Podiatric Medicine Workforce Study

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Prepared by

Center for Health Workforce Studies
School of Public Health, University at Albany
7 University Place, B334
Rensselaer, NY 12144
518-402-0250

Preface

This report was prepared to provide insights about the future of the podiatric medicine profession to the leadership of the American Podiatric Medicine Association (APMA). Its primary focus is on the results of a number of statistical models that estimate the future supply of and demand for podiatric physicians in the United States. In addition, it provides a variety of historical data on the profession which were the findings of a number of interim analyses performed to support the design of the projection models. A separate report has been prepared to document the methods used in the projection models.

This report was prepared by staff of the Center for Health Workforce Studies at the School of Public Health, University at Albany, State University of New York. The principal investigator was Paul Wing, the deputy director of the Center. He was assisted in the study by Gaetano Forte, senior associate, and Mark Dionne, assistant director at the Center. The project was supported by a contract with the APMA.

The assistance of the APMA project officer, Dr. James Christina, is gratefully acknowledged. The advice of a formal project advisory committee is also acknowledged. Much of the data used in the projection models originated in earlier APMA surveys and studies.

Questions about the project or the report can be directed to Dr. Wing at 518-402-0250, or via e-mail at pow01@health.state.ny.us.

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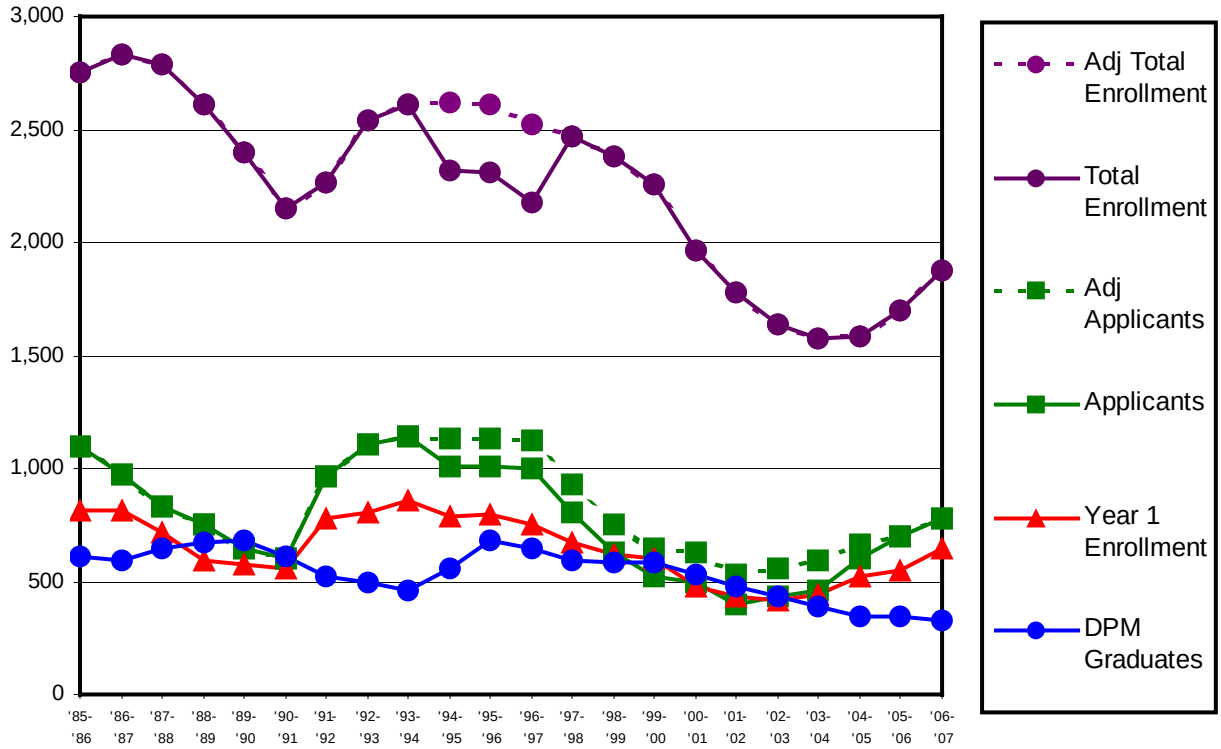
Executive Summary

Podiatric medicine is the diagnosis and treatment of conditions affecting the lower extremity by medical, surgical, and all appropriate systems and means. Podiatric physicians provide the full range of foot and ankle care, including palliative care, acute care for injuries, and chronic care for secondary conditions related to diseases such as arthritis and diabetes. Podiatric physicians provided approximately 40% of all foot-related health services in the United States in 2001. In 2000, most podiatric physicians worked in medical offices and hospitals.

