrics	50%	50%	48%
Otolaryngology	9%	1%	0%
Other Specialty	11%	0%	7%

In summary, this section presented data on the training characteristics of the current A/I physician workforce. The data show that the A/I physicians workforce is a highly-trained, highly-qualified group of physicians. Examining the survey observations collected in 1999, 2004, and 2009/10, a clear trend toward a more consistently trained workforce was evident as well.

5. Current Practice Characteristics of the A/I Physician Workforce

In this section, current A/I practice characteristics are the focus. The section begins with an examination of how A/I physicians spend their professional time; moves into the organization and medical aspects of A/I practice, practice activity, capacity, and productivity; and concludes with an examination of practice satisfaction.

a) General Overview

The median number of hours an A/I physician spends per week in a variety of professional activities is shown in Figure 15. On average, an A/I physician spends almost 37 hours per week in A/I patient care and slightly more than a half-hour in other patient care for a total of 37.5 hours in patient care per week. A/I physicians spend less than two hours a week in research activities, dividing the time fairly evenly between clinical trials, investigator-initiated clinical research, and bench research. Teaching and administrative duties round out the professional week for A/I physicians, taking up about an hour per week each. In the 10-year period between 1999 and 2009/10, the weekly activity distribution did not change substantially with the exception of A/I patient care hours, which increased by three and a half hours per week.

Figure 15. Median Hours per Week Spent in Selected Professional Activities, A/I Physicians, 1999 – 2009/10

	1999	2004	2009/10
A/I Patient Care Hours	33.4	35.3	36.9
Other Patient Care Hours	0.7	0.7	0.6
A/I Clinical Trials Hours	0.6	0.6	0.6
A/I Research Hours	0.6	N/A	N/A
A/I Investigator-Initiated Clinical Research	N/A	0.6	0.6
A/I Bench Research	N/A	0.5	0.5
A/I Diagnostic Laboratory Research	N/A	0.5	N/A
A/I Teaching	0.9	1.0	0.9
A/I Administrative Hours	0.9	0.8	1.0
Other Non-A/I Hours	N/A	0.7	0.6
Total Hours	37.2	40.7	41.7

Note: Due to difference in the wording of the survey items, direct comparison of the data on professional activities across the time points should be limited to categories where data appear in all three columns (e.g., A/I patient care; Other patient care, etc.).

The small increase in median hours spent in A/I patient care produced an increase in the number of FTE A/I physicians between 1999 and 2004. In previous work,[7] we determined that an FTE was approximately 38.4 hours per week in A/I patient care. Applying that standard to the survey data from 1999, 2004 and 2009/10, there was a total of 3,561 A/I physician patient care FTEs in 1999, 3,698 in 2004, and 3,962 in 2009/10 (Figure 16). While the increase in FTEs mitigated the decrease in the number of A/I physicians between 1999 and 2004, it was not great enough to keep up with the overall growth in the U.S. population. Thus, a decline in the ratio of A/I patient care FTEs occurred between 1999 and 2004, moving from 1.31 per 100,000 population to 1.24 per 100,000 population in 2004 (Figure 17). With the increased production of new A/I physicians in the subsequent years and the rise in the number of hours spent providing patient care services, the A/I patient care FTE to 100,000 population ratio increased between 2004 and 2009/10 from 1.24 to 1.27.

Figure 16. A/I Physician Patient Care FTEs, 1999 – 2009/10

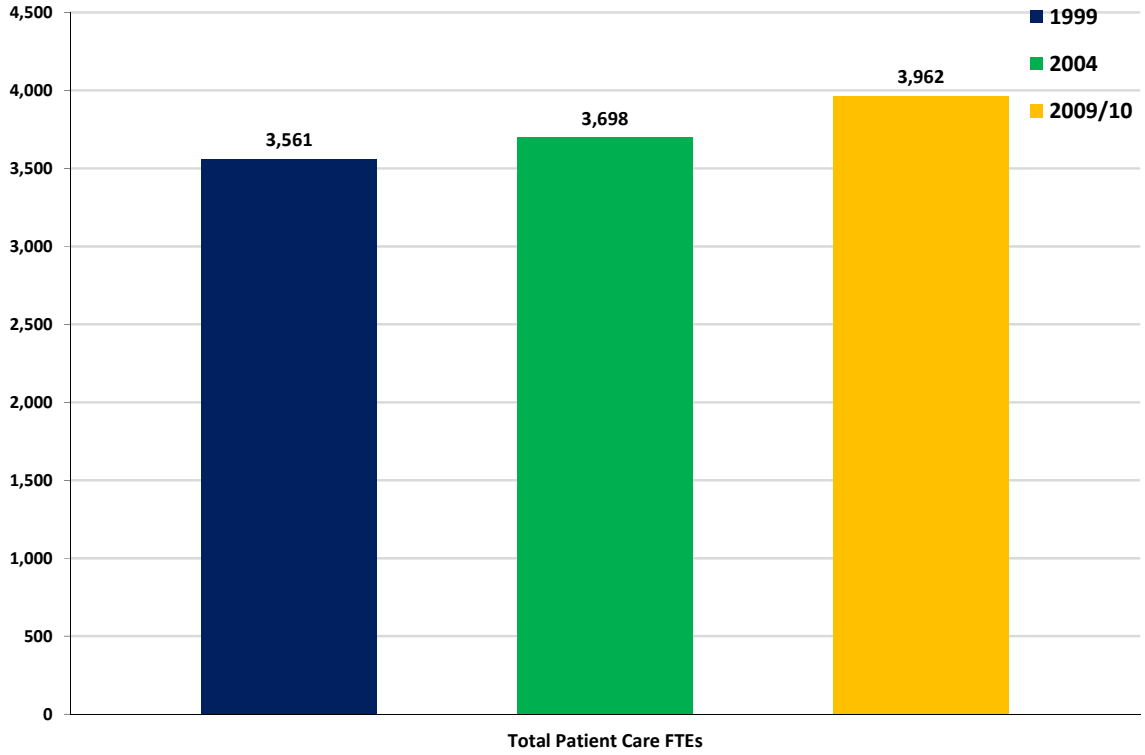


Figure 17. A/I Physician to Population and Patient Care FTE to Population Ratios by Region, 1999 – 2009/10

	Population (000s)			A/I Physicians per 100k Population			A/I Patient Care FTEs per 100k Population		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
New England	13,430	14,239	14,430	2.01	1.52	1.95	1.60	1.38	1.83
Middle Atlantic	38,292	40,332	40,854	2.16	2.00	1.75	1.76	1.75	1.65
East North Central	44,195	46,032	46,501	1.40	1.36	1.30	1.18	1.25	1.27
West North Central	18,695	19,698	20,336	1.49	1.31	1.24	1.24	1.24	1.20
South Atlantic	48,945	55,183	59,196	1.51	1.33	1.22	1.25	1.15	1.21
East South Central	16,471	17,480	18,271	1.34	1.12	1.26	1.12	1.08	1.30
West South Central	30,014	33,282	35,851	1.47	1.29	1.13	1.30	1.21	1.13
Mountain	16,813	19,799	22,123	1.46	1.04	1.09	1.18	0.93	1.17
Pacific	43,444	47,610	49,445	1.49	1.27	1.19	1.26	1.15	1.12
Other U.S. Territories	380	389	397	0.47	0.49	0.44	0.37	0.34	0.39
United States	**274,099**	**297,550**	**310,974**	**1.59**	**1.43**	**1.43**	**1.31**	**1.24**	**1.27**

In 2009/10, the regional distribution of A/I patient care FTEs followed a similar pattern as the total A/I physician distribution. The highest patient care FTE per 100,000 population ratios were found in the New England and Middle Atlantic Census divisions, followed by the East North Central, East South Central, and West North Central

divisions. The Mountain and the West South Central Census divisions had the lowest A/I patient care FTEs per 100,000 population ratios in the country.

Between 1999 and 2004, in nearly all of the Census divisions, there were increases in the number of patient care FTEs. However, the increases were not enough in most divisions to keep up with the growth in the populations of those divisions. In slower growing divisions (e.g., Middle Atlantic, East North Central, West North Central), the ratio of A/I patient care FTEs per 100,000 population was relatively stable, even growing in the East North Central. In the faster growing divisions (e.g., Mountain and South Atlantic), the ratio of A/I patient care FTEs per 100,000 declined. The mitigation of A/I patient care FTE decline due to A/I physicians spending greater numbers of hours in patient care per week that was observed nationally can also be observed regionally. The regional supply of A/I patient care physician FTEs decreased much less pronouncedly than the total number of A/I physicians decreased between 1999 and 2004. For example, the New England Census division experienced a 24 percent decline in the number of A/I physicians per 100,000 population between 1999 and 2004, but only a 14 percent decline in FTEs per 100,000 population.

Extending the analysis to 2009/10, some different trends emerged. Due to the growth in the A/I physician supply nationally, the number of A/I physicians per 100,000 population remained the same between 2004 and 2009/10. Moreover, due to the continued increase in the number of hours A/I physicians spent per week providing A/I patient care services, the number of A/I physician FTEs per 100,000 increased slightly from 1.24 to 1.27. Geographically, changes in A/I physician supply also varied. In the New England, East North Central, South Atlantic, East South Central, and Mountain Census divisions, there were increases in the number of A/I physician FTEs per 100,000 population. On the other hand, in the Middle Atlantic, West North Central, West South Central, and Pacific Census divisions, the number of A/I physician FTEs per 100,000 population declined.

Figure 18. Median A/I Patient Visits per Week to A/I Physicians by Age of Physician, 1999 and 2009/10

	1999	2004	2009/10
Younger than 45 Years of Age	55	51	50
45 to 54 Years of Age	61	62	61
55 to 64 Years of Age	53	62	64
65 Years of Age and Older	44	46	48

Figure 18 presents the median A/I patient visits per week by physician age reported by A/I physicians in 1999, 2004, and 2009/10. Overall, A/I physicians had 56 A/I patient visits per week in 2009/10. That figure was slightly lower than was reported in 2004 (57) and slightly higher than was reported in 1999 (55). This figure has remained remarkably stable over the past decade. The data also showed that the number of A/I patient visits per week increased with age of the physician until the oldest age category was reached and then patient visits decline dramatically. This pattern held across each of the time periods, except that the decline in patient visits began earlier in 1999 (55-64 years of age group), suggesting that more recently, A/I physicians have been maintaining higher levels activity for longer portions of their careers than they had in the past.

b) Organization of Practice

In 2009/10, a majority (53 percent) of the A/I physician workforce was practicing in group practice arrangements, while 28 percent of the workforce was practicing in solo practice arrangements (Figure 19). About 14 percent of the A/I physician workforce was practicing in medical centers, academic or otherwise. There were more A/I physicians working in group practices in 2009/10 than in 2004 and 1999, and at the same time, there were fewer working in solo practice arrangements. These changes follow the overall trend in medical practice toward the group practice that has been occurring for more than a decade.

Examining the percentage of A/I physicians who practiced in solo and group practice arrangements by age illuminates the trend. Considering the 2009/10 survey responses in Figure 20, there is a clear pattern evident that solo practice arrangements were more common among older A/I physicians. In the 2004 and 1999 survey responses, the same pattern is evident. These data suggest that the trend toward consolidation of practices into groups is continuing. In the 2009/10 survey, group practices were further

delineated into three categories: small single specialty group, large single specialty group, and multispecialty group. Figure 21 shows the distribution across these three groups. Three-quarters (75 percent) of A/I physicians practicing in groups were practicing in single specialty groups, with somewhat more practicing in small groups (two or three physicians) than in larger groups (four or more physicians). One-quarter (25 percent) of A/I physicians practicing in groups were practicing in multispecialty groups.

Figure 19. Primary Practice Setting Distribution of A/I Physicians, 1999 – 2009/10

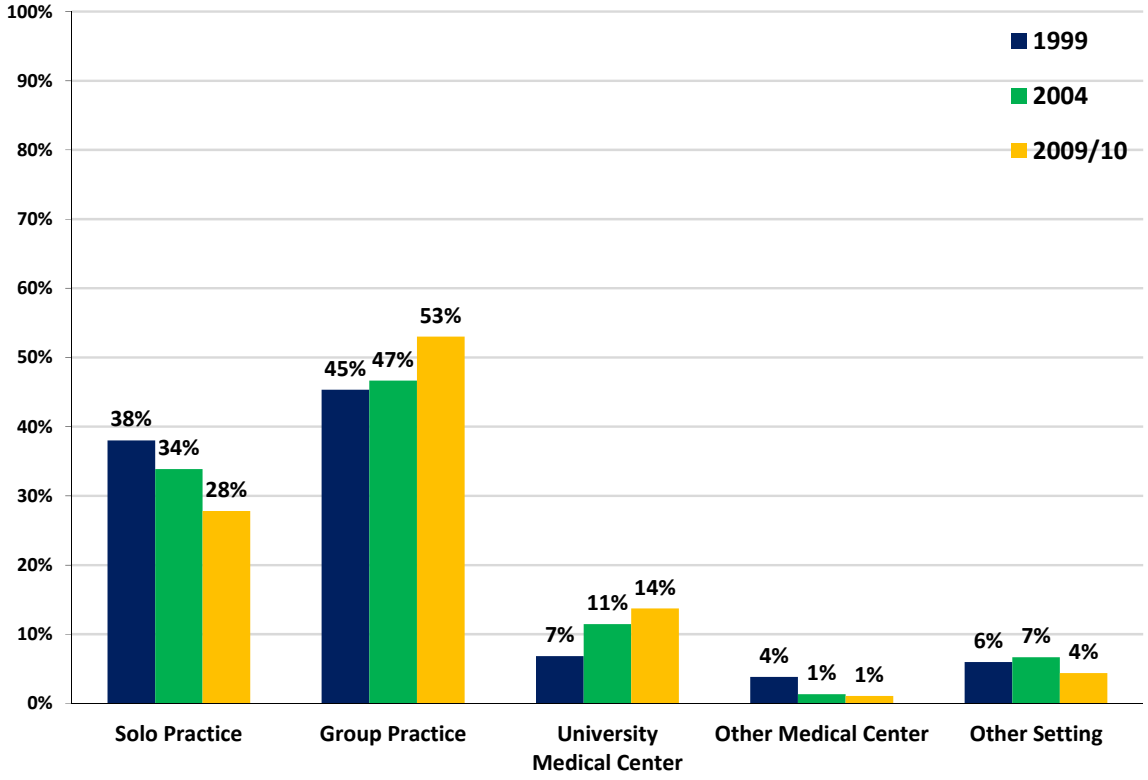
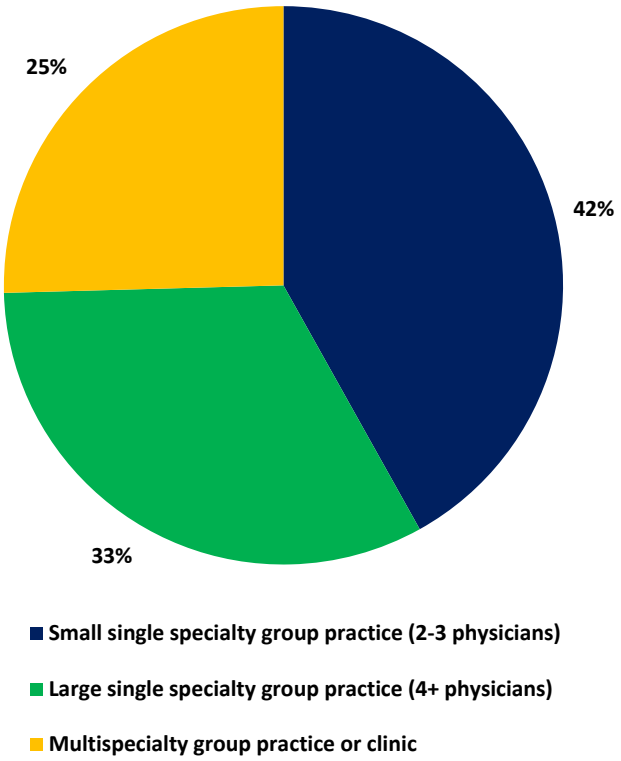


Figure 20. Percentage of A/I Physicians Working in Solo and Group Practice Settings by Age, 1999 – 2009/10

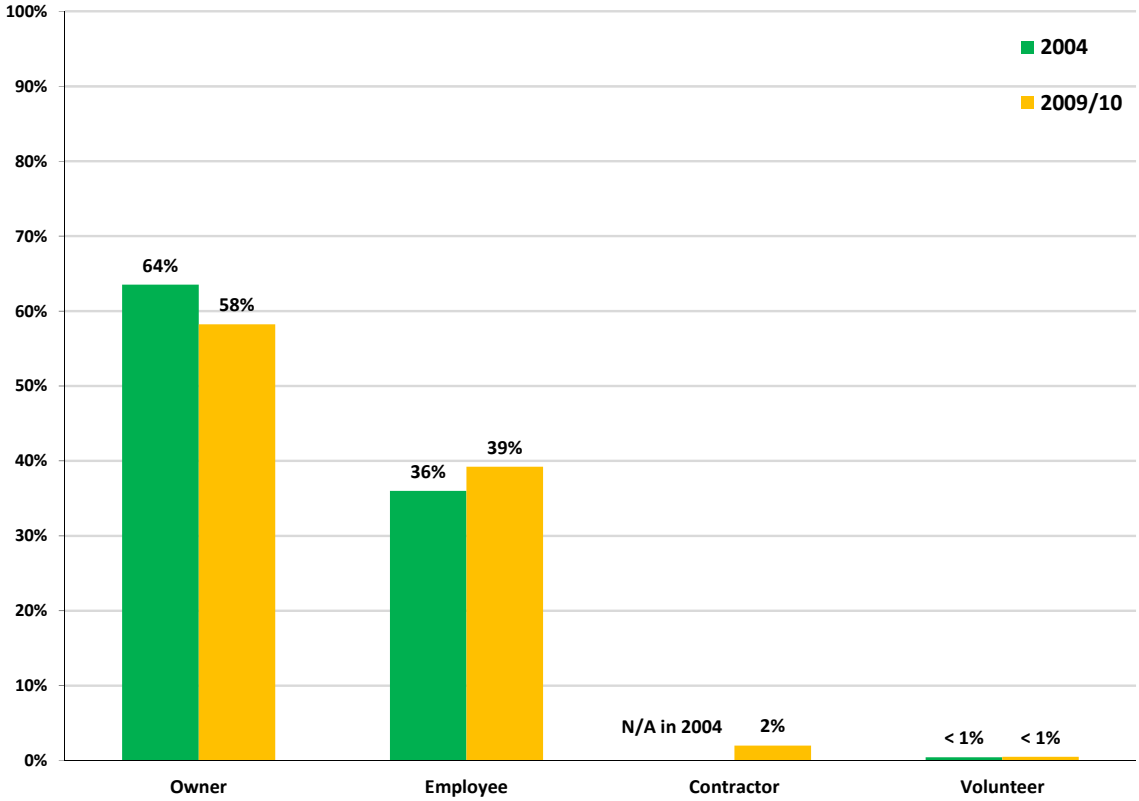
	1999		2004		2009/10	
	Solo Practice	Group Practice	Solo Practice	Group Practice	Solo Practice	Group Practice
Younger than 45 Years of Age	36%	64%	25%	75%	22%	78%
45 to 54 Years of Age	50%	50%	44%	56%	36%	64%
55 to 64 Years of Age	56%	44%	48%	52%	39%	61%
65 Years of Age and Older	67%	33%	50%	50%	43%	57%

Figure 21. Distribution of A/I Physicians Working in Group Practices, 2009/10



In 2009/10, 58 percent of the A/I physicians reported that they are owners of their principal practice. A substantial portion (39 percent) were employees. Very small percentages were contractors or volunteers (2 percent and less than 1 percent, respectively). These figures were consistent with the data collected in 2004 (Figure 22) with small decreases in the percentage of A/I physicians who were owners of their practices and small increases in the percentage who were employees and contractors. With the trend toward group practice and away from solo practice as noted above, it is likely that more A/I physicians will become employees in the future.

Figure 22. Principal Practice Ownership Status of A/I Physicians, 2004 – 2009/10

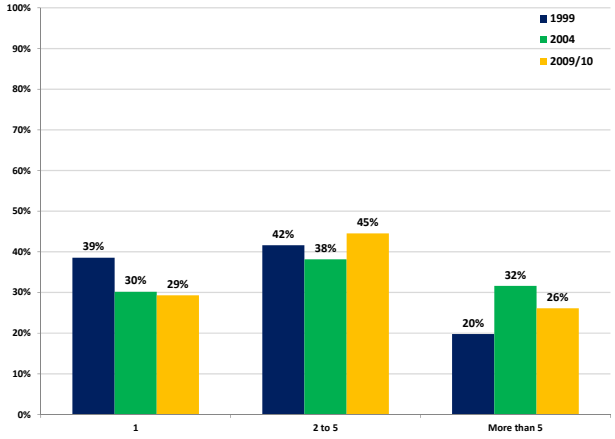


The number of professionals working in an A/I physician's practice also manifested interesting trends.[31] Data on staffing in A/I physician practices from 1999 through 2009/10 are presented in Figure 23, Panels A through F. In 2009/10, the median number of physicians reported per practice was three. This represented a slight increase relative to the previous surveys (2.8 in 2004 and 2.1 in 1999). Median physician FTEs was two. Twenty-nine percent of A/I physicians reported one physician in their practice. This number represented a decrease relative to 1999 (38 percent). Close to half (45 percent) of A/I physicians reported two to five physicians at their practice. One-quarter (26 percent) of A/I physicians reported more than five physicians in their practice. This number represented a decrease relative to 2004 (36 percent)

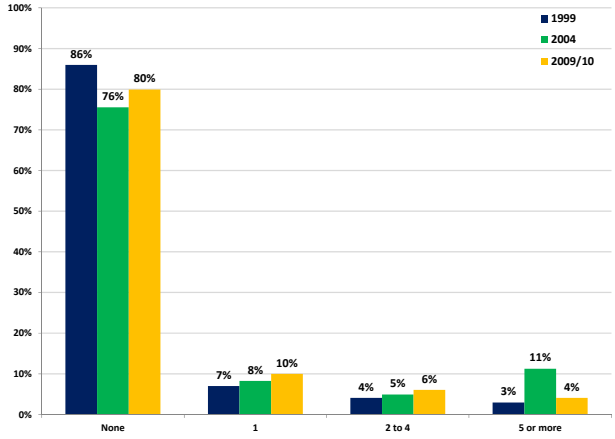
In 2009/10, 20 percent of A/I physicians reported working with physician assistants in their principal practices, slightly fewer than in 2004, but more than in 1999. Ten percent of A/I physicians reported working with one physician assistant, 6 percent with two to five physician assistants, and four percent with more than five. The mean number of physician assistant FTEs reported by A/I physicians was 0.5.

Figure 23. Staffing at Principal Practices of A/I Physicians, 1999 – 2009/10, Panels A and B

A. Physicians



B. Physician Assistants

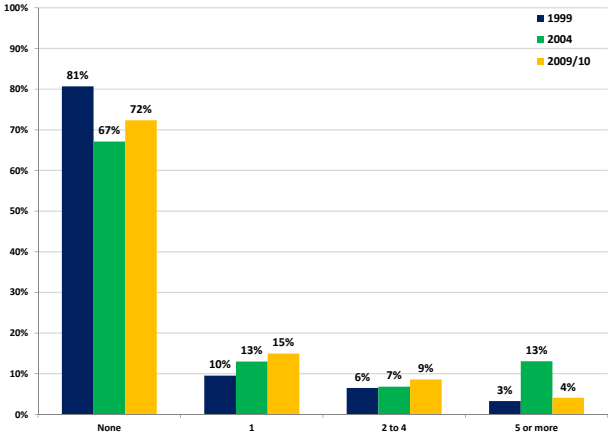


In 2009/10, 28 percent of A/I physicians reported working with nurse practitioners in their principal practices, slightly fewer than in 2004, but more than in 1999. Fifteen percent of A/I physicians reported working with one nurse practitioner, 9 percent with two to five nurse practitioners, and four percent with more than five. The mean number of nurse practitioner FTEs reported by A/I physicians was 0.7.

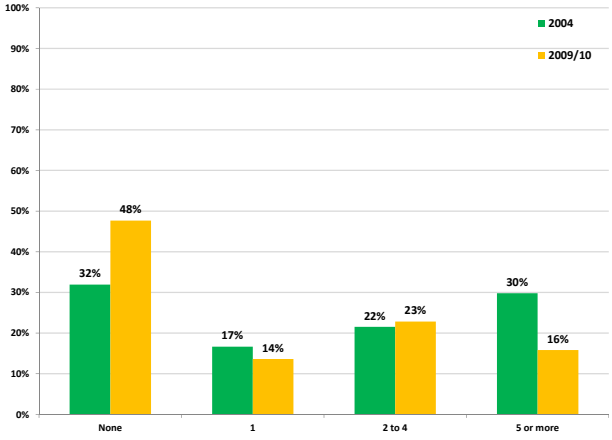
In 2009/10, 52 percent of A/I physicians reported working with registered nurses in their principal practices, significantly fewer than in 2004. Fourteen percent of A/I physicians reported working with one registered nurse, 23 percent with two to five registered nurses, and 16 percent with more than five. The mean number of registered nurse FTEs reported by A/I physicians was 10.

Figure 23. Staffing at Principal Practices of A/I Physicians, 1999 – 2009/10, Panels C and D

C. Nurse Practitioners



D. Registered Nurses

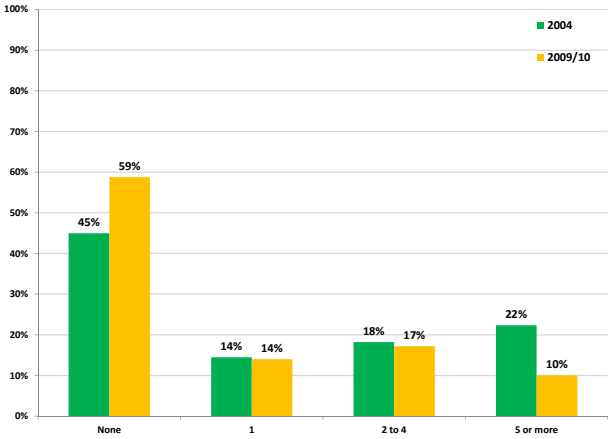


In 2009/10, 41 percent of A/I physicians reported working with licensed practical/vocational nurses in their principal practices, significantly fewer than in 2004. Fourteen percent of A/I physicians reported working with one licensed practical/vocational nurse, 17 percent with two to five licensed practical/vocational nurses, and 10 percent with more than five. The mean number of licensed practical/vocational nurse FTEs reported by A/I physicians was almost six and one-half.

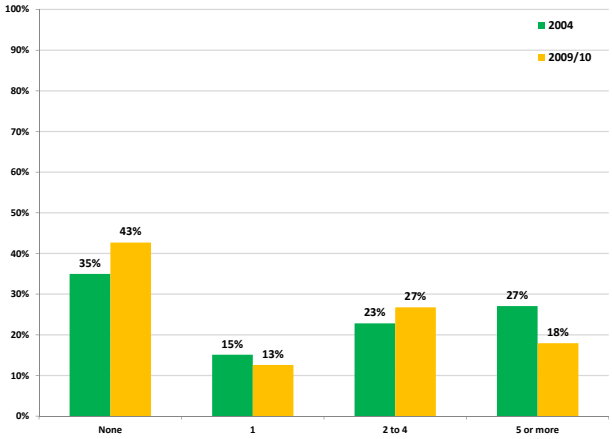
In 2009/10, 57 percent of A/I physicians reported working with medical assistants in their principal practices, somewhat fewer than in 2004. Thirteen percent of A/I physicians reported working with one medical assistant, 27 percent with two to five medical assistants, and 18 percent with more than five. The mean number of medical assistant FTEs reported by A/I physicians was six and one-half.

Figure 23. Staffing at Principal Practices of A/I Physicians, 1999 – 2009/10, Panels E and F

E. Licensed Practical/Vocational Nurses



F. Medical Assistants



Over the past decade, the use of electronic resources in medical practices has become more common. Figure 24 presents data from A/I physicians in 2009/10. In general, A/I physicians reported using all of the resources included on the survey. More than half (57 percent) of the A/I physicians reported using office automation and informational management systems more than once daily in their medical practice. Email was the next most frequently used resource with more than half (51 percent) of A/I physicians reporting using email more than once daily as well. Electronic medical records and smartphones/PDAs were reported by more than one-third of A/I physicians as used more than once daily. Less commonly used were clinical application software and electronic prescribing without an electronic medical record, with over two-thirds of A/I physicians reporting never using these resources. Finally, both the Academy and the

American College of Allergy Asthma and Immunology Web sites were seldom used more than once a week by A/I physicians (7 and 5 percent, respectively).

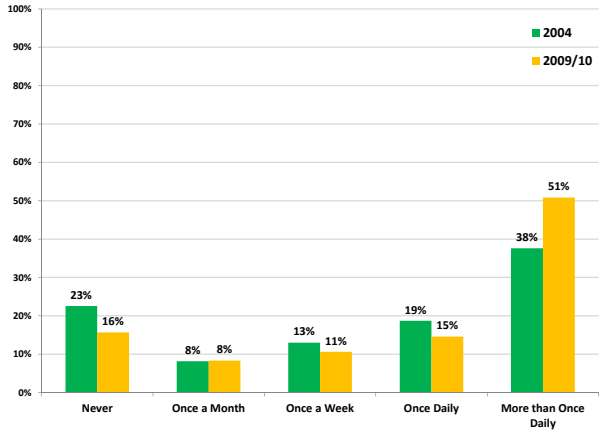
Figure 24. Frequency of Use of Electronic Resources in Medical Practice Among A/I Physicians, 2009/10

	Never	Once a Month	Once a Week	Once Daily	More than Once Daily
Email	16%	8%	11%	15%	51%
AAAAI Web site	12%	46%	35%	5%	2%
ACAAI Web site	32%	41%	22%	3%	2%
Smart phone/PDA	48%	4%	5%	9%	34%
Electronic medical record (EMR)	50%	1%	3%	4%	42%
Electronic prescribing (no EMR)	68%	1%	3%	4%	25%
Clinical application software	67%	10%	8%	6%	9%
Office automation and information management systems	26%	2%	5%	9%	57%

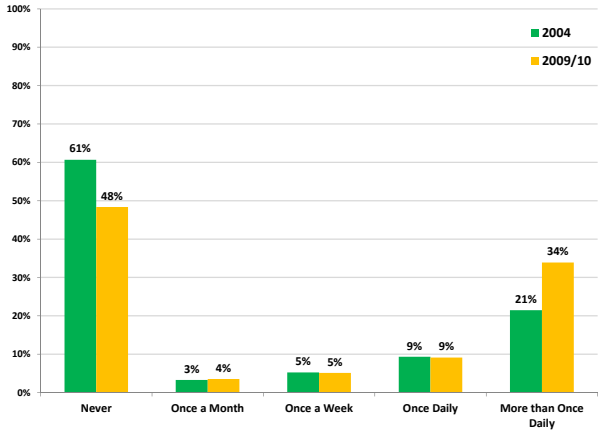
Examining the trends in use of electronic resources in A/I practices over time, the data showed increased use (Figure 25, Panels A-C). For email, somewhat fewer A/I physicians reported never using email in their practices (16 percent in 2009/10 compared with 23 percent in 2004), while substantially more A/I physicians reported using email in their practice more than once daily (51 percent in 2009/10 compared with 38 percent in 2004). A similar trend was evident with smartphone/PDA use, with fewer A/I physicians reporting never using these devices in their practices (48 percent in 2009/10 compared with 61 percent in 2004), while more reported using these devices more than once daily (34 percent in 2009/10 compared with 21 percent in 2004). On the other hand, very little change was evident in the use of clinical application software.

Figure 25. Frequency of Use of Electronic Resources in Medical Practice Among A/I Physicians, 2004 – 2009/10

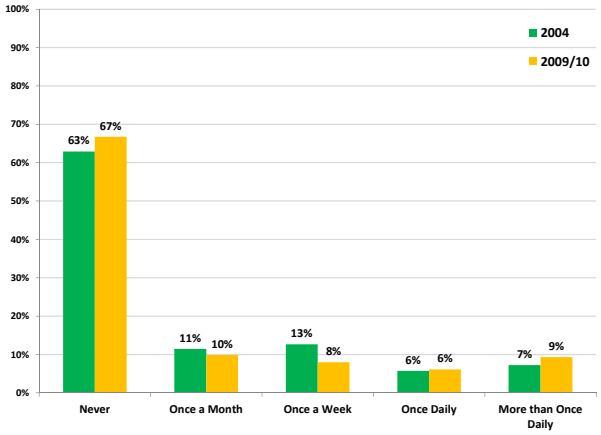
A. Email



B. Smartphone/PDA



C. Clinical Application Software



In 2004, it was observed that younger A/I physicians were more likely to use electronic resources in their practices than older A/I physicians.[8] Figure 26 examines this relationship using 2009/10 data. As is evident in the figure, younger physicians, for the most part, continued to be more likely to report that they used electronic resources in their practices. The differences between age groups, however, were not always great. For example, 92 percent of the A/I physicians younger than age 45 reported using email, 87 percent of those between ages 45 and 54 reported using email, 89 percent of those between ages 55 and 64 reported using email, and 74 percent of those age 65 and older reported using email. Some electronic resources manifested even more nuanced trends. For office automation and information management systems, almost equal percentages of the age groups younger than age 65 reported using the resource, while 66 percent of A/I physicians age 65 and older reported using the resource. Figure 27 Panels A through C show this relationship over time.

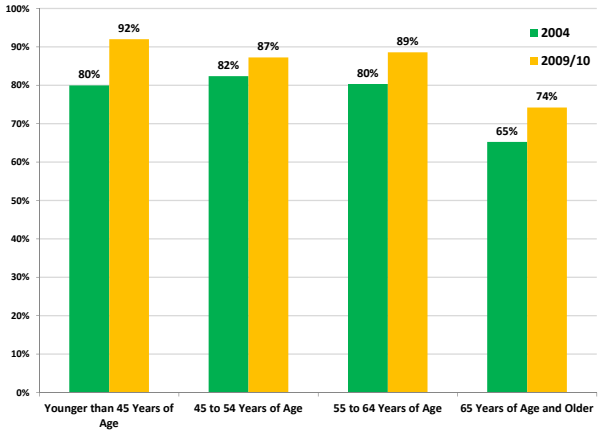
Figure 26. Use of Electronic Resources in Medical Practice by Age of A/I Physician, 2009/10

	Younger than 45 Years of Age	45 to 54 Years of Age	55 to 64 Years of Age	65 Years of Age and Older
Email	92%	87%	89%	74%
AAAAI Web site	97%	92%	92%	73%
ACAAI Web site	84%	75%	69%	55%
Smartphone/PDA	66%	50%	52%	36%
Electronic medical record (EMR)	65%	51%	45%	34%
Electronic prescribing (no EMR)	41%	35%	34%	26%
Clinical application software	44%	32%	30%	28%
Office automation and information management systems	75%	77%	79%	66%

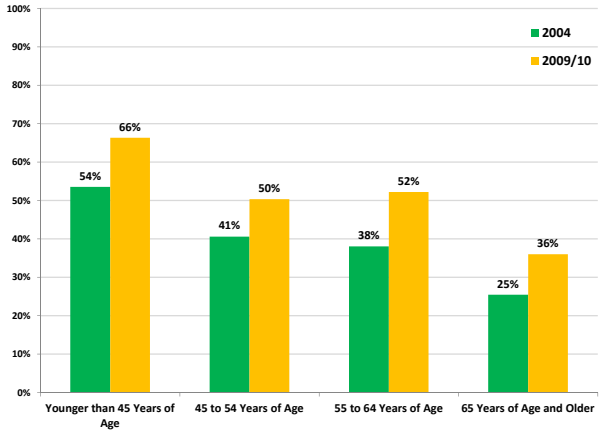
Percentage who use selected electronic resources.

Figure 27. Use of Electronic Resources in Medical Practice by Age of A/I Physician, 2004 – 2009/10

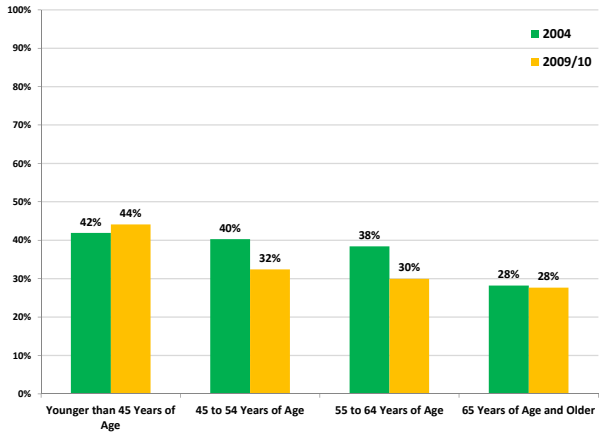
A. Email



B. Smartphone/PDA



C. Clinical Application Software



In the 2004 and 2009/10 surveys, a battery of items was included on the sources of referrals to A/I physicians (Figure 28). The pattern of referrals evident in the figure was that A/I physicians were most likely to report they very often received referrals from primary care physicians (pediatricians, internists, and family practitioners). Also, A/I physicians were least likely to receive referrals from physicians in specialties with partially-overlapping scopes of practice like otolaryngology, pulmonology, and dermatology. Other A/I physicians were the least likely source of referral. As will be shown later in this report (see Figures 117-120), these specialties as well as other A/I physicians were the main competitors of A/I physicians, so it was not surprising that few referrals were reported from those specialties. Finally, important sources of referrals for A/I physicians were patients themselves.

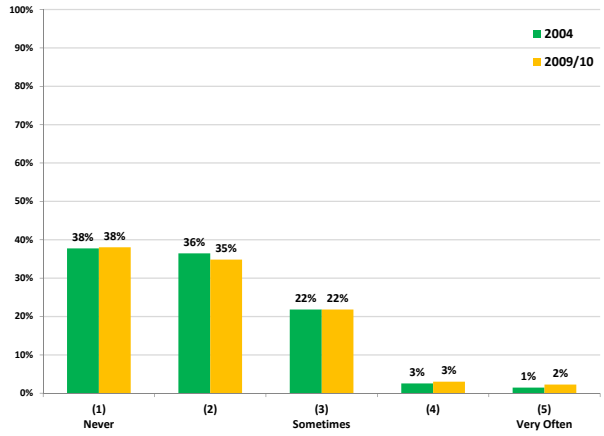
Figure 28. Frequency of Referral from Selected Sources, 2009/10

	(1) Never	(2)	(3) Sometimes	(4)	(5) Very Often
A/I Physicians	38%	35%	22%	3%	2%
Otolaryngologists	6%	18%	38%	24%	13%
Pulmonologists	12%	28%	40%	15%	5%
Dermatologists	7%	24%	42%	20%	7%
Pediatricians	5%	10%	20%	27%	39%
Internists	4%	13%	29%	29%	24%
Family Physicians	2%	7%	24%	35%	32%
Patient Self-Referral	2%	3%	11%	31%	53%

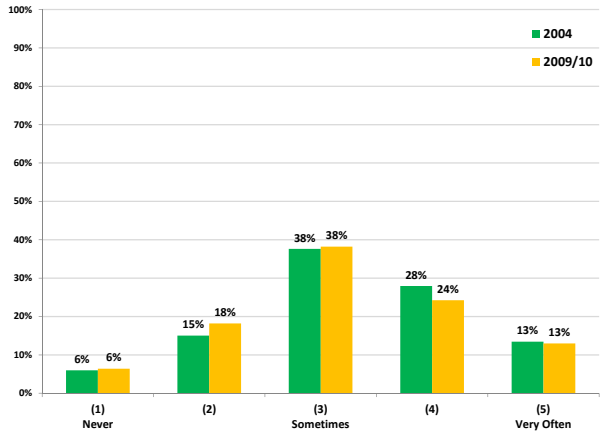
Figure 29 Panels A through H show the trends in referral frequency between 2004 and 2009/10. Statistically significant differences between 2004 and 2009/10 in referral frequency patterns were identified for all sources except other A/I physicians and patient self-referrals. Referrals were more frequent in 2009/10 than in 2004 from pulmonologists, dermatologists, and pediatricians. Referrals were less frequent in 2009/10 than in 2004 from otolaryngologists. There were mixed patterns evident in the referral frequencies from internists and family physicians.