The Bureau of Labor Statistics (BLS) projects job growth of about 16% in podiatric medicine between 2004 and 2014 (slightly higher than the average for all professions and occupations). It is expected that per capita demand for podiatric physicians will increase as the population ages, due to the greater proneness to foot problems on the part of the elderly.

Despite attractive working conditions and earnings, there was an apparent decline in interest by prospective students in podiatric medicine as a career in the decade starting in the mid-1990s (Figure 1). The number of graduates of doctor of podiatric medicine (DPM) schools in the U.S. declined from 680 in 1995-96 to 331 in 2006-07, creating a shortfall in the supply that seems certain to affect the podiatric medicine profession for decades to come.

Figure 1. Enrollments, Applicants, and Graduates of DPM Programs in the U.S., 1985-86 to 2006-07



Supply and Demand Forecasts for Podiatric Physicians

This report summarizes the results of statistical forecasting models to estimate the impact on the supply of podiatric physicians of five different scenarios of the production of new podiatric physicians, all of which are adjusted for attrition. It also presents a number of projections of demographic and illness trends that are related to the demand for podiatric medicine services.

The five scenarios examine different options for future production of DPMs by the podiatric medicine schools in the U.S. Each is summarized briefly below.

Scenario 1: Status Quo

This scenario assumes current production levels continue into the future. It incorporates a modest increase in graduations out to 2010 expected as a result of actual enrollment and applicant increases in recent years. This increase levels off in 2010 at 486 grads per year (adjusted for attrition), the last year for which there are reliable estimates of the actual total class size.

Scenario 2: Planned Expansion (new school at Pomona, CA)

Scenario 2 is the same as Scenario 1, but adds the planned DPM school in Pomona, CA. Its first graduating class is expected in 2013, and it will produce about 50 DPM graduates per year after that. Thus, this forecast adds 50 DPMs annually to the supply starting in 2013. The total number of DPM graduates per year in the U.S. from 2013 on under this scenario will be 536.

Scenario 3: Planned Expansion plus 10% one-time increase in 2012

Scenario 3 is the same as Scenario 2, but in addition it includes a one-time permanent 10% increase in DPM grads for all existing schools beginning in 2012 (the earliest an immediate increase in class size could actually impact graduations). The total number of graduates per year from 2013 on under this scenario will be 590.

Scenario 4: Planned Expansion plus 10% increase plus one additional DPM school in 2017

Scenario 4 has the same specifications as Scenario 3, but also adds an additional school that would graduate its first class in 2017. The class size for the new school is 55 (the median class size at current schools). The total number of graduates per year from 2017 on under this scenario will be 645.

Scenario 5: Planned Expansion plus 10% increase plus additional schools in 2017 and 2021

Scenario 5 has the same specifications as Scenario 4, and also adds another new school that graduates its first class in 2021. The graduating class for this new school is also 55. The total number of graduates per year from 2021 on under this scenario will be 700. This number is slightly larger than the peak historical production of 680 that occurred in 1995-96.

The production of new DPM graduates under each of the five scenarios is shown graphically in Figure 2. Achieving these production levels assumes that student demand for entry into podiatric medicine will be sufficient to fill all of the approved programs.

Figure 3 presents estimates of the supply of DPMs per 100,000 population in the U.S. under the five different scenarios. The figure also shows “standardized” projections of four different factors thought to be especially relevant to the demand for foot-related health services, including total population, the percentage of the population age 65 and older, the percentage of the population that is obese, and the percentage of the population with diabetes.

Figure 2. Numbers of New DPM Graduates Under Five Production Scenarios, 2005 to 2030

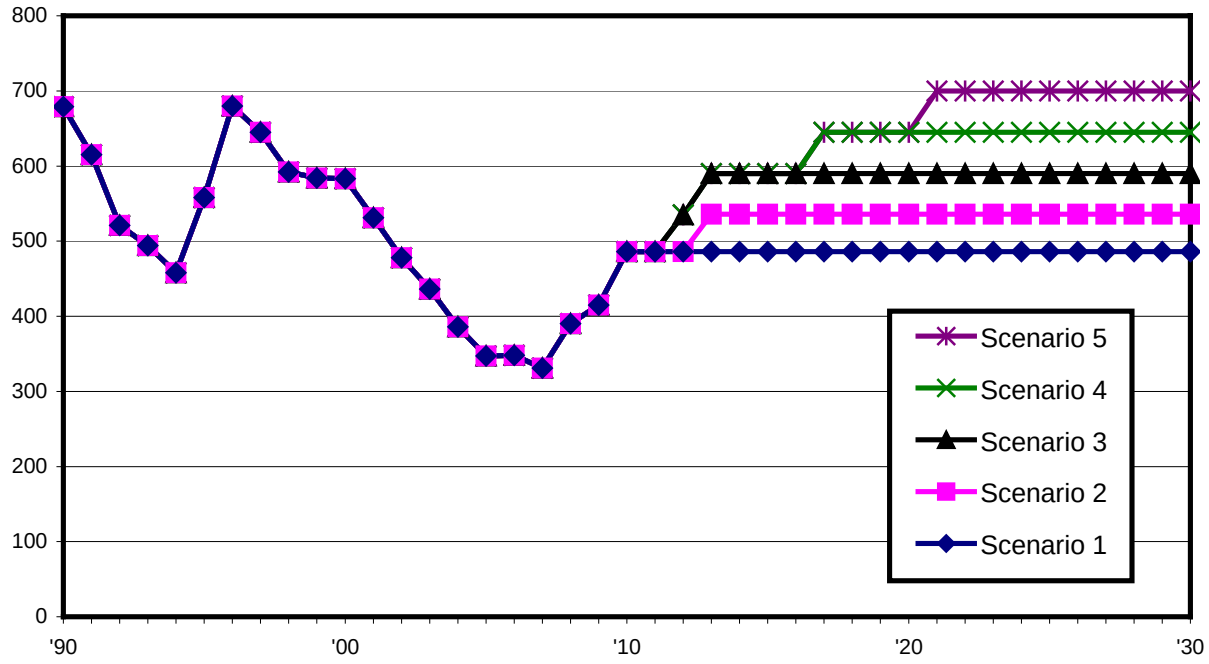
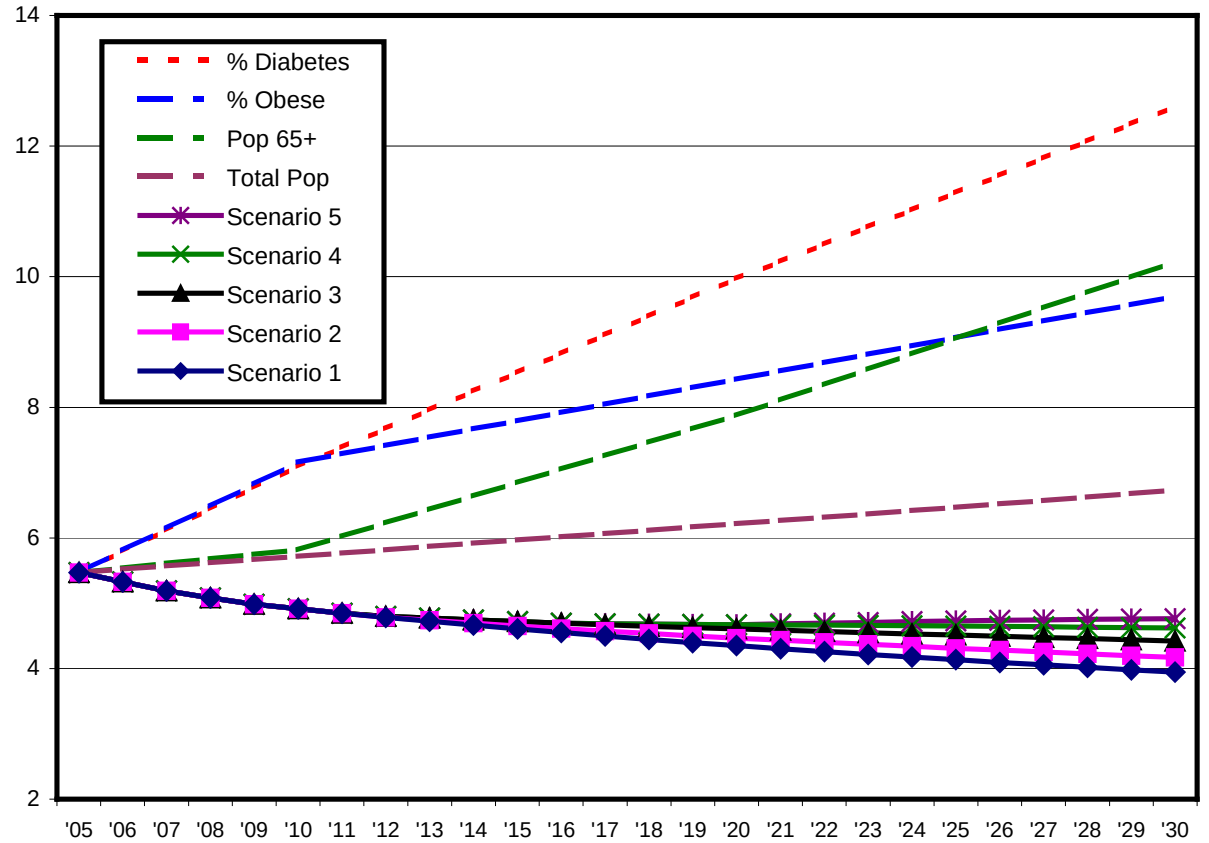