Figure 29. Frequency of Referral from Selected Sources, 2009/10, Panels A through F

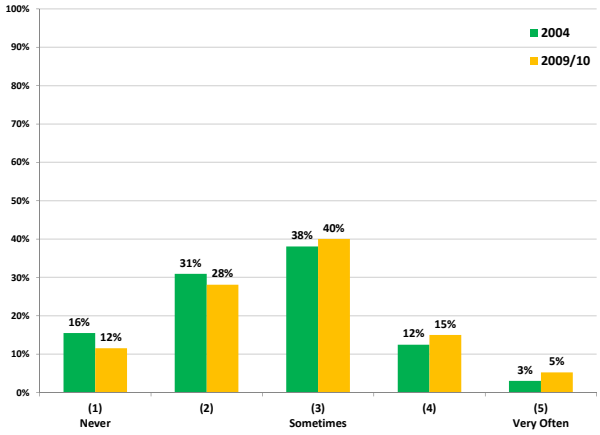
A. A/I Physicians



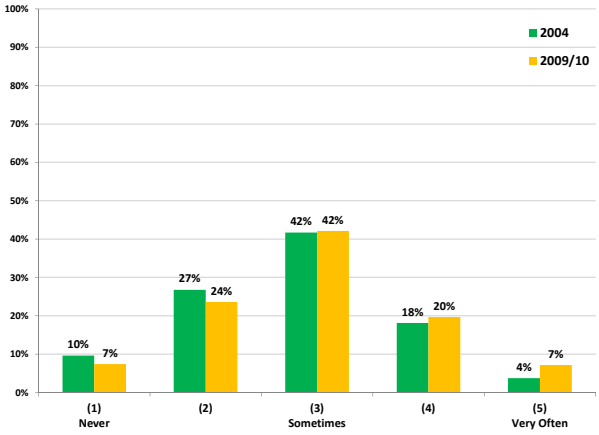
B. Otolaryngologists



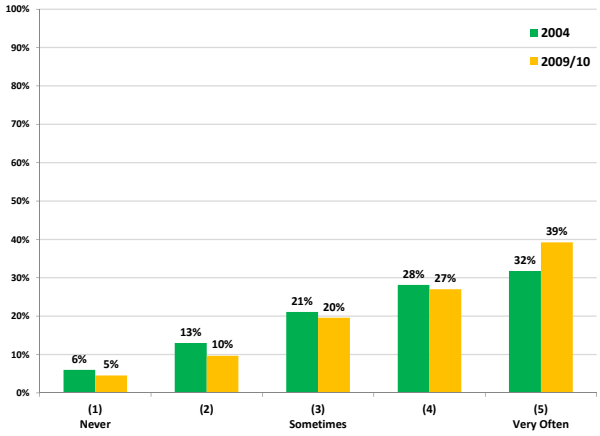
C. Pulmonologists



D. Dermatologists



E. Pediatricians



F. Internists

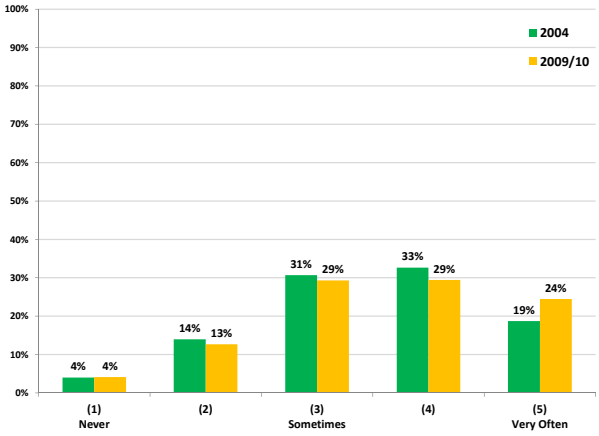
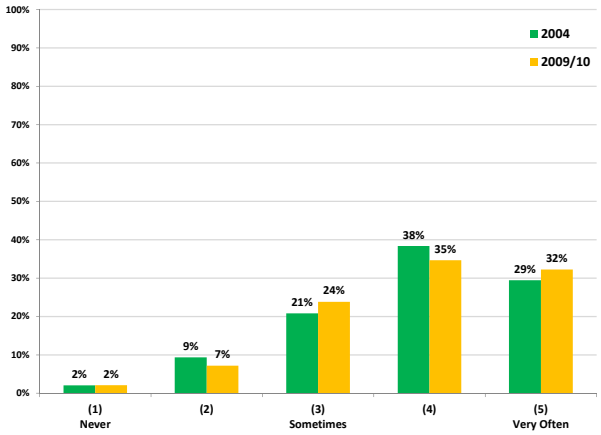
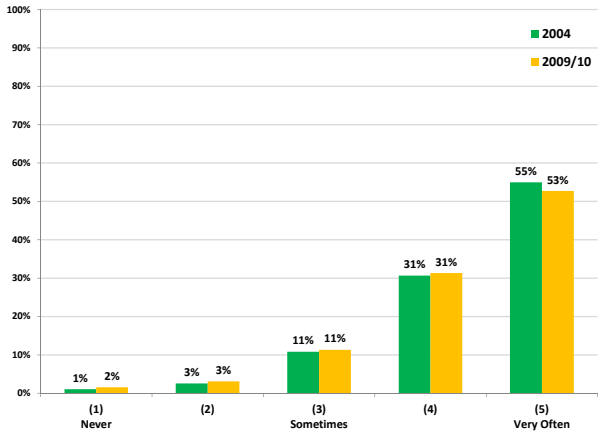


Figure 29. Frequency of Referral from Selected Sources, 2009/10, Panels G and H

G. Family Physicians



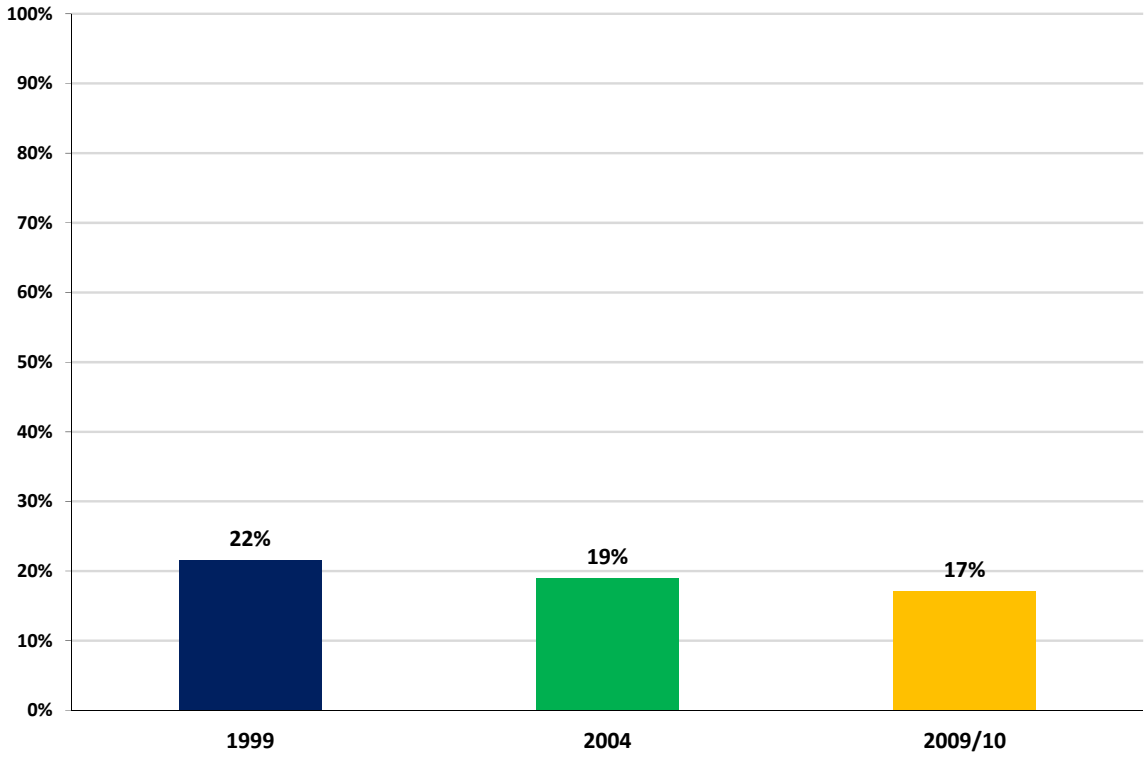
H. Patient Self-referral



c) Medical Aspects of Practice

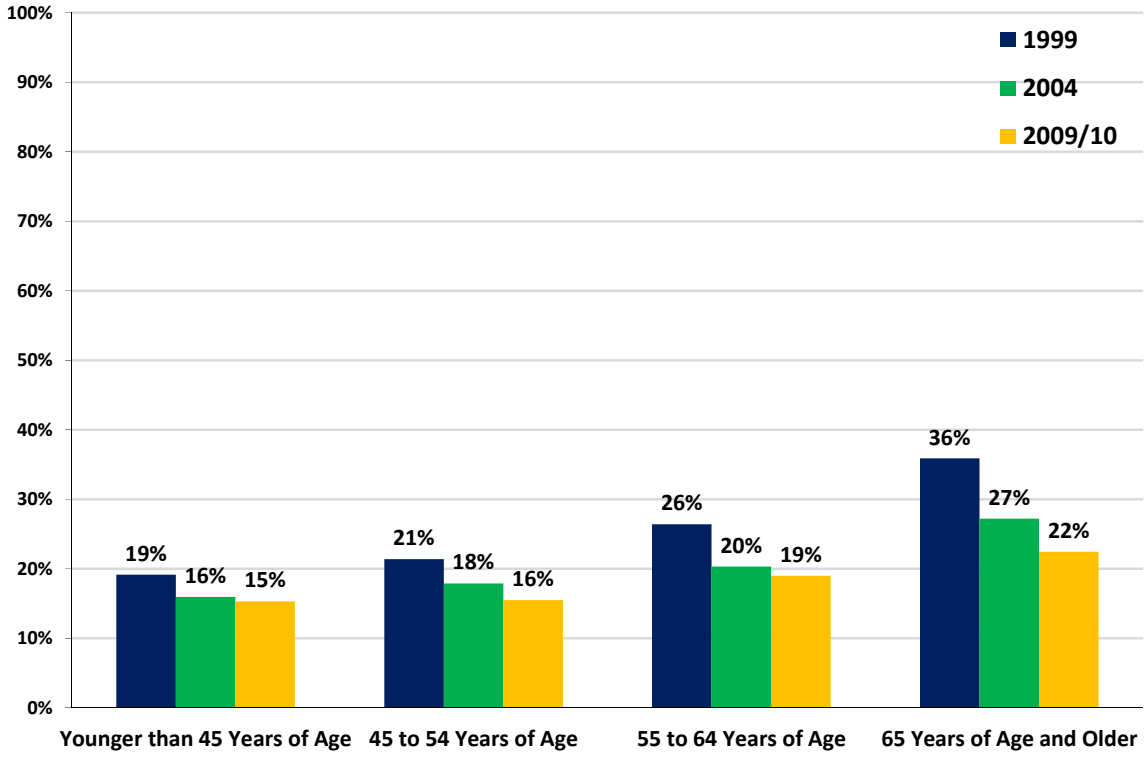
The use of allergy shots/immunotherapy is common among A/I physicians, with nearly all A/I physicians treating at least some of their patients with this technique. In 2009/10, the median percent of patients treated with allergy shots/immunotherapy was 17 percent (Figure 30). This number represented a slight decrease compared to 2004 when the median percent of patients treated with allergy shots/immunotherapy was 19 percent, and a decrease from 1999 when the median percent of patients treated with allergy shots/immunotherapy was 22 percent. In 2009/10, more than one-third (34 percent) of A/I physicians reported that they treated between one-fifth and one-half of their patients with allergy shots/immunotherapy. This number did not change significantly compared to 2004 (35 percent), but did decline compared to 1999 (from 39 percent). On the other hand, fewer A/I physicians had very high concentrations of patients being treated with allergy shots/immunotherapy, with only 6 percent of A/I physicians reporting treating more than half of their patients with allergy shots/immunotherapy in 2009/10 compared to 11 percent in 2004 and 15 percent in 1999.

Figure 30. Median Percentage of Patients Treated with Allergy Shots/Immunotherapy Among A/I Physicians, 1999 – 2009/10



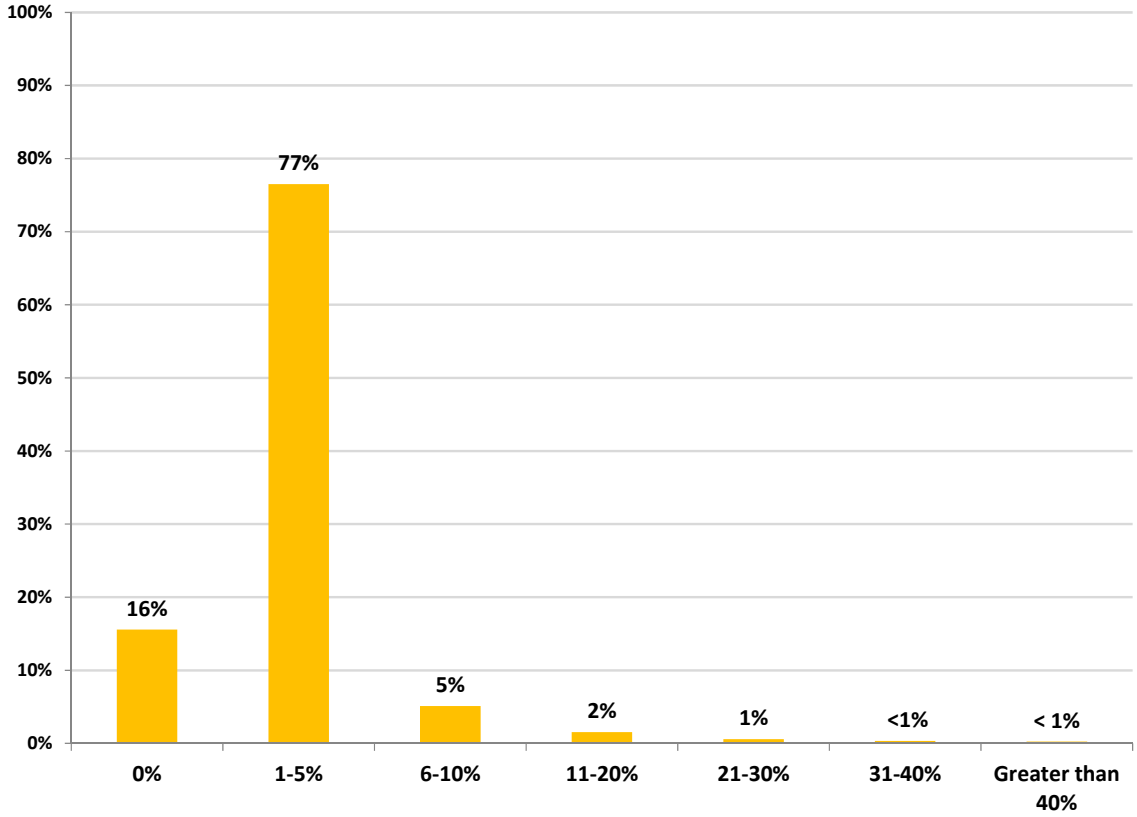
Examining the use of allergy shots/immunotherapy more closely (Figure 31), there continued to be a direct relationship between the ages of the A/I physicians and the percentage of patients treated with allergy shots/immunotherapy. Older A/I physicians reported higher percentages of their patients being treated with allergy shots/immunotherapy than younger A/I physicians. The pattern was evident in all three surveys. Over time, however, the relationship has grown weaker, with the differences in the median percent of patients treated with allergy/immunology between the age groups becoming smaller at each subsequent observation. For example, the difference in median percentage of patients treated with allergy shots/immunotherapy between the youngest A/I physicians and the oldest A/I physicians was 17 percent in 1999, 11 percent in 2004, and 7 percent in 2009/10.

Figure 31. Median Percentage of Patients Treated with Allergy Shots/Immunotherapy by Age of A/I Physicians, 1999 – 2009/10



For the 2009/10 survey, a new question on the use of another treatment, biologic immune response modifiers (e.g., Xolair, IVIG, Rituxan), was added. More than three-quarters (84 percent) of A/I physicians reported treating patients with biologic immune response modifiers. The treatment, however, was limited to relatively few patients. Seventy-seven percent of A/I physicians reported that between 1 and 5 percent of their patients were being treated with biologic immune response modifiers. Fewer than 3 percent of A/I physicians reported that more than 10 percent of their patients were being treated with biologic immune response modifiers.

Figure 32. Percentage of Patients Treated with Biologic Immune Response Modifiers Among A/I Physicians, 2009/10



In terms of the demographics of the patients treated by A/I physicians, the median percentage of patients younger than age 16 reported in the 2009/10 survey was 39 percent (Figure 33). This number has increased slightly, but remained largely unchanged since 1999 and 2004 when the median percent of patients younger than age 16 was 35 percent and 36 percent, respectively. Figure 34 shows that this percentage varied greatly by the initial specialty training an A/I physician had. A/I physicians who reported having completed a pediatrics residency program also reported that 47 percent of their patients were younger than age 16. For A/I physicians who completed a residency program other than pediatrics, the median percentage of patients treated younger than age 16 was 30 percent. This variation has remained relatively constant since 1999. The gradual increase in percent of patients younger than age 16 among those with non-pediatric initial specialty training corroborates the small increase over time in patients younger than age 16 observed among all A/I physicians in Figure 33.

Figure 33. Median Percentage of Patients Younger Than Age 16, 1999 – 2009/10

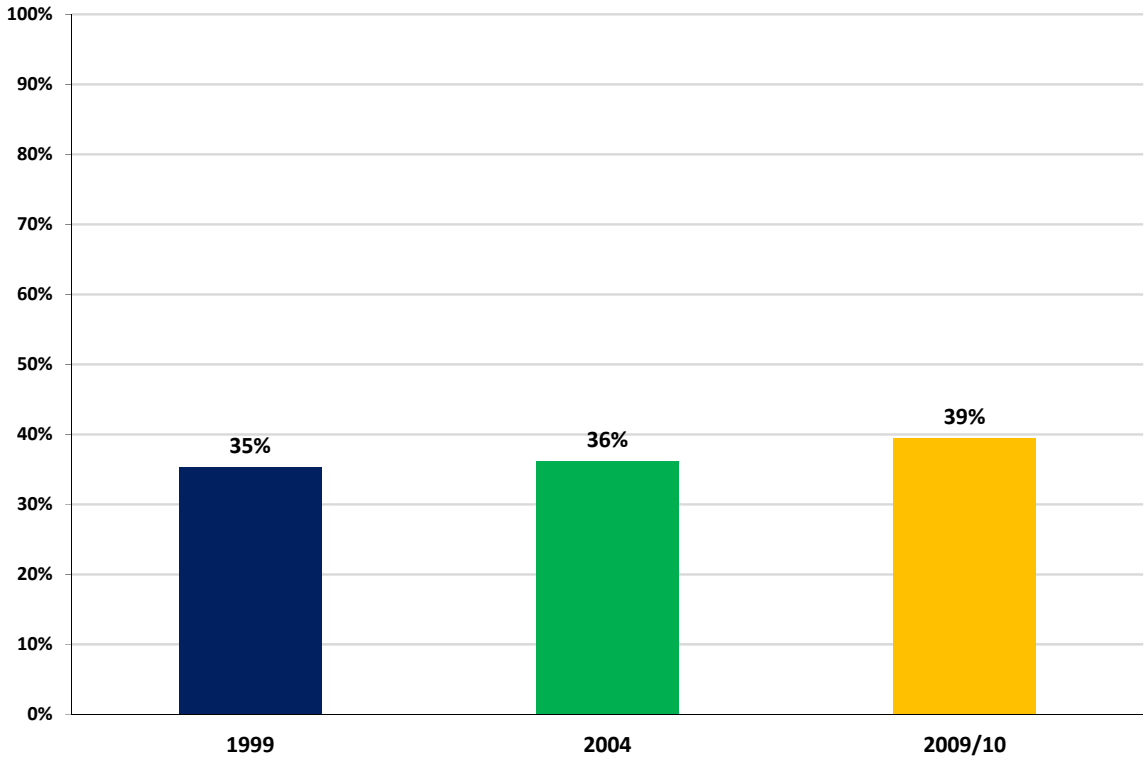
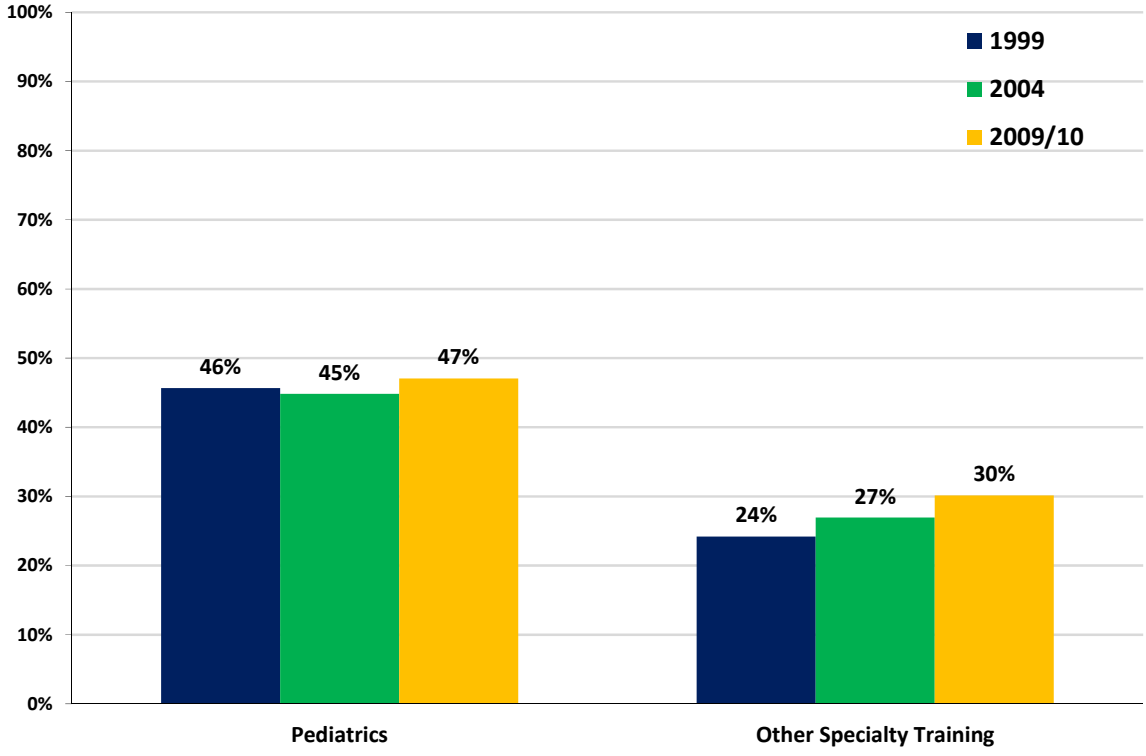


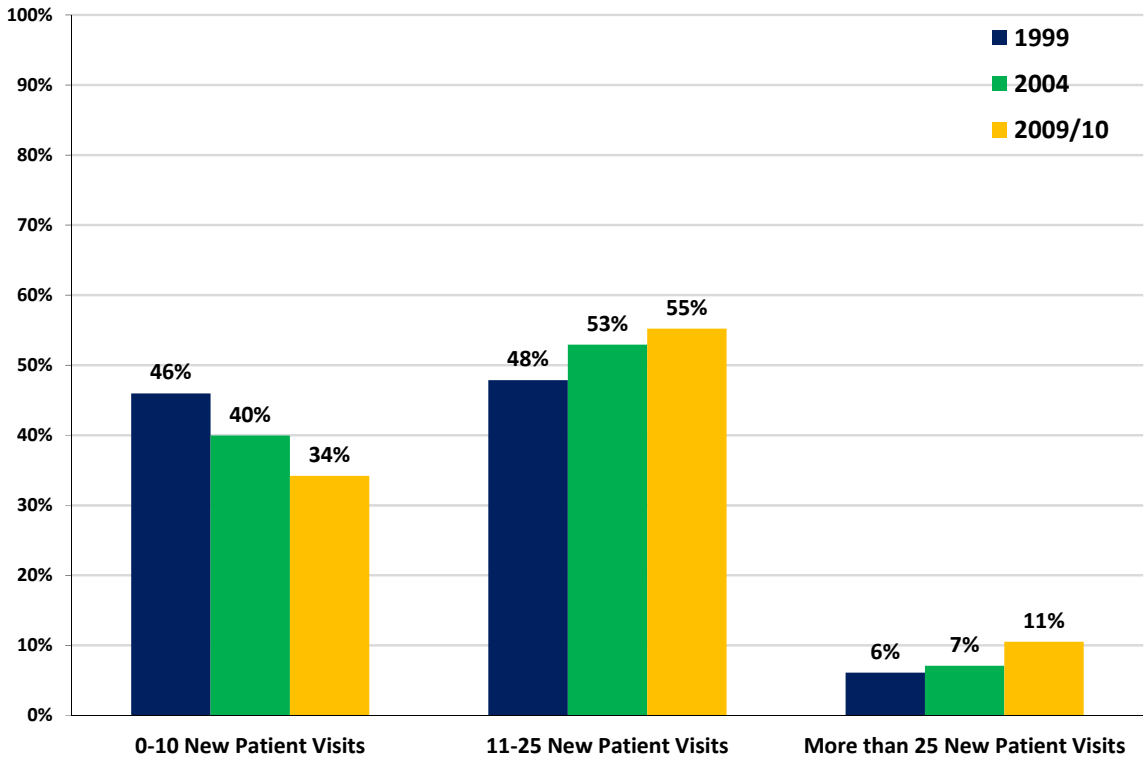
Figure 34. Median Percentage of Patients Younger Than Age 16 by Initial Specialty Training, 1999 – 2009/10



d) Current Practice Activity, Productivity, and Capacity

The volume of new A/I patient visits per week is an indicator of practice differences as well as demand for A/I services. In 2009/10, the median new A/I patient visits per week reported by A/I physicians was 14 per week, an increase from 13 in 2004, and 12 in 1999. Figure 31 shows the distribution of new A/I patient visits for A/I physicians between 1999 and 2009/10. The majority of A/I physicians reported between 11 and 25 new patient visits per week. Comparing 2009/10 with 1999, more A/I physicians reported 11 to 25 and more than 25 new patient visits a week than they did in 1999, and fewer reported 0 to 10 new patient visits in 2009/10 than in 1999. The percentage of A/I physicians who reported more than 25 new patient visits per week also increased over the time period.

Figure 35. Median Number of New A/I Patient Visits per Week Reported by A/I Physicians, 1999 – 2009/10



Examining median new A/I patient visits per week by age of the A/I physician yielded some variation in the 2009/10 data (Figure 36). The median number of new patient visits per week among A/I physicians younger than age 65 was 15. For A/I physicians age 65 years and older, the median number of new patient visits per week was 9. A similar pattern was observed in the previous workforce survey data, except that the decline in

the number of new patient visits per week was at a more gradual rate and since 2004 had started at an older age. The patterns observed since 2004 suggest that A/I physicians are remaining more productive as they age than they had in the past.

Figure 36. Median Number of New A/I Patient Visits per Week by Age of A/I Physician, 1999 – 2009/10

	1999	2004	2009/10
Younger than 45 years of age	14	14	15
45 to 54 years of age	13	14	15
55 to 64 years of age	10	13	14
65 years of age and older	6	8	9

Figure 37. Median A/I Patient Visits per Hour by Age of A/I Physician, 1999 – 2009/10

	1999	2004	2009/10
Younger than 45 years of age	1.6	1.4	1.3
45 to 54 years of age	1.7	1.7	1.5
55 to 64 years of age	1.6	1.7	1.7
65 years of age and older	1.9	1.6	1.7

Physician productivity, however, is usually conceptualized as taking into account more than simply the volume of patient visits. By combining total A/I patient visit data with data on hours spent in A/I patient care, it was possible to calculate patient visits per hour statistics. In 2009/10, A/I physicians had an average of 1.5 patient visits per hour. This figure represented a very small decline from 1.6 patient visits per hour in 2004, and 1.7 patient visits per hour in 1999. In terms of age, the youngest A/I physicians were the least productive, with 1.3 patient visits per hour on average in 2009/10, down from 1.4 in 2004 and 1.6 in 1999 (Figure 37). In 2009/10, the peak productivity age groups were the age 55 to 64 and age 65 and older groups. It should be noted that the variation between groups while small, if extrapolated to a larger time period became more meaningful – e.g., there are approximately 2,000 hours in a typical work year, so a 0.1 patient visit per hour difference translated into 200 patient visits over the course of a year.

Other indicators of practice activity/capacity on the survey included a number of items on average waiting times for appointments for two types of patients: 1) non-emergent, existing patients (Figures 38-40); and 2) new patients (Figures 41-43). Overall, non-

emergent, existing patients had to wait three days for an appointment with an A/I physician, somewhat less than the number of days reported by A/I physicians in 1999 (five days), and about the same as reported in 2004 (three days). In 2009/10, a majority (56 percent) of A/I physicians reported that waiting times were less than one week. Few (8 percent) reported waiting times of over one month. There was little variation in waiting times by age of the A/I physician in 2009/10, whereas in the earlier surveys, there was some evidence of a decrease in wait time for appointments as the age of the A/I physician increased. However, there were differences in perceptions of changes in wait times reported by A/I physicians between 2004 and 2009/10. In 2009/10, more A/I physicians reported that waiting times had increased recently (18 percent) than reported similarly in 2004 (14 percent). Fewer (60 percent compared to 64 percent) reported no change in wait times (Figure 40).

Figure 38. Wait Time for Appointment, Non-Emergent/Existing Patient, 1999 – 2009/10

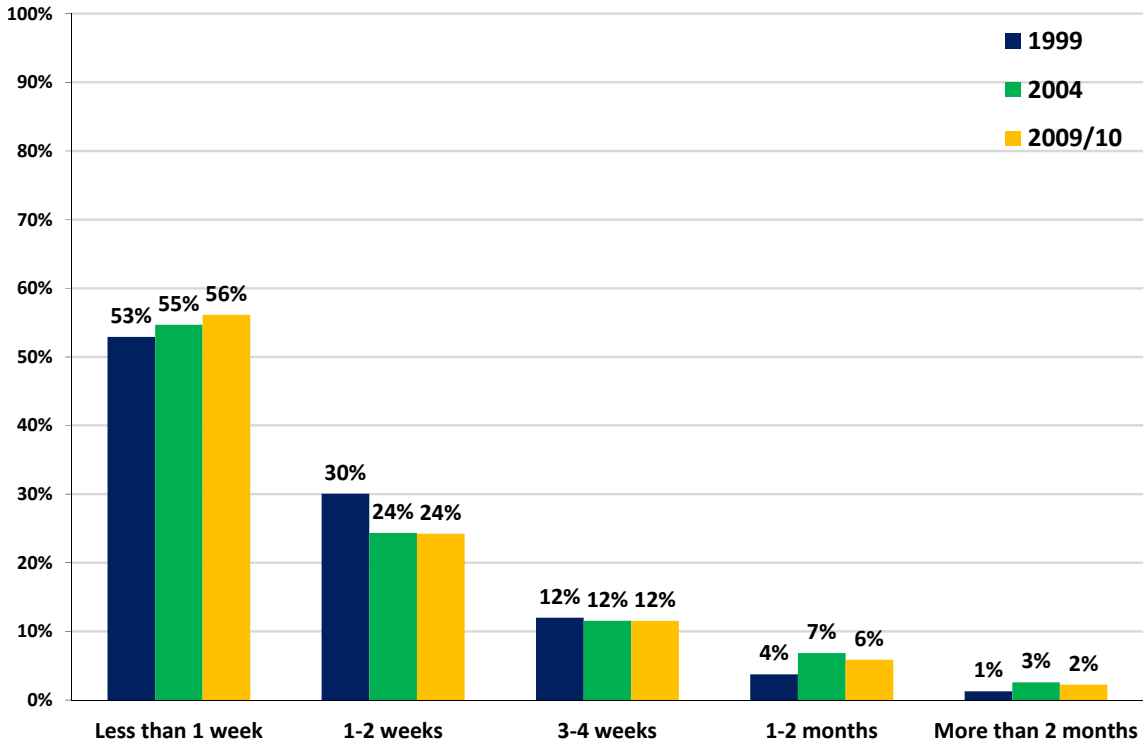
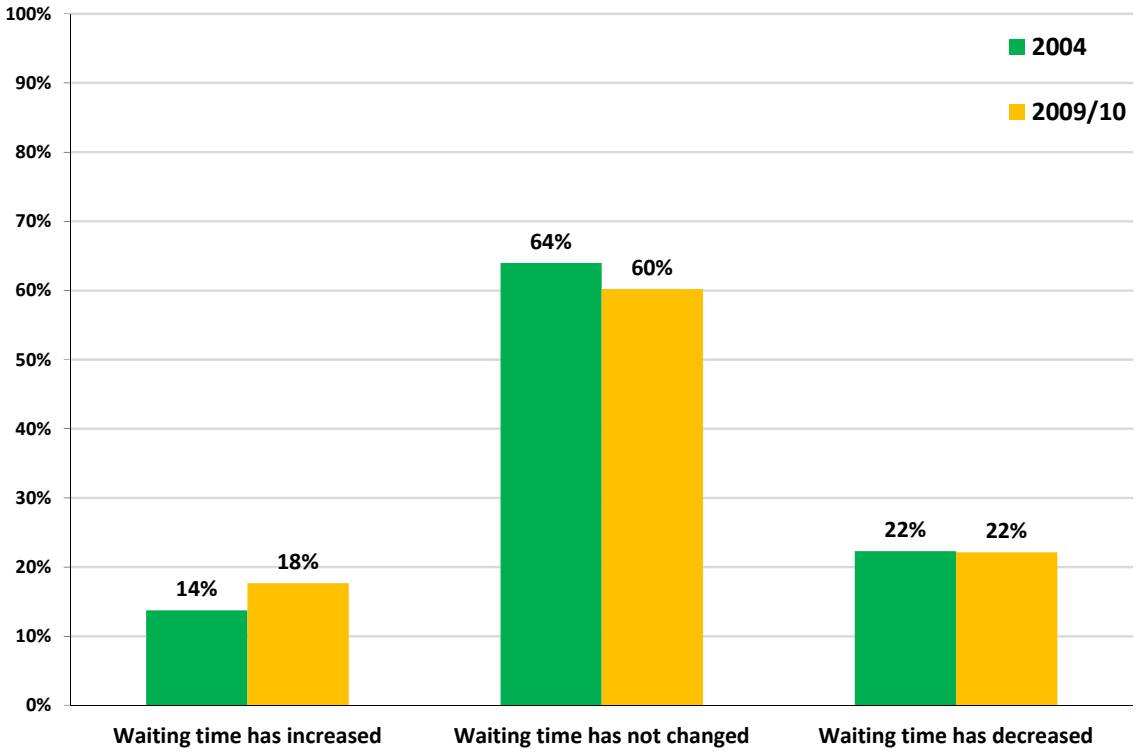


Figure 39. Median Wait Time for Appointment (in Days), Non-Emergent/Existing Patient by Age of A/I Physician, 1999 – 2009/10

	1999	2004	2009/10
Younger than 45 years of age	5	2	3
45 to 54 years of age	5	3	3
55 to 64 years of age	4	4	3
65 years of age and older	4	3	3

Figure 40. Perceptions Among A/I Physicians of Change in Wait Time for an Appointment, Non-Emergent/Existing Patient, 2004 – 2009/10



Similar observations were made for wait times for new patients. In 2009/10, A/I physicians reported that new patients had to wait five days to get an appointment, about two days less than was reported in 1999 and in 2004. More than one-third (41 percent) of the A/I physicians reported that a new patient could get an appointment in less than a week. This represented an increase compared to the previous surveys (Figure 41). Moreover, fewer A/I physicians (33 percent) reported that a new patient could get an appointment in one to two weeks in 2009/10 than reported similarly in 1999 and 2004 (39 percent and 35 percent, respectively). The 2009/10 responses showed very little variation in waiting times by the age of the A/I physician (Figure 42). Finally, as was the case for perceptions of changes in wait times for non-emergent, existing patients,

more A/I physicians perceived that wait times had increased (20 percent) in 2009/10 than had reported similarly in 2004 (15 percent). Fewer (53 percent compared to 57 percent) reported no change in wait times (Figure 43).

Figure 41. Wait Time for Appointment, New Patient, 1999 – 2009/10

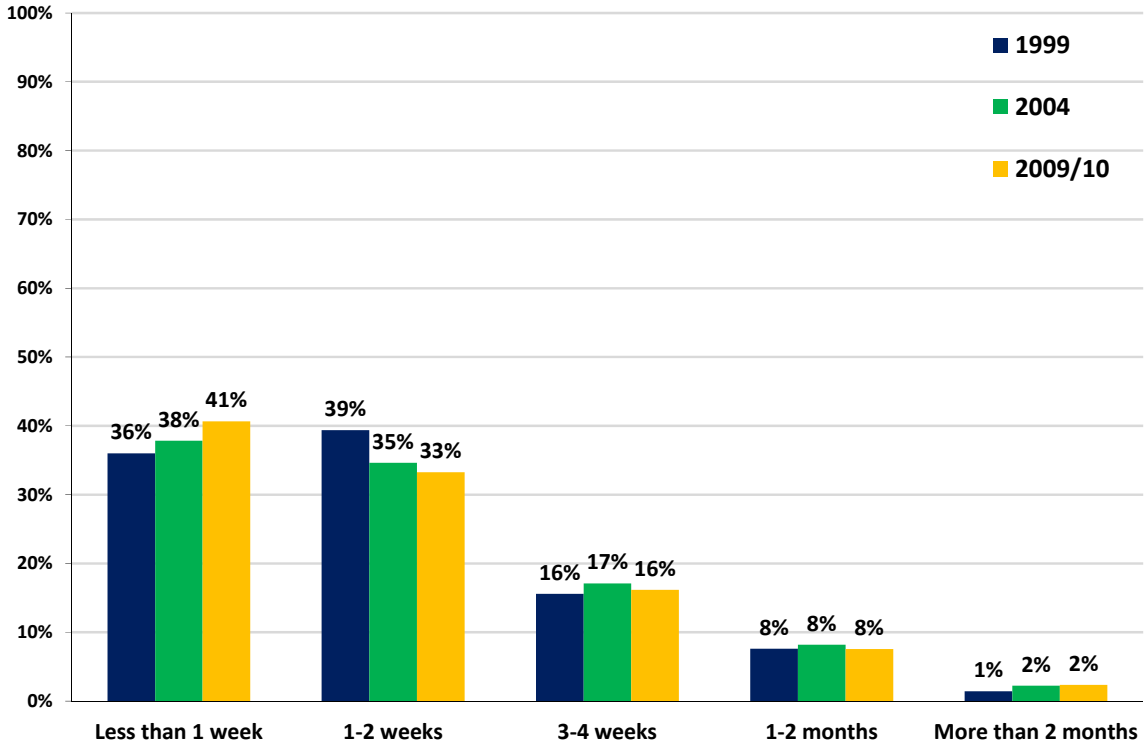
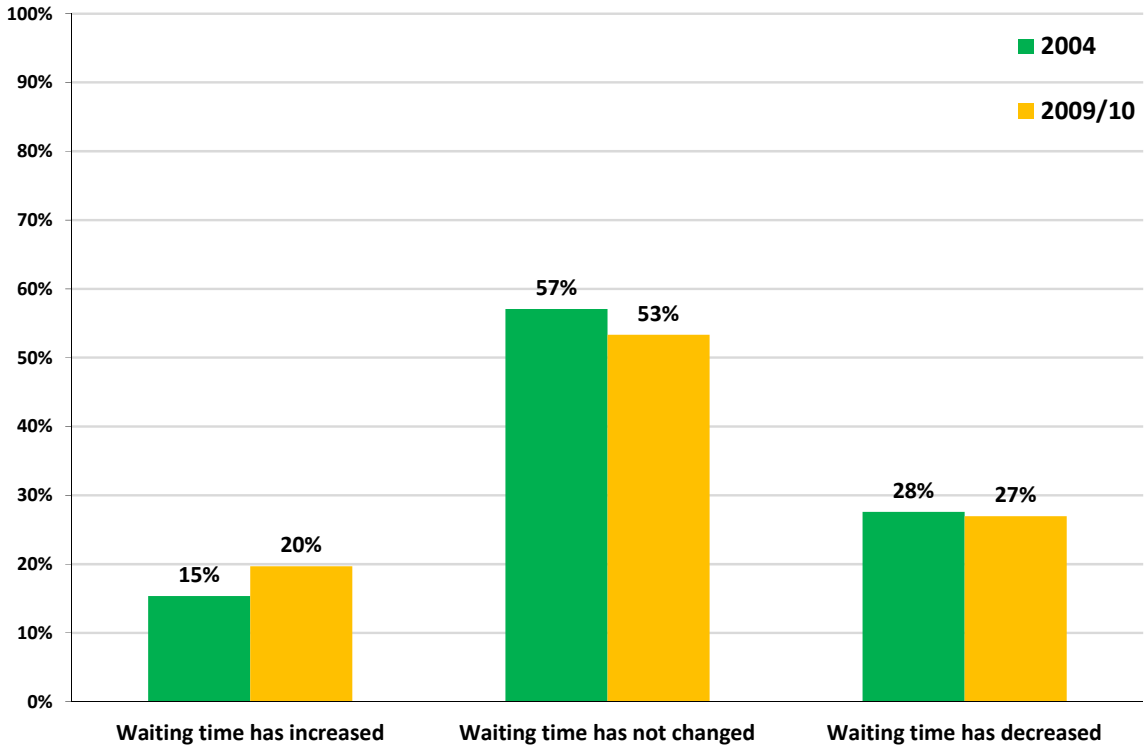


Figure 42. Median Wait Time for Appointment (in Days), New Patient by Age of A/I Physician, 1999 – 2009/10

	1999	2004	2009/10
Younger than 45 years of age	7	5	5
45 to 54 years of age	7	7	5
55 to 64 years of age	7	7	5
65 years of age and older	6	5	6

Figure 43. Perceptions Among A/I Physicians of Change in Wait Time for an Appointment, New Patient, 2004 – 2009/10



A/I physicians' perceptions of their practice capacity (Figures 44 and 45) can be indicative of their ability to care for additional patients. Almost two-thirds (63 percent) of A/I physicians reported that their practices were far from full and they could take on many additional patients in 2009/10. More than one-third (36 percent) reported that they could take on a few new patients. Only 1 percent reported that their practices were full. Compared to 1999, the A/I physicians in 2009/10 were more likely to report excess practice capacity. There was very little change in perceptions of practice capacity between 2004 and 2009/10.

Examining practice capacity perceptions by age revealed two important patterns (Figure 45). First, as A/I physicians grew older, fewer perceived that they could take on additional patients. In 2009/10, while 74 percent of those younger than age 45 reported being able to take on many additional patients, 63 percent of those age 45 to, 56 percent of those age 55 to 64, and 53 percent of those age 65 or older reported similarly. As A/I physicians grew older, their practices matured and they built reputations with the residents of the communities they served. Over time, A/I physicians build the patient base they treat on a regular basis so that the taking on of

additional new patients becomes more difficult (without the hiring of additional staff or some other organizational change).

Figure 44. Perceptions of Practice Capacity Among A/I Physicians, 1999 – 2009/10

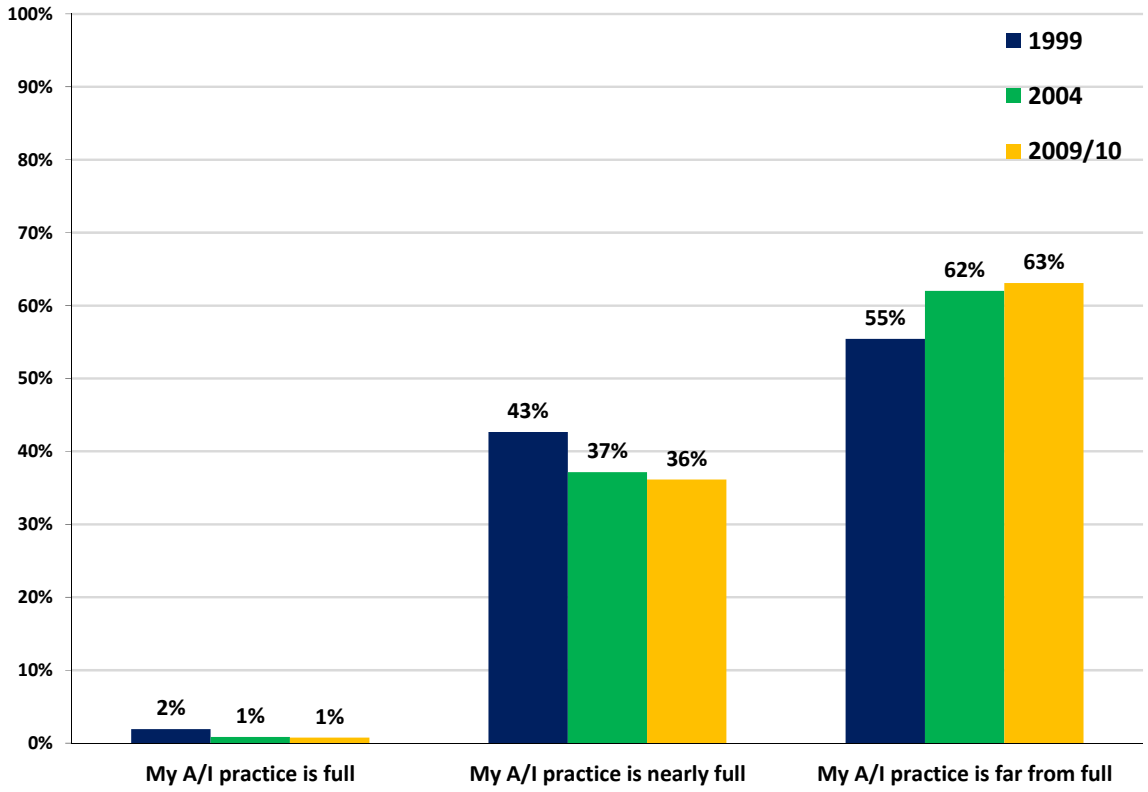


Figure 45. Perceptions of Practice Capacity Among A/I Physicians by Age, 1999 – 2009/10

	My A/I Practice is Full			My A/I Practice is Nearly Full			My A/I Practice is Far from Full		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	1%	0%	0%	33%	22%	26%	66%	78%	74%
45 to 54 years of age	2%	1%	1%	45%	37%	36%	54%	62%	63%
55 to 64 years of age	3%	1%	1%	47%	43%	43%	50%	56%	56%
65 years of age and older	4%	2%	1%	54%	50%	46%	41%	48%	53%

However, a second pattern observed in these data suggested a slight nuance to this explanation. Between 2004 and 2009/10, the age groups in which perceptions changed were the youngest (younger than age 45) and the oldest (age 65 or older). This observation was not, in and of itself, extraordinary as the explanation suggested changing perceptions at different stages of an A/I physician's practice, notably the beginning when establishing and growing the practice would be an important goal and

the end when winding the practice down would be an important goal. The unexpected observation was that between 2004 and 2009/10 there was a decrease in the percentage of younger A/I physicians who perceived the ability to take on many additional patients and an increase in the percentage of older A/I physicians who perceived the ability to take on many additional patients. This observation might be a manifestation of the findings that the newer generation of physicians have different priorities than previous groups of physicians.[24,25,26,27]

e) A/I Physician Satisfaction

The final data on current A/I practice characteristics focus on levels of satisfaction among A/I physicians. The survey included items on professional (Figures 46 and 47) and economic (Figures 48 and 49) satisfaction. In 2009/10, nearly four-fifths (78 percent) of A/I physicians reported being professionally satisfied with their A/I practice, with 31 percent being very satisfied. Fewer than 10 percent reported any sort of dissatisfaction. The observed levels of professional satisfaction were consistent with the observations in 1999 and 2004 and were slightly more positive.