Figure 3. Projections of DPMs per 100,000 Population Under Five Scenarios and Selected Factors Related to the Demand for Podiatric Medicine Services, 2005 to 2030



The five scenarios suggest that:

- Future graduations from existing and planned podiatric medical schools (Scenario 2) will be higher than the 2006-07 low of 331, but nowhere near enough to permit the profession to achieve numbers of practitioners that will keep up with expected increases in population.
- Just to maintain the DPM to population ratio at a constant level in the future will require all DPM schools to increase their graduations collectively by 10% plus adding one new DPM school (in addition to the new one scheduled to open in Pomona, CA in 2008). This would not permit the profession to keep up with increases in demand anticipated due to basic population growth, let alone substantial increases in demand due to other factors.
- In order to increase the supply of DPMs enough to keep up with population growth, podiatric medical schools would have to nearly triple their production of graduates. And to keep up with the increasing demand for foot-related services created by the aging of the population and expected increases in the prevalence of obesity and diabetes, an even more dramatic increase in production would be required.
- Without a dramatic increase in the production of new podiatric physicians in the next several decades, there will be a significant and growing shortfall in the ability of podiatric physicians to provide their historical share of foot-related health services. Unless production is significantly greater than in Scenario 5, or demand for podiatric medicine services unexpectedly declines, other professionals would have to increase their share of foot-related services, or patients would have to go without services.

Discussion

All of the scenarios presented in this report result in future supplies of podiatric physicians that do not keep up with increases in demand for foot-related services anticipated due to population growth, let alone increases in other demographic factors that could increase demand for podiatric services even more. This increasing supply-demand gap could have several important implications for the podiatric medicine profession, some positive and some negative.

Positive Implications

- Traditionally, professions with supply less than demand enjoy relatively high incomes due to economic factors, assuming of course that other physicians continue to turn to podiatric physicians for assistance dealing with foot problems of their patients. This is expected to be one of the outcomes of any of the five scenarios examined in this study.
- Adding two or three new podiatric medical schools would provide the profession with an important opportunity to balance the production of new podiatric physicians geographically across the U.S. Since new podiatric physicians tend to establish practices close to their podiatric medical school, this would also help to balance the supply of practitioners geographically.
- All of this information should provide a useful basis for an effective "marketing program" to attract more DPM applicants and students. The supply-demand gap should help to stimulate demand and applications for podiatric medical schools, helping to ensure high quality students and graduates in future years.