Figure 46. Professional Satisfaction Among A/I Physicians, 1999 – 2009/10

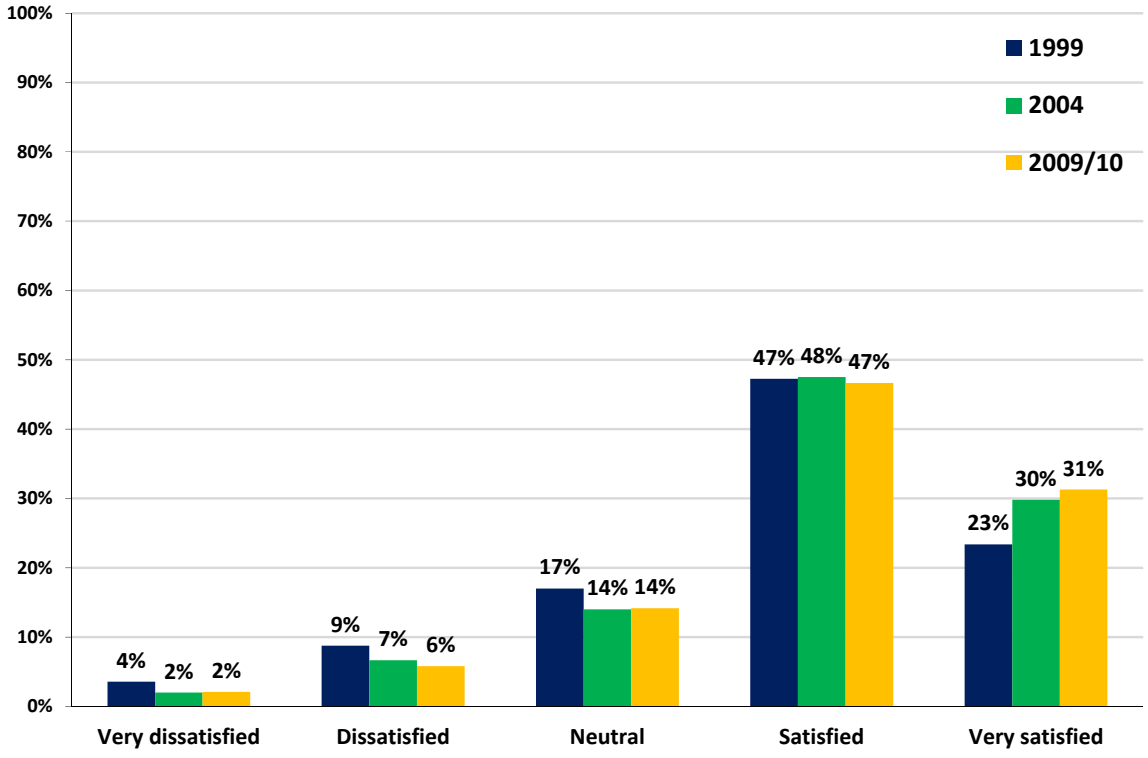


Figure 47. Professional Satisfaction Among A/I Physicians by Age, 1999 – 2009/10

	Very Dissatisfied			Dissatisfied			Neutral			Satisfied			Very Satisfied		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	2%	2%	1%	7%	5%	4%	16%	15%	13%	50%	46%	50%	25%	32%	32%
45 to 54 years of age	5%	2%	3%	10%	8%	7%	18%	16%	16%	46%	47%	47%	22%	28%	28%
55 to 64 years of age	4%	3%	2%	11%	7%	8%	15%	12%	13%	46%	50%	48%	23%	27%	29%
65 years of age and older	5%	2%	2%	5%	4%	2%	21%	12%	12%	47%	46%	42%	23%	35%	42%

In terms of age, levels of professional satisfaction did not vary substantially. The oldest group was the most likely to be professional satisfied, but in all age groups, at least 75 percent of the A/I physicians reported being professionally satisfied or very satisfied. Again, compared to the observations made in 1999 and 2004, there appeared to be a slightly higher level of professional satisfaction across all age groups.

Figure 48. Economic Satisfaction Among A/I Physicians, 1999 – 2009/10

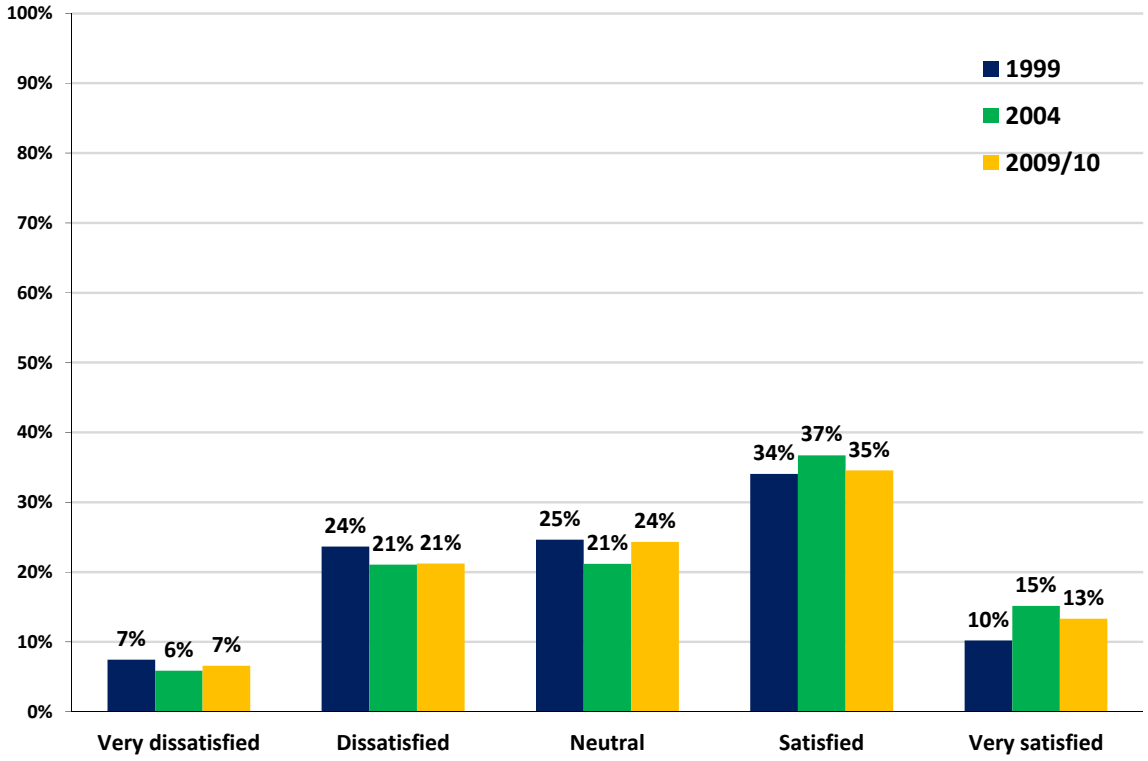


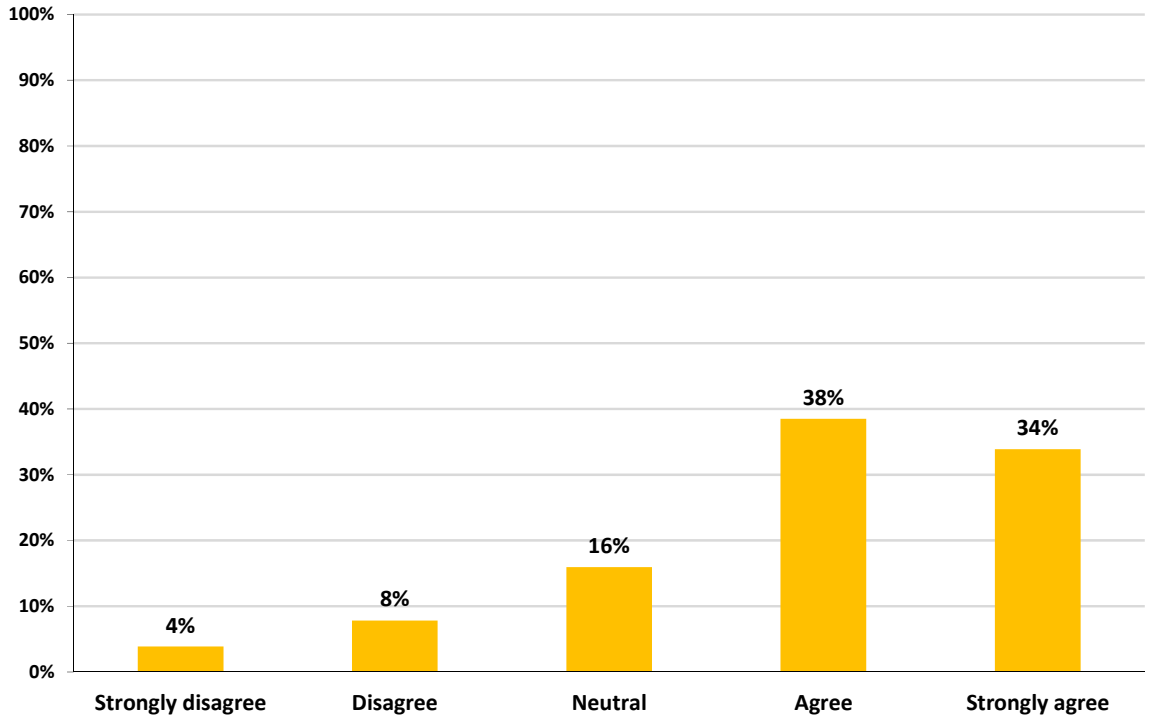
Figure 49. Economic Satisfaction Among A/I Physicians by Age, 1999 – 2009/10

	Very Dissatisfied			Dissatisfied			Neutral			Satisfied			Very Satisfied		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	5%	3%	5%	22%	21%	17%	26%	23%	26%	36%	40%	39%	11%	13%	12%
45 to 54 years of age	8%	7%	8%	26%	22%	23%	24%	20%	23%	32%	37%	33%	10%	14%	14%
55 to 64 years of age	10%	7%	7%	24%	20%	24%	21%	21%	24%	34%	35%	32%	11%	16%	13%
65 years of age and older	9%	6%	6%	21%	20%	22%	27%	21%	21%	34%	34%	36%	9%	19%	15%

Economic satisfaction levels were lower among A/I physicians than professional satisfaction levels. Just less than a majority (48 percent) reported that they were economically satisfied with their A/I practice in 2009/10. Examining the trends over time, A/I physicians in 2009/10 were less economically satisfied than they were five years ago. A smaller percentage of A/I physicians reported that they were economically satisfied in 2009/10 than in 2004. However, compared to 1999, levels of economic satisfaction were slightly higher in 2009/10. There were more A/I physicians who reported being economically satisfied in 2009/10 (48 percent) than in 1999 (44 percent), and fewer who reported being dissatisfied in 2009/10 (28 percent) than in 1999 (31 percent). In terms of age, the middle age groups (age 45 to 54 and age 55 to 64) were slightly more likely than the others to report being dissatisfied in 2009/10, but the differences were very small.

Finally, a new question was added to the survey in 2009/10 to provide a slightly different assessment of satisfaction with the specialty among A/I physicians. Physicians were asked their level of agreement with the following statement: *I would recommend Allergy and Immunology to a medical student seeking advice on specialty choice*. Figure 50 shows the results. Nearly three-quarters (72 percent) of current A/I physicians reported that they agreed or strongly agreed with the statement, with more than one-third (34 percent) reporting strong agreement. Twelve percent of A/I physicians reported that they disagreed with the statement, with 4 percent reporting strong disagreement.

Figure 50. Level of Agreement with Statement to Recommend the Allergy and Immunology to a Medical Student, 2009/10



6. Recent Changes in A/I Practice

This section begins with an examination of the change in case volume for a selected number of common A/I diagnoses and conditions; moves into data on changes in patient volume, patient care hours, types of referrals, case complexity, practice growth, and income; and ends with an examination of changes in medical liability insurance premiums.

a) Types of Cases

An important factor to consider in assessing trends in A/I practice and possible changes in future demand is the mix of diagnoses in a typical allergist practice. Figures 51 through 62 present the reported changes in 12 selected A/I diagnoses/conditions over the two years prior to the survey. In 2009/10, A/I physicians reported asthma cases as having increased over the two years, but not as greatly as they had reported in 1999 and 2004. A slightly greater percentage of A/I physicians reported a modest decrease in the number of asthma cases. The same patterns were observed in the sinusitis, rhinitis, and chronic cough items. Also, A/I physicians reported that food allergy and atopic dermatitis cases had increased over the past two years in the 2009/10 survey, while they were reported unchanged in 1999. In 2009/10, adverse drug reaction and urticaria/angioedema were reported as increasing over the past two years, with fewer A/I physicians reporting declining numbers of cases as A/I physicians had in 1999 and 2004. A/I physicians reported that insect sting reaction cases continued to decrease in the 2009/10 survey, as they had in the prior surveys. The new condition added in 2009/10, immune deficiency, was reported as being relatively unchanged in the past two years.

Figure 51. Change in Volume of Asthma Cases in the Past Two Years, 1999 – 2009/10

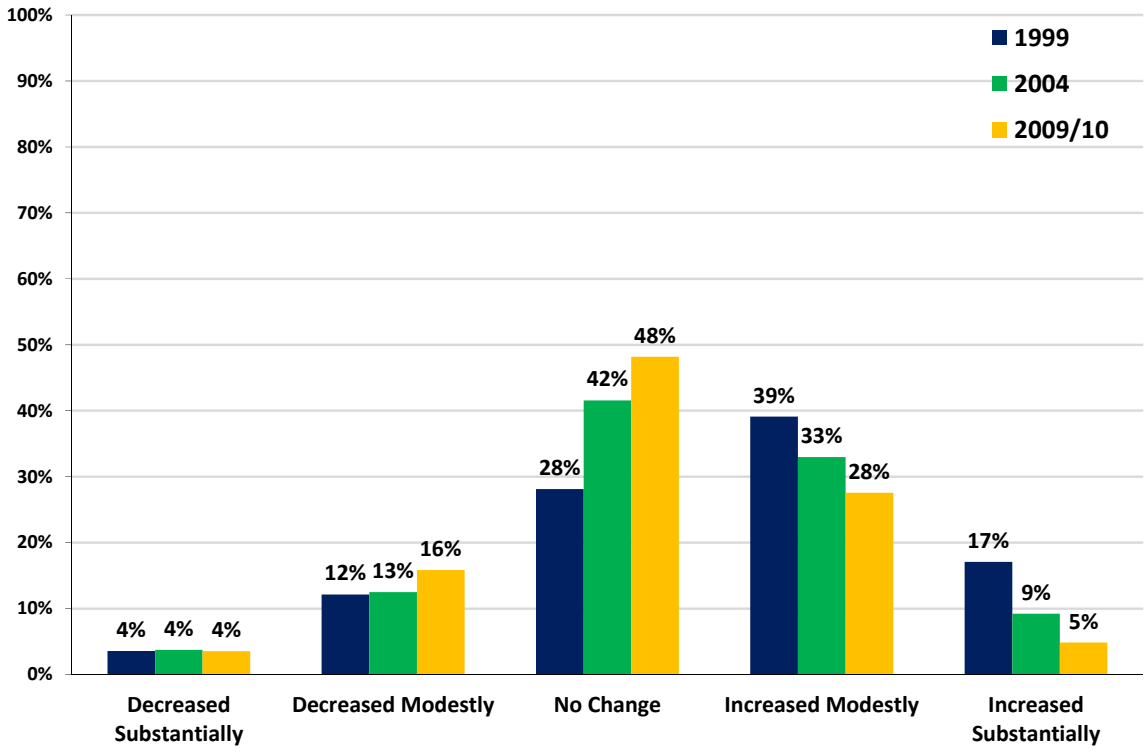


Figure 52. Change in Volume of Sinusitis Cases in the Past Two Years, 1999 – 2009/10

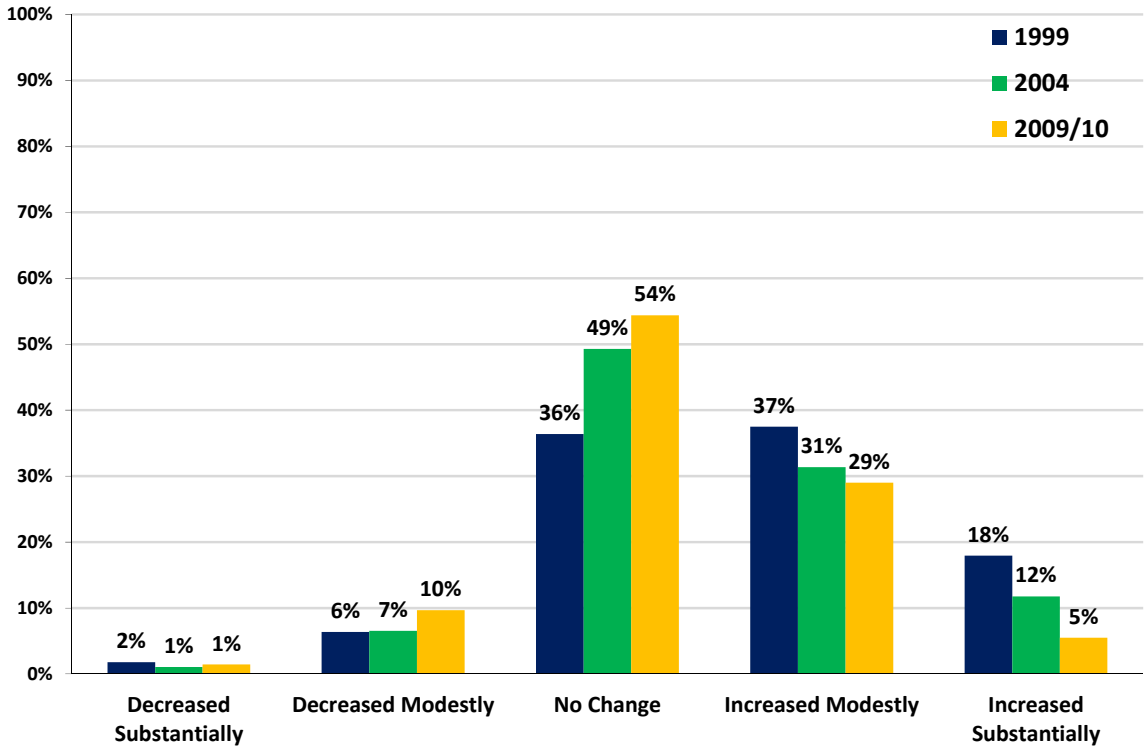


Figure 53. Change in Volume of Rhinitis Cases in the Past Two Years, 1999 – 2009/10

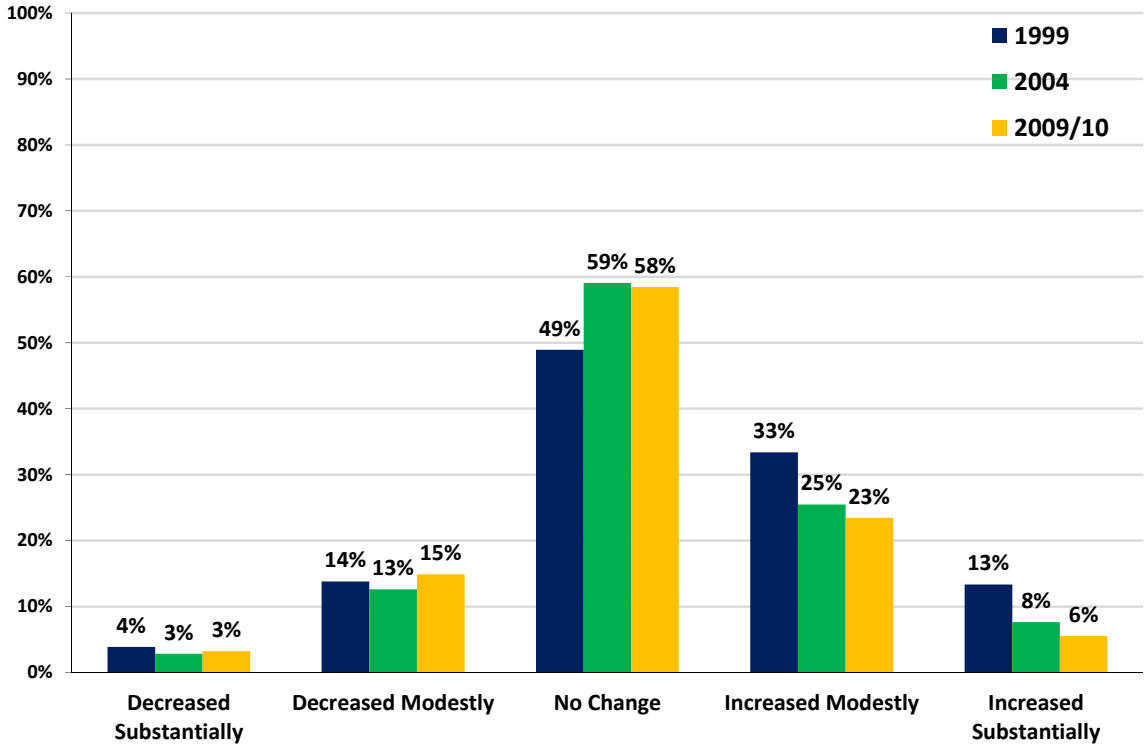


Figure 54. Change in Volume of Food Allergy Cases in the Past Two Years, 1999 – 2009/10

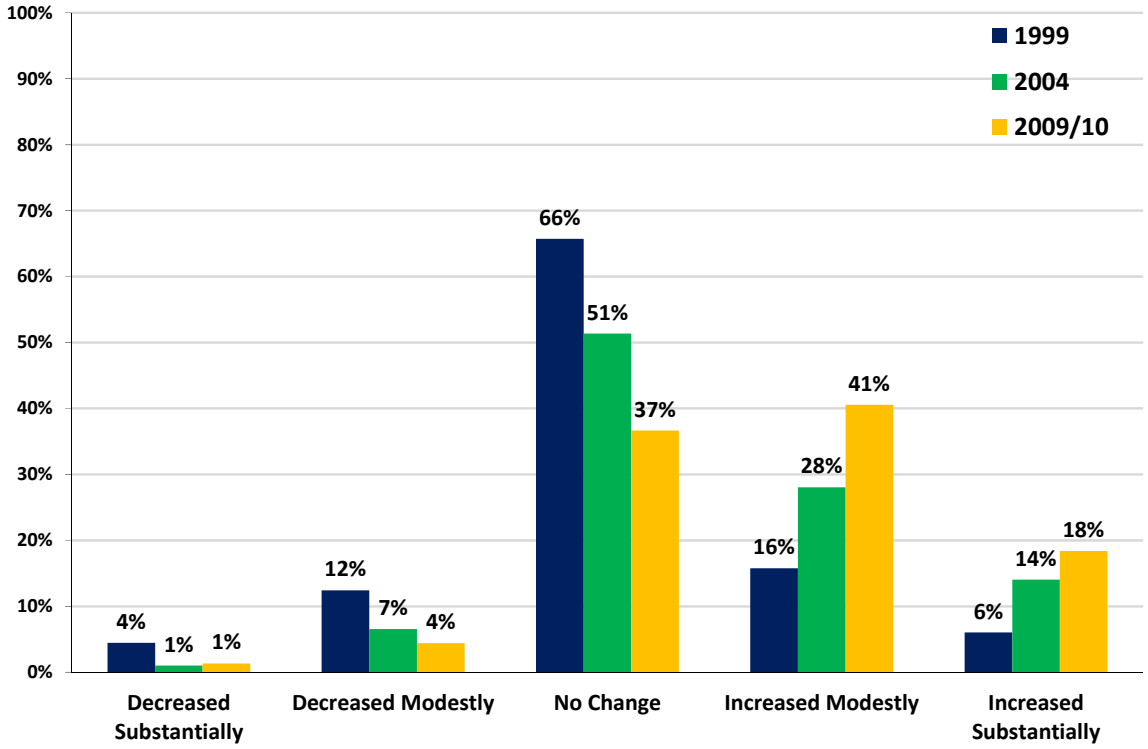


Figure 55. Change in Volume of Atopic Dermatitis Cases in the Past Two Years, 1999 – 2009/10

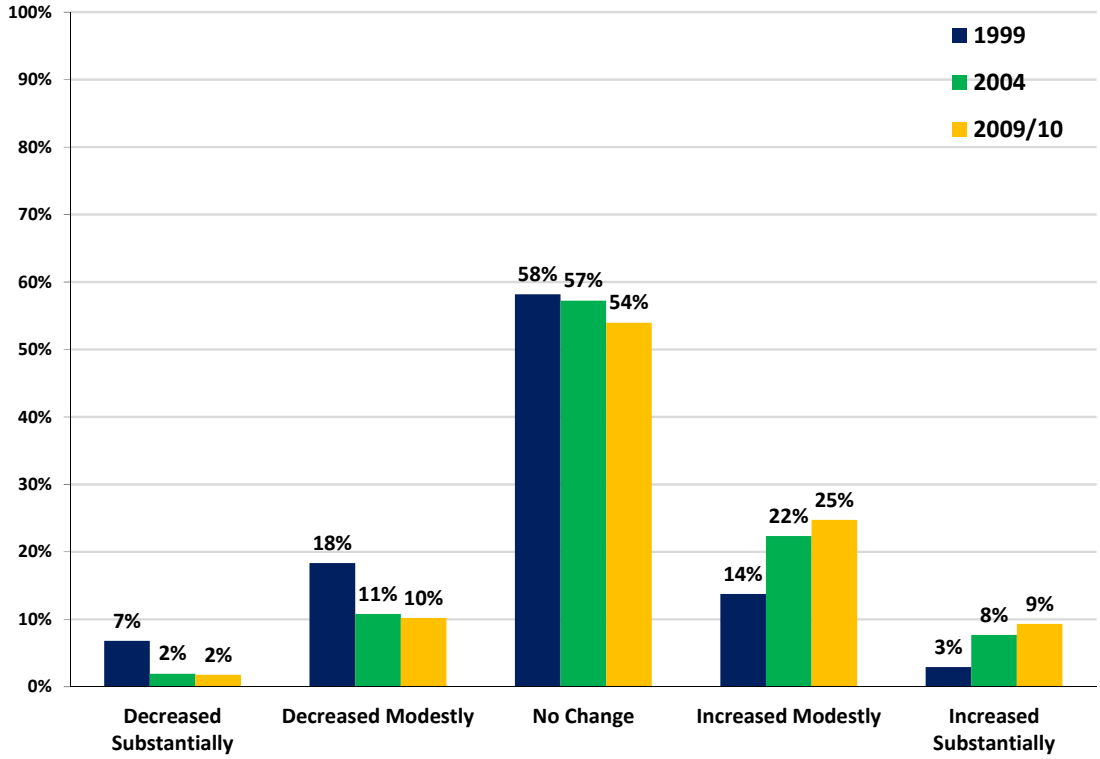


Figure 56. Change in Volume of Contact Dermatitis Cases in the Past Two Years, 2004 – 2009/10

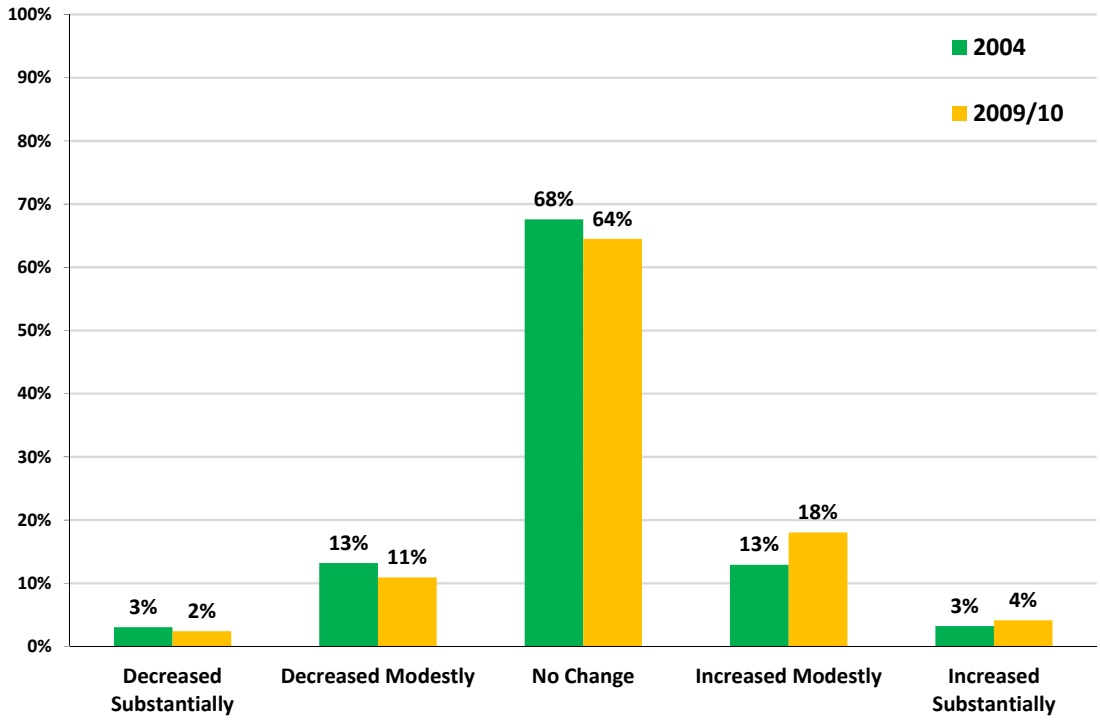


Figure 57. Change in Volume of Immune Deficiency Cases in the Past Two Years, 2009/10

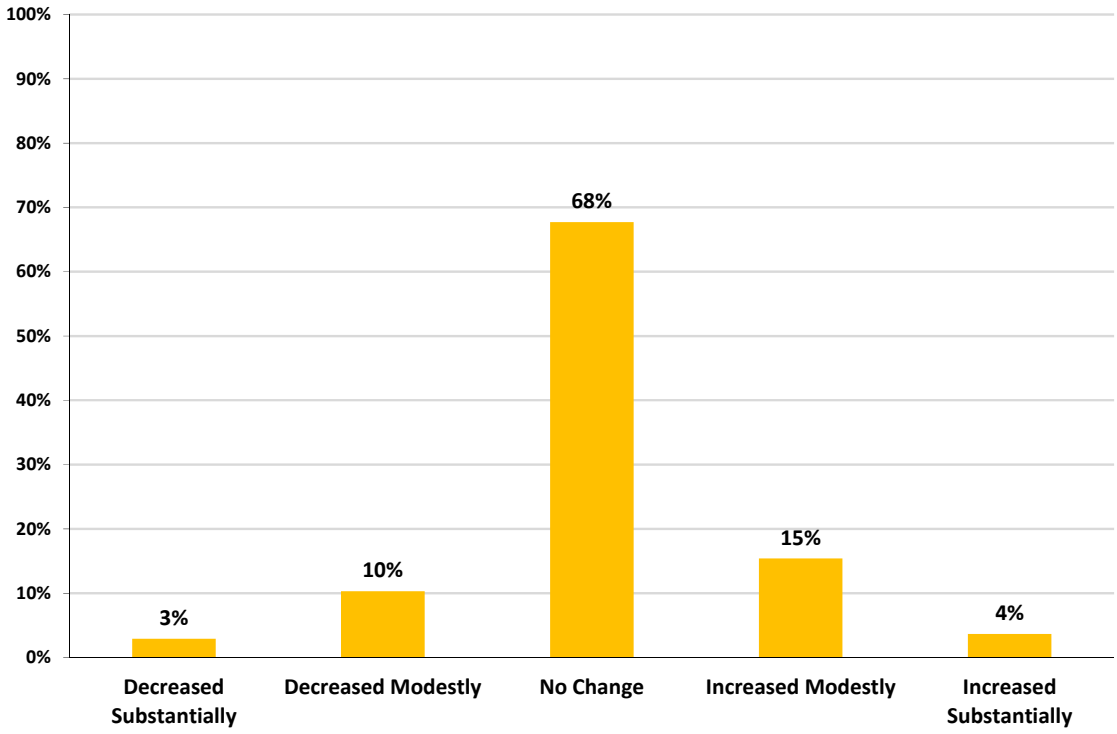


Figure 58. Change in Volume of Chronic Cough Cases in the Past Two Years, 1999 – 2009/10

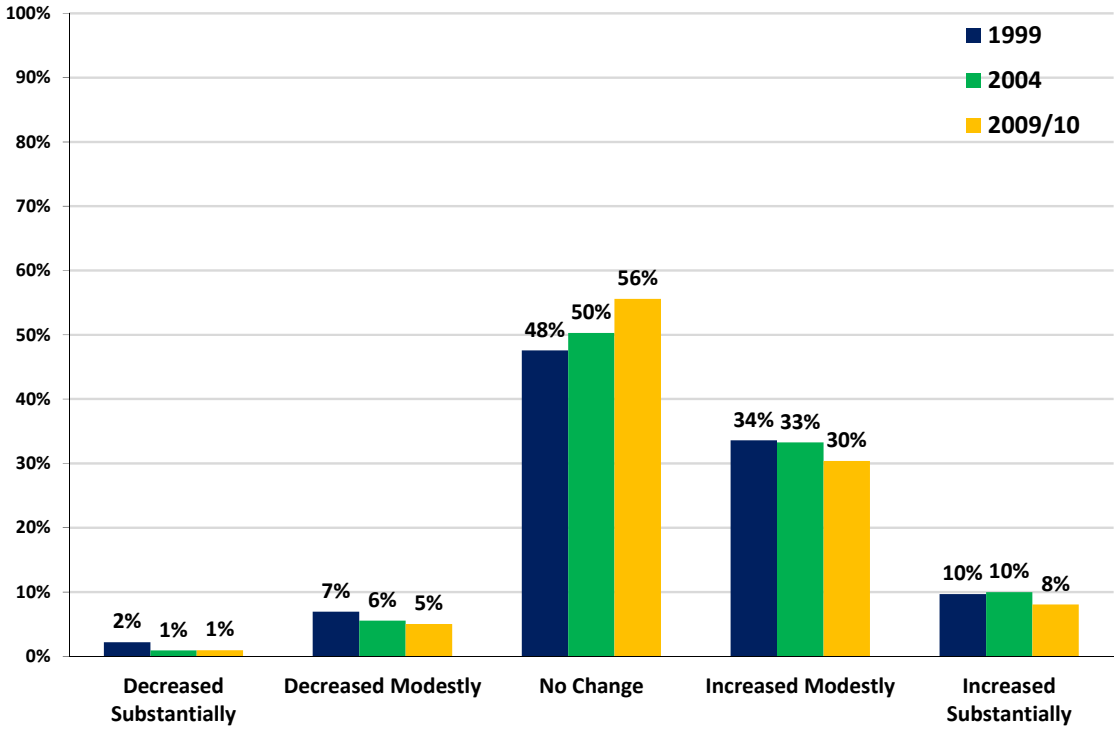


Figure 59. Change in Volume of Adverse Drug Reaction Cases in the Past Two Years, 1999 – 2009/10

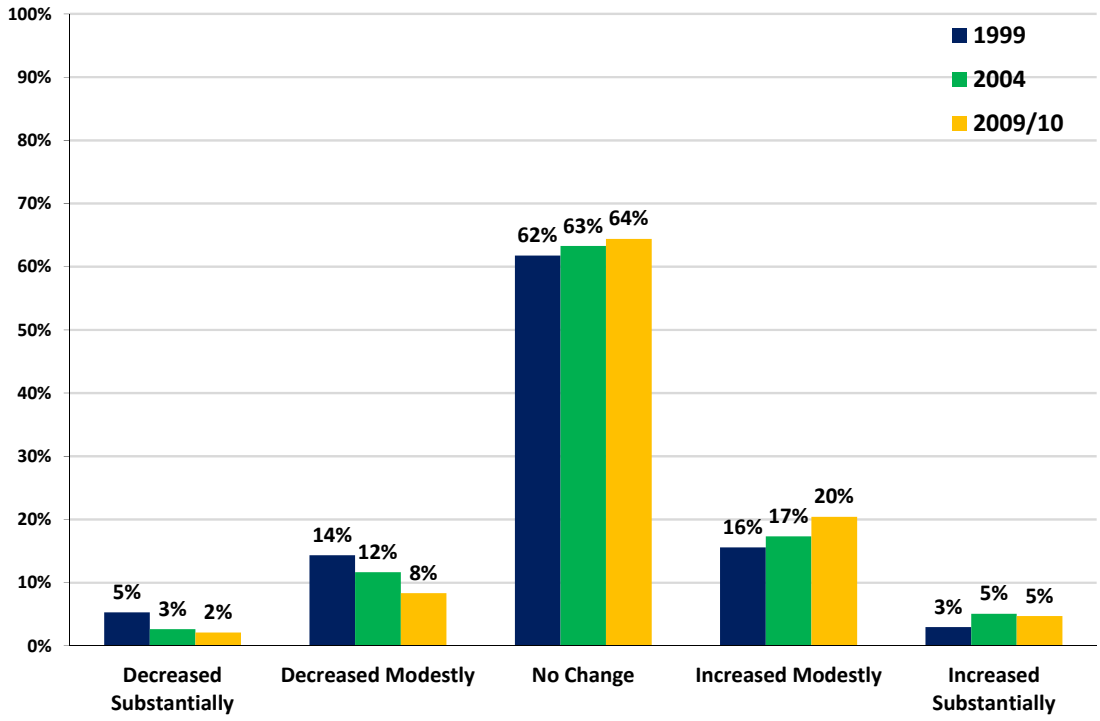


Figure 60. Change in Volume of Urticaria/Angioedema Cases in the Past Two Years, 1999 – 2009/10

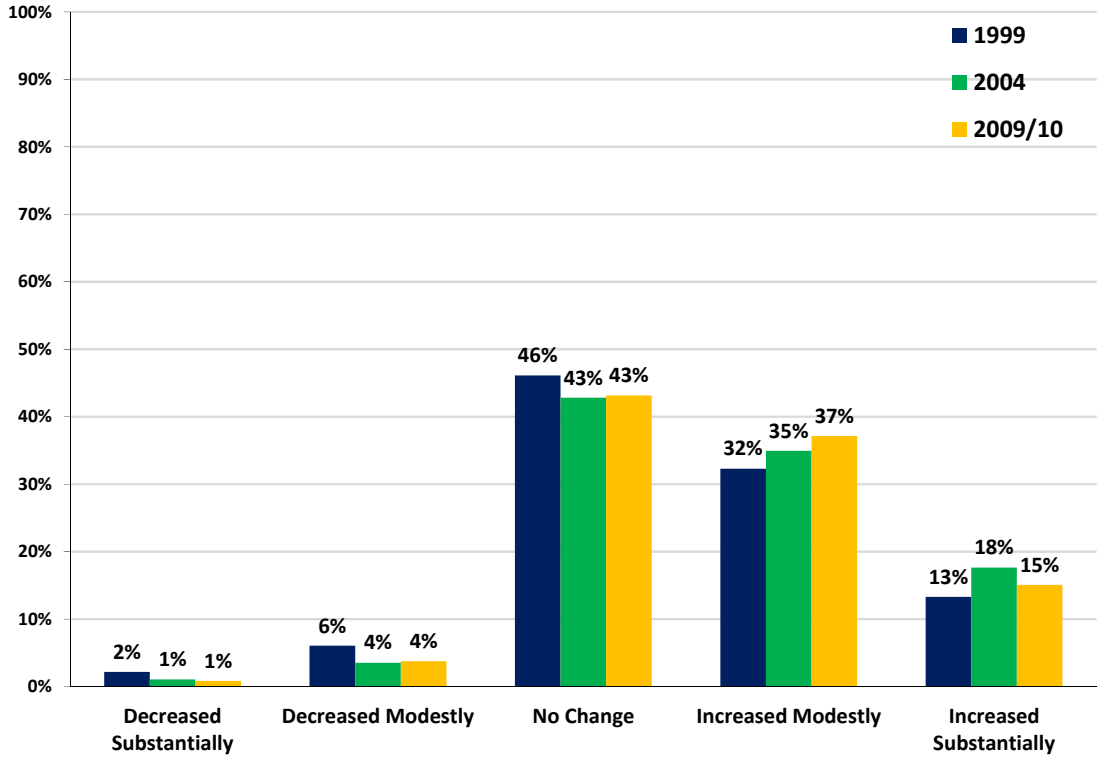


Figure 61. Change in Volume of Insect Sting Reaction Cases in the Past Two Years, 1999 – 2009/10

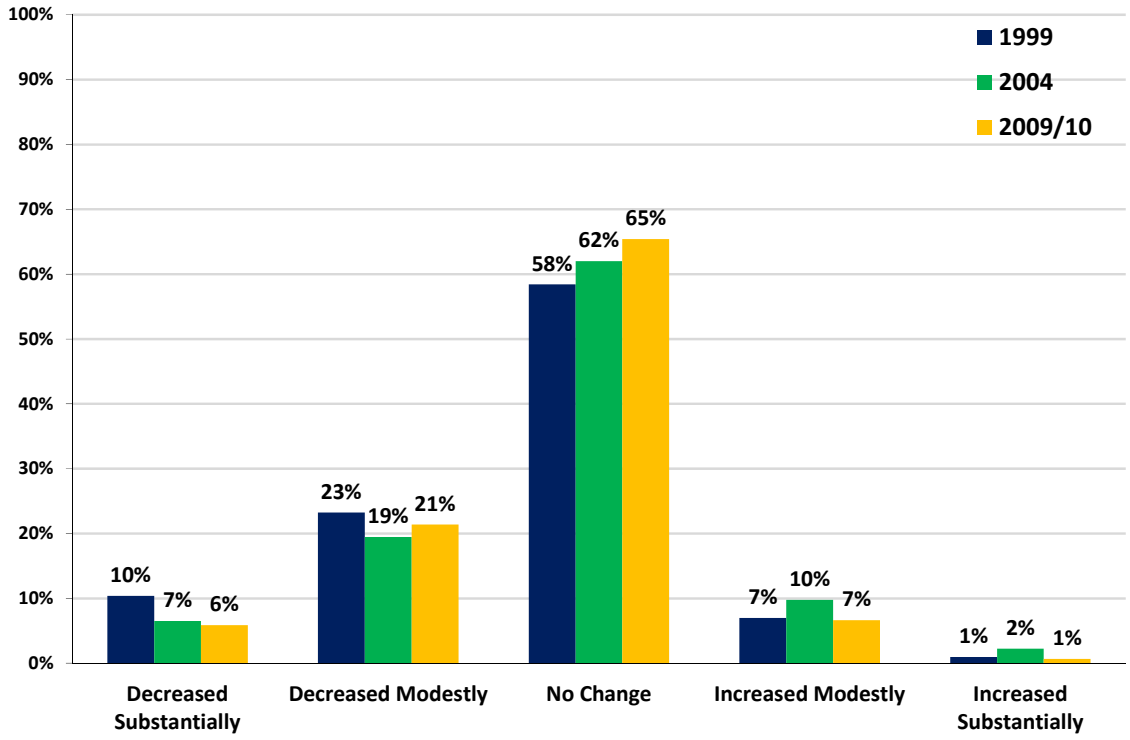
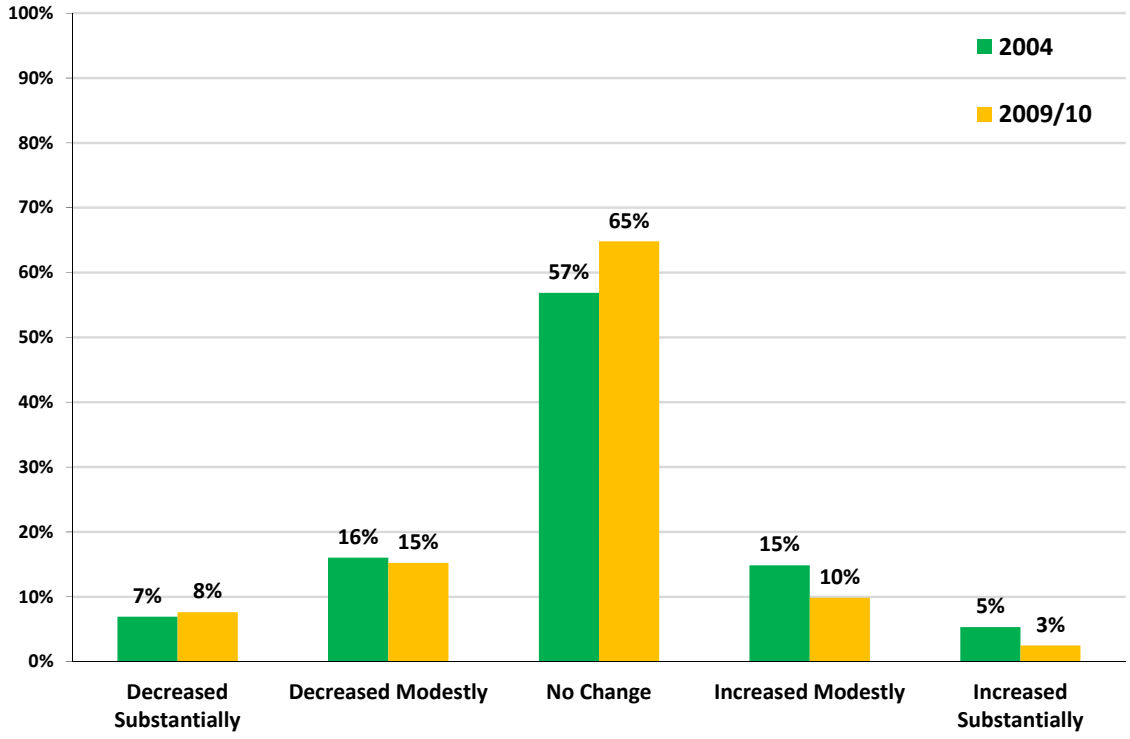


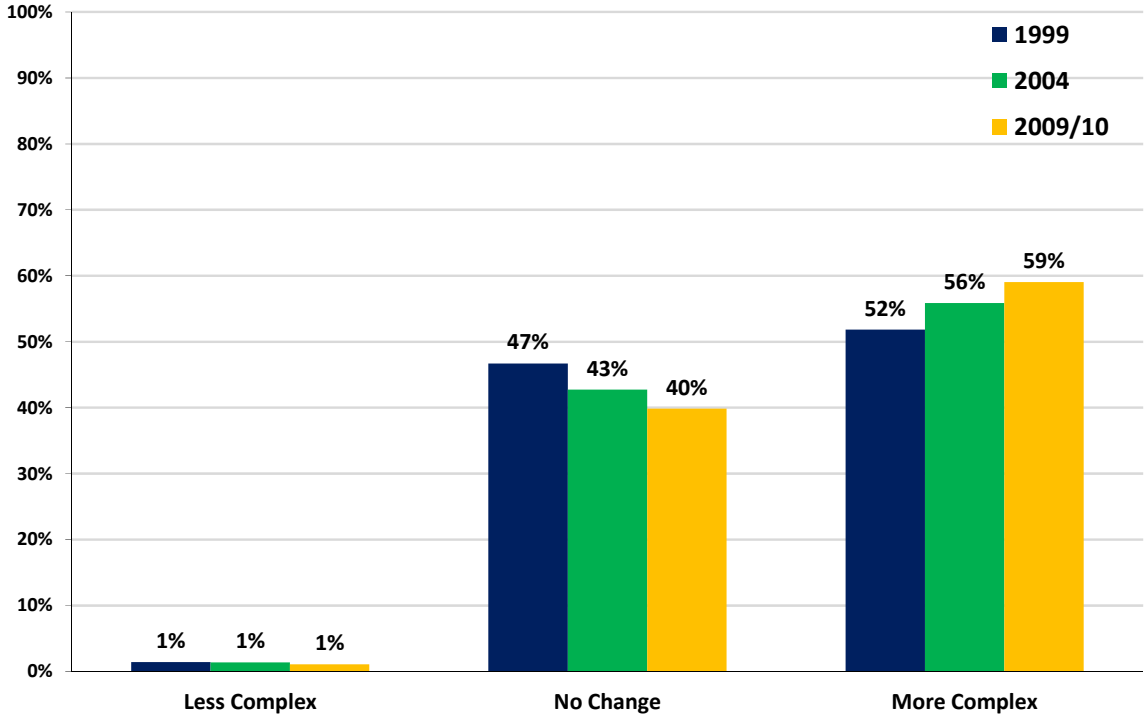
Figure 62. Change in Volume of Environmental Intolerance Syndrome Cases in the Past Two Years, 2004 – 2009/10



b) Case Complexity

Another aspect of A/I practice that was considered were changes in case complexity; that is, whether A/I physicians continued to see more complex cases and how that might have changed since 2004. One of the most striking and important findings in the 1999 survey was the growing complexity of the cases A/I physicians reported. In 2004, A/I physicians continued to report a higher level of complexity in the patients they treated. The responses in 2004 showed a slight increase in the proportion of A/I physicians who reported increasing case complexity. The survey responses in 2009/10 continued the trend observed in the prior surveys (Figure 63).

Figure 63. Change in Case Complexity Among A/I Physicians in the Past Two Years, 1999 – 2009/10



Changes in case complexity varied very slightly by age (Figure 64). As was observed in the 1999 and 2004 surveys, changes in case complexity increased in the age groups younger than age 65. In the oldest age group, about half of the A/I physicians reported no change in complexity. In general, however, the patterns were very similar across age groups. Over time, fewer A/I physicians reported no change in case complexity, more reported increasing complexity, and very few reported decreasing complexity. Potential

explanations for these variations include maturity of the practice, practice capacity issues, and willingness to take on more complex patients. Additional data would be needed to fully examine these possible explanations.

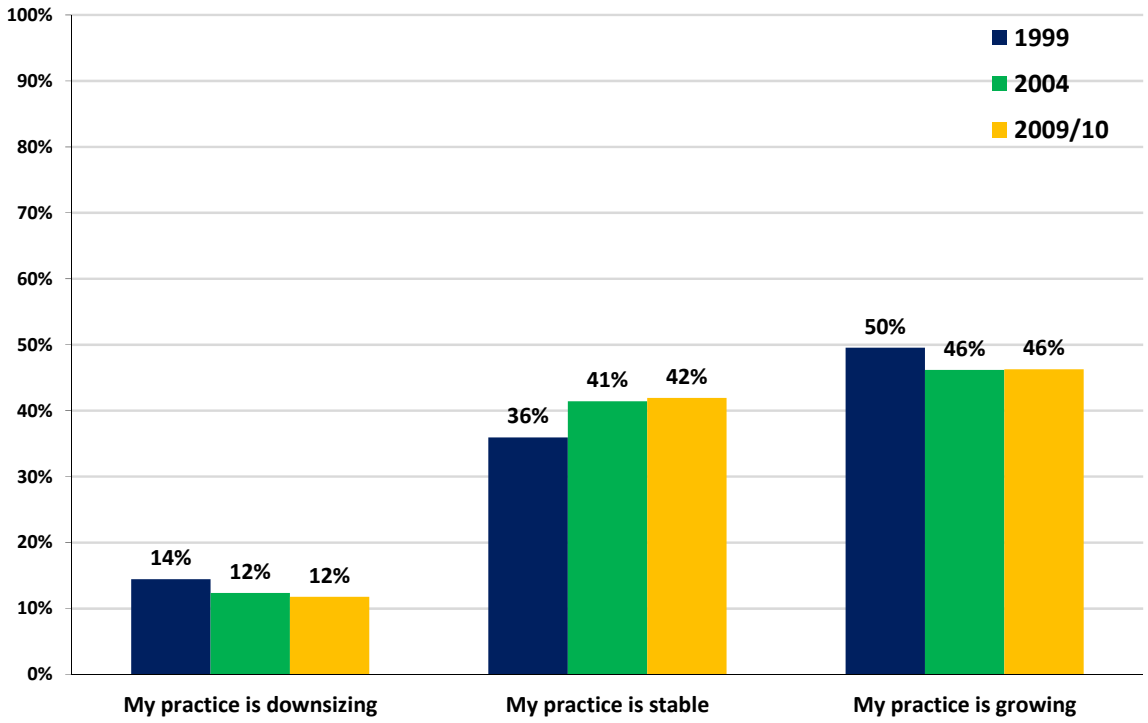
Figure 64. Change in Case Complexity in the Past Two Years by Age of A/I Physician, 1999 – 2009/10

	Less Complex			No Change			More Complex		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	1%	2%	2%	44%	43%	44%	55%	55%	54%
45 to 54 years of age	2%	1%	1%	43%	39%	35%	56%	60%	64%
55 to 64 years of age	2%	1%	1%	50%	43%	36%	48%	56%	63%
65 years of age and older	1%	1%	1%	57%	51%	49%	42%	48%	51%

c) Practice Growth

Slightly less than half (46 percent) of A/I physicians reported that their practices were growing in 2009/10 (Figure 65). This number was the same as reported in 2004, and down from 50 percent in 1999. At the same time, 12 percent of A/I physicians reported they were downsizing their practices.

Figure 65. Recent A/I Practice Changes Among A/I Physicians, 1999 – 2009/10



Age, not surprisingly, played a role here, with the youngest A/I physicians most likely to report growing practices (Figure 66). However, in all but the oldest age group, the percentage of A/I physicians who reported that their practices were growing was higher than those who reported they were downsizing. Among the oldest A/I physicians, the percent that reported downsizing their practices has decreased over time from 35 percent in 1999 to about 25 percent in 2004 and 2009/10. Between 2004 and 2009/10, the data were stable, with only a couple of exceptions (e.g., A/I physicians age 45 to 54 were more likely to report stable practices and less likely to report growing or downsizing practices in 2009/10 than in 2004).

Figure 66. Recent A/I Practice Changes by Age of A/I Physician, 1999 – 2009/10

	My Practice is Downsizing			My Practice is Stable			My Practice is Growing		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	5%	4%	4%	21%	23%	23%	74%	73%	72%
45 to 54 years of age	12%	11%	8%	40%	37%	43%	48%	52%	49%
55 to 64 years of age	20%	15%	15%	44%	55%	54%	36%	30%	31%
65 years of age and older	34%	25%	26%	48%	50%	52%	18%	24%	22%

In 2009/10, A/I physicians who reported that their practices were growing were asked a follow-up question on whether they were recruiting or planning to add another A/I physician to their practice. Thirty percent of those whose practices were growing reported recruiting or planning to add another A/I physician.

d) Practice Income

Perhaps due to the reported growth in their practice, a substantial number (31 percent) of A/I physicians also reported growth in their practice income over the past two years (Figure 67). At the same time, this figure was lower than the 36 percent who reported growing incomes in 2004. The data from 2009/10 appeared to mark a return to the levels observed in 1999 after the increases observed in 2004. The largest difference between 1999 and 2009/10 was that there were fewer A/I physicians who reported lower incomes and more who reported stable incomes. In terms of age (Figure 68), the younger A/I physicians were most likely to report increased income, while the older A/I physicians were most likely to report decreased income. Whether the decline in income in the older age groups was voluntary (e.g., slowing down a practice in preparation for retirement) or involuntary was beyond the scope of the survey data.

Figure 67. Change in Personal Practice Income Among A/I Physicians, 1999 – 2009/10

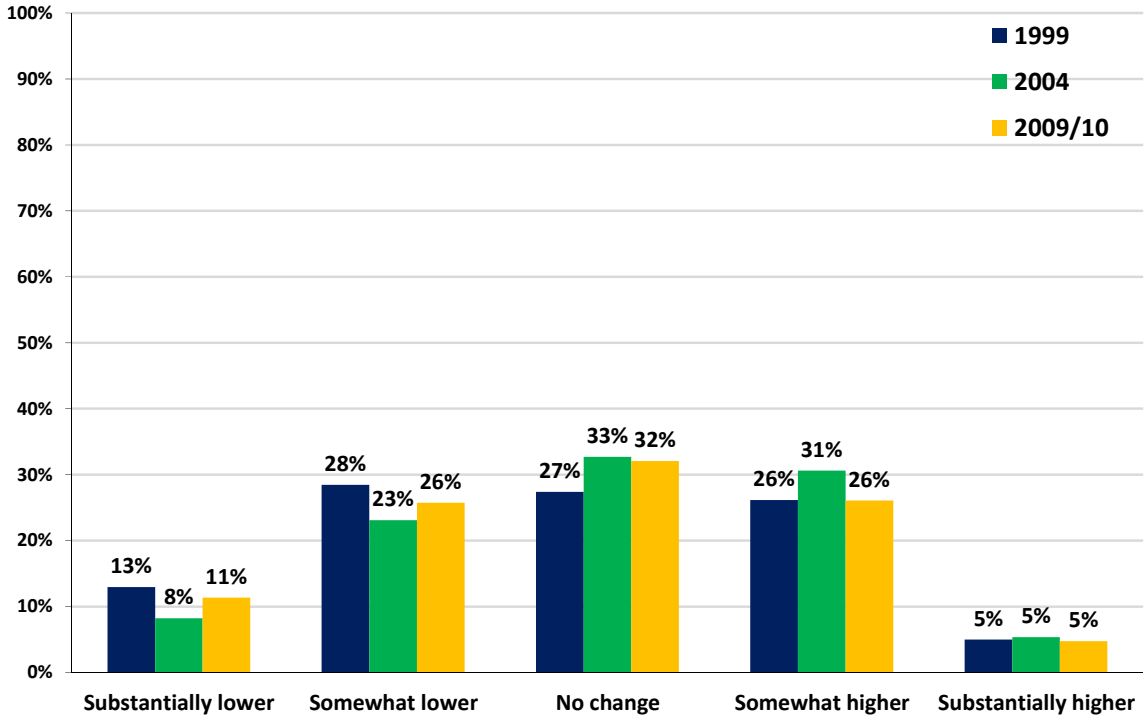


Figure 68. Change in Personal Practice Income by Age of A/I Physician, 1999 – 2009/10

	Substantially Lower			Somewhat Lower			No Change			Somewhat Higher			Substantially Higher		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	7%	4%	3%	20%	12%	14%	26%	33%	35%	37%	41%	37%	10%	11%	10%
45 to 54 years of age	11%	7%	12%	32%	23%	28%	27%	28%	31%	27%	35%	26%	3%	6%	4%
55 to 64 years of age	19%	12%	15%	30%	26%	31%	29%	36%	29%	18%	24%	22%	4%	2%	2%
65 years of age and older	22%	11%	20%	36%	33%	32%	28%	35%	35%	13%	18%	12%	1%	2%	2%

e) Patient Volume

In 2009/10, A/I physicians continued to report seeing more A/I patients over the past two years, but not at the same pace as they did in 1999 (Figure 69). In 2009/10, more than one-third (36 percent) of the A/I physicians reported seeing more A/I patients compared to 42 percent in 1999 and 34 percent in 2004. Moreover, more than one-quarter (27 percent) of A/I physicians reported seeing fewer A/I patients in 2009/10. That represented an increase since 2004 (22 percent). In terms of age, as with many of the other practice characteristics presented, the younger groups of A/I physicians were more likely to report seeing more A/I patients than older physicians (Figure 70). It should also be noted that the percent of A/I physicians who reported seeing fewer A/I patients increased in every age group between 2004 and 2009/10.

Figure 69. Change in the Number of A/I Patients in the Past Two Years, 1999 – 2009/10

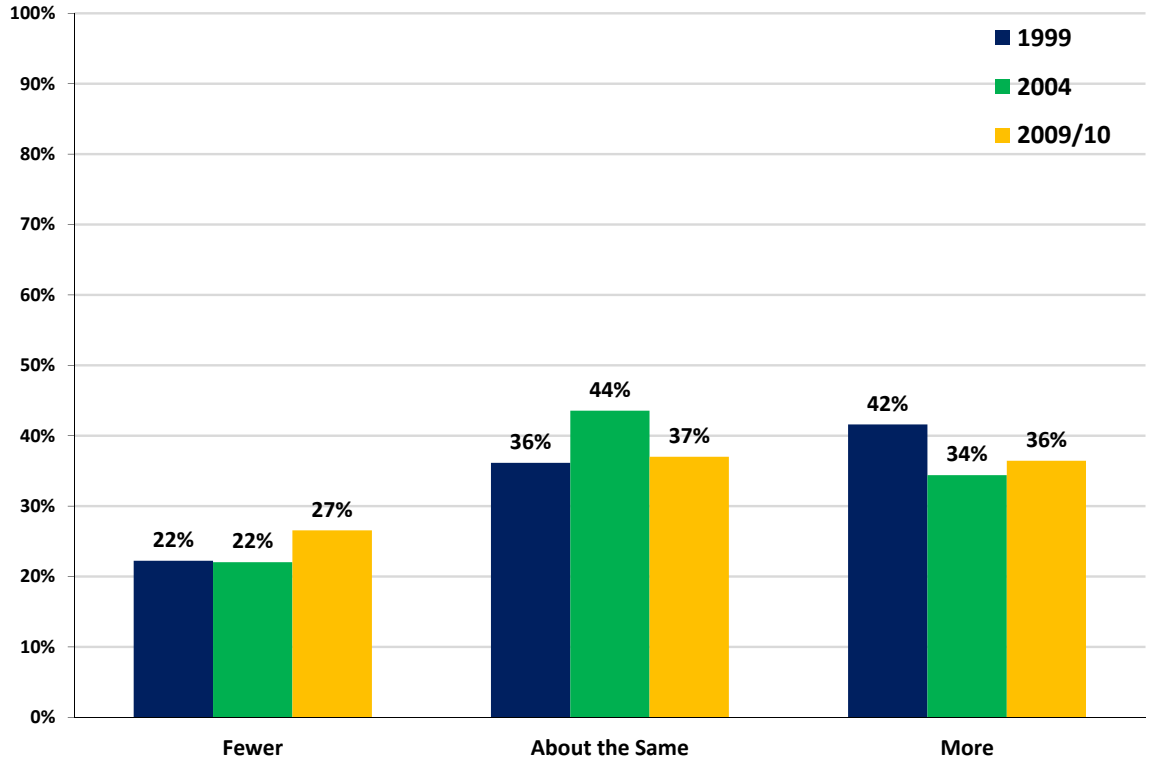


Figure 70. Change in the Number of A/I Patients in the Past Two Years by Age of A/I Physician, 1999 – 2009/10

	Fewer			About the Same			More		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	13%	11%	15%	28%	36%	26%	59%	53%	60%
45 to 54 years of age	20%	21%	28%	40%	43%	35%	39%	37%	37%
55 to 64 years of age	28%	27%	31%	38%	48%	44%	34%	25%	25%
65 years of age and older	39%	31%	33%	42%	48%	46%	19%	21%	20%

The volume of non-A/I patients treated by A/I physicians showed evidence of volatility. While half (50 percent) of A/I physicians reported treating the same number of non-A/I patients over the past two years in 2009/10 (Figure 71), 28 percent reported treating more and 22 percent reported treating fewer. Relative to the previous A/I workforce surveys, fewer A/I physicians reported treating the same number of non-A/I patients (50 percent in 2009/10 compared with 66 percent in2004 and 55 percent in 1999). The likelihood of treating more non-A/I patients varied directly with age; younger A/I physicians were most likely to report treating more non-A/I patients (Figure 72). Moreover, the differences between the age groups were greater in 2009/10 than in the past.

Figure 71. Change in the Number of Non-A/I Patients in the Past Two Years, 1999 – 2009/10

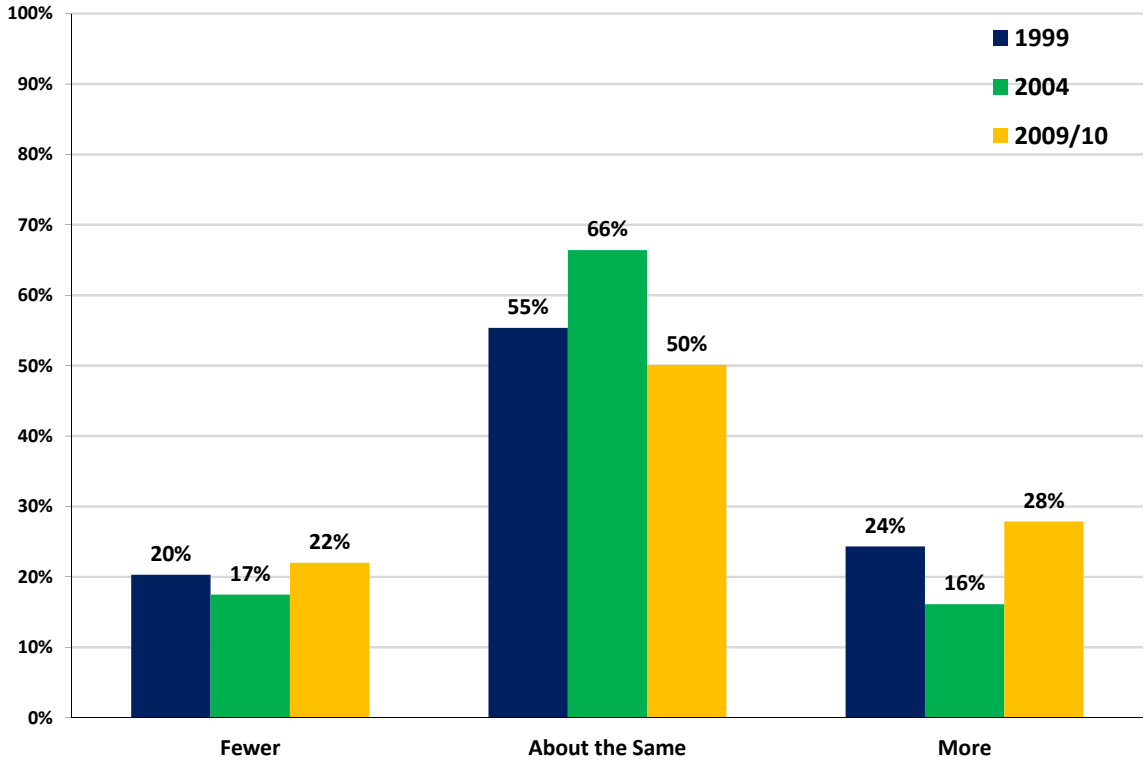


Figure 72. Change in the Number of Non-A/I Patients in the Past Two Years by Age of A/I Physician, 1999 – 2009/10

	Fewer			About the Same			More		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	16%	11%	13%	57%	65%	44%	27%	24%	43%
45 to 54 years of age	16%	16%	23%	59%	68%	49%	25%	16%	28%
55 to 64 years of age	23%	19%	23%	52%	67%	53%	25%	14%	23%
65 years of age and older	36%	25%	28%	50%	64%	56%	14%	11%	17%

f) Hours Spent in Patient Care

More than one-quarter (29 percent) of A/I physicians reported spending more hours in A/I patient care per week over the past two years in 2009/10 (Figure 73). Only 10 percent reported spending fewer hours in A/I patient care. Compared to 2004, more A/I physicians reported increases in the number of hours spent in A/I patient care per week, while an equal percentage reported spending fewer hours. These observations corroborate the data presented earlier comparing data on reported hours spent in patient care in 2004 and 2009/10. A negative linear association between age and spending more hours in A/I patient care was evident, as the percentage who reported more hours in A/I patient care decreased in each successive age group (Figure 74). In 2009/10, however, the two youngest groups of A/I physicians reported very similarly.

Figure 73. Change in the Number of Hours Spent in A/I Patient Care per Week in the Past Two Years, 1999 – 2009/10

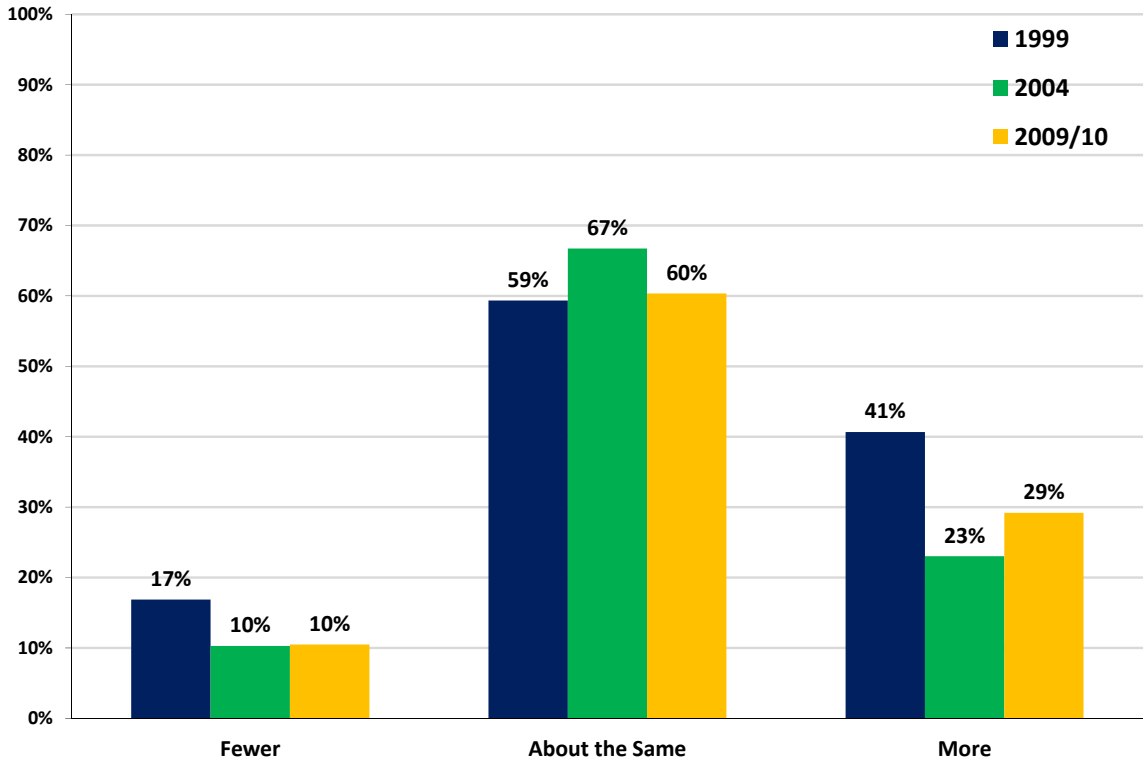


Figure 74. Change in the Number of Hours Spent in A/I Patient Care per Week in the Past Two Years by Age of A/I Physician, 1999 – 2009/10

	Fewer			About the Same			More		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	7%	5%	6%	47%	60%	56%	46%	35%	38%
45 to 54 years of age	11%	6%	6%	51%	66%	58%	37%	27%	35%
55 to 64 years of age	19%	14%	14%	52%	71%	61%	29%	16%	25%
65 years of age and older	34%	21%	18%	56%	69%	69%	10%	10%	13%

Figure 75. Change in the Number of Hours Spent in Non-A/I Patient Care per Week in the Past Two Years, 1999 – 2009/10

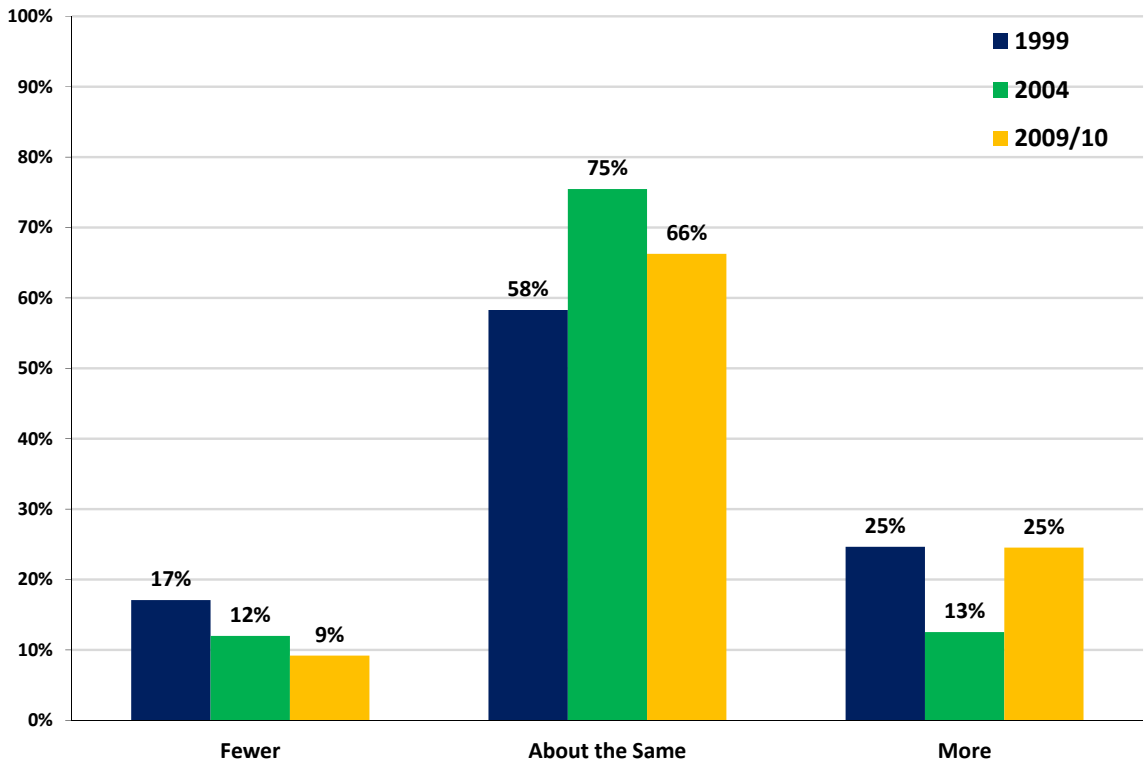


Figure 76. Change in the Number of Hours Spent in Non-A/I Patient Care per Week in the Past Two Years by Age of A/I Physician, 1999 – 2009/10

	Fewer			About the Same			More		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	15%	12%	10%	60%	74%	57%	25%	14%	33%
45 to 54 years of age	13%	9%	6%	57%	77%	65%	30%	14%	29%
55 to 64 years of age	16%	13%	10%	58%	76%	67%	26%	10%	23%
65 years of age and older	33%	17%	14%	58%	72%	76%	9%	11%	10%

In terms of non-A/I patient care hours per week, two-thirds (66 percent) of A/I physicians reported no change in the past two years in 2009/10 (Figure 75). One quarter (25 percent) of A/I physicians reported spending more hours in non-A/I patient care per week, almost twice the percentage who reported similarly in 2004. A small percentage (9 percent) reported that they spent few hours in non-A/I patient care. There were small age group differences in the percentages of A/I physicians reporting changes in non-A/I patient care hours per week, with slightly more younger physicians reporting more hours and slightly more of the oldest A/I physicians reporting fewer hours (Figure 76). Over time, however, there was a clear downward trend in the percentage of the oldest group of A/I physicians who reported treating fewer non-A/I patients (33 percent in 1999, 17 percent in 2004, and 14 percent in 2009/10).

g) Sources of Referrals to A/I Physicians

In 2009/10, a battery of questions was added to collect information on trends in the number of referrals to A/I physicians from different sources. The sources addressed included physicians, nurse practitioners, physician assistants, and patient self-referrals.

Figure 77. Change in the Number of Patients who were Referred by Physicians in the Past Two Years, 2009/10

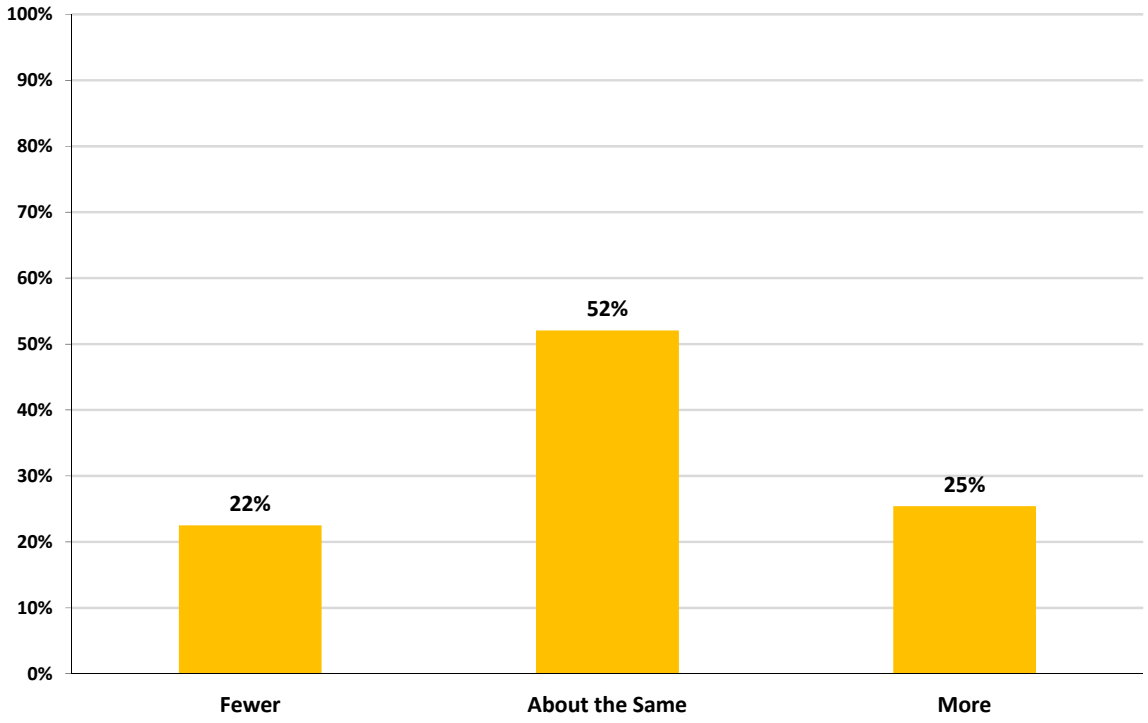
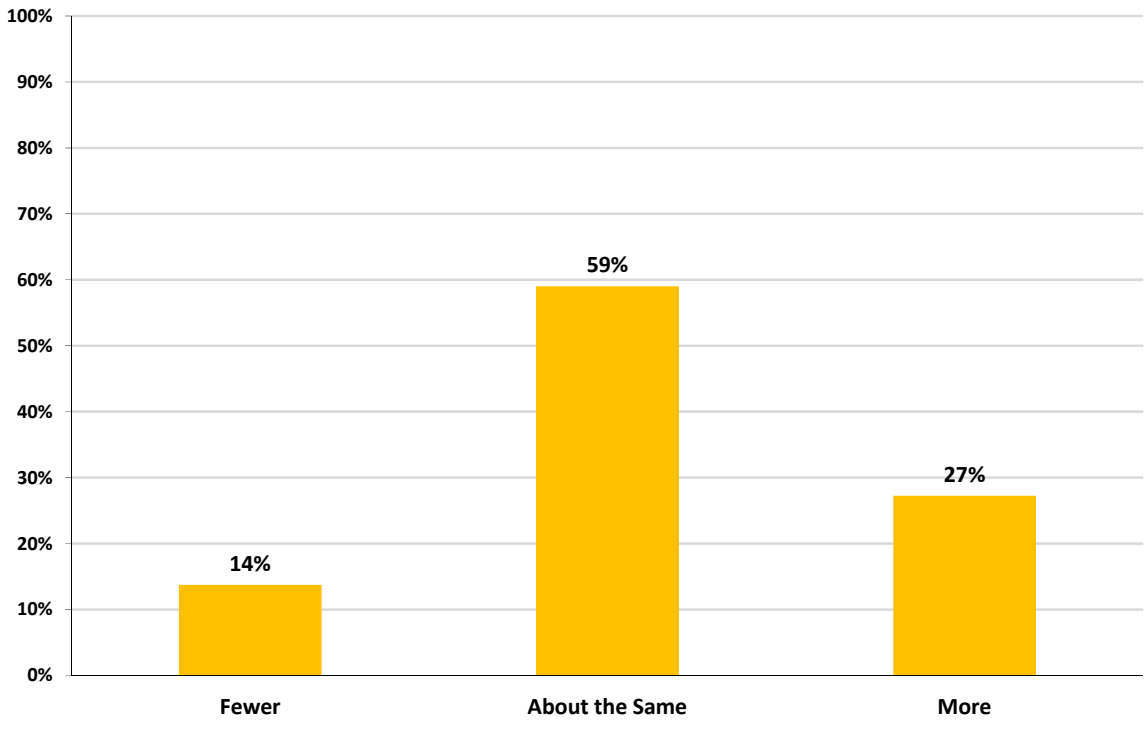


Figure 78. Change in the Number of Patients who were Referred by Physicians in the Past Two Years by Age of A/I Physician, 2009/10

	Fewer	About the same	More
Younger than 45 years of age	14%	45%	41%
45 to 54 years of age	25%	53%	22%
55 to 64 years of age	27%	56%	17%
65 years of age and older	21%	58%	21%

Half (52 percent) of A/I physicians reported that the number of referrals from physicians remained the same over the previous two years (Figure 77). Nearly equal percentages (22 percent and 25 percent) of A/I physicians reported fewer and more referrals from physicians, respectively. There was some variation observed in change in physician referrals by age, with a larger percentage of the youngest group of A/I physicians reporting the more physician referrals than the other age groups (Figure 78).

Figure 79. Change in the Number of Patients who were Referred by Nurse Practitioners and Physician Assistants in the Past Two Years, 2009/10



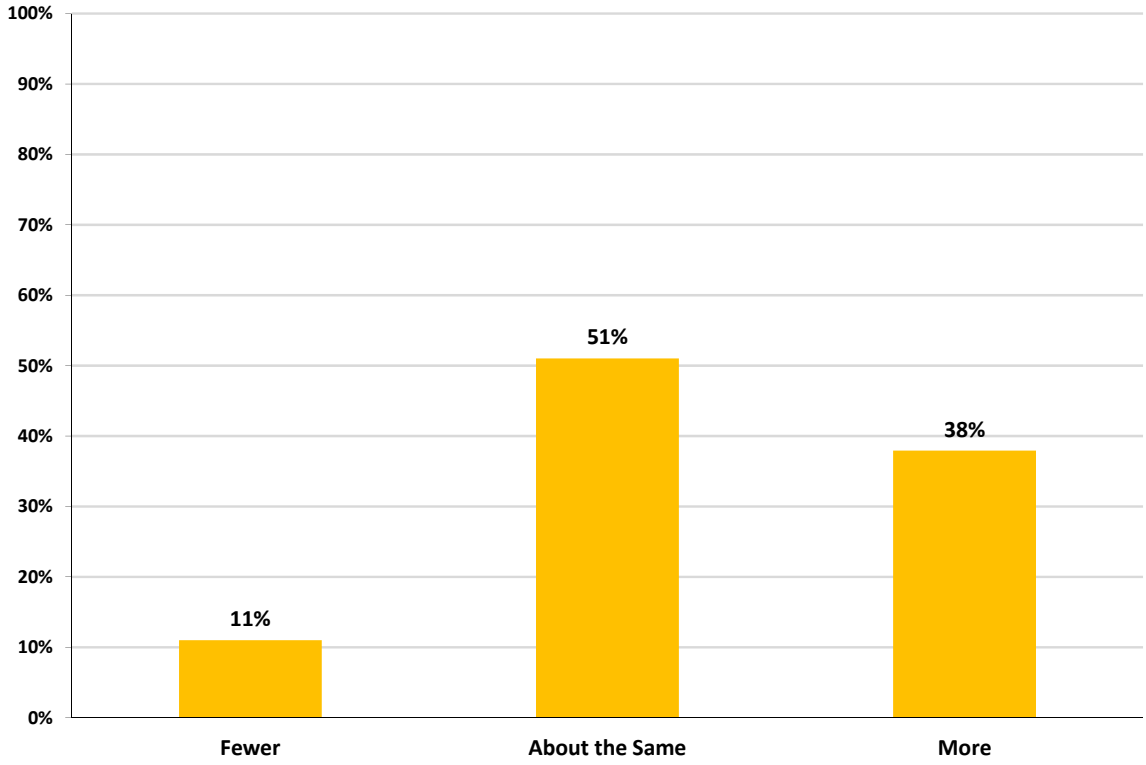
Similar percentages of A/I physicians reported changes in the number of referrals from nurse practitioners and physician assistants. More than half (59 percent) of A/I physicians reported that the number of referrals form nurse practitioners and physician assistants remained the same over the previous two years (Figure 79). More than one-quarter (27 percent) of A/I physicians reported that referrals from these professionals had increased. Fourteen percent reported that referrals had decreased. A negative linear relationship was observed between the percentage of A/I physicians who reported more referrals from nurse practitioners and physician assistants and the age of the A/I physician (Figure 80). On the other hand, the youngest group of A/I physicians was less likely to report decreases in referrals from these health professionals (8 percent compared to 15 to 16 percent).

Figure 80. Change in the Number of Patients who were Referred by Nurse Practitioners and Physician Assistants in the Past Two Years by Age of A/I Physician, 2009/10

	Fewer	About the same	More
Younger than 45 years of age	8%	55%	37%
45 to 54 years of age	15%	57%	28%
55 to 64 years of age	15%	62%	22%
65 years of age and older	16%	65%	19%

More than one-third (38 percent) of A/I physicians reported that self-referred patients increased over the past two years (Figure 81). Slightly more than half (51 percent) reported that the number of self-referred patients remained the same, while 11 percent reported that the number decreased.

Figure 81. Change in the Number of Self-Referred Patients in the Past Two Years, 2009/10



A negative linear relationship was observed between the percentage of A/I physicians who reported more self-referred patients from nurse practitioners and physician assistants and the age of the A/I physician (Figure 82). The converse (i.e., a positive linear relationship) was also observed for the percentages of A/I physicians who reported fewer or about the same number of self-referred patients in the past two years. As A/I physicians aged, larger percentages reported fewer or the same amount of self-referred patients.

Figure 82. Change in the Number of Self-Referred Patients in the Past Two Years by Age of A/I Physician, 2009/10

	Fewer	About the same	More
Younger than 45 years of age	6%	43%	51%
45 to 54 years of age	11%	50%	39%
55 to 64 years of age	12%	54%	33%
65 years of age and older	16%	62%	23%

h) Insurance Status of Patients

In 2009/10, nearly one-half (43 percent) of A/I physicians reported that the number of patients they served who were covered by Medicaid increased in the past two years (Figure 83). Only 9 percent reported that the number of Medicaid patients they served had decreased during the time period. The remainder (48 percent) reported no change. These reports from A/I physicians were dramatically different than those made in 2004, undoubtedly a result of the recession that started in 2008. Younger A/I physicians were more likely than the oldest group of A/I physicians to have reported that the number of patients covered by Medicaid had increased over the past two years (Figure 84). The pattern observed among all A/I physicians, for the most part, was also observed among the three younger age groups.

Figure 83. Change in the Number of Patients Covered by Medicaid in the Past Two Years, 2004 – 2009/10

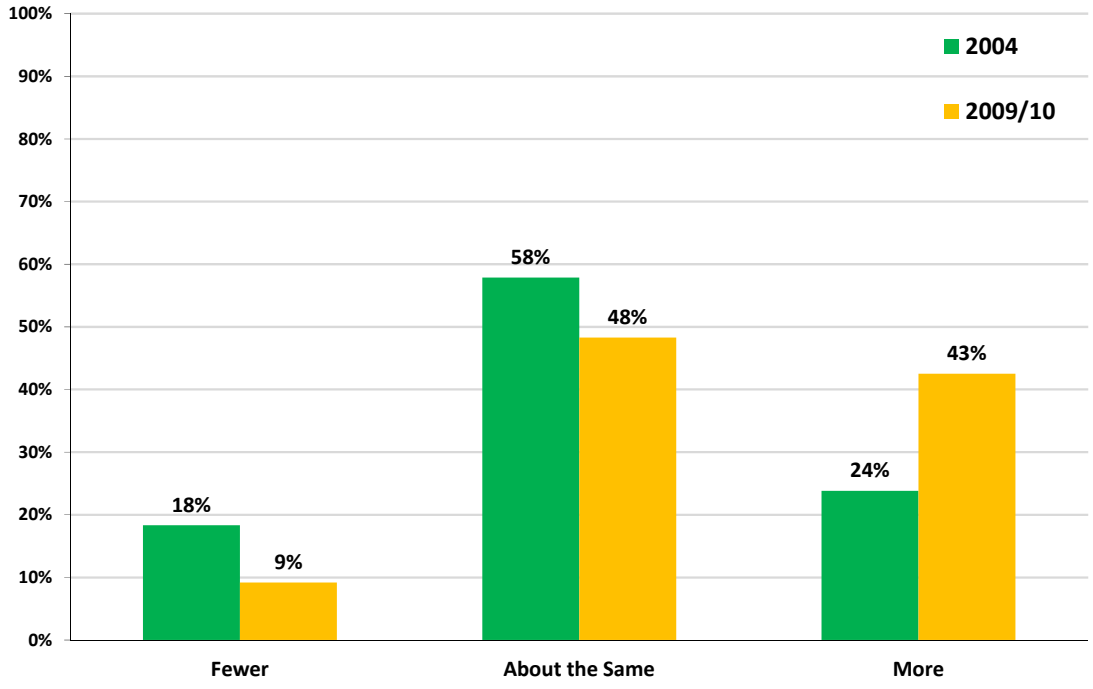


Figure 84. Change in the Number of Patients Covered by Medicaid in the Past Two Years by Age of A/I Physician, 2004 – 2009/10

	Fewer		About the Same		More	
	2004	2009/10	2004	2009/10	2004	2009/10
Younger than 45 years of age	16%	7%	56%	44%	28%	49%
45 to 54 years of age	15%	9%	56%	44%	29%	48%
55 to 64 years of age	19%	11%	60%	49%	21%	40%
65 years of age and older	27%	10%	60%	60%	13%	30%

Figure 85. Change in the Number of Patients Covered by Medicare in the Past Two Years, 2004 – 2009/10

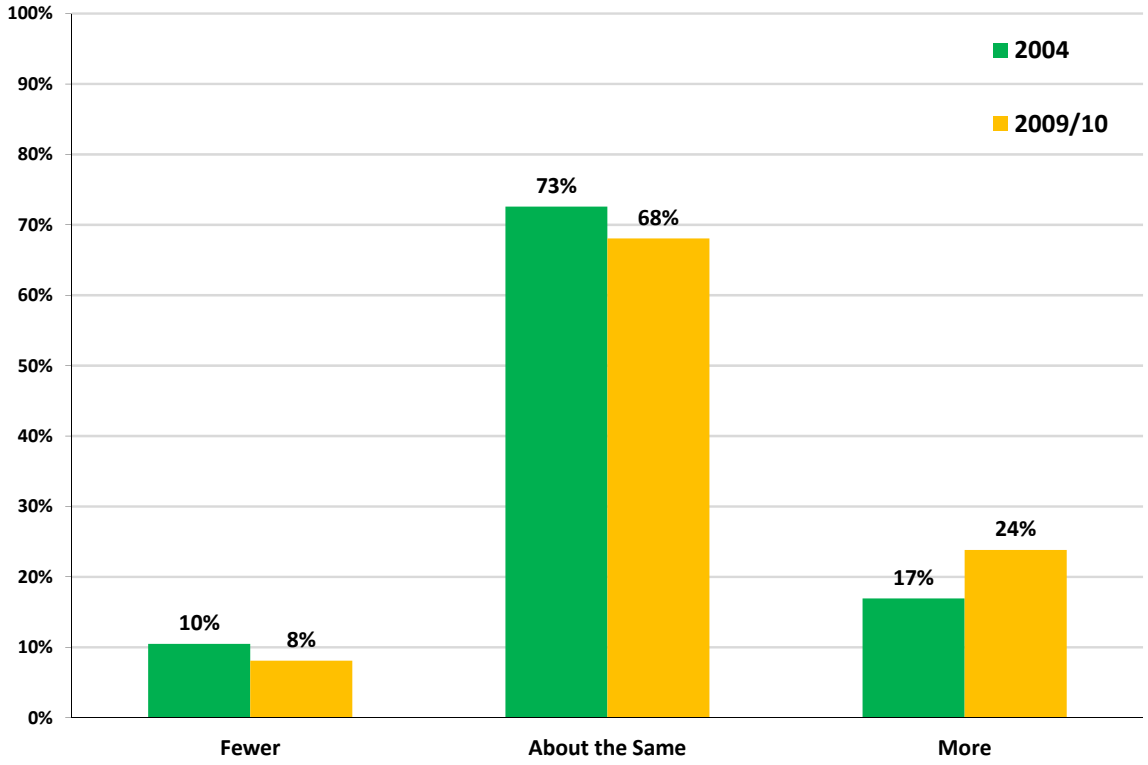


Figure 86. Change in the Number of Patients Covered by Medicare in the Past Two Years by Age of A/I Physician, 2004 – 2009/10

	Fewer		About the Same		More	
	2004	2009/10	2004	2009/10	2004	2009/10
Younger than 45 years of age	9%	6%	70%	64%	21%	30%
45 to 54 years of age	11%	9%	73%	68%	16%	22%
55 to 64 years of age	12%	9%	71%	67%	17%	23%
65 years of age and older	10%	7%	76%	73%	14%	20%

A/I physicians reported less change in the number of Medicare patients (Figure 85) they served than in the number of Medicaid patients over the past two years. Two-thirds (68 percent) of A/I physicians reported that the number of Medicare patients they served remained about the same over the past two years. This observation was not surprising given that patients younger than age 16 make up a large proportion of the patients A/I physicians served (see Figures 33 and 34). The percentage of A/I physicians who reported serving more Medicare patients in 2009/10 was higher than in 2004 (24 percent compared to 17 percent). The oldest A/I physicians were the most likely to report not experiencing a change in the number Medicare patients over the past two

years (Figure 86), though the differences between the oldest group and the other A/I physician age groups were small. The differences between 2004 and 2009/10 by age did not reach statistical significance.

Figure 87. Change in the Number of Patients with Private Insurance in the Past Two Years, 2004 – 2009/10

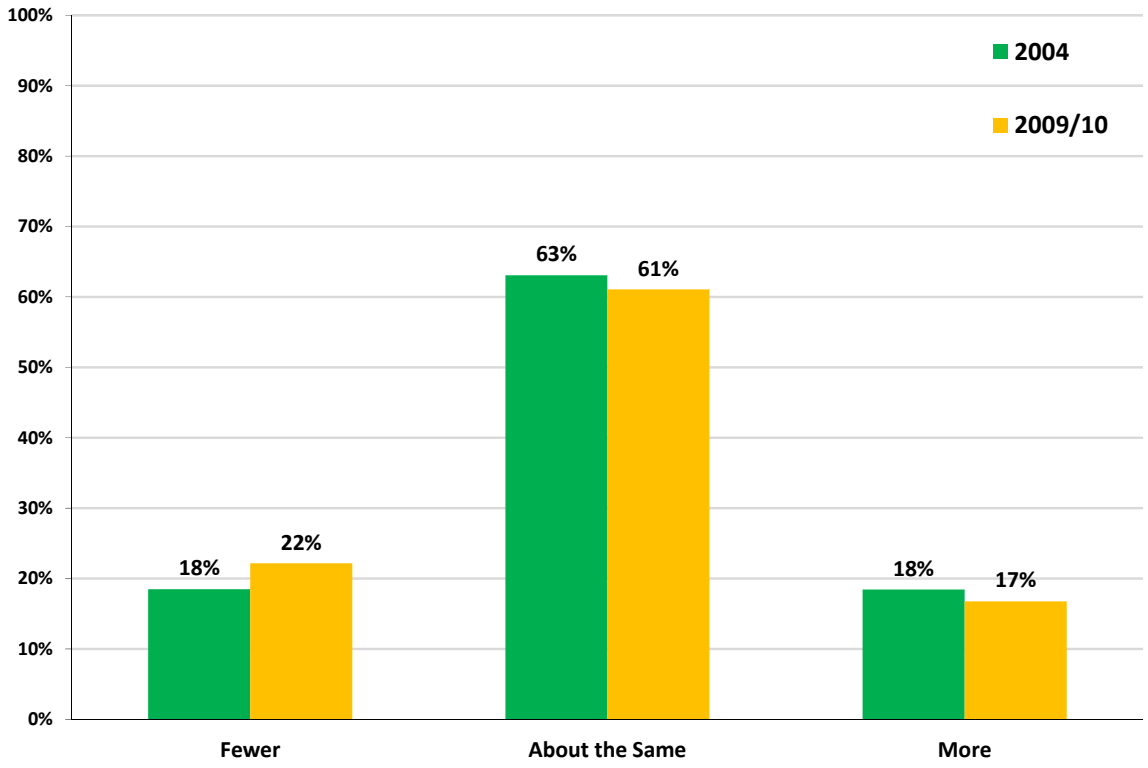


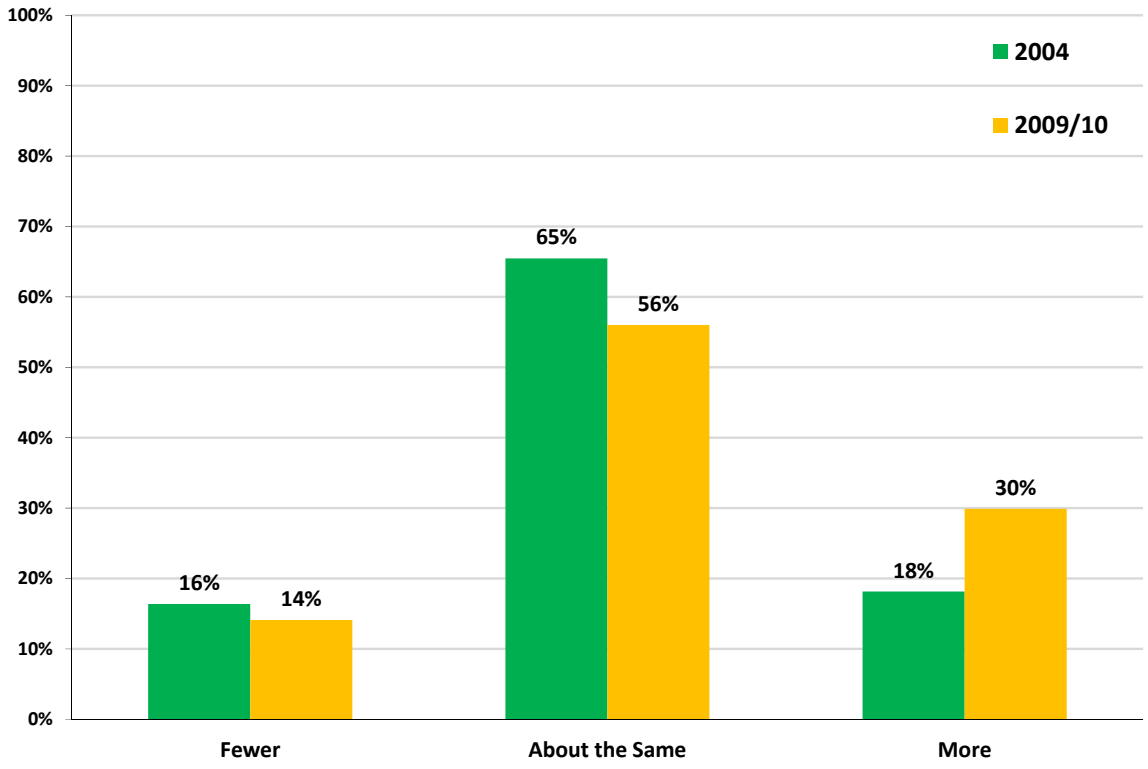
Figure 88. Change in the Number of Patients with Private Insurance in the Past Two Years by Age of A/I Physician, 2004 – 2009/10

	Fewer		About the Same		More	
	2004	2009/10	2004	2009/10	2004	2009/10
Younger than 45 years of age	14%	16%	59%	55%	28%	29%
45 to 54 years of age	21%	26%	60%	60%	18%	14%
55 to 64 years of age	20%	25%	66%	63%	14%	12%
65 years of age and older	18%	20%	69%	70%	13%	9%

In 2009/10, fewer A/I physicians (17 percent) reported that the number of patients with private insurance in the past two years had increased than reported that the number had decreased (22 percent) (Figure 87). Almost two-thirds (61 percent) reported that the number of patients with private insurance had remained about the same during the

time period. Compared to 2004, a larger percentage of A/I physicians in 2009/10 reported serving fewer patients with private insurance (18 percent and 22 percent, respectively). The youngest group of A/I physicians was more likely to report that the number of private insurance patients had increased (Figure 88). A/I physicians age 45 and older were about equally as likely to report fewer private insurance patients over the past two years.

Figure 89. Change in the Number of Uninsured Patients in the Past Two Years, 2004 – 2009/10



As with the reported changes in the number of patients covered by Medicaid, half (56 percent) of A/I physicians reported that the number of uninsured patients they served had remained the same in the past two years (Figure 89). Almost one-third (30 percent) of A/I physicians reported more uninsured patients served in the past two years. These reports from A/I physicians were dramatically different than those made in 2004, undoubtedly a result of the recession that started in 2008. Older A/I physicians were most likely to report fewer uninsured patients over the time period (Figure 90). The younger groups of physicians (those age 65 and younger) had very similar patterns of

reporting with dramatic increases in uninsured patients in the past two years relative to 2004.

Figure 90. Change in the Number of Uninsured Patients in the Past Two Years by Age of A/I Physician, 2004 – 2009/10

	Fewer		About the Same		More	
	2004	2009/10	2004	2009/10	2004	2009/10
Younger than 45 years of age	17%	11%	64%	56%	19%	33%
45 to 54 years of age	15%	11%	64%	56%	21%	33%
55 to 64 years of age	16%	14%	66%	55%	18%	31%
65 years of age and older	21%	21%	69%	65%	10%	13%

i) Medical Liability Insurance Trends

The final recent practice change that was included on the survey covered medical liability insurance. When asked how medical liability premiums had changed in the past two years, almost half (48 percent) of the A/I physicians reported in 2009/10 that they had not changed (Figure 91). More than one-third (38 percent) reported that they had increased, while 14 percent reported that they had decreased. These observations were in stark contrast to those five years before, when two-thirds of A/I physicians reported increased medical liability premiums. The youngest A/I physicians were most likely to report premium increases, while the oldest were most likely to report no changes in premiums (Figure 92). Reports of decreased premiums were about equally likely across all age groups.

The more important questions regarding medical liability insurance, however, were the ramifications of changes in premiums, especially of increases to premiums. In 2009/10, in response to increases in their medical liability premiums, 1 percent of A/I physicians reported they had decreased the number of patients seen per week because of the increases; fewer than 1 percent reported they had decreased the number of hours they spent in patient care per week; 4 percent reported they increased the number of tests ordered per patient; 4 percent reported that the likelihood they would refer patients to other physicians increased; and fewer than 1 percent relocated their practice to another state (Figure 93). These observations were similar to those made in 2004. The small differences observed between the observations did not reach statistical significance.

Figure 91. Change in Medical Liability Insurance Premiums in the Past Two Years, 2004 – 2009/10

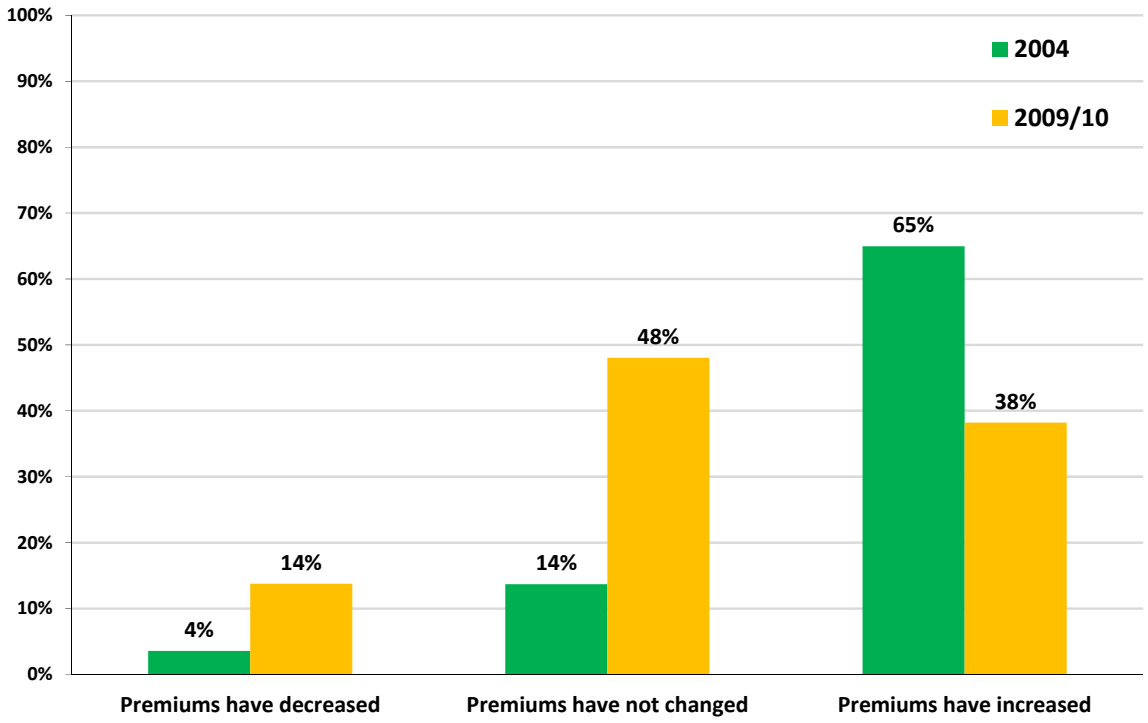


Figure 92. Change in Medical Liability Insurance Premiums in the Past Two Years by Age of A/I Physician, 2004 – 2009/10

	Premiums Have Decreased		Premiums Have Not Changed		Premiums Have Increased	
	2004	2009/10	2004	2009/10	2004	2009/10
Younger than 45 years of age	2%	11%	14%	47%	84%	43%
45 to 54 years of age	5%	15%	14%	43%	81%	42%
55 to 64 years of age	4%	13%	16%	51%	80%	37%
65 years of age and older	7%	15%	26%	55%	67%	30%

Figure 93. Results of Increases in Medical Liability Insurance Premiums in the Past Two Years, 2004 – 2009/10

	2004	2009/10
Decreased number of patients seen per week	1%	1%
Decreased number of hours spent in patient care per week	1%	Less than 1%
Increased the number of tests ordered per patient	7%	4%
Increased likelihood of referring patients to other physicians	8%	4%
Relocated practice to another state	Less than 1%	Less than 1%

7. Future Changes in Practice

Uncertainties are inherent in any prediction of how specific factors will impact a medical practice in any specialty. However, one way to assess the potential impact of specific factors is to ask physicians how they think their practices might be affected. In this section, data on several survey items are examined, including data that assessed the perceived impact of new medications and treatments, the incidence/prevalence of allergy/asthma and immunologic conditions, new A/I practice parameters, and new health care reforms on demand for A/I services over the next five years. This section also presents data on A/I physicians' near future practice plans, including changes in how they spend their work time and retirement plans.

a) Future Demand for A/I Services

First, in 2009/10, half (51 percent) of A/I physicians reported that new treatments and medications would increase demand for A/I services over the next five years (Figure 94) and about one-third (31 percent) reported they would not change demand. The remainder (18 percent) reported that the new treatments and medications would reduce demand. This response pattern was different than in the previous workforce surveys in which A/I physicians were more likely to think that new treatments and medications would either reduce demand or not affect demand. Over time, the perception has shifted toward new medications and treatments increasing future demand for A/I services. Younger physicians were more likely to think that new treatments and medication would increase demand for A/I services (Figure 95). Over time, the relationship between age and perceptions of how new medications and treatments would affect demand have remained the same for the most part.

Figure 94. Perception of the Future Impact of New Treatments and Medications on Demand for A/I Services over the Next Five Years Among A/I Physicians, 1999 – 2009/10

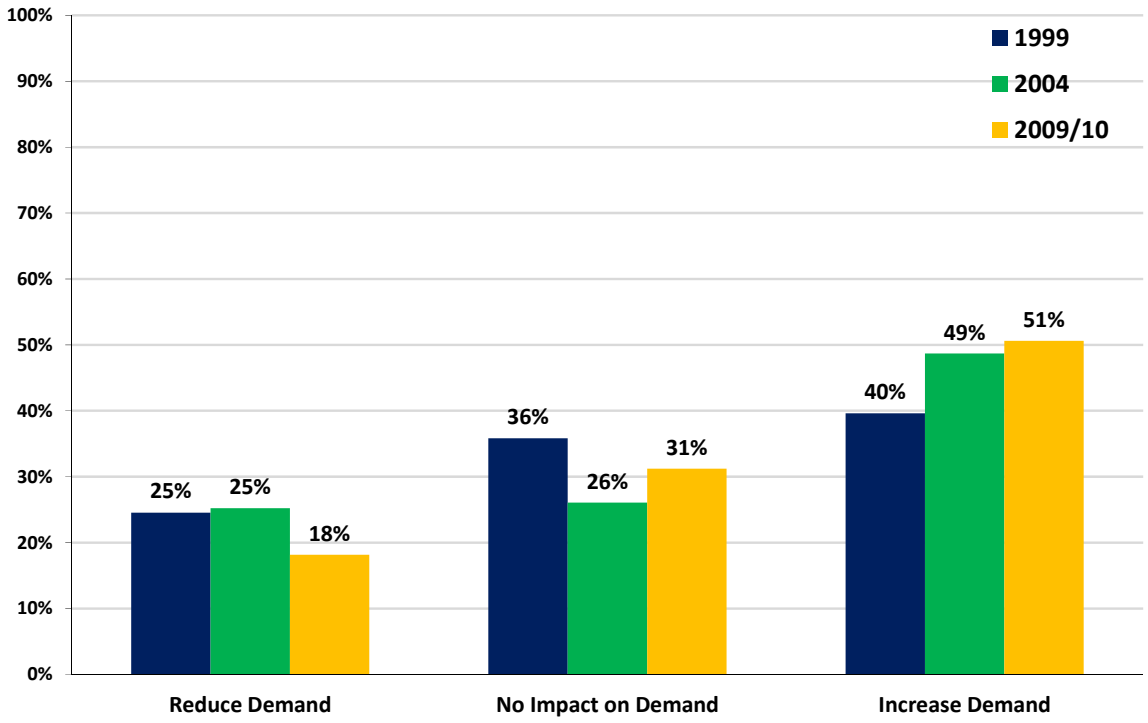
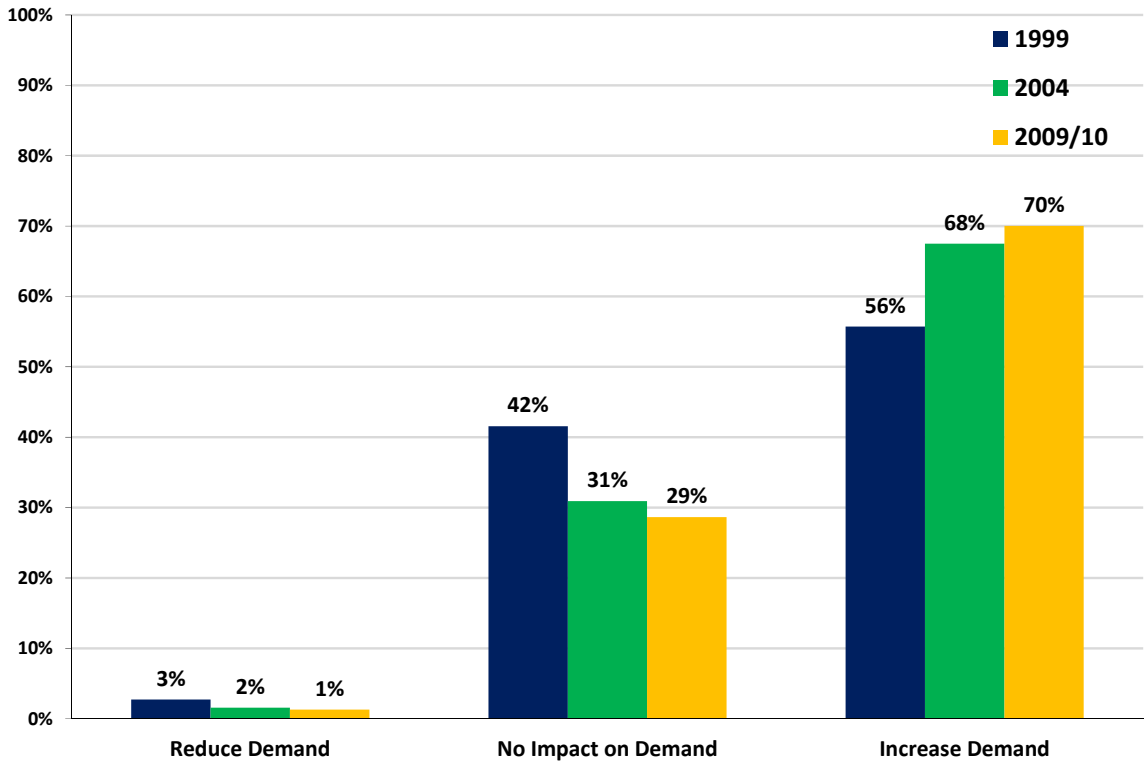


Figure 95. Perception of the Future Impact of New Treatments and Medications on Demand for A/I Services over the Next Five Years by Age of A/I Physician, 1999 – 2009/10

	Reduce Demand			No Impact on Demand			Increase Demand		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	24%	17%	11%	29%	17%	24%	46%	65%	64%
45 to 54 years of age	24%	27%	20%	35%	25%	31%	40%	48%	49%
55 to 64 years of age	26%	31%	22%	40%	27%	33%	34%	43%	45%
65 years of age and older	23%	22%	20%	47%	43%	40%	29%	35%	40%

Figure 96. Perception of the Future Impact of the Incidence/Prevalence of Allergy/Asthma Conditions on Demand for A/I Services Over the Next Five Years Among A/I Physicians, 1999 – 2009/10



The perceived impact of the incidence/prevalence of allergy/asthma and immunologic conditions on demand revealed an interesting pattern. In 2009/10, more than two-thirds (70 percent) of A/I physicians reported that the incidence/prevalence of allergy/asthma conditions would increase demand for A/I services (Figure 96). On the other hand, more than half (57 percent) of the A/I physicians reported that the incidence/prevalence of immunologic conditions would have no impact on demand for A/I services (Figure 97). Moreover, when the patterns were examined by age, the data suggested that length of time in practice continued to influence how the impact of immunologic conditions and allergy/asthma conditions were perceived (Figure 98). Younger A/I physicians were more likely to perceive that both allergy/asthma and immunologic conditions would lead to increased demand for their services. A/I physicians believed that the drivers of future demand for A/I services were allergy/asthma conditions, more so than immunologic conditions. Since 2004, however, immunologic conditions were perceived as an increasingly important driver of demand.

Figure 97. Perception of the Future Impact of the Incidence/Prevalence of Immunologic Conditions on Demand for A/I Services over the Next Five Years Among A/I Physicians, 1999 – 2009/10

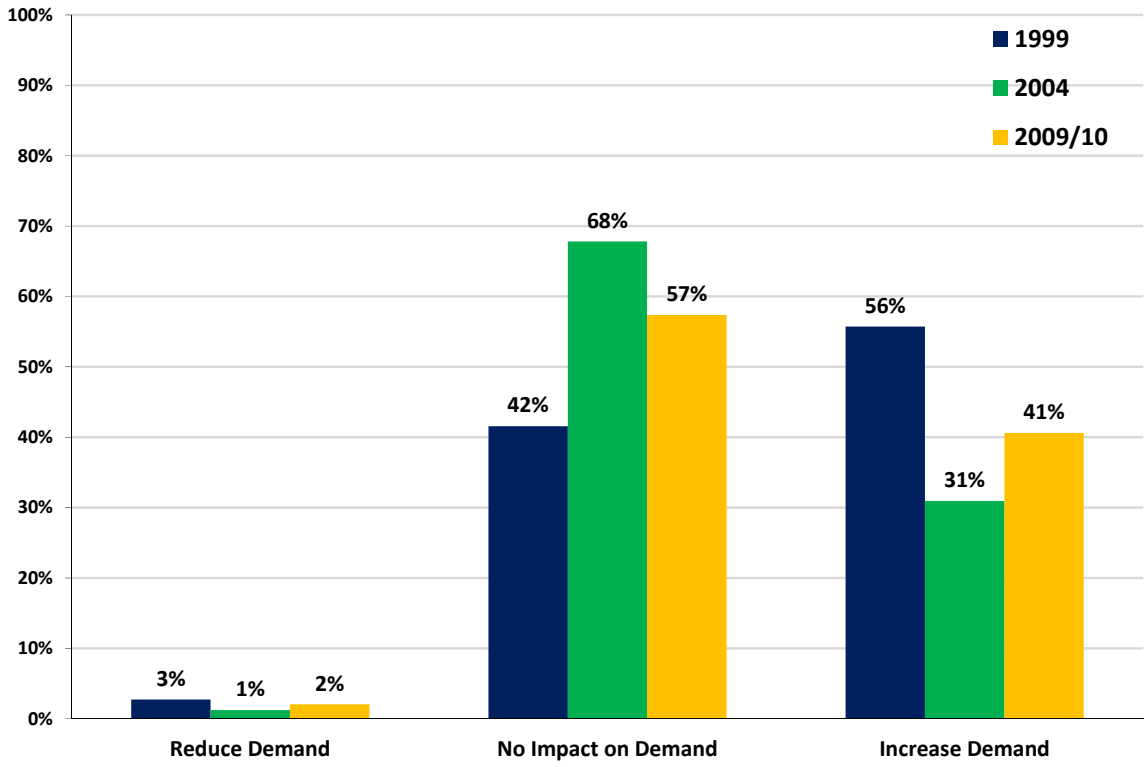


Figure 98. Perception of the Future Impact of the Incidence/Prevalence of Allergy/Asthma and Immunologic Conditions on Demand for A/I Services Over the Next Five Years by Age of A/I Physician, 1999 – 2009/10

	Reduce Demand					No Impact on Demand					Increase Demand				
		Allergy/ Asthma	Immun-ology	Allergy/ Asthma	Immun-ology		Allergy/ Asthma	Immun-ology	Allergy/ Asthma	Immun-ology		Allergy/ Asthma	Immun-ology	Allergy/ Asthma	Immun-ology
	1999	2004	2004	2009/10	2009/10	1999	2004	2004	2009/10	2009/10	1999	2004	2004	2009/10	2009/10
Younger than 45 years of age	1%	1%	1%	0%	1%	30%	14%	59%	12%	42%	69%	85%	40%	88%	58%
45 to 54 years of age	2%	1%	0%	2%	2%	43%	28%	68%	27%	60%	55%	71%	32%	71%	38%
55 to 64 years of age	5%	1%	1%	1%	3%	46%	40%	72%	38%	65%	49%	59%	27%	60%	33%
65 years of age and older	5%	3%	4%	2%	5%	60%	49%	73%	47%	68%	35%	48%	23%	52%	27%

Note: In 1999, Allergy/Asthma and Immunology were combined in one question. In 2004 and 2009/10, they were asked separately.

Figure 99. Perception of the Future Impact of New Practice Parameters on Demand for A/I Services over the Next Five Years Among A/I Physicians, 1999 – 2009/10

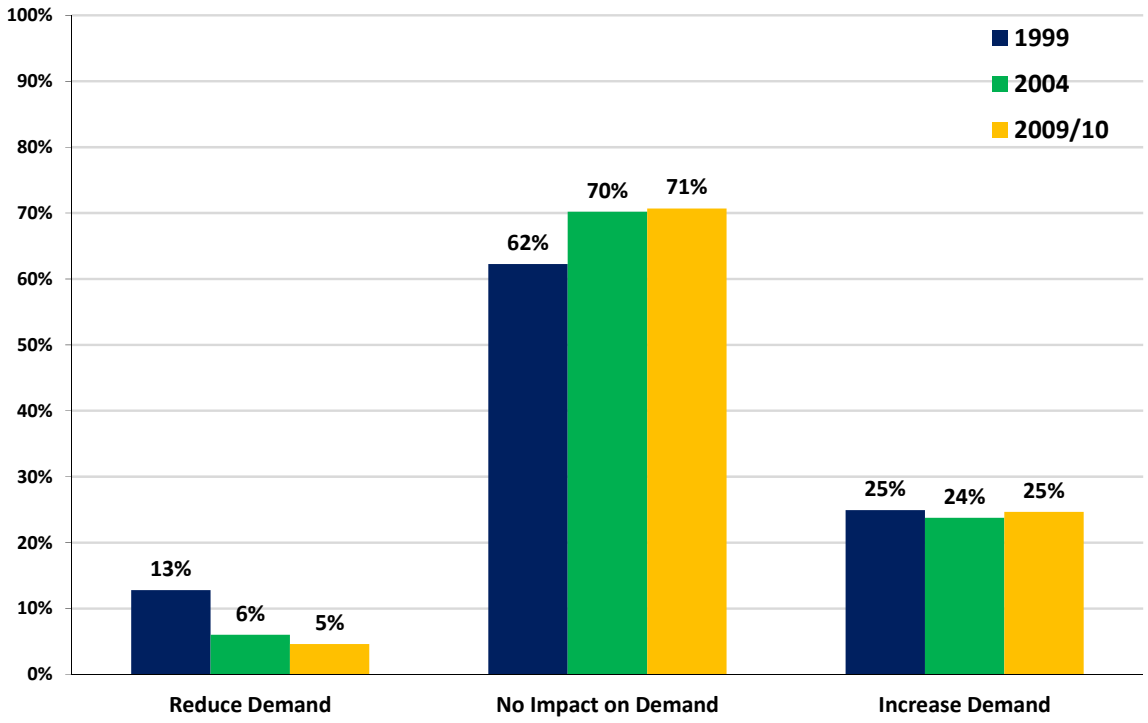


Figure 100. Perception of the Future Impact of New Practice Parameters on Demand for A/I Services over the Next Five Years by Age of A/I Physician, 1999 – 2009/10

	Reduce Demand			No Impact on Demand			Increase Demand		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Younger than 45 years of age	11%	5%	2%	60%	64%	65%	29%	31%	33%
45 to 54 years of age	12%	6%	5%	63%	71%	72%	25%	23%	22%
55 to 64 years of age	15%	7%	5%	61%	73%	75%	24%	20%	20%
65 years of age and older	16%	7%	7%	67%	74%	71%	17%	19%	22%

In 2009/10, nearly three-quarters (71 percent) of A/I physicians reported they believed new practice parameters would have little effect on demand for A/I services (Figure 99). One-quarter (25 percent) reported that new parameters would increase demand, while only 5 percent reported they would decrease demand. The 2009/10 responses were very similar to those in 2004. There was little variation in terms of age, with the exception that the youngest group of physicians was most likely to report that new parameters would increase demand for A/I services (Figure 100).

Figure 101. Perception of the Future Impact of Health Care Reform on Demand for A/I Services over the Next Five Years Among A/I Physicians, 2009/10

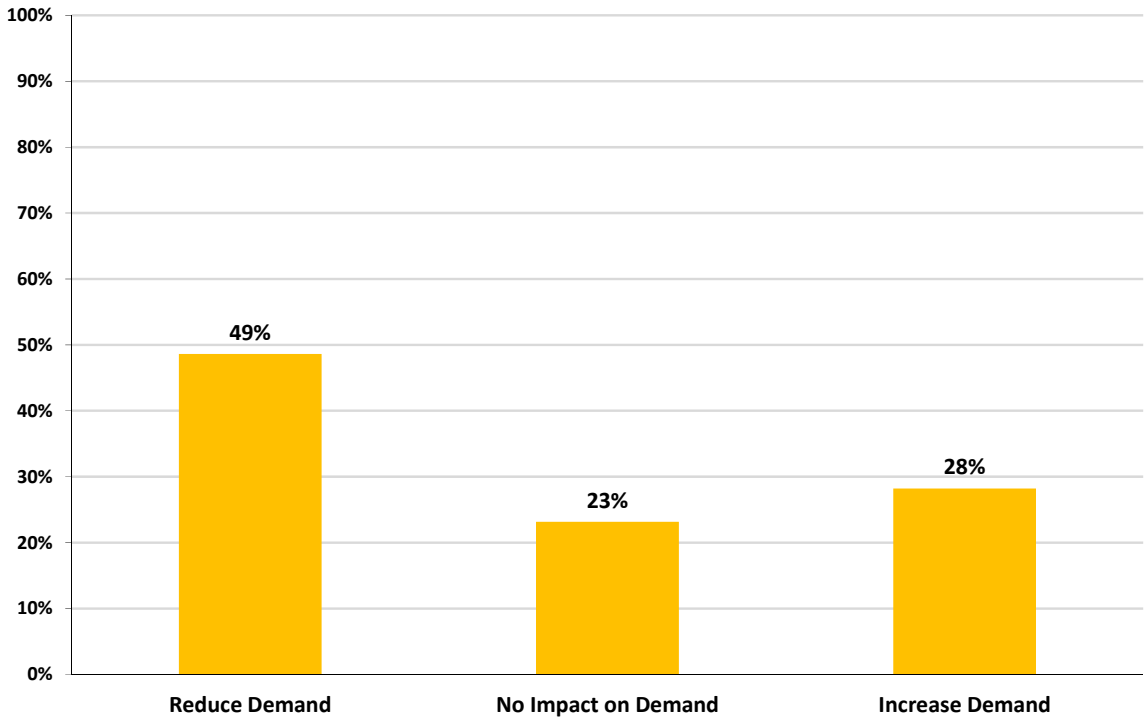


Figure 102. Perception of the Future Impact of Health Care Reform on Demand for A/I Services over the Next Five Years by Age of A/I Physician, 2009/10

	Reduce Demand	No Impact on Demand	Increase Demand
Younger than 45 years of age	51%	23%	26%
45 to 54 years of age	51%	23%	25%
55 to 64 years of age	50%	21%	28%
65 years of age and older	37%	28%	35%

The 2009/10 survey of A/I physicians was conducted at the same time as the formulation and debate was occurring around the country about the Patient Protection and Affordable Care Act that eventually became law in 2010. This coincidence afforded the opportunity to ask A/I physicians what they thought the ramifications of the health care reforms would be on demand for A/I services. Almost half (49%) of A/I physicians reported that they believed the proposed (at the time) health care reforms would decrease demand for A/I services over the next five years (Figure 101). One-quarter (28 percent) reported that the health care reforms would increase demand, and the remainder (23 percent) reported that they would not affect demand substantially. There was little variation in terms of age, with the exception that the oldest group of

physicians were most likely to report that the health care reforms would increase demand for A/I services and least likely to report they would decrease demand (Figure 102).

b) Future Work Plans of A/I Physicians

When asked to anticipate specific work-effort changes in the next 12 months, the vast majority (78 percent) of A/I physicians reported no plans to change work effort. Fourteen percent reported they planned to increase the amount of time they spent providing A/I services. Only 1 percent reported plans to completely discontinue providing A/I services (Figure 103). The observations made in 2009/10 were nearly the same as those made in 2004 – the figures differed by mere tenths of percentage points.

Figure 103. Near Future Work Plans Among A/I Physicians, 2004 – 2009/10

	2004	2009/10
Reduce the time you spend in providing A/I services by 25%	6%	6%
Reduce the time you spend in providing A/I services by 50%	1%	1%
Reduce the time you spend in providing A/I services by 75%	0%	0%
Completely discontinue providing A/I services	1%	1%
Not change the time you spend providing A/I services	78%	78%
Increase the time you spend providing A/I services	14%	14%

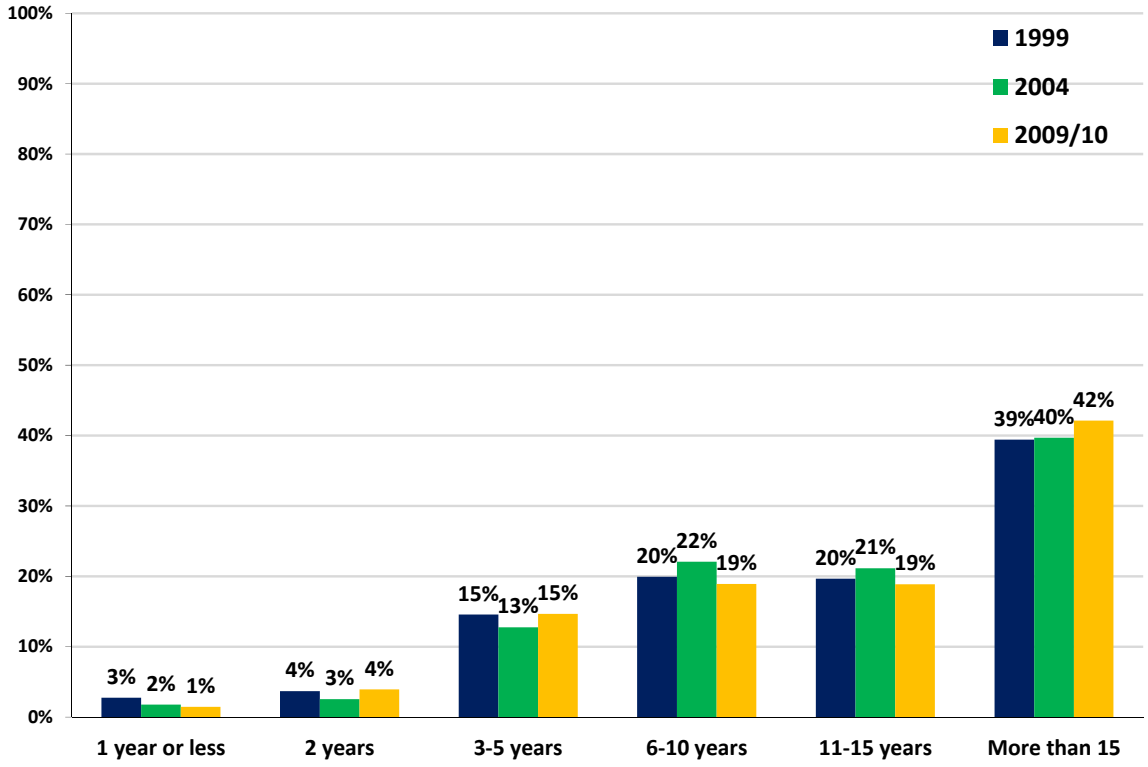
Figure 104. Near Future Work Plans by Age of A/I Physician, 2004 – 2009/10

	2004				2009/10			
	Younger than 45 years of age	45 to 54 years of age	55 to 64 years of age	65 years of age and older	Younger than 45 years of age	45 to 54 years of age	55 to 64 years of age	65 years of age and older
Reduce the time you spend in providing A/I services by 25%	2%	3%	9%	10%	3%	5%	8%	12%
Reduce the time you spend in providing A/I services by 50%	0%	1%	1%	2%	0%	1%	1%	1%
Reduce the time you spend in providing A/I services by 75%	0%	0%	0%	1%	0%	0%	0%	1%
Completely discontinue providing A/I services	1%	0%	0%	6%	0%	0%	1%	3%
Not change the time you spend providing A/I services	72%	82%	81%	75%	74%	80%	81%	77%
Increase the time you spend providing A/I services	25%	14%	9%	5%	22%	14%	8%	6%

As might be expected, the youngest A/I physicians were the most likely to report plans to increase the amount of time they spend providing A/I services, and the oldest A/I physicians were the most likely to report plans to discontinue providing A/I services (Figure 104). The observations made in 2009/10 and those made in 2004 did not differ greatly. The exception was that fewer A/I physicians who were age 65 and older reported near future plans to completely discontinue providing A/I services in 2009/10 than in 2004 (3 percent compared to 6 percent, respectively). As mentioned earlier in this report, the economic recession of 2008 and continued slow economic growth could be responsible for the observed difference in plans to stop providing services among the older A/I physicians.

Examining anticipated retirement from practice is a key component in understanding the changes occurring in a medical specialty. In 2009/10, almost two-thirds (61 percent) of A/I physicians reported that they did not anticipate retiring for more than a decade (Figure 105). At the same time, almost 40 percent of the A/I physicians reported that they planned to retire within the next 10 years. These figures did not change dramatically between 1999 and 2009/10.

Figure 105. Years Until Expected Retirement from A/I Practice, 1999 – 2009/10



Examining these data more closely by Census division can give an indication of where the future practice opportunities might be located. In the next section, current and future practice opportunities will be examined more closely. Figure 106 presents the average (median) years until retirement for the A/I physicians practicing in each Census division. Overall, each region's average is relatively close to the others, i.e., there is not a great deal of variation in the average years to retirement. The shortest time until retirement is in the Pacific division with an average of 10.9 years until retirement for the physicians practicing there. The Mountain, West North Central, and Middle Atlantic Census divisions have the next shortest times until retirement. With over 14 years until expected retirement, the South Atlantic, West South Central, and East South Central Census divisions had the longest times until retirement.

Figure 106. Median Years Until Expected Retirement from A/I Practice by Census Division, 1999 – 2009/10

	1999	2004	2009/10
New England	12.0	13.1	13.6
Middle Atlantic	13.6	13.5	12.9
East North Central	13.0	14.2	13.9
West North Central	13.3	13.9	12.9
South Atlantic	14.6	14.6	14.5
East South Central	14.2	14.7	15.9
West South Central	12.4	11.2	14.5
Mountain	10.4	12.0	12.2
Pacific	11.3	10.6	10.9

8. Current and Future A/I Physician Practice Opportunities

In this section, data are presented describing A/I physicians' perceptions of the current and future practice opportunities for A/I physicians locally, at the state level, and nationally.

Respondents were afforded the choice of four responses to describe the current A/I practice opportunities at the local level (defined as within 50 miles of the respondent's practice), the state level (defined as within the respondent's state of practice), and the national level. Overall, A/I physicians assessed current practice opportunities negatively at the local level (Figure 107). Three-quarters (76 percent) of A/I physicians reported that there were few or no available practice opportunities within 50 miles of their practices. Moreover, only 3 percent reported many available practice opportunities for

A/I physicians locally. The 2009/10 assessments were somewhat more negative relative to those made in 1999 and 2004. A/I physicians reported more positively concerning current practice opportunities at the state level. More than half (54 percent) of A/I physicians reported that there were some or many available practice opportunities in their practice states. Compared to 1999 and 2004, A/I physicians assessed less positively the state level practice opportunities in 2009/10. While not observed in 1999, A/I physicians also reported positive practice opportunities for the A/I specialty nationally. The vast majority (83 percent) reported some or many current practice opportunities in the specialty nationally. This percentage, however, represented a slight decrease compared to 2004 (87 percent).

Figure 107. Assessment of Current Local Practice Opportunities for A/I Physicians, 1999 – 2009/10

	No Available Opportunities			Few Available Opportunities			Some Available Opportunities			Many Available Opportunities		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Local (Within 50 Miles of Respondent's Practice)	23%	24%	29%	45%	42%	47%	29%	29%	21%	4%	5%	3%
Within State	5%	4%	5%	38%	33%	41%	48%	51%	46%	9%	12%	8%
National	N/A	1%	1%	N/A	12%	17%	N/A	49%	54%	N/A	38%	29%

Figure 108. Assessment of Current Local Practice Opportunities for A/I Physicians by Census Division, 1999 – 2009/10

	No Available Opportunities			Few Available Opportunities			Some Available Opportunities			Many Available Opportunities		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
New England	22%	20%	23%	45%	44%	44%	30%	32%	32%	2%	3%	1%
Middle Atlantic	17%	14%	19%	51%	44%	51%	28%	33%	27%	3%	8%	3%
East North Central	18%	29%	34%	41%	43%	50%	36%	24%	14%	6%	4%	2%
West North Central	26%	35%	27%	42%	46%	48%	30%	17%	22%	2%	2%	2%
South Atlantic	22%	23%	31%	44%	39%	46%	30%	32%	22%	4%	6%	2%
East South Central	31%	28%	38%	40%	38%	43%	26%	34%	16%	3%	0%	4%
West South Central	17%	20%	27%	42%	38%	45%	36%	37%	21%	4%	5%	6%
Mountain	36%	32%	37%	42%	34%	38%	19%	29%	23%	3%	5%	2%
Pacific	32%	22%	32%	47%	49%	54%	19%	26%	11%	2%	3%	2%

Regionally, current local level practice opportunities for A/I physicians showed some variation (Figure 108). A/I physicians in the New England and Middle Atlantic Census divisions assessed the current local practice opportunities most positively with more than 30 percent reporting some or many available local A/I practice opportunities. On the other hand, in the East North Central, East South Central, and the Pacific Census divisions, the assessment was much worse, with more than 80 percent of the A/I physicians in those regions reporting few or no available practice opportunities at the time of the survey. Compared with the assessments of current local practice opportunities made in previous surveys by A/I physicians, the West North Central Census division was the only division with A/I physicians who assessed local practice opportunities more positively in 2009/10. New England A/I physicians' assessment of the local practice opportunities remained about the same compared to the other surveys. All other Census divisions were assessed more negatively in 2009/10.

Figure 109. Assessment of Current Within State Practice Opportunities for A/I Physicians by Census Division, 1999 – 2009/10

	No Available Opportunities			Few Available Opportunities			Some Available Opportunities			Many Available Opportunities		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
New England	11%	8%	6%	46%	41%	40%	38%	40%	49%	5%	11%	6%
Middle Atlantic	4%	3%	4%	36%	28%	38%	53%	57%	50%	8%	12%	8%
East North Central	2%	4%	7%	32%	40%	47%	52%	47%	39%	13%	9%	7%
West North Central	5%	4%	4%	31%	39%	49%	57%	52%	40%	7%	4%	7%
South Atlantic	4%	2%	4%	37%	32%	37%	47%	49%	50%	11%	17%	9%
East South Central	6%	1%	2%	33%	33%	47%	50%	48%	46%	12%	17%	5%
West South Central	5%	3%	4%	31%	22%	29%	50%	60%	51%	15%	16%	15%
Mountain	11%	10%	14%	48%	32%	46%	37%	48%	36%	4%	10%	4%
Pacific	5%	3%	5%	47%	37%	48%	42%	50%	43%	6%	9%	5%

The same pattern of more positive assessments of state level practice opportunities by A/I physicians compared to local practice opportunities was also observed regionally (Figure 109). A/I physicians in every region were more positive in their assessment of state level practice opportunities than of local level practice opportunities. A/I physicians in the West South Central, Middle Atlantic, and South Atlantic Census divisions assessed state level practice opportunities the most positively, with close to 60 percent of physicians in those regions reporting some or many available practice opportunities. A/I physicians in the Mountain, East North Central, West North Central,

and Pacific Census divisions were the least positive about state level practice opportunities, with more than half of A/I physicians in those divisions reporting few or no state level practice opportunities. A/I physicians' assessments of state level practice opportunities improved only in the New England Census division. In all other divisions, state level practice assessments deteriorated over time. They reduced the most in the East South Central, Mountain, and Pacific Census divisions.

Figure 110. Assessment of Current National Practice Opportunities for A/I Physicians by Census Division, 2004 – 2009/10

	No Available Opportunities		Few Available Opportunities		Some Available Opportunities		Many Available Opportunities	
	2004	2009/10	2004	2009/10	2004	2009/10	2004	2009/10
New England	0%	0%	12%	13%	55%	53%	34%	34%
Middle Atlantic	1%	1%	12%	18%	51%	49%	36%	31%
East North Central	1%	2%	20%	21%	49%	52%	30%	26%
West North Central	2%	0%	17%	22%	48%	59%	33%	19%
South Atlantic	0%	0%	10%	18%	48%	52%	42%	30%
East South Central	0%	0%	10%	18%	49%	51%	40%	31%
West South Central	1%	2%	7%	14%	48%	55%	43%	29%
Mountain	2%	0%	9%	9%	37%	59%	52%	32%
Pacific	1%	1%	11%	16%	50%	55%	39%	29%

Assessments of national practice opportunities for A/I physicians also varied by region (Figure 110). A/I physicians in the East North Central and the West North Central Census divisions reported the most negative assessments of the practice opportunities for A/I physicians at the national level. At the same time, A/I physicians in the New England and Mountain Census divisions reported the most positive assessments of national practice opportunities (greater than 85 percent). However, only A/I physicians in the Mountain Census division reported a more positive assessment of national practice opportunities in 2009/10 than in 2004.

Respondents were also afforded the choice of four responses to predict future (defined as over the next five years) A/I practice opportunities at the local, state, and national levels. Overall, A/I physicians assessed future practice opportunities more positively than current practice opportunities at the local and state levels, but more negatively at the national level (Figure 111). As was the case with current practice opportunities in

the specialty, A/I physicians assessed local level future opportunities less positively than state level future opportunities, and state level future opportunities less positively than national level future opportunities. At the local level, slightly more than one-third (36 percent) of A/I physicians predicted some or many practice opportunities in the future. Compared to the previous survey responses of A/I physicians in 1999 and 2004, fewer A/I physicians predicted some or many local practice opportunities in the future. At the state level, more than half (58 percent) of A/I physicians predicted some or many practice opportunities in the specialty in the future. These state level predictions by A/I physicians were somewhat less positive than those made in 2004 and about equivalent to those made in 1999. More than three-quarters (79 percent) of A/I physicians reported expecting some or many jobs at the national level over the next five years. This figure represented a decrease compared to 2004 (84 percent).

Figure 111. Assessment of Future Practice Opportunities for A/I Physicians, 1999 – 2009/10

	No Available Opportunities			Few Available Opportunities			Some Available Opportunities			Many Available Opportunities		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Local (Within 50 Miles of Respondent's Practice)	15%	15%	18%	45%	38%	47%	36%	41%	31%	4%	7%	5%
Within State	6%	4%	4%	37%	27%	37%	49%	54%	47%	8%	14%	11%
National	N/A	2%	2%	N/A	14%	19%	N/A	50%	48%	N/A	34%	31%

Figure 112. Assessment of Future Local Practice Opportunities for A/I Physicians by Census Division, 1999 and 2004

	No Available Opportunities			Few Available Opportunities			Some Available Opportunities			Many Available Opportunities		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
New England	17%	16%	8%	47%	35%	38%	31%	41%	49%	5%	9%	5%
Middle Atlantic	12%	15%	12%	54%	37%	47%	33%	40%	36%	2%	9%	5%
East North Central	12%	20%	21%	42%	41%	53%	40%	35%	24%	6%	4%	2%
West North Central	16%	19%	17%	45%	44%	46%	37%	33%	33%	3%	4%	4%
South Atlantic	13%	14%	18%	41%	36%	47%	41%	43%	30%	6%	7%	5%
East South Central	14%	19%	23%	41%	30%	44%	39%	47%	28%	5%	5%	5%
West South Central	14%	10%	21%	38%	32%	43%	44%	51%	30%	4%	8%	7%
Mountain	23%	15%	24%	46%	33%	43%	28%	42%	30%	2%	11%	3%
Pacific	19%	9%	18%	49%	44%	54%	28%	40%	24%	3%	6%	3%

Regionally, the predicted future local practice opportunities for A/I physicians varied (Figure 112). A/I physicians in the New England Census division provided the most positive predictions for future local practice opportunities, with 54 percent reporting some or many future local practice opportunities. The predictions were more negative in the East North Central and Pacific Census divisions, with more than 70 percent of A/I physicians predicting few or no future local practice opportunities in the specialty. With the exception of the New England Census division, A/I physicians in all regions reported more negative predictions of local practice opportunities in 2009/10 than A/I physicians predicted in 2004.

Figure 113. Assessment of Future Within State Practice Opportunities for A/I Physicians by Census Division, 1999 – 2009/10

	No Available Opportunities			Few Available Opportunities			Some Available Opportunities			Many Available Opportunities		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
New England	10%	9%	4%	47%	29%	28%	36%	50%	54%	6%	13%	13%
Middle Atlantic	4%	5%	4%	43%	25%	36%	48%	55%	50%	4%	14%	10%
East North Central	5%	6%	6%	33%	32%	42%	51%	51%	42%	11%	11%	10%
West North Central	6%	2%	2%	30%	37%	39%	58%	51%	47%	6%	10%	11%
South Atlantic	6%	2%	2%	29%	23%	39%	55%	58%	46%	10%	17%	13%
East South Central	3%	2%	3%	35%	28%	38%	51%	48%	48%	11%	21%	11%
West South Central	6%	3%	5%	30%	18%	30%	52%	62%	47%	12%	17%	17%
Mountain	10%	8%	5%	44%	25%	49%	41%	48%	38%	5%	19%	7%
Pacific	8%	4%	3%	43%	29%	37%	43%	56%	53%	5%	11%	7%

As observed with current state level practice opportunities, across all regions, future state level practice opportunities for A/I physicians were predicted to be more numerous than local practice opportunities over the next five years (Figure 113). A/I physicians in the New England, Middle Atlantic, West South Central, and Pacific Census divisions provided the most positive predictions of future practice opportunities in the specialty, with 60 percent or more reporting some or many available practice opportunities in the future. The least positive future state level practice opportunity predictions were observed by A/I physicians in the East North Central and Mountain Census divisions. With the exception of the New England Census division, A/I physicians in all regions reported anticipating a greater number of available state-level practice opportunities in the specialty over the next five years in 2004 than they did in 2009/10. The South Atlantic and Mountain Census divisions showed the greatest deterioration in

anticipated future state-level practice opportunities in the specialty between 2004 and 2009/10.

Predictions of national practice opportunities for A/I physicians also varied somewhat by region (Figure 114). The most positive predictions about future national level practice opportunities in the specialty were made by physicians in the New England, East South Central, Mountain, and Pacific Census divisions, with more than 80 percent of A/I physicians predicting some or many future practice opportunities nationally. The least positive predictions about future national level practice opportunities were made by physicians in the Middle Atlantic, East North Central, West North Central, and South Atlantic Census division, with 23 percent or greater of the A/I physicians reporting few or no available future practice opportunities at the national level.

Figure 114. Assessment of Future National Practice Opportunities for A/I Physicians by Census Division, 2004 – 2009/10

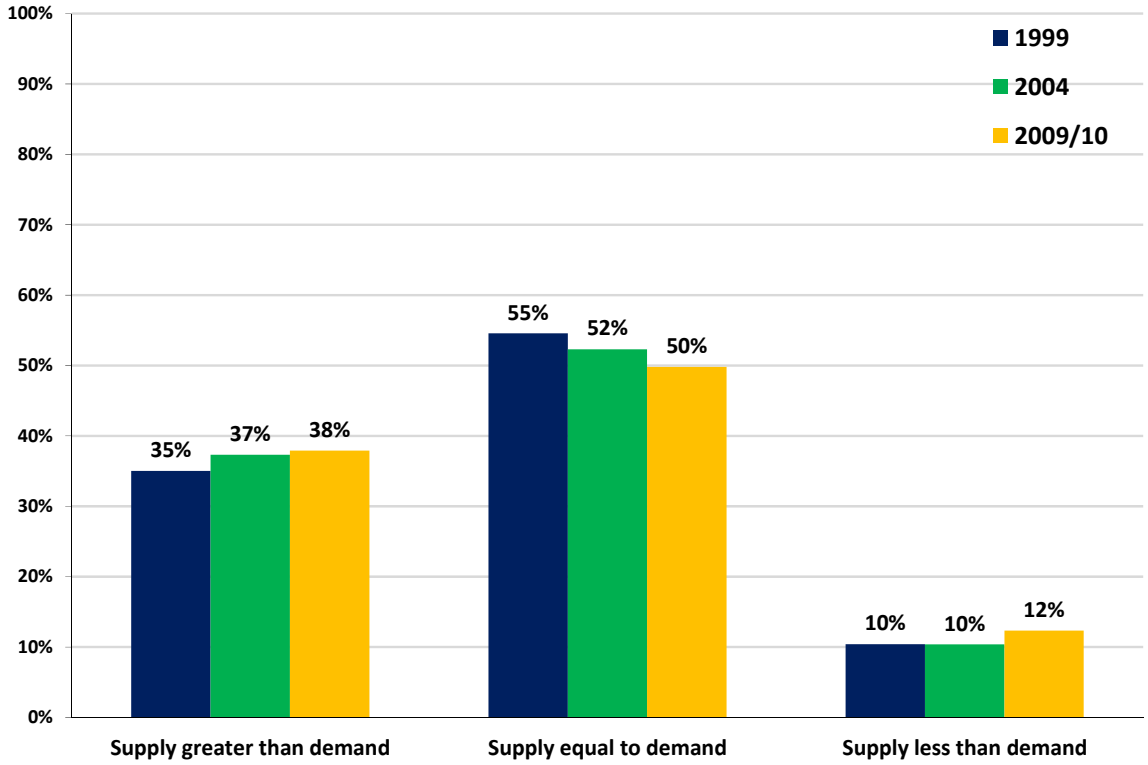
	No Available Opportunities		Few Available Opportunities		Some Available Opportunities		Many Available Opportunities	
	2004	2009/10	2004	2009/10	2004	2009/10	2004	2009/10
New England	1%	0%	14%	11%	54%	59%	31%	30%
Middle Atlantic	2%	2%	16%	21%	49%	47%	32%	30%
East North Central	2%	2%	21%	24%	50%	45%	27%	29%
West North Central	4%	1%	13%	22%	50%	54%	33%	23%
South Atlantic	2%	0%	12%	23%	48%	44%	39%	33%
East South Central	0%	1%	17%	18%	44%	48%	39%	33%
West South Central	3%	3%	9%	17%	51%	48%	37%	31%
Mountain	3%	1%	7%	15%	45%	49%	45%	35%
Pacific	3%	2%	12%	16%	51%	49%	34%	33%

In sum, while great variation in A/I physicians' assessments of both current and future practice opportunities in the specialty at the local, state, and national levels was observed, several clear patterns were evident. First, A/I physicians were decidedly more positive in their assessment of practice opportunities at higher levels of aggregation (i.e., state and national levels) than at the local level. Second, A/I physicians were more positive in their assessments of future practice opportunities at the local and state levels, but more pessimistic at the national level, than they were at the time of the survey. Third, with few exceptions, A/I physicians were more negative in their

assessments of practice opportunities currently and in the future on the 2009/10 survey than they were on the 1999 and 2004 surveys. Finally, one Census division stood out as a place where A/I physicians were most positive about current and future practice opportunities. That region was the New England Census division. At the same time, two divisions also stood out as places where A/I physicians were the most pessimistic about current and future practice opportunities. Those divisions were the East North Central and the West North Central Census divisions.

An issue closely related to the availability of practice opportunities for A/I physicians is the relationship between the A/I physician supply and the demand for A/I services. The survey instrument queried respondents directly as to their perceptions of A/I physician supply and of demand for A/I services in their local practice communities. Half (50 percent) of A/I physicians reported that the A/I physician supply and the demand for A/I services were equal in their communities (Figure 115). At the same time, more than three times as many A/I physicians perceived supply as greater than demand (38 percent) than perceived demand to exceed supply (12 percent). These observations were generally consistent with the observations made in 1999 and 2004; however, a gradual, upward trend was observed in the perception that supply exceeds demand, while a gradual downward trend was observed in the perception that supply and demand are equal.

Figure 115. Perceptions of Supply and Demand in Local Community Among A/I Physicians, 1999 – 2009/10



Perceptions of the relationship between A/I physician supply and demand for A/I services varied regionally (Figure 116). The percentage of A/I physicians who reported perceiving demand for A/I services to exceed A/I physician supply in their practice communities ranged from 6 percent to 21 percent in 2009/10, while the percentage of A/I physicians who reported perceiving supply to exceed demand ranged from 22 percent to 46 percent.

A/I physicians in the East North Central and West South Central Census divisions were the most likely (46 percent and 43 percent, respectively) to perceive that the A/I physician supply in their communities exceeded the demand for A/I services. For both of these regions, those perceptions represented a significant change relative to the 1999 survey. At the same time, A/I physicians in the West South Central Census division were also among the highest ranked in perceiving that local A/I physician supply was lower than demand for A/I services. This observation suggested that there were localized pockets of shortage and surplus within the West South Central Census division. These observations were also consistent with A/I physicians' assessment of current and future

local practice opportunities. It should also be noted that the West South Central Census division experienced a loss of FTE A/I physician supply between 2004 and 2009/10, while the East North Central Census division experienced growth in the FTE A/I physician supply during the same time period. Other Census divisions that experienced substantial growth in the percentage of A/I physicians who perceived that supply was greater than demand included the East South Central and Pacific Census divisions.

Figure 116. Perceptions of Supply and Demand in Local Community Among A/I Physicians by Census Division, 1999 – 2009/10

	Supply Greater than Demand			Supply Balanced with Demand			Supply Less than Demand		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
New England	29%	26%	22%	58%	62%	57%	13%	12%	21%
Middle Atlantic	43%	41%	42%	50%	49%	45%	6%	10%	14%
East North Central	30%	50%	46%	56%	46%	49%	14%	4%	6%
West North Central	27%	44%	39%	62%	43%	48%	12%	13%	13%
South Atlantic	34%	31%	31%	55%	57%	58%	11%	12%	11%
East South Central	25%	30%	39%	62%	59%	48%	13%	10%	13%
West South Central	27%	36%	43%	59%	53%	44%	14%	11%	13%
Mountain	45%	31%	41%	48%	50%	53%	7%	19%	6%
Pacific	43%	32%	39%	50%	57%	48%	8%	11%	13%

The New England and West North Central Census divisions showed the greatest decline in the percentage of A/I physicians perceiving A/I physician supply exceeding demand, shifting from 26 percent and 22 percent to 44 percent and 39 percent, respectively. The New England Census division also experienced a substantial increase in the percentage of physicians who perceive that demand for A/I services was greater the supply of A/I physicians (21 percent in 2009/10 compared to 12 percent in 2004). These observations were consistent with A/I physicians' assessments of current and future practice opportunities in the specialty, especially in the New England Census division.

9. Local Competition with Other Physicians

Another factor related to both perceptions of the relationship between A/I physician supply and demand for A/I services and practice opportunity assessments is competition between A/I physicians and physicians in other specialties that have potentially overlapping scopes of services. Respondents were asked a battery of questions relating to the level competition and cooperation between themselves and other selected physician specialties in their practice locales. The specialties were chosen to represent

1) selected specialists (otolaryngologists, pulmonologists, and dermatologists) who could potentially provide similar services as A/I physicians and 2) primary care practitioners (family physicians, internists, and pediatricians). Respondents were asked to describe the level of cooperation/competition with each selected specialty on a scale of 1 (Strong competition/Little cooperation) to 5 (Strong cooperation/Little competition). Figures 117 through 120 present the responses from the 2009/10 survey as well as the 1999 and 2004 surveys.

Figure 117. Local Competition Levels between A/I Physicians and Physicians in Selected Specialties, 1999 – 2009/10

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Other A/I Physicians	23%	12%	17%	24%	17%	20%	35%	40%	30%	13%	19%	20%	6%	12%	13%
Otolaryngologists	17%	14%	22%	30%	23%	24%	29%	28%	25%	15%	22%	18%	7%	13%	12%
Pulmonologists	16%	11%	11%	29%	21%	19%	37%	37%	31%	13%	20%	24%	5%	11%	15%
Dermatologists	4%	4%	4%	13%	9%	11%	57%	46%	33%	20%	26%	30%	6%	16%	21%

Figure 118. Local Competition Levels between A/I Physicians and Physicians in Primary Care Specialties, 1999 – 2009/10

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Pediatricians	11%	7%	6%	26%	18%	15%	36%	31%	27%	18%	25%	25%	8%	18%	27%
Internists	7%	4%	5%	22%	15%	14%	45%	41%	33%	21%	26%	26%	6%	14%	21%
Family Physicians	9%	4%	5%	23%	12%	13%	36%	35%	29%	24%	31%	29%	8%	18%	23%

Overall, A/I physicians were more likely to report that they cooperated to some extent with other physicians (Figures 117 and 118). A/I physicians were most likely to report cooperation with pediatricians (52 percent), family physicians (52 percent), and dermatologists (51 percent). These three groups of specialists were also reported in 1999 and 2004 as cooperative by relatively large portions of the A/I physician workforce, albeit at lower levels. The large percentages of A/I physicians reporting cooperation with primary care physicians was likely due to primary care physicians' role as referral sources for specialists like A/I physicians.

Conversely, A/I physicians were most likely to report competition with otolaryngologists (46 percent), other A/I physicians (37 percent), and pulmonologists (30 percent). These observations were also consistent with those made in 1999 and 2004; however, the percentages of A/I physicians reporting competition with other A/I physicians and

otolaryngologists increased between 2004 and 2009/10. With perceived competition increasing, these observation made it clear that otolaryngologists and other A/I physicians continued to be the main competitors of A/I physicians. One of the interesting changes observed among the responses to the earlier surveys and the 2009/10 survey was the increase in competition with other A/I physicians since 2004 after a decline between 1999 and 2004. In 1999, nearly half (47 percent) of A/I physicians reported competing with other A/I physicians. By 2004, only 31 percent reported competing with other A/I physicians. In 2009/10, the percentage had bumped up again to 37 percent.

Reported levels of cooperation/competition with other physicians did vary across regions (Figures 119 and 120). In 2009/10, with the exceptions of the Pacific Census division where other A/I physicians were reported most often as competitors, A/I physicians reported otolaryngologists as competitors most often in all regions. Half or more of the A/I physicians in the Middle Atlantic, East South Central, West South Central, and Mountain Census divisions reported otolaryngologists as competitors. While in all regions, except for the West North Central Census division, fewer A/I physicians reported competing with other physicians in 2004 than in 1999, A/I physicians reported more competition, especially with otolaryngologists and other A/I physicians, in 2009/10 than in 2004.

Figure 119. Local Competition Levels between A/I Physicians and Physicians in Selected Specialties by Census Division, 1999 – 2009/10

New England

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Other A/I Physicians	15%	12%	10%	18%	15%	14%	43%	31%	28%	15%	26%	25%	9%	16%	23%
Otolaryngologists	14%	18%	19%	34%	21%	16%	30%	25%	22%	18%	19%	20%	4%	16%	23%
Pulmonologists	19%	16%	10%	30%	17%	21%	30%	35%	29%	13%	18%	19%	8%	14%	21%
Dermatologists	2%	3%	3%	12%	6%	8%	57%	46%	33%	23%	27%	34%	6%	17%	21%

Middle Atlantic

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Other A/I Physicians	24%	11%	15%	30%	17%	20%	31%	43%	36%	11%	18%	17%	4%	12%	12%
Otolaryngologists	18%	13%	20%	32%	27%	30%	32%	30%	26%	12%	20%	13%	5%	11%	11%
Pulmonologists	22%	11%	13%	36%	29%	25%	30%	33%	32%	9%	19%	19%	2%	7%	11%
Dermatologists	4%	4%	6%	17%	12%	16%	59%	48%	34%	15%	24%	29%	5%	11%	15%

East North Central

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Other A/I Physicians	21%	14%	17%	25%	19%	21%	35%	43%	35%	14%	15%	16%	4%	9%	11%
Otolaryngologists	14%	14%	16%	32%	25%	27%	29%	30%	26%	18%	22%	20%	7%	10%	11%
Pulmonologists	14%	14%	11%	33%	23%	24%	35%	39%	30%	15%	19%	24%	3%	6%	13%
Dermatologists	4%	5%	3%	15%	9%	13%	58%	48%	36%	19%	27%	29%	5%	11%	18%

West North Central

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Other A/I Physicians	17%	8%	8%	24%	20%	16%	36%	39%	35%	12%	23%	25%	10%	10%	16%
Otolaryngologists	14%	15%	22%	27%	21%	22%	30%	32%	23%	17%	16%	20%	12%	16%	14%
Pulmonologists	14%	13%	8%	25%	17%	19%	40%	44%	34%	11%	20%	26%	9%	7%	13%
Dermatologists	4%	3%	2%	9%	11%	6%	52%	47%	29%	25%	23%	34%	9%	14%	29%

South Atlantic

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Other A/I Physicians	26%	15%	20%	28%	20%	23%	31%	40%	26%	12%	13%	21%	4%	12%	11%
Otolaryngologists	18%	15%	25%	34%	24%	23%	24%	26%	24%	15%	21%	18%	9%	15%	10%
Pulmonologists	15%	10%	10%	26%	22%	21%	37%	31%	25%	16%	22%	26%	6%	15%	18%
Dermatologists	4%	3%	3%	11%	7%	12%	52%	45%	31%	23%	27%	29%	10%	18%	26%

Figure 119. Local Competition Levels between A/I Physicians and Physicians in Selected Specialties by Census Division, 1999 – 2009/10 (Continued)

East South Central

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Other A/I Physicians	20%	11%	17%	21%	17%	28%	37%	38%	29%	15%	23%	16%	7%	10%	9%
Otolaryngologists	29%	27%	31%	29%	23%	27%	23%	16%	21%	14%	29%	11%	5%	4%	10%
Pulmonologists	12%	12%	10%	23%	15%	15%	41%	38%	31%	17%	23%	27%	7%	12%	17%
Dermatologists	3%	2%	3%	8%	4%	10%	60%	46%	26%	25%	29%	37%	6%	20%	25%

West South Central

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Other A/I Physicians	18%	12%	18%	27%	17%	21%	36%	40%	28%	14%	21%	21%	5%	10%	12%
Otolaryngologists	17%	14%	31%	32%	22%	24%	26%	25%	24%	18%	27%	12%	7%	12%	9%
Pulmonologists	11%	7%	10%	27%	17%	17%	38%	40%	30%	20%	26%	29%	4%	10%	15%
Dermatologists	4%	4%	5%	12%	7%	8%	56%	40%	36%	23%	29%	29%	5%	20%	23%

Mountain

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Other A/I Physicians	29%	14%	22%	19%	16%	21%	24%	25%	28%	15%	30%	15%	12%	15%	15%
Otolaryngologists	22%	21%	29%	28%	16%	29%	34%	24%	20%	9%	29%	16%	7%	10%	7%
Pulmonologists	15%	10%	11%	26%	18%	12%	38%	44%	37%	13%	19%	21%	8%	9%	19%
Dermatologists	5%	2%	3%	16%	8%	8%	52%	45%	38%	19%	35%	28%	8%	10%	24%

Pacific

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Other A/I Physicians	26%	13%	18%	17%	14%	19%	39%	37%	25%	12%	19%	23%	5%	17%	15%
Otolaryngologists	15%	6%	15%	25%	17%	17%	36%	34%	26%	16%	20%	28%	8%	24%	14%
Pulmonologists	15%	6%	10%	27%	17%	15%	44%	44%	38%	11%	17%	26%	3%	16%	12%
Dermatologists	4%	2%	4%	14%	9%	11%	61%	42%	32%	16%	26%	32%	5%	20%	21%

Figure 120. Local Competition Levels between A/I Physicians and Physicians in Primary Specialties by Census Division, 1999 – 2009/10

New England

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Pediatricians	10%	8%	6%	27%	19%	13%	34%	25%	21%	20%	24%	25%	10%	24%	35%
Internists	7%	5%	3%	26%	10%	14%	42%	29%	22%	18%	32%	31%	7%	24%	30%
Family Physicians	11%	2%	2%	23%	8%	12%	38%	37%	23%	21%	32%	32%	8%	21%	31%

Middle Atlantic

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Pediatricians	14%	8%	7%	27%	16%	19%	36%	33%	28%	16%	26%	25%	7%	16%	21%
Internists	10%	4%	5%	22%	15%	15%	42%	37%	36%	20%	32%	27%	6%	13%	18%
Family Physicians	11%	5%	5%	22%	10%	14%	39%	37%	32%	21%	32%	27%	7%	15%	22%

East North Central

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Pediatricians	11%	8%	5%	31%	20%	17%	36%	34%	26%	14%	24%	26%	8%	14%	25%
Internists	7%	5%	4%	24%	18%	17%	48%	43%	36%	16%	23%	24%	5%	11%	19%
Family Physicians	9%	5%	4%	31%	15%	14%	31%	36%	34%	20%	29%	25%	8%	16%	22%

West North Central

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Pediatricians	7%	13%	5%	27%	31%	19%	41%	24%	33%	17%	22%	27%	8%	10%	17%
Internists	3%	5%	3%	23%	23%	15%	48%	51%	40%	21%	15%	29%	6%	7%	13%
Family Physicians	8%	5%	4%	19%	19%	16%	31%	37%	29%	29%	23%	32%	13%	16%	20%

South Atlantic

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Pediatricians	10%	9%	6%	21%	12%	13%	36%	28%	27%	22%	28%	22%	11%	24%	33%
Internists	5%	5%	5%	17%	12%	14%	47%	36%	32%	23%	30%	25%	9%	17%	24%
Family Physicians	6%	4%	5%	21%	8%	10%	36%	32%	29%	26%	37%	31%	11%	20%	24%

Figure 120. Local Competition Levels between A/I Physicians and Physicians in Primary Specialties by Census Division, 1999 – 2009/10 (Continued)

East South Central

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Pediatricians	10%	3%	6%	18%	19%	9%	31%	27%	28%	32%	29%	23%	9%	22%	35%
Internists	4%	4%	3%	17%	15%	12%	41%	44%	31%	33%	18%	24%	5%	18%	30%
Family Physicians	3%	2%	3%	15%	21%	13%	37%	27%	24%	34%	32%	30%	11%	18%	29%

West South Central

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Pediatricians	13%	5%	10%	28%	23%	14%	34%	37%	22%	18%	18%	27%	7%	16%	27%
Internists	4%	3%	9%	21%	16%	15%	49%	51%	31%	21%	20%	26%	5%	10%	19%
Family Physicians	9%	4%	7%	21%	12%	17%	32%	38%	26%	28%	26%	31%	10%	20%	19%

Mountain

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Pediatricians	8%	10%	6%	28%	18%	12%	37%	29%	31%	16%	27%	24%	11%	17%	27%
Internists	5%	5%	6%	26%	18%	12%	42%	37%	35%	21%	33%	22%	7%	7%	24%
Family Physicians	7%	5%	8%	30%	16%	11%	31%	26%	32%	22%	40%	28%	11%	13%	21%

Pacific

	(1) Strong competition/ Little cooperation			(2)			(3) Neutral			(4)			(5) Strong cooperation/ Little competition		
	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10	1999	2004	2009/10
Pediatricians	12%	4%	4%	29%	18%	16%	37%	30%	28%	16%	28%	27%	6%	21%	25%
Internists	9%	3%	4%	21%	12%	14%	44%	42%	31%	22%	27%	29%	4%	16%	22%
Family Physicians	11%	2%	3%	25%	12%	13%	39%	36%	28%	21%	30%	31%	5%	20%	26%

Forecasting A/I Physician Supply and Demand

Understanding the current and future physician workforce from the perspectives of both supply and demand requires the analysis of a broad range of information. Much of the information that supported the development of forecasts of the future supply and demand for A/I physicians was derived from the 2009/10 *Survey of Physicians Providing Allergy and Immunology Services in the United States*. Data from the survey were used to update the supply and demand forecasting models developed in 1999 and updated in 2006. The updated model was then used to create several scenarios describing the relationship between the supply of A/I physicians and demand for their services in the future.

1. Supply and Demand for A/I Physicians

The components of the models developed to forecast the supply of A/I physicians and demand for their services are described below:

Supply Model Components

The supply model developed is of the age-cohort-flow model family. The model has the following basic structure:

$$Supply_t = Supply_{t-1} + New\ A/I\ Physicians\ Entering\ Practice_{t-1} - Separations\ from\ Practice_{t-1},$$

where t is the year for which the forecast is being made.

Supply: Supply is the number of physicians who are providing A/I patient care services in any particular year. Supply in the baseline year, 2009, was estimated based on the data collected in the 2009/10 *Survey of Physicians Providing Allergy and Immunology Services in the United States*. In the model, supply is further distinguished by two variables: five-year age cohort and formally trained/non-formally trained classification.

New A/I Physicians: The number of new A/I physicians added to the supply for each year was estimated based on published data in the September 2010 issue of the *Journal of the American Medical Association*.[1] These data were informed by the reported practice plans of physicians completing training in A/I derived from the *Fellows Completing*

[1] Specifically, data on the number of fellows who completed A/I training programs in 2009 were obtained from Appendix II, Table 9. *Resident Physicians Who Completed a Graduate Medical Education Program or Preliminary Year During 2009-2010*.

Allergy and Immunology Training Programs Surveys conducted between 2007 and 2010. The survey data provided estimates of the proportion of fellowship program completers who intended to enter patient care practice and the number of hours they intended to spend in patient care practice per week (allowing for the calculation of FTEs) provided by the Academy. An additional number of FTE A/I physicians were added annually to represent physicians who provided A/I patient care services, but had not completed an A/I fellowship training program.[2]

It is important to note that over time, changes have occurred in the production of formally-trained A/I physicians. First, the magnitude of training has increased somewhat from 128 A/I fellowship graduates in 2004 to 141 in 2009. These more recent figures represent a marked increase in the production of A/I fellowship graduates relative to 1999 where just 84 fellows completed A/I programs in the U.S. Second, the composition of fellows-in-training has remained relatively stable. In 2009, 14 percent of the fellows-in-training were IMGs compared to 12 percent in 2004. Once again, these more recent figures represent a dramatic change from 1999, where 42 percent of the fellows-in-training were IMGs. The combination of the changes (magnitude and composition) had a direct effect on the A/I physician supply forecasts developed for the 2005 work and for the current project. In 1999, it was estimated that 52 FTE formally-trained A/I physicians were being added to the existing supply of physicians each year, while it was estimated that about 107 FTE formally-trained A/I physicians were being added to the supply each year, an increase of more than 100%. By 2009, it was estimated that close to 117 FTE formally-trained A/I physicians were being added to the supply each year.

[2] In the previous forecasts of A/I physician supply, this additional group of physicians was estimated to be 25 FTEs annually. For the current forecast efforts, the number was allowed to vary between 0 and 25 to represent the potential variation in this group. This group's size is unknown currently since the 2009/10 data collection effort did not include all A/I physicians, only Academy members.

Figure 121. Estimated Production of New A/I Physicians in the U.S., 1999-2009

	1999	2004	2009/10
Number of fellows completing training	84	128	141
Percentage of fellows completing training with temporary visa status	27.0%	8.4%	3.2%
Average patient care FTE of fellows entering patient care practice in the U.S.	0.85 FTE	0.91 FTE	0.92 FTE
Total patient care FTEs added to A/I physician supply	52.0 FTEs	107.0 FTEs	116.8 FTEs

Sources: 2000, 2005, and 2010 Medical Education Theme Issues of the Journal of the American Medical Association; 1999, 2002, 2007, 2009, and 2010 Surveys of Fellows Completing A/I Training in the U.S. 2004 production estimated based on 2002 survey responses. 2009 production estimated based on averaging rates derived from the 2007, 2009, and 2010 survey responses.

Separations: Separations from A/I patient care practice were made up of two components: cohort-specific 5-year mortality rates and cohort-specific A/I physician 5-year retirement rates. The mortality rates were based on National Vital Statistics System data (Hoyert et al., 2006). Cohort-specific A/I physician retirement rates were based upon the data collected in the 2009/10 survey. Distinct rates of separation were developed for A/I fellowship-trained A/I physicians and those who had not completed A/I fellowship training.

The baseline year for the supply model was 2009, the most recent year for which reliable supply estimates were available. The supply model output was expressed in terms of patient care FTE A/I physicians per 100,000 population.[3]

Demand Model Components

The demand model employed had the following basic structure:

$$Demand_t = Demand_{t-1} +/- Adjustment\ to\ Demand_{t-1},$$

where t is the year for which the forecast is being made.

[3] Population estimates used in these forecasts were obtained from the U.S. Census Bureau.

Demand: The level of demand for A/I physicians was based on the assumption that, in general, A/I physician supply and demand were roughly in balance in 2009. This assumption was based upon several observations in the data collected in the 2009/10 *Survey of Physicians Providing Allergy and Immunology Services in the United States* compared to the data collected in 2004 as detailed in the preceding chapters. Specifically, A/I physicians reported spending slightly more hours in patient care (36.9 hours per week compared to 35.3 hours per week) and seeing about the same number of patients (56 per week compared to 57 per week) in 2009/10 than in 2004. The median wait time reported for a non-emergent appointment did not change between 2004 and 2009/10. Similar percentages of A/I physicians characterized their practice as being far from full (63 percent in 2009/10 compared to 62 percent in 2004) and as growing (46 percent in both 2009/10 and 2004).

Moreover, fewer A/I physicians reported increases in the numbers of cases they treated of asthma, sinusitis, and rhinitis in 2009/10 than in 2004 (33 percent, 34 percent, 29 percent compared to 42 percent, 43 percent, and 33 percent, respectively). On the other hand, more A/I physicians reported increases in the numbers of cases they treated of food allergies and atopic dermatitis in 2009/10 than in 2004 (59 percent and 34 percent compared to 42 percent and 30 percent, respectively). Finally, when asked directly their perception of the relationship between supply for A/I physicians and the demand for their services, there was little change in the responses given between 2004 and 2009/10 (52 percent compared to 50 percent). These pieces of information were interpreted as indications that the relationship between supply and demand was essentially the same in 2009 as it was in 2004, when it was deemed in balance. Thus, the level of demand in 2009 was set equal to the A/I physician supply level.

Adjustments to Demand: Both upward and downward adjustments were made to demand to form bands of estimated future demand. Ten-year demand adjustments of 5 percent and 10 percent were used to generate the demand bands.

The baseline year for the demand forecasts was 2009. The forecast demand was expressed in terms of patient care FTE A/I physicians per 100,000 population.

Supply and Demand Scenarios

To reflect the potential variation in the A/I physician supply and demand, four supply scenarios and five demand scenarios have been developed. Each of the scenarios is described below.

Supply Scenarios: Four supply scenarios were developed to represent differing levels of production of new A/I physicians and the relative contribution of fellowship training programs compared to other sources of new A/I physicians. These two production factors (magnitude and source) were combined to generate four potential future supply forecasts.

Supply Scenario 1 – Baseline Production: This scenario represented an extrapolation of current production levels into the future: 1) the number of physicians who completed A/I training in the U.S. each year remained constant at 141 between 2009 and 2029; 2) those graduates represented a total of 116.8 full-time equivalent (FTE) A/I physicians added to the supply each year; 3) between 0 and 25 additional FTE A/I physicians who had not completed a formal A/I fellowship program were also added to the supply annually; and 4) the relative proportions of USMGs and IMGs in A/I fellowship training programs remained constant at 12% between 2009 and 2029.

Supply Scenario 2 – Increased Production: This scenario had the following characteristics: 1) the number of physicians who completed A/I training in the U.S. each year would increase by 10% starting in 2012; 2) there would be 155 new A/I physicians added to the supply each year, yielding 128.4 new A/I physician FTEs per year from 2012 through 2029; 3) between 0 and 25 additional FTE A/I physicians who had not completed a formal A/I fellowship program were also added to the supply annually; and 4) the relative proportions of USMGs and IMGs in A/I fellowship training programs remained constant at 12% between 2009 and 2029.

Supply Scenario 3 – Decreased Production: This scenario had the following characteristics: 1) the number of physicians who completed A/I training in the U.S. each year would decrease by 10% starting in 2012; 2) there would be 127 new A/I physicians added to the supply each year, yielding 105.2 new A/I physician FTEs per year from 2012 through 2029; 3) between 0 and 25 additional FTE A/I physicians who had not completed a formal A/I fellowship program were also added to the supply annually; and

4) the relative proportions of USMGs and IMGs in A/I fellowship training programs remained constant at 12% between 2009 and 2029.

Figure 122. Supply Scenarios and Assumptions

Model ID	Scenario Description	Assumptions
S1	**Baseline Production**	1) 141 physicians completed A/I fellowship programs annually 2) those completers represented a total of 116.8 FTE patient care A/I physicians 3) Additional 0 to 25 FTE patient care A/I physicians added to the supply annually who were not formally trained in A/I 4) Percentage of USMGs and IMGs in A/I fellowship training: 88% USMG, 12% IMG
S2	**Increased Production**	1) 155 physicians completed A/I fellowship programs annually 2) those completers represented a total of 128.4 FTE patient care A/I physicians 3) Additional 0 to 25 FTE patient care A/I physicians added to the supply annually who were not formally trained in A/I 4) Percentage of USMGs and IMGs in A/I fellowship training: 88% USMG, 12% IMG
S3	**Decreased Production**	1) 127 physicians completed A/I fellowship programs annually after 2006 2) those completers represented a total of 105.2 FTE patient care A/I physicians 3) Additional 0 to 25 FTE patient care A/I physicians added to the supply annually who were not formally trained in A/I 4) Percentage of USMGs and IMGs in A/I fellowship training: 88% USMG, 12% IMG

Demand Scenarios: Five demand scenarios were developed by adjusting the rate of change in demand over time. The five scenarios represent potential changes in demand for A/I physicians per 100,000 *every 10 years* between 2009 and 2029.[4]

Figure 123. Demand Scenarios and Assumptions

Model ID	Scenario Description	Assumptions
D1	**Large Demand Increase**	10% increase in demand for A/I physician services every 10 years: population will demand additional A/I physician services than it does currently (annualized increase of 1.06460%)
D2	**Small Demand Increase**	5% increase in demand for A/I physician services every 10 years: population will demand additional A/I physician services than it does currently (annualized increase of 0.54358%)
D3	**No Demand Change**	No change in demand for A/I physician services during forecast period
D4	**Small Demand Decline**	5% decline in demand for A/I physician services every 10 years: population will demand fewer A/I physician services than it does currently (annualized decrease of 0.5683%)
D5	**Large Demand Decline**	10% decline in demand for A/I physician services every 10 years: population will demand fewer A/I physician services than it does currently (annualized decrease of 1.16385%)

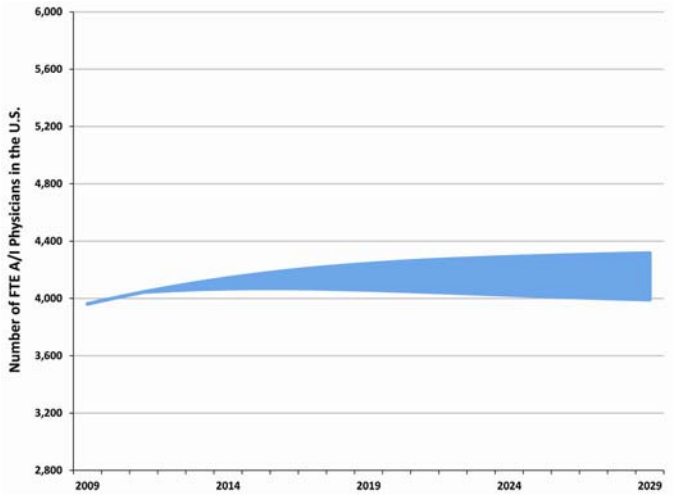
[4] By adjusting demand for A/I physicians per 100,000 population, the forecasts take into account not only the effect of projected population size changes on demand, but also the effects of increased or decreased utilization of A/I services on demand.

2. Forecasts

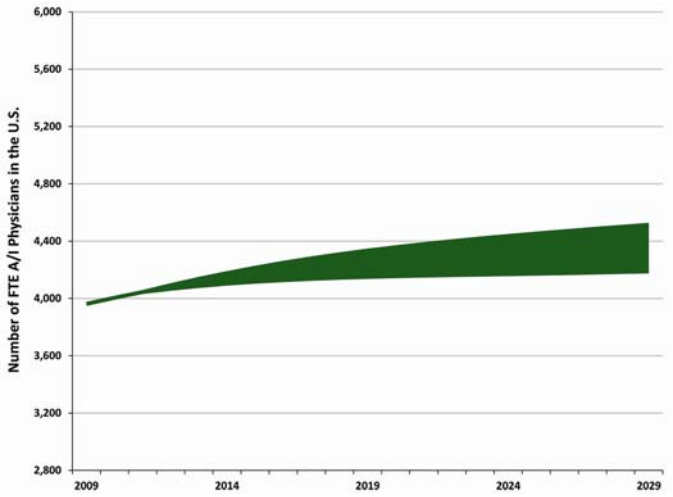
This section presents, both graphically and numerically, the forecasts of A/I physician supply and demand given the assumptions underlying each scenario. Each of the supply scenario forecasts also included a factor that accounted for the addition of physicians who were not formally trained in an A/I fellowship program. As noted above in the descriptions of the supply scenarios, the number of physicians from this group added to the A/I physician supply was allowed to vary from none to 25 FTEs annually. The variation in this factor created a forecast range for each of the supply scenarios with a minimum value reflecting the forecast with no new FTEs from this group added and a maximum value reflecting the forecast with 25 new FTEs added annually.

Figure 124. A/I Physician Supply Forecasts, 2009-2029: Number of A/I Physician FTEs

Supply Scenario 1



Supply Scenario 2



Supply Scenario 3

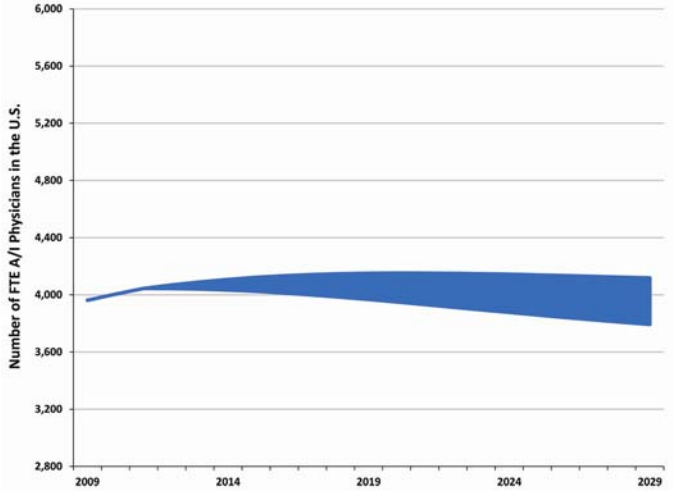
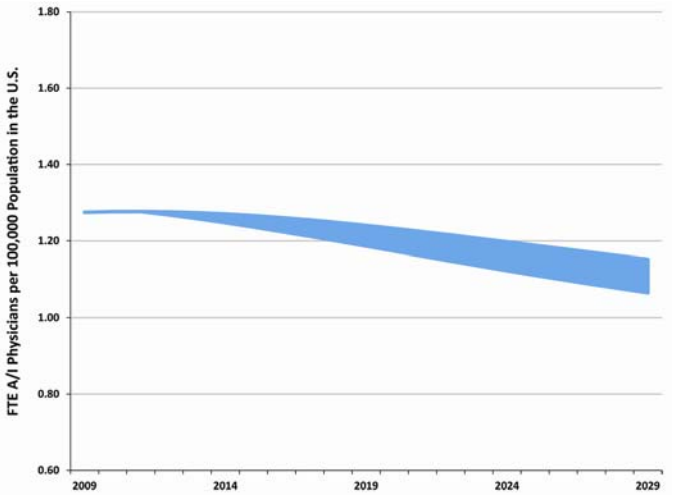
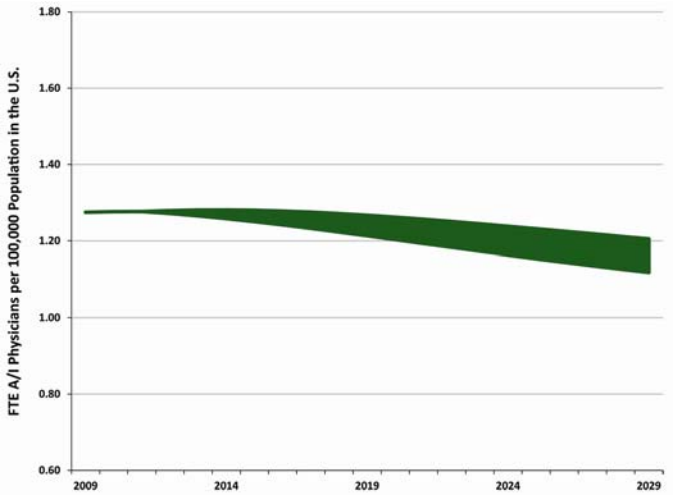


Figure 125. A/I Physician Supply Forecasts, 2009-2029: Ratio of A/I Physician FTEs to 100,000 Population

Supply Scenario 1



Supply Scenario 2



Supply Scenario 3

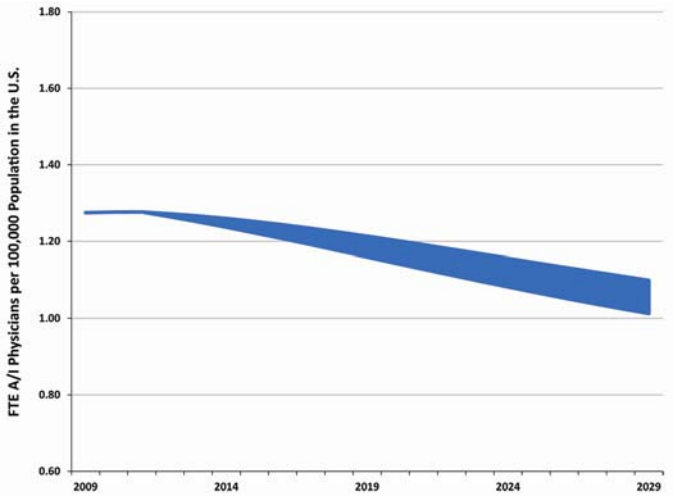


Figure 126. A/I Physician Supply Forecasts, 2009-2029

Scenario	2009	2014	2019	2024	2029	% Change 2009-2029
S1	3,962 (1.27)	4,068 – 4,143 (1.25 – 1.27)	4,059 – 4,243 (1.19 – 1.24)	4,024 – 4,290 (1.12 – 1.20)	3,991 – 4,316 (1.07 – 1.15)	0.7% – 8.9% (-16.4% – -9.6%)
S2	3,962 (1.27)	4,103 – 4,177 (1.26 – 1.28)	4,151 – 4,334 (1.21 – 1.27)	4,170 – 4,437 (1.16 – 1.24)	4,189 – 4,514 (1.12 – 1.21)	5.7% – 13.9% (-12.3% – -5.5%)
S3	3,962 (1.27)	4,034 – 4,108 (1.24 – 1.26)	3,968 – 4,151 (1.16 – 1.21)	3,877 – 4,144 (1.08 – 1.16)	3,794 – 4,118 (1.01 – 1.10)	-4.2% – 4.0% (-20.5% – -13.7%)

Note: Numbers in chart represent forecast FTE A/I physicians; numbers in parentheses represent forecast FTE A/I physician to 100,000 population ratios. The ranges of numbers indicate the minimum and maximum FTE forecasts generated by modeling no new non-formally-trained A/I physicians (minimum) and 25 new FTE non-formally-trained A/I physicians (maximum) added to the A/I physician workforce annually.

Figures 127 and 128 show the demand forecasts under each of the five demand scenarios. As noted in the descriptions of the scenarios, the baseline scenario (D3) assumed that per capita utilization of A/I physician services will not change over time. Since, however, the population is projected to grow, the number of A/I physician FTEs demanded in the future under this scenario was also forecast to grow. In all but the most pessimistic scenario (D5), the absolute number of A/I physician FTEs demanded was forecast to grow.

Figure 127. A/I Physician Demand Forecasts, 2009-2029: Number of A/I Physician FTEs Demanded

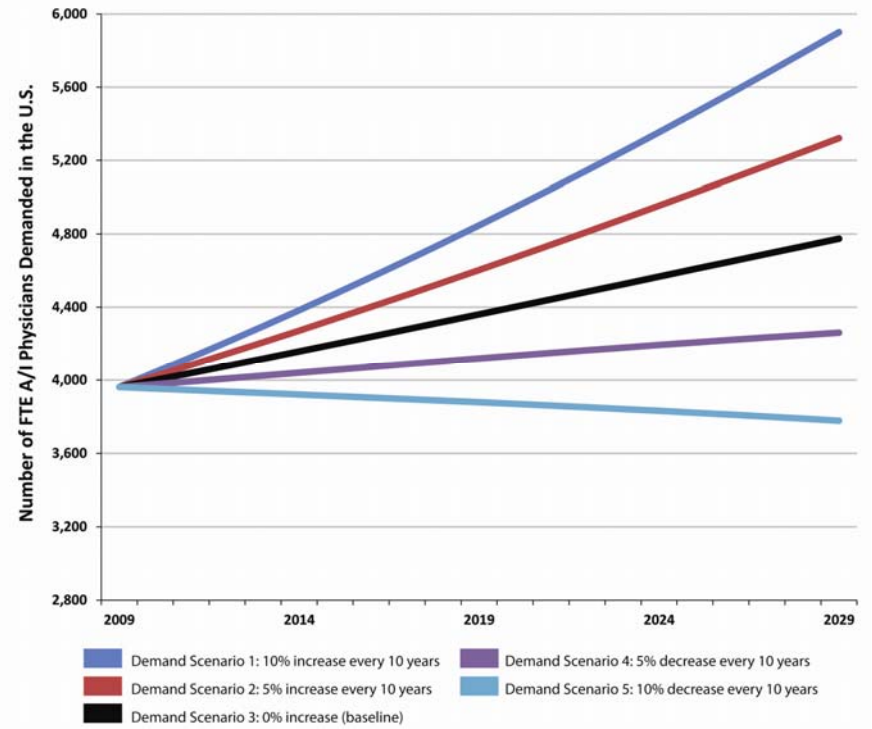


Figure 128. A/I Physician Demand Forecasts, 2009-2029: Ratio of A/I Physician FTEs Demanded to 100,000 Population

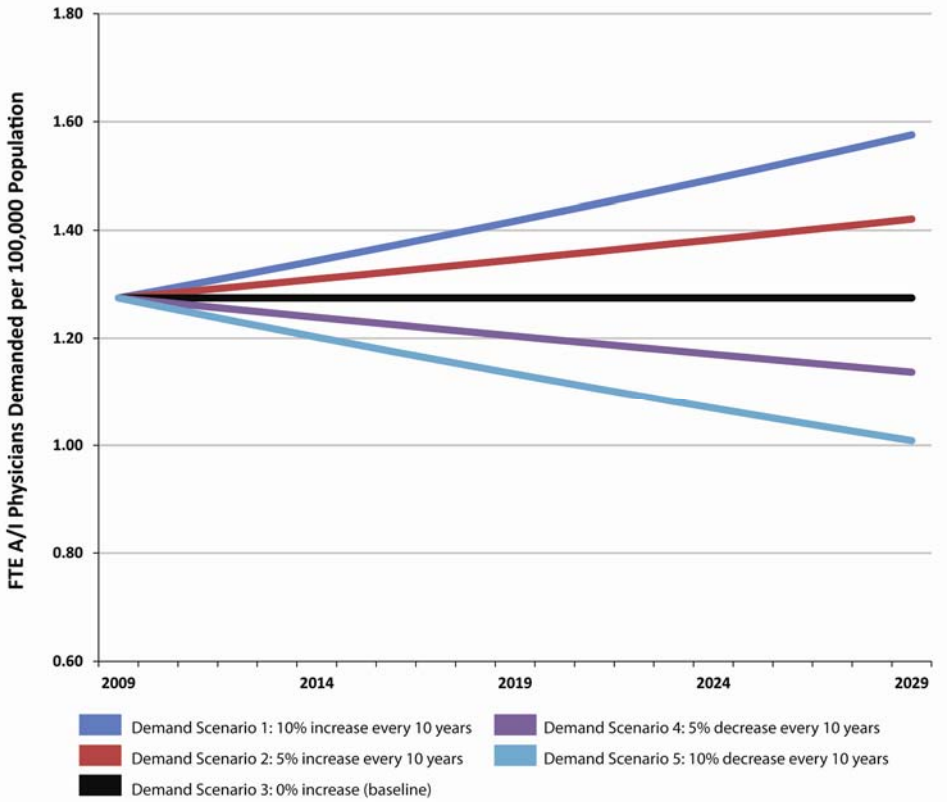


Figure 129. A/I Physician Demand Forecasts, 2009-2029

Scenario	2009	2014	2019	2024	2029	% Change 2009-2029
D1	3,962 (1.27)	4,383 (1.33)	4,847 (1.42)	5,354 (1.49)	5,901 (1.58)	48.9% (23.6%)
D2	3,962 (1.27)	4,271 (1.30)	4,604 (1.35)	4,954 (1.38)	5.321 (1.42)	34.3% (11.5%)
D3	3,962 (1.27)	4,157 (1.27)	4,361 (1.27)	4,567 (1.27)	4,775 (1.27)	20.5% (0.0%)
D4	3,962 (1.27)	4,040 (1.24)	4,119 (1.20)	4,193 (1.17)	4,260 (1.14)	7.5% (-10.7%)
D5	3,962 (1.27)	3,921 (1.20)	3,879 (1.13)	3,832 (1.07)	3,778 (1.01)	-4.6% (-20.9%)

Note: Numbers in chart represent forecast demand for A/I physicians in terms of FTE A/I physicians; numbers in parentheses represent forecast demand for A/I physicians in terms of FTE A/I physician to 100,000 population ratios.

3. Assessing the Relationship between Supply and Demand

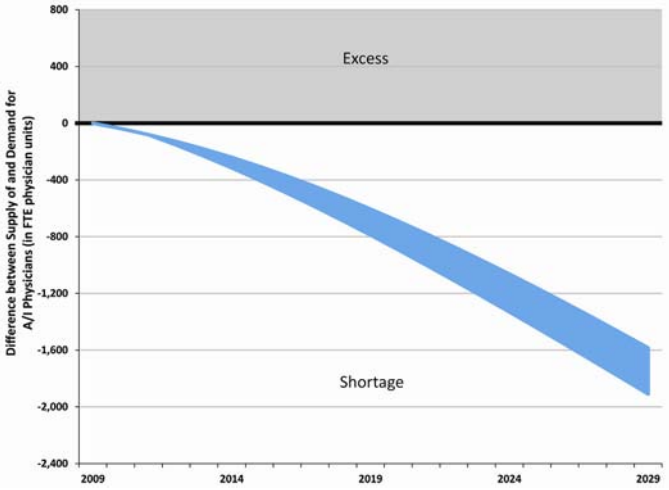
In order to assess the potential relationship between A/I physician supply and demand, the five demand scenarios were combined with the three supply scenarios and presented across four future time points (2014, 2019, 2024, and 2029) to create a series of five 12-cell matrices of unique supply-demand scenarios. At each time point, a simple calculation *([forecast supply – forecast demand]/ forecast demand * 100)* was made to describe the extent to which the forecast A/I physician supply was adequate to meet forecast demand. This calculation expressed the percentage of forecast demand that could be met by the forecast supply. Using this calculation, negative percentages indicated a forecast supply that could not meet the forecast demand for A/I physicians; positive percentages indicated a forecast supply that could meet the forecast demand for A/I physicians with room to spare; and a zero percentage indicated a perfect balance of forecast supply and forecast demand for A/I physicians.

Figure 130 depicts the forecast relationship between A/I physician supply and demand under the large demand increase scenario (D1). It is clear that should demand increase by 10 percent every 10 years, the current rate of production of new A/I physicians will be inadequate to meet demand (indicated by the difference between supply and

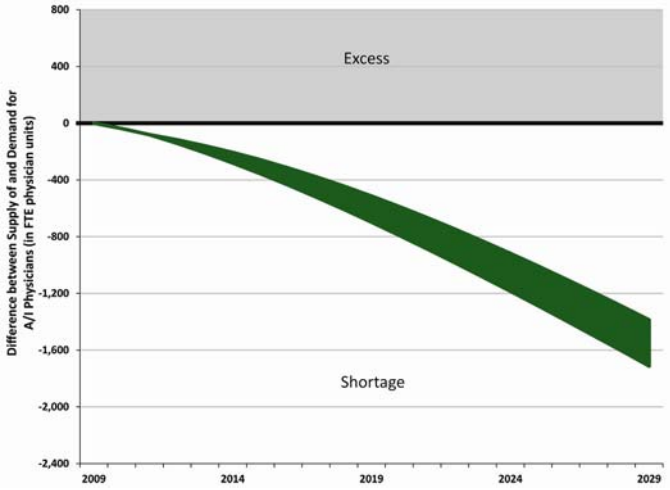
demand falling below the bold black line on the chart). Further, even if the rate of production of new A/I physicians increased by 10 percent (S2), production would still not be sufficient to keep up with demand increasing at the rate forecast in this scenario. Figure 131 presents the absolute and relative magnitudes of the forecast shortages under this demand scenario at five-year intervals. Because the supply scenarios produced ranged forecasts, the comparisons between supply and demand were also expressed in terms of a range.

Figure 130. Forecast Shortage/Surplus: Large Demand Increase (D1)

Supply Scenario 1



Supply Scenario 2



Supply Scenario 3

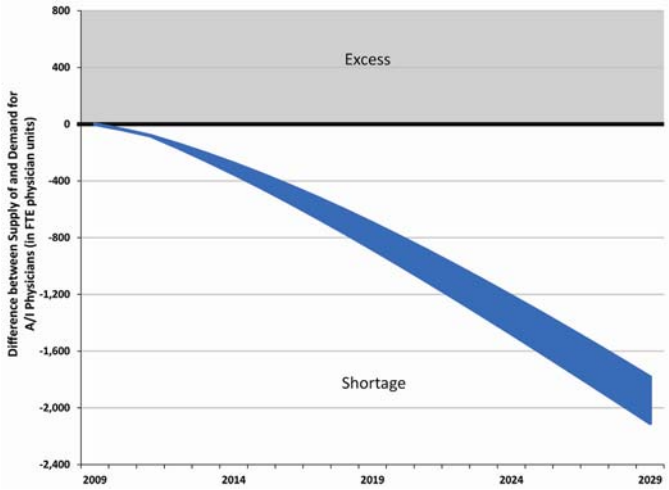


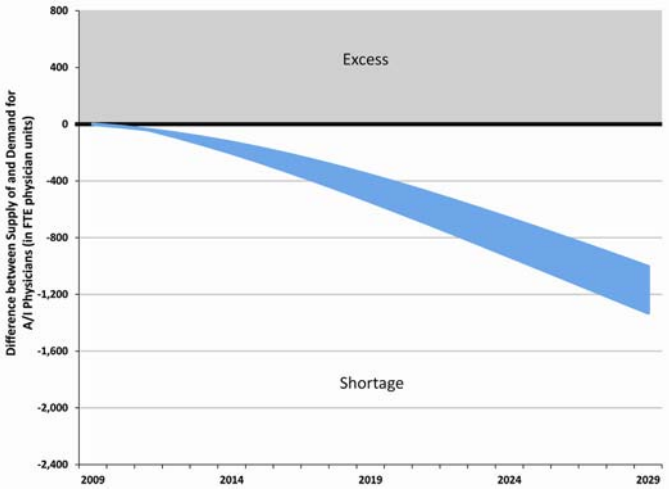
Figure 131. Forecast Shortage/Surplus: Large Demand Increase (D1)

Scenario	2014	2019	2024	2029
S1	-240.8 – -315.0 (-5.5% – -7.2%)	-605.1 – -788.7 (-12.5% – -16.3%)	-1,063.4 – -1,330.3 (-19.9% – -24.8%)	-1,584.6 – -1,909.4 (-26.9% – -32.4%)
S2	-206.1 – -280.3 (-4.7% – -6.4%)	-513.6 – -697.2 (-10.6% – -14.4%)	-917.3 – -1,184.1 (-17.1% – -22.1%)	-1,386.7 – -1,711.6 (-23.5% – -29.0%)
S3	-275.5 – -349.7 (-6.3% – -8.0%)	-696.6 – -880.1 (-14.4% – -18.2%)	-1,209.6 – -1,476.4 (-22.6% – -27.6%)	-1,782.5 – -2,107.3 (-30.2% – -35.7%)

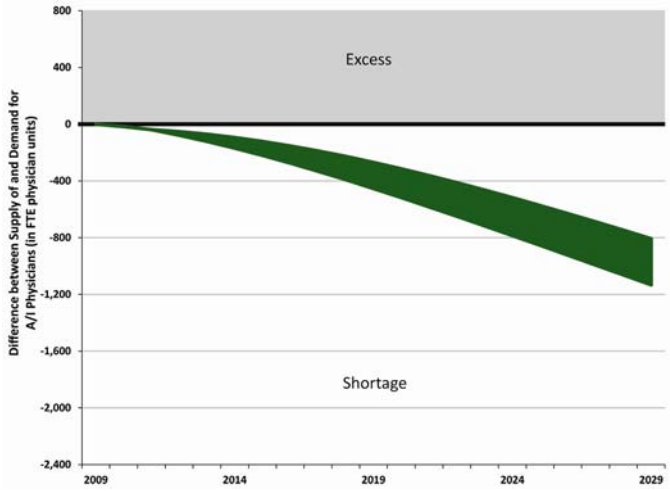
Figure 132 depicts the forecast relationship between A/I physician supply and demand under the small demand increase scenario (D2). As was the case in demand scenario 1, should demand increase by 5 percent every 10 years, the current rate of production of new A/I physicians will be inadequate to meet demand. Further, even if the rate of production of new A/I physicians increased by 10 percent (S2), production would still not be sufficient to keep up with demand increasing at the rate forecast in this scenario. Figure 133 presents the absolute and relative magnitudes of the forecast shortages under this demand scenario at five-year intervals.

Figure 132. Forecast Shortage/Surplus: Small Demand Increase (D2)

Supply Scenario 1



Supply Scenario 2



Supply Scenario 3

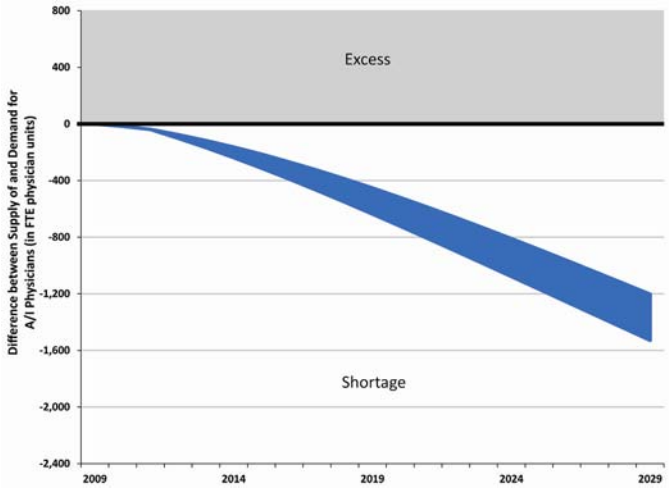


Figure 133. Forecast Shortage/Surplus: Small Demand Increase (D2)

Scenario	2014	2019	2024	2029
S1	-129.0 – -203.1 (-3.0% –-4.8%)	-360.9 – -544.5 (-7.8% – -11.8%)	-664.0 – -930.8 (-13.4% – -18.8%)	-1,005.0 – -1,329.9 (-18.9% – -25.0%)
S2	-94.3 – -168.4 (-2.2% –-3.9%)	-269.4 – -453.0 (-5.9% – -9.8%)	-517.8 – -853.5 (-11.4% – -18.1%)	-807.1 – -1,132.0 (-15.1% – -21.2%)
S3	-163.7 – -237.8 (-3.8% –-5.6%)	-452.4 – -635.9 (-9.8% – -13.8%)	-810.1 – -1,077.0 (-16.4% – -21.7%)	-1,202.9 – -1,527.8 (-22.6% – -28.7%)

Figure 134. Forecast Shortage/Surplus: No Demand Change (D3)

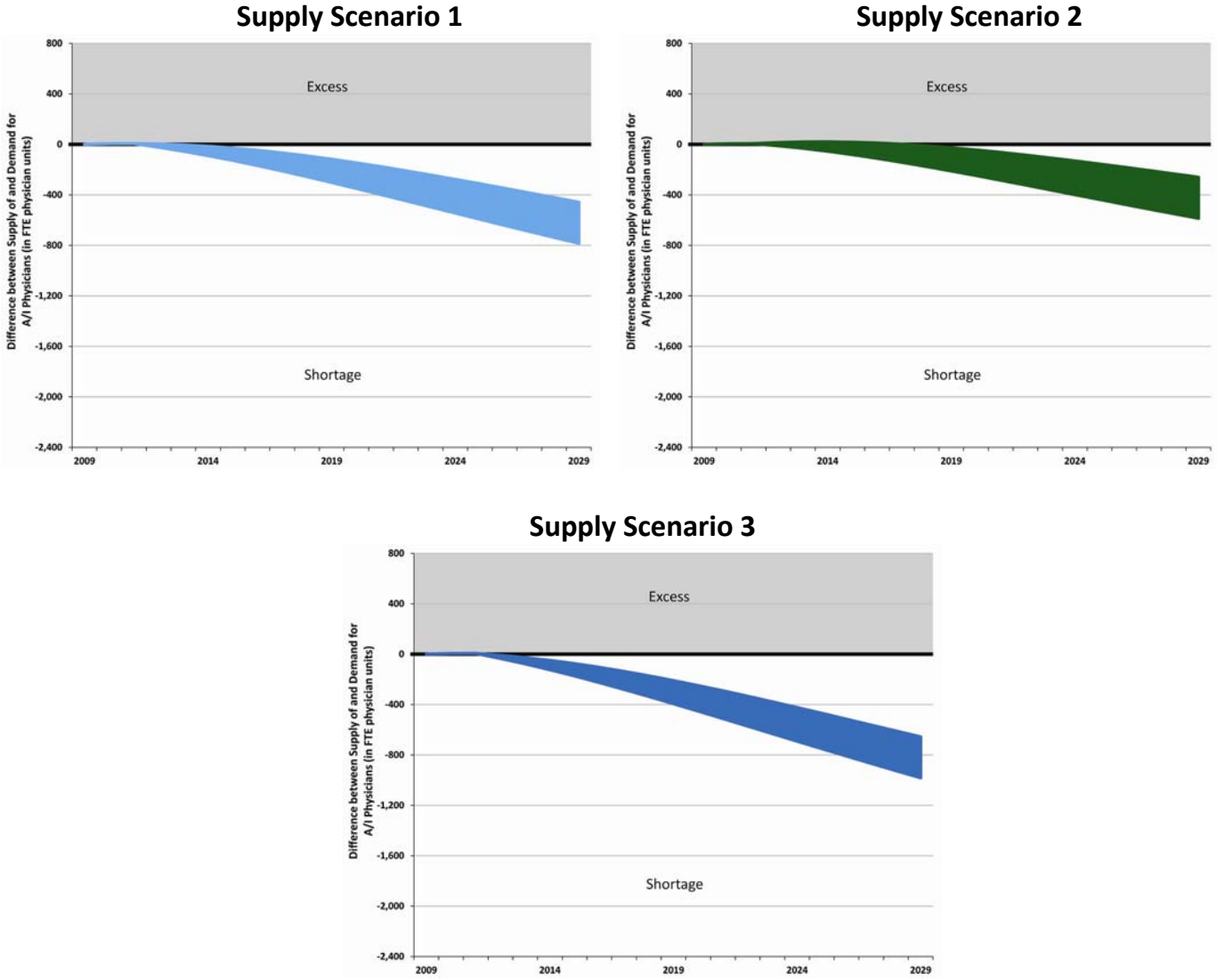


Figure 134 depicts the forecast relationship between A/I physician supply and demand under the no demand change scenario (D3). Should demand not change, the current rate of production of new A/I physicians would be adequate to meet demand in the very short term, but would fail to meet demand beyond the next several years. If the rate of production of new A/I physicians increased by 10 percent (S2), production would still not be sufficient to keep up with demand increasing at the rate forecast in this scenario, but would remain adequate for several additional years relative to the current production of new formally-trained A/I physicians. Figure 135 presents the absolute and relative magnitude of the forecast shortages under this demand scenario at five-year intervals.

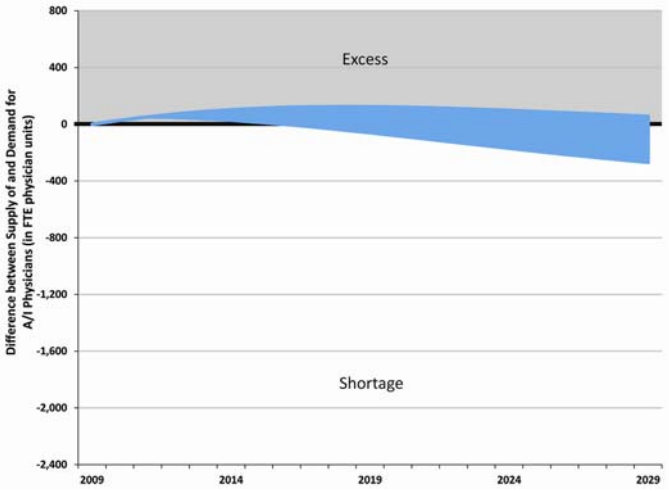
Figure 135. Forecast Shortage/Surplus: No Demand Change (D3)

Scenario	2014	2019	2024	2029
S1	-29.1 – -88.9 (-0.4% – -2.1%)	-118.0 – -301.5 (-2.7% – -6.9%)	-277.1 – -543.9 (-6.1% – -11.9%)	-458.2 – -783.1 (-9.6% – -16.4%)
S2	20.0 – -54.2 (0.5% – -1.3%)	-26.5 – -210.1 (-0.6% – -4.8%)	-130.9 – -397.7 (-2.9% – -8.7%)	-260.3 – -585.2 (-5.5% – -12.3%)
S3	-49.4 – -123.6 (-1.1% – -3.0%)	-209.4 – -393.0 (-4.8% – -9.0%)	-423.2 – -690.1 (-9.3% – -15.1%)	-656.1 – -981.0 (-13.7% – -20.5%)

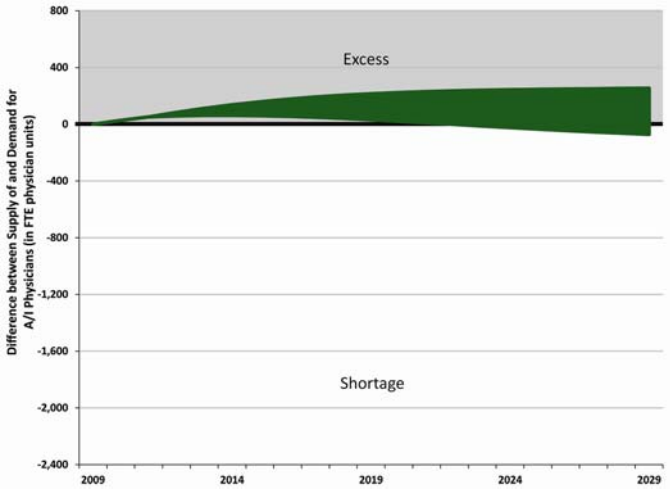
Figure 136 depicts the forecast relationship between A/I physician supply and demand under the small demand decline scenario (D4). Should demand decrease by 5 percent every 10 years, the current rate of production of new A/I physicians may be adequate to meet demand for the next decade and beyond. If the rate of production of new A/I physicians increased by 10 percent (S2), production would still not be sufficient to keep up with demand increasing at the rate forecast in this scenario, but would remain adequate for several additional years relative to the current production of new formally-trained A/I physicians. Figure 137 presents the absolute and relative magnitudes of the forecast differences between supply and demand under this demand scenario at five-year intervals.

Figure 136. Forecast Shortage/Surplus: Small Demand Decline (D4)

Supply Scenario 1



Supply Scenario 2



Supply Scenario 3

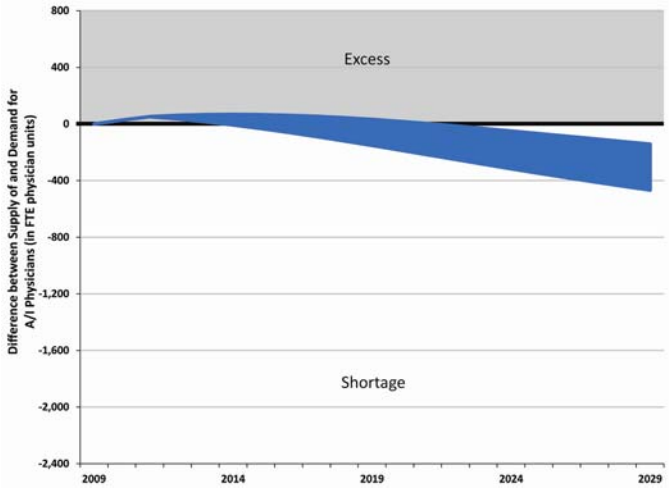


Figure 137. Forecast Shortage/Surplus: Small Demand Decline (D4)

Scenario	2014	2019	2024	2029
S1	27.9 – 102.1 (0.7% – 2.5%)	123.6 – -60.0 (3.0% – -1.5%)	97.2 – -169.7 (2.3% – -4.0%)	56.1 – -268.8 (1.3% – -6.3%)
S2	62.6 – 136.8 (1.5% – 3.4%)	31.5 – -215.1 (0.8% – 5.2%)	243.3 – -23.5 (5.8% – -0.6%)	254.0 – -70.9 (5.9% – -1.7%)
S3	67.4 – -6.8 (1.7% – -0.2%)	32.1 – -151.4 (0.8% – -3.7%)	-49.0 – -315.8 (-1.2% – -7.5%)	-141.8 – -466.6 (-3.3% – -11.0%)

Figure 138 depicts the forecast relationship between A/I physician supply and demand under the large demand decline scenario (D5). Should demand decrease by 10 percent every ten years, the current rate of production of new A/I physicians may be more than adequate to meet demand for the next decade and beyond. Even in the event of the rate of production of new A/I physicians decreasing by 10 percent (S3), production would be sufficient to keep up with demand increasing at the rate forecast in this scenario. Figure 139 presents the absolute and relative magnitudes of the forecast differences between supply and demand under this demand scenario at five-year intervals.

Figure 138. Forecast Shortage/Surplus: Large Demand Decline (D5)

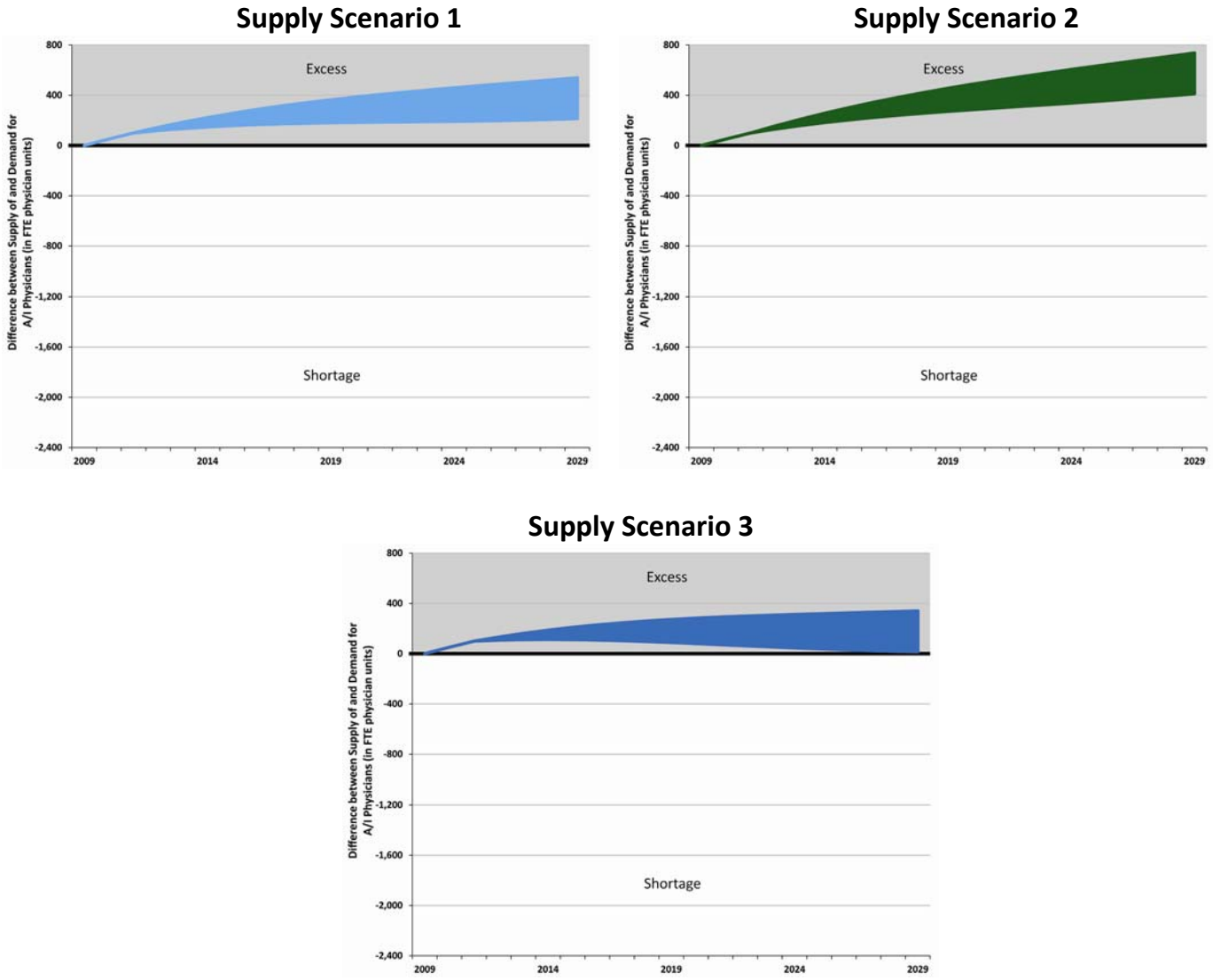


Figure 139. Forecast Shortage/Surplus: Large Demand Decline (D5)

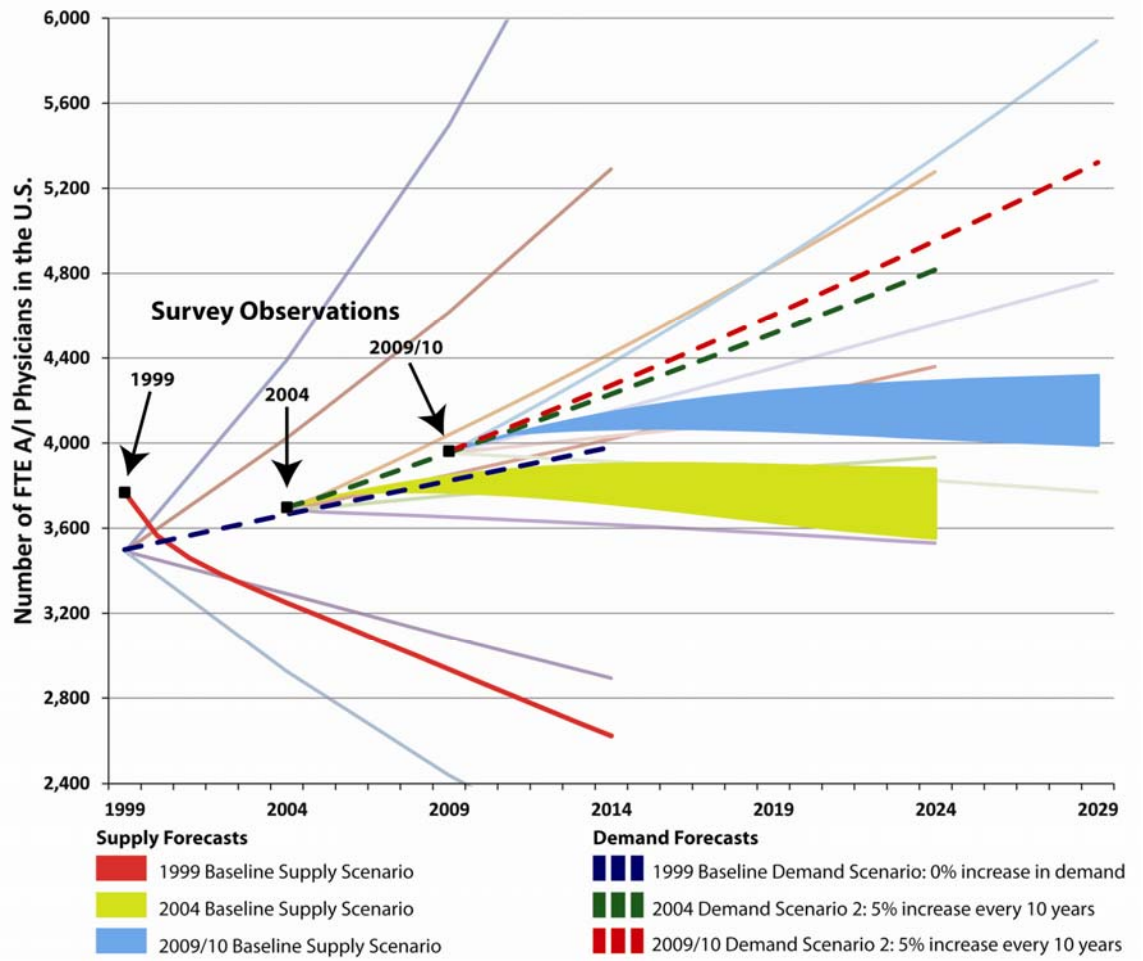
Scenario	2014	2019	2024	2029
S1	147.5 – 221.6 (3.8% – 6.5%)	180.2 – 363.8 (4.6% – 9.4%)	191.7 – 458.5 (5.0% – 12.0%)	213.6 – 538.4 (5.7% – 14.3%)
S2	182.2 – 256.3 (4.6% – 6.5%)	271.7 – 455.3 (7.0% – 11.7%)	337.8 – 604.7 (8.8% – 15.8%)	411.5 – 736.3 (10.9% – 19.5%)
S3	112.8 – 186.9 (2.8% – 4.8%)	88.7 – 272.3 (2.3% – 7.0%)	45.5 – 312.4 (1.2% – 8.1%)	15.7 – 340.6 (0.4% – 9.0%)

4. Supply and Demand Forecasting Retrospective

Since 1999, several forecasts of supply and demand for A/I physicians have been developed. The forecasts were made using a similar age-cohort-flow model. The data informing the models were updated with the information gathered with each workforce survey and other secondary sources. Figure 140 depicts the baseline supply forecasts and the demand forecasts with one demand forecast highlighted for each forecast iteration (1999, 2004, and 2009/10).

In 1999, the A/I workforce was considered oversupplied (the number of A/I physicians was greater than the number demanded). The data collected in 2004 suggested that demand for A/I physician services grew at the same rate as the general population between 1999 and 2004. Subsequently, between 2004 and 2009/10, demand for A/I physician services grew at a rate equivalent to 5 percent growth every 10 years. The final highlighted demand forecast in the figure is from the current forecasting effort. It shows a similar demand scenario as held five years ago (five percent growth every ten years).

Figure 140. Historical Forecasts of A/I Physician Supply and Demand, 1999-2009/10



On the supply side, between 1999 and 2004, the number of A/I physician FTEs declined. The decline was not as steep as had been forecast in 1999. The reason for the large discrepancy was the rapid increase in the number of new A/I physicians that were trained during that period. Also, the 2004 workforce survey found that on average A/I physicians were working longer hours in patient care than they had in 1999. Both of these factors helped to mitigate the forecast decline in the number of A/I physician FTEs. Between 2004 and 2009/10, once again the baseline supply forecast did not adequately account for the continued increase in the production of new A/I physicians, but was much closer to the actual growth than the previous forecast.

Figure 141. Accuracy of Historical Forecasts of A/I Physician Supply and Demand, 1999-2009/10

Supply Forecasts

	Forecast	Actual	Difference	Difference as a Proportion of Supply
1999				
1999-2004				
Baseline Scenario	-519	-70	-449	12.1%
2004				
2004-2009				
Baseline Scenario Maximum	146	264	-118	3.0%
2004-2009				
Baseline Scenario Minimum	72	264	-192	4.8%

Demand Forecasts

	Forecast	Actual	Difference	Difference as a Proportion of Demand
1999				
1999-2004				
No Demand Growth Scenario	166	198	-32	0.9%
2004				
2004-2009				
5% Demand Growth Scenario	256	264	-8	0.2%

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31. It should be noted that the manner in which questions regarding staffing in A/I physician practices has changed since the questions were originally asked in 1999. In 2004, the response categories were expanded and registered nurses and medical assistants were added to the professions. In 2009/10, A/I physicians were asked to report the actual number of each professional (rather than a category representing a range) and the number of full-time equivalents for each. Because of these differences, caution is urged in attempting to interpret trends in the staffing levels of A/I practices.

Appendix A: Survey Methodology

1. Background

In March 2009, the Center for Health Workforce Studies (the Center) began a collaboration with the American Academy of Allergy Asthma and Immunology (the Academy) to conduct a follow-up survey of physicians providing allergy and immunology (A/I) services in the United States in 2009. The Center and the Academy had earlier collaborated on a similar survey in 1999 and in 2004. The purpose of the 2009 survey was to update the data elements collected five and 10 years previously in order to better understand the forces presently affecting A/I practice around the country, as well as to generate data to update the A/I physician supply and demand models developed as a result of the earlier collaborations.

The Center worked closely with the Academy Workforce Committee to edit and enhance the 2004 survey instrument from March through October 2009. A final survey instrument was approved in October 2009. The survey was conducted between November 2009 and November 2010. For those A/I physicians meeting the inclusion criteria and having a known email address, a link to the survey to be completed online was distributed in November 2009 with several follow-up email reminders to non-respondents. In April 2010, paper versions of the survey were distributed to all non-respondents and A/I physicians who met the inclusion criteria and did not have a known email address.

2. Definition of the A/I Physician Population

Conceptual Definition

The Center conceptually defined the study population as all physicians providing A/I services in the U.S. in 2009. For the purposes of examining this population, this definition included all U.S.-based physician fellows and members of the Academy and all U.S.-based physicians who self-declared a primary specialty in allergy, allergy/immunology, clinical laboratory immunology, or immunology in the American Medical Association's (AMA) Masterfile of Physicians.

This comprehensive definition of the population ensured that no major segment of the population providing A/I services was overlooked. Defining the population as only physicians certified by the American Board of Allergy and Immunology (ABAI) or only

fellows/members of the Academy ignored the realities of the physician marketplace and the increased competition among physicians of various specialties who may feel pressure to expand the range of services they provide.

An overly-narrow definition also ignored the possibility that rapidly developing treatment breakthroughs for A/I diagnoses and conditions continue to allow physicians from other specialties and other types of providers to provide allergy and immunology services. In addition, given the voluntary nature of membership in professional organizations, it is certain that not all physicians providing A/I services are members of the Academy.

Finally, the young age of the specialty compared to some of the other medical boards (the ABAI was established in 1971) suggests the existence of older physicians who have and continue to provide A/I services, but who are not board-certified in the specialty and may not be members of the Academy. Findings from the previous surveys of this population, however, suggest that this group accounts for a diminishing portion of the workforce over time.

Operational Definition

Notwithstanding the conceptual definition of the A/I physician workforce described above, the operational definition of the A/I physician workforce employed in the 2009 survey was fellows, members, and fellows-in-training in the Academy membership database. This definition was used because the Academy Board of Directors declined to fund the inclusion of either: 1) all non-Academy members who self-declare a primary specialty in allergy, allergy/immunology, clinical laboratory immunology, or immunology in the AMA's Masterfile of Physicians, or 2) a subset of those physicians, members of the American College of Asthma, Allergy, and Immunology (ACAAI).

The exclusion of portions of the conceptual population is not without precedent. It should be noted that in the 1999 survey of physicians providing A/I services in the U.S., the Center also considered physicians who were members of the Joint Council of Allergy Asthma and Immunology (JCAAI) and ACAAI. The consideration of the other organizations resulted in the inclusion of 225 physicians who were not members of the Academy, about 4% of the potential respondents for that survey. The Center found that these 225 physicians did not differ substantially from the other non-Academy

physicians. Thus, the selection process was simplified for the 2004, as the previous inclusion did not provide any additional information.

The exclusion of self-declared, non-affiliated A/I physicians is substantively more problematic, however, as they are a much larger group, numbering over 1,500. In preparation for the survey, the Center obtained a list of physicians meeting the conceptual criteria of self-declared, non-affiliated A/I physicians from the AMA Masterfile of Physicians. Using information about how this group responded to the 2004 survey, the Center has attempted to artificially account for this group. At the very least, the Center was able to account for the size of this group. Less certain, however, was the Center's ability to account for the more substantive characteristics of the practices of the group.

3. Survey List Sources

The elements of the population of physicians providing A/I services were drawn from one source: the Academy membership database.

From the Academy membership database, the Center excluded the following groups: international fellows and members, all fellows and members with addresses outside the U.S., and all non-physician fellows and members. After these exclusions, the list of potential respondents was 4,595.

Since the survey was designed to be completed online or on paper, the potential respondents were divided into two groups: 1) those with known email addresses (N=3,945); and 2) those without known email addresses (N=650).

4. Survey Distribution Details

On November 3, 2009, emails with a link to the survey were distributed to the 3,945 A/I physicians with known email addresses. The email consisted of a brief explanation of the survey as well as a link to the online version of the survey. The email was sent under Dr. Mark Ballow's, President of the Academy, and Dr. N. Franklin Adkinson's, Chair of the Academy Workforce Committee, signatures. The emails also included options for the respondent to request a paper copy of the survey, as well as an option to be removed from further email solicitations as per CAN-SPAM Act of 2003 provisions regarding unsolicited email solicitations.

Follow-up emails to nonrespondents were conducted on November 18, 2009, December 14, 2009, and February 3, 2010. The follow-up emails were identical to the first, save for a slightly different solicitation for participation.

On April 6, 2010, paper copies of the survey were distributed to the 650 A/I physicians without known email addresses and the 2,571 A/I physicians who had not responded to the online survey. Each physician was sent a package with the following contents: a six-page survey booklet, a cover letter, and a business reply envelope. The cover letter was printed on Academy stationary under Dr. Mark Ballow's, President of the Academy, and Dr. N. Franklin Adkinson's, Chair of the Academy Workforce Committee, signatures. The cover letter also included a link to the online survey. Completed surveys were returned to the Center in business reply envelopes provided in each survey package.

A follow-up mailing to nonrespondents was conducted on June 22, 2010. The follow-up mailing consisted of the distribution of 2,123 survey packages identical to the first, save for a slightly different cover letter (again printed on Academy stationary under the President's and Workforce Committee Chair's signatures).

A final follow-up mailing to nonrespondents was conducted on September 20, 2010. The final follow-up mailing consisted of the distribution of 1,681 survey packages identical to the first, save for a slightly different cover letter (again printed on Academy stationary under the President's and Workforce Committee Chair's signatures).

Data collection was open through November 30, 2010. Completed online surveys were downloaded by Center staff. Completed paper surveys were processed by Center staff and scanned into an electronic database using an NCS OpScan 8 Optical Mark Read (OMR) scanner. The datasets were merged and cleaned as necessary (e.g., correcting for mutilated survey forms, incomplete scans, responses out of range, etc.). Written comments from paper survey forms were hand-entered and merged into the final response dataset.

5. Response Rate Analysis

In all 2,836 responses were collected from the 4,555 potential respondents, for a response rate of 62.3%.[5] This level of response was greater than both of the previous waves of the survey: 1999 with 56.3% ($t = 6.204; p < 0.001$) and 2004 with 55.9% ($t =$

[5] Forty of the original 4,595 persons solicited to participate in the survey were reported as deceased to the Center for Health Workforce Studies' survey office.

6.331; p < 0.001). To determine whether certain substantively relevant groups were adequately represented among the respondents in 2009/10, the Center conducted an analysis of response rates from a variety of groups, including those defined by whether the individual had an email address, and geographic location, and membership type. The following tables present the findings of this analysis.[6]

Physicians with an email address listed in the Academy membership database responded to the survey at a rate of 65.9%. Physicians without an email listed in the database responded to the survey at a rate of 39.0%. The difference between the two groups was statistically significant (*F = 172.219; p < 0.001*). As such, physicians who had an email listed in the Academy database were overrepresented among the survey respondents, while those without an email listed in the database were underrepresented. This finding was expected as physicians with an email address listed in the Academy database were contacted a total of seven times to complete the survey. On the other hand, physicians who did not have an email address listed in the Academy database were contacted just three times to complete to survey.

Appendix A Table 1. Survey Response by Email Listing Status

	Rate	*N*	*Responses*	*F*	*p*
Did not have email address	39.0%	621	242	*172.219*	*< 0.001*
Had email address	65.9%	3,934	2,594		

In terms of geographic location, response levels in the five categories observed (four Census Regions and one category U.S. Territories) did not vary statistically (*F = 0.674; p < 0.610*). While physicians in the West and in U.S. territories were the least likely to respond to the survey, the differences did not reach statistical significance.

Appendix A Table 2. Survey Response by Geographic Location

	Rate	*N*	*Responses*	*F*	*p*
Northeast	62.1%	1,085	674		
Midwest	64.2%	982	630		
South	62.2%	1,550	964	*0.674*	*< 0.610*
West	60.6%	921	558		
Other (Territories, Military)	58.8%	17	10		

[6] The level of response for each wave of the workforce survey since 1999 is on par with other surveys of its size (greater than 1,000 potential respondents) and target (physicians). For more information on response levels to physician surveys, please see: Cummings SM, et al. 2001. Reported response rates to mailed physician questionnaires. *Health Services Research.* 35(6):1347-55.

The final variable of interest available for analysis was type of Academy membership. Membership types were categorized into three groups: emeritus members, non-emeritus members, and fellows-in-training. Emeritus members were the least likely to respond to the survey with a response rate of 48.2%. Fellows-in-training responded at a rate of 56.3%. Non-emeritus members, the largest group, responded at the highest rate (66.0%). The response rate differences between the groups were statistically significant (*F = 46.639; p < 0.001*).

Appendix A Table 3. Survey Response by Membership Type

	Rate	*N*	*Responses*	*F*	*p*
Emeritus	48.2%	776	374		
Non-emeritus	66.0%	3,431	2,266	*46.639*	*< 0.001*
Fellow-in-training	56.3%	348	196		

To round out this comprehensive review of potential response rate biases, geographic location was considered simultaneously with email listing status and membership type. In this analysis, the response rate differences were statistically significant (*F = 9.871; p < 0.001*).[7]

In conclusion, a number of factors conditioned response rates among physicians providing A/I services. These included geographic location, whether the potential respondent had an email address listed in the Academy membership database, and Academy membership type. These factors were taken into consideration in the weighting process to ensure that the results of the survey accurately represent the responses of the A/I physician population in the U.S.

[7] Because physicians in U.S. territories made up such a small group, their response rates could not be disaggregated. To determine whether this group was biasing the response rate analysis, the analysis was conducted a second time with the group excluded. The results were consistent, and the differences observed in response rates were statistically significant (*F = 10.321, p < 0.001*).

Appendix A Table 4. Survey Response by Email Listing Status, Membership Type, and Geographic Location

	Rate	*N*	*Responses*	*F*	*p*
EM / Email / NE	63.1%	84	53		
EM / Email / MW	68.1%	72	49		
EM / Email / S	63.6%	118	75		
EM / Email / W	71.0%	93	66		
EM / No Email / NE	33.6%	116	39		
EM / No Email / MW	30.1%	73	22		
EM / No Email / S	35.3%	133	47		
EM / No Email / W	26.5%	83	22		
Non-EM / Email / NE	68.4%	752	514		
Non-EM / Email / MW	66.9%	714	478		
Non-EM / Email / S	66.6%	1,090	726		
Non-EM / Email / W	65.2%	661	431		
Non-EM / No Email / NE	45.7%	46	21	*9.871*	*< 0.001*
Non-EM / No Email / MW	61.9%	42	26		
Non-EM / No Email / S	56.4%	78	44		
Non-EM / No Email / W	48.6%	37	18		
FIT / Email / NE	54.8%	84	46		
FIT / Email / MW	68.4%	79	54		
FIT / Email / S	55.9%	127	71		
FIT / Email / W	44.7%	47	21		
FIT / No Email / NE	33.3%	3	1		
FIT / No Email / MW	50.0%	2	1		
FIT / No Email / S	25.0%	4	1		
FIT / No Email / W	N/A	--	--		
U.S. Territories	58.8%	17	10		

***Note**: EM = Emeritus member; Non-EM = Non-Emeritus member; FIT = fellow-in-training; Email = Email address listed in AAAAI member database; No Email = Email address not listed in Academy member database*

Appendix B: Survey Response Weighting Procedures

In order to ensure that the results of the 2009/10 survey accurately reflected the responses of the population of A/I physicians, the survey responses were weighted using information from the response rate analysis described above.

The weighting process consisted of developing a set of weights to correct for differences in rates of response among various respondent groups. The weights were generated by taking the reciprocal of the response rate for members of each respondent group. Following the response rate analysis described above, responses were distributed into 25 respondent groups defined by three characteristics: 1) geographic location, 2) whether the potential respondent had an email address listed in the Academy membership database, and 3) Academy membership type. As indicated in the response rate analysis, A/I physicians in U.S. territories were such a small group that the additional respondent groups defined by email listing status and membership type were unable to be disaggregated. As such this group of A/I physicians was treated as one respondent group. The specific weights used are presented in Table 1.

Appendix B Table 1. Survey Response Weights

Membership Type	*Email Listing Status*	*Census Region*	*Response Rate*	*Weight*
Emeritus	Email	Northeast	63.1%	1.58491
		Midwest	68.1%	1.46939
		South	63.6%	1.57333
		West	71.0%	1.40909
	No Email	Northeast	33.6%	2.97436
		Midwest	30.1%	3.31818
		South	35.3%	2.82979
		West	26.5%	3.77273
Non-Emeritus	Email	Northeast	68.4%	1.46304
		Midwest	66.9%	1.49372
		South	66.6%	1.50138
		West	65.2%	1.53364
	No Email	Northeast	45.7%	2.19048
		Midwest	61.9%	1.61538
		South	56.4%	1.77273
		West	48.6%	2.05556
Fellow-In-Training	Email	Northeast	54.8%	1.82609
		Midwest	68.4%	1.46296
		South	55.9%	1.78873
		West	44.7%	2.23810
	No Email	Northeast	33.3%	3.00000
		Midwest	50.0%	2.00000
		South	25.0%	4.00000
		West	N/A	--
		U.S. Territories	58.8%	1.70000

* There were no fellows-in-training without an email listing in the West Census region in the population.

Appendix C: Survey of Physicians Providing Allergy and Immunology Services in the United States in 2009/10

Survey of Physicians Providing Allergy and Immunology Services in the United States

Center for Health Workforce Studies
School of Public Health
University at Albany
and
American Academy of Allergy Asthma and Immunology

MARKING INSTRUCTIONS

- Use a No. 2 pencil or blue or black ink pen only.
- Do not use pens with ink that soaks through the paper.
- Make solid marks that fill the response completely.
- Make no stray marks on this form.
- Do not fold, tear, or multilate this form.

CORRECT

INCORRECT

Survey of Physicians Providing Allergy and Immunology Services in the United States

Center for Health Workforce Studies
School of Public Health, University at Albany
and
American Academy of Allergy Asthma and Immunology

This questionnaire is designed to obtain information on the supply and demand and job market, practice characteristics and activities, demographic characteristics, and education and training of physicians providing allergy and immunology services in the U.S. Your response is confidential and will be reported only in national and regional summaries.

Please mark only one answer for each question unless otherwise directed.
Note: A&I services refers to all allergy and immunology services.
Please return the completed questionnaire in the accompanying business reply envelope.

A. CURRENT STATUS

How would you describe your current medical practice status?

- ○ Actively providing A&I services
- ○ Active in medicine, but not providing A&I services
- ○ In residency/fellowship training as of Oct 31, 2009
- ○ Retired from medicine

→ ***If you marked either of these responses, please stop here and return the survey.***

B. DEMOGRAPHIC CHARACTERISTICS

1. Year of birth: → ☐☐☐☐

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

2. Race/Ethnic background: (*Please mark all that apply.*)

- ○ American Indian or Alaska Native
- ○ Asian
- ○ Black/African American
- ○ Hispanic, Latino, or Spanish origin
- ○ Native Hawaiian or Other Pacific Islander
- ○ White
- ○ Other (specify): _____

3. Gender: ○ Female ○ Male

C. EDUCATION AND TRAINING

1. A) Professional degrees: (*Please mark all that apply.*)

○ MD ○ DO ○ PhD

B) Location of medical school:

○ United States ○ Canada ○ Other country

2. Initial residency training completed: (*Please mark all that apply.*)

Specialty			
Int Med	Peds	ENT	Other (specify):
○	○	○	○ _____

3. Identify the source(s) of your **formal** A&I training. (*Please mark all that apply.*)

- ○ A&I fellowship/residency
- ○ ENT fellowship/residency
- ○ Other fellowship/residency
- ○ Short courses
- ○ None

4. Year completed A&I fellowship training:

☐☐☐☐ ○ Not applicable

5. Board certification(s): (*Please mark all that apply.*)

	Specialty				
	Allergy/ Immun	Int Med	Peds	ENT	Other (specify):
Board certified	○	○	○	○	○
Training completed	○	○	○	○	○

3/8" SPINE PERF

SERIAL ○○○○○○○○○○○○○○○○○○○○○○○○○○○○

PLEASE DO NOT WRITE IN THIS AREA

6. Professional membership(s):
(*Please mark all that apply.*)

- ○ AAAAI - American Academy of Allergy Asthma and Immunology
- ○ ACAAI - American College of Allergy Asthma and Immunology
- ○ JCAAI - Joint Council of Allergy Asthma and Immunology
- ○ CIS - Clinical Immunology Society
- ○ Regional/State/Local Allergy and Immunology Society
- ○ Other (specify): _____

D. PRACTICE CHARACTERISTICS AND ACTIVITIES

1. Indicate the hours you spend in a **typical week** in each of the following professional activities.

	Number of Hours
A. A&I Patient Care	
A&I Patient Care	_____
B. Other A&I Activities	
Pharmaceutical trials	_____
Investigator-initiated clinical research	_____
Bench research	_____
Teaching	_____
Administration	_____
C. Other Non-A&I Medical Activities	
Non-A&I patient care	_____
Non-A&I administration	_____
Other non-A&I activities	_____

IF YOU ARE NOT CURRENTLY PROVIDING A&I SERVICES, PLEASE PROCEED TO SECTION G, PAGE 5.

2. Location of your principal A&I practice (i.e., where you spend the most time per week):

Zip Code

0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

3. A. Please identify your principal and secondary (if applicable) practice organization(s).

Principal	Secondary	
○	○	Solo practice
○	○	Small single specialty group practice (2-3 physicians)
○	○	Large single specialty group practice (4+ physicians)
○	○	Multispecialty group practice or clinic
○	○	Academic medical center
○	○	Hospital - inpatient
○	○	Hospital - ambulatory care
○	○	Hospital - emergency room
○	○	Managed care organization/HMO
○	○	Military/U.S. government
○	○	Private industry
○	○	Other (specify): _____

B. How would you describe your position(s) in the organization(s)?

Principal	Secondary	
○	○	Owner
○	○	Employee
○	○	Contractor
○	○	Volunteer

3/8" SPINE PERF

4. How many of the following health professionals work at your principal organization? Please indicate the total FTEs (full-time equivalents, e.g., 1.7, 0.75, 0.5, etc.) for each type of professional as well.

Professionals	Number of Professionals	Total FTEs	Don't know
Physicians (include self)	_____	_____	○
Physician assistants (PAs)	_____	_____	○
Nurse practitioners (NPs)	_____	_____	○
Registered nurses (RNs)	_____	_____	○
Licensed practical/vocational nurses (LPNs/LVNs)	_____	_____	○
Medical assistants	_____	_____	○

5. Please indicate the percentage of your A&I patients that are children (*age 16 and younger*).

- ○ 0%
- ○ 1-10%
- ○ 11-20%
- ○ 21-30%
- ○ 31-40%
- ○ 41-50%
- ○ 51-60%
- ○ 61-70%
- ○ 71-80%
- ○ 81-90%
- ○ 91-100%

6. A. Indicate the **number of visits** in your personal A&I practice **in a typical week.**

New A&I Patients

- ○ 0
- ○ 1-5
- ○ 6-10
- ○ 11-15
- ○ 16-20
- ○ 21-25
- ○ 26-30
- ○ >30

All A&I Patients

- ○ 0
- ○ 1-10
- ○ 11-20
- ○ 21-30
- ○ 31-40
- ○ 41-50
- ○ 51-60
- ○ 61-70
- ○ 71-80
- ○ 81-90
- ○ 91-100
- ○ >100

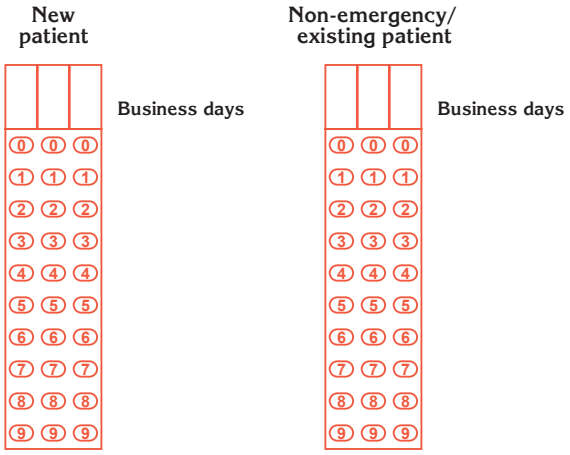
B. What percentage of your A&I patients do you treat with allergy shots/immunotherapy?

- ○ 0%
- ○ 1-10%
- ○ 11-20%
- ○ 21-30%
- ○ 31-40%
- ○ 41-50%
- ○ 51-60%
- ○ 61-70%
- ○ 71-80%
- ○ 81-90%
- ○ 91-100%

C. What percentage of your A&I patients do you treat with biologic immune response modifiers (e.g., Xolair, IVIG, Rituxan)?

- ○ 0%
- ○ 1-5%
- ○ 6-10%
- ○ 11-20%
- ○ 21-30%
- ○ 31-40%
- ○ >40%

7. A. What is the typical waiting time to obtain an appointment in your A&I practice for the following?



B. Compared to last year at this time, how has the waiting time to obtain an appointment changed in your A&I practice?

New patient	Non-emergency/ existing patient
Waiting time has:	Waiting time has:
○ increased	○ increased
○ not changed	○ not changed
○ decreased	○ decreased

8. Without making substantial changes to your current practice patterns, which response best describes your current A&I practice?

- ○ I cannot accept any new A&I patients, my A&I practice is full.
- ○ I can accept some more A&I patients, my A&I practice is nearly full.
- ○ I can accept many more A&I patients, my A&I practice is far from full.

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9. What percentage of your share of practice income is derived from A&I patient services?

○ 0%	○ 31-40%	○ 71-80%
○ 1-10%	○ 41-50%	○ 81-90%
○ 11-20%	○ 51-60%	○ 91-99%
○ 21-30%	○ 61-70%	○ 100%

10. Indicate how frequently you use the following health technology resources in your A&I practice.

	Never	Once a Month ▼	Once a Week	Once Daily ▼	More than Once Daily
Email	○	○	○	○	○
AAAAI web site	○	○	○	○	○
ACAAI web site	○	○	○	○	○
Smart phone/PDA (e.g., iPhone, BlackBerry, Palm)	○	○	○	○	○
Electronic medical record (EMR)	○	○	○	○	○
Electronic prescribing (with no EMR)	○	○	○	○	○
Clinical application software (e.g., clinical decision support, point of care electronic references, Asthma IQ)	○	○	○	○	○
Office automation and information management systems (e.g., practice management software, electronic billing, document imaging systems, voice recognition software)	○	○	○	○	○
Other (specify): _____	○	○	○	○	○

E. RECENT CHANGES IN PRACTICE

1. Please describe how the volumes of the following have changed in your A&I practice **over the past two years.**

	Fewer	About the same	More	Don't know	N/A
A. Number of patients					
A&I patients	○	○	○	○	○
Other patients	○	○	○	○	○
B. Hours worked per week					
A&I practice	○	○	○	○	○
Other practice	○	○	○	○	○
C. Patients who were					
Physician-referred	○	○	○	○	○
NP/PA-referred	○	○	○	○	○
Self-referred	○	○	○	○	○
D. Patients insured through					
Medicaid	○	○	○	○	○
Medicare	○	○	○	○	○
Private insurance	○	○	○	○	○
Uninsured	○	○	○	○	○

2. Indicate how the volume of the following types of cases has changed **over the past two years.**

	Decreased Substantially	Decreased Modestly ▼	No Change	Increased Modestly ▼	Increased Substantially	I Do Not See These Cases ▼
Asthma	○	○	○	○	○	○
Sinusitis (chronic and acute)	○	○	○	○	○	○
Rhinitis	○	○	○	○	○	○
Food allergy	○	○	○	○	○	○
Atopic dermatitis	○	○	○	○	○	○
Contact dermatitis	○	○	○	○	○	○
Immune deficiency	○	○	○	○	○	○
Chronic cough	○	○	○	○	○	○
Adverse drug reaction	○	○	○	○	○	○
Urticaria/ angioedema	○	○	○	○	○	○
Insect sting reaction	○	○	○	○	○	○
Environmental intolerance syndrome	○	○	○	○	○	○

3. Indicate how the complexity of A&I cases you treat has changed **over the past two years.**

- ○ More complex
- ○ No change
- ○ Less complex

4. Indicate the most appropriate description of your A&I practice.

- ○ My practice is growing.
- ○ My practice is stable.
- ○ My practice is downsizing.

If your practice is growing, are you currently recruiting/planning to add another A&I physician?

○ Yes ○ No

5. Indicate how your personal practice income has changed **over the past two years.**

- ○ Substantially higher
- ○ Somewhat higher
- ○ No change
- ○ Somewhat lower
- ○ Substantially lower

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6. A. Which best describes the change in your medical liability premiums **over the past two years**?

- ○ Premiums have decreased
- ○ Premiums have not changed
- ○ Premiums have increased
- ○ I don't know

B. Have you made changes in your medical practice due to changes in your medical liability premiums **over the past two years**?

- ○ Yes (continue to part C below)
- ○ No (skip part C, go to section F)

C. As a result of the changes in your medical liability premiums **over the past two years**, how has your practice changed?

i. Practice patterns

	Fewer	About the same	More
Number of patients treated per week	○	○	○
Number of hours I spend in patient care per week	○	○	○
Number of tests performed per patient	○	○	○
Likelihood that I will refer patients to other physicians	○	○	○

ii. Location of practice

	Yes	No
I have relocated my practice to another state.	○	○

iii. Other changes

- ○ Other change (specify): _____
- ○ Other change (specify): _____

F. PLANS AND EXPECTATIONS FOR FUTURE

1. Over the next 12 months, do you expect to:

- ○ Reduce the time you spend providing A&I services by 25%?
- ○ Reduce the time you spend providing A&I services by 50%?
- ○ Reduce the time you spend providing A&I services by 75%?
- ○ Completely discontinue providing A&I services?
- ○ Not change the time you spend providing A&I services?
- ○ Increase the time you spend providing A&I services?

2. In how many years do you expect to stop providing A&I services?

- ○ Less than 1
- ○ 1
- ○ 2
- ○ 3-5
- ○ 6-10
- ○ 11-15
- ○ >15

3. Please indicate the impact you expect the following factors to have on demand for A&I services in your practice over the next 5 years.

	Reduce Demand	No Impact	Increase Demand
a) New treatments and medications	○	○	○
b) Incidence/prevalence of allergy/asthma conditions	○	○	○
c) Incidence/prevalence of immunologic conditions	○	○	○
d) New A&I practice parameters	○	○	○
e) Proposed health care reforms	○	○	○
f) Other (specify):	○	○	○

_____

G. ALLERGY & IMMUNOLOGY PRACTICE MARKET

1. What is your perception of the **current** employment/practice opportunities for physicians providing A&I services?

	Many Available Opportunities	Some Available Opportunities	Few Available Opportunities	No Available Opportunities	Don't Know
a) Local (within 50 miles)	○	○	○	○	○
b) Within state	○	○	○	○	○
c) Nationally	○	○	○	○	○

2. What is your perception of the **future** job prospects for physicians providing A&I services?

	Many Available Opportunities	Some Available Opportunities	Few Available Opportunities	No Available Opportunities	Don't Know
a) Local (within 50 miles)	○	○	○	○	○
b) Within state	○	○	○	○	○
c) Nationally	○	○	○	○	○

3. Please assess the level of cooperation/ competition you experience with the following physicians in your locale.

Specialties	Strong Competition/ Little Cooperation 1	2	3	4	Little Competition/ Strong Cooperation 5
a) A&I physicians	○	○	○	○	○
b) Otolaryngologists	○	○	○	○	○
c) Pulmonologists	○	○	○	○	○
d) Dermatologists	○	○	○	○	○
e) Pediatricians	○	○	○	○	○
f) Internists	○	○	○	○	○
g) Family physicians	○	○	○	○	○
h) Other (specify):	○	○	○	○	○

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4. How frequently are your patients referred to you by the following?

	Never 1	2	Sometimes 3	4	Very Often 5
a) A&I physicians	○	○	○	○	○
b) Otolaryngologists	○	○	○	○	○
c) Pulmonologists	○	○	○	○	○
d) Dermatologists	○	○	○	○	○
e) Pediatricians	○	○	○	○	○
f) Internists	○	○	○	○	○
g) Family physicians	○	○	○	○	○
h) Patient self-referral	○	○	○	○	○
i) Other (specify):	○	○	○	○	○

_____

5. How satisfied are you with your current A&I practice?

	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
a) Professionally	○	○	○	○	○
b) Economically	○	○	○	○	○

6. Indicate your level of agreement with the following statement:

I would recommend Allergy and Immunology to a medical student seeking advice on specialty choice.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
○	○	○	○	○

7. The supply of physicians providing A&I services in your community is:

- ○ Greater than the demand for A&I services.
- ○ Balanced with the demand for A&I services.
- ○ Less than the demand for A&I services.

8. Please provide any additional comments or observations you may have about the A&I workforce and/or the job market for physicians providing A&I services.

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THANK YOU FOR COMPLETING THIS IMPORTANT SURVEY!

Please return the completed questionnaire in the accompanying business reply envelope or mail to:

Center for Health Workforce Studies
University at Albany, School of Public Health
1 University Place, Suite 220
Rensselaer, NY 12144-3445

If you have questions about the questionnaire or the study, please call Gaetano Forte at the Center for Health Workforce Studies at (518) 402-0250 or email to chws@health.state.ny.us.

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Appendix D: Regions Used in the Analysis

In a number of cases, the report presents data analysis at a two aggregate levels: Census Division and Census Region. Table 1 shows the state components of each type of aggregate.

Appendix D Table 1. Regional Analysis Components

Region	Division	State
Northeast		
	New England	
		Connecticut
		Maine
		Massachusetts
		New Hampshire
		Rhode Island
		Vermont
	Middle Atlantic	
		New Jersey
		New York
		Pennsylvania
Midwest		
	East North Central	
		Illinois
		Indiana
		Michigan
		Ohio
		Wisconsin
	West North Central	
		Iowa
		Kansas
		Minnesota
		Missouri
		Nebraska
		North Dakota
		South Dakota
South		
	South Atlantic	
		Delaware
		District of Columbia
		Florida
		Georgia
		Maryland
		North Carolina
		South Carolina
		Virginia
		West Virginia
	East South Central	
		Alabama
		Kentucky
		Mississippi
		Tennessee
	West South Central	
		Arkansas
		Louisiana
		Oklahoma
		Texas
Pacific		
	Mountain	
		Arizona
		Colorado
		Idaho
		Montana
		Nevada
		New Mexico
		Utah
		Wyoming
	Pacific	
		Alaska
		California
		Hawaii
		Oregon
		Washington
Territories		
		Puerto Rico
		Virgin Islands
		Pacific Islands