Negative Implications

- If the podiatric medicine profession was viewed by the public or some important political constituency as not responding appropriately to the need for critical foot-related services, it might create significant negative publicity about the profession to which it might be very difficult to react to effectively.
- A serious shortage of DPMs could lead some referring physicians to look for other professionals to perform some of the tasks that DPMs would otherwise provide. In the long run, this could undercut the podiatric medical profession, even though in the short run, this would be unlikely.
- Even when a clear case for public need and adequate student demand for podiatric medicine can be made, adding new health professional schools is seldom an easy proposition. Costs are significant, logistics are complex, and the politics are labyrinthine. The key unknown in this situation appears to be whether sustainable student demand can be promised to appropriate universities, although patient demand factors seem to justify such promises.

All of this opens up other possibilities for podiatric physicians as they consider how best to deal with the growing supply-demand gap. For example, another profession (i.e., podiatric assistant) might be created to fill in the service gaps.

The Bottom Line

The current situation clearly presents the podiatric medical profession with an important challenge, and an opportunity to take stock and consider carefully different options for the future. This report provides some background information, choices, and implications related to the production of new podiatric physicians. A number of interrelated paths seem open to the podiatric medical profession and APMA at this time:

- A careful strategic planning effort designed to define goals and objectives for the profession and alternative actions for the future;
- Public relations efforts to promote the profession to the public and especially to prospective students;
- Continuing efforts to develop and refine statistical models to help understand the outcomes and implications of different choices on different aspects of the profession;
- Continuing efforts to identify, understand, and predict the factors related to the demand for podiatric medicine services by different segments of the population;
- Continuing efforts to identify, understand, and predict the factors related to the demand for entry into the podiatric medicine profession; and
- Continuing efforts to define, refine, and standardize the scope of practice of podiatric medicine, with special attention to relationships with other health professions.

The figures presented in this report indicate that expansion of podiatric medical educational capacity would help to meet increasing demand for podiatric medicine services in the future, with no significant detriment to the profession.

Introduction

Podiatric physicians earn a doctor of podiatric medicine (DPM) degree, and they diagnose and treat disorders, diseases, and injuries of the foot and lower leg. Podiatric physicians also set fractures, perform surgeries of the foot, and order physical therapy. They design and fit orthotic devices and prescribe medications [BLS, 2003].

The problems podiatric physicians treat include such common problems as corns, calluses, ingrown toenails, bunions, heel spurs, and arch problems; as well as more serious ankle and foot injuries, misalignments, deformities, and infections. They also deal with foot complaints associated with diseases such as diabetes and arthritis [BLS, 2003]. Table 1 lists some of the typical treatments offered by podiatric physicians.

Podiatric physicians also provide acute care, such as treatment of foot and ankle injuries (of which about 60% are sprains or strains of the ankle).

Table 1. Selected Podiatric Disorders and Available Treatments

Disorder	Available Treatment
Arthritis	Patient Education
	Physical Therapy/Exercise
	Medication
	Orthoses
	Braces
	Surgical Intervention
Bunions	Padding and Taping
	Medication
	Physical Therapy
	Orthotics
	Surgery
Diabetes (Amputation Prevention)	Regular Foot Screenings
Diabetes (Treatment of Ulceration)	Application of Wound-Healing Technology
Back Problems Due to Irregular Walking Pattern	Use of Rigid, Soft, or Semi-rigid Orthoses

Source: APMA, 2003

All states and the District of Columbia license podiatric physicians. Podiatric physicians must complete a four-year post-baccalaureate educational program, which in all but one or two states must be followed by a hospital-based residency of at least one year. Most states require written and/or oral examinations for licensure, and many require continuing medical education as a condition for maintaining licensure.

Demographic Characteristics

Table 2 shows that podiatric physicians in 2000 were predominantly male (approximately 74%) and non-Hispanic White (approximately 85%). Graduates of podiatric medical programs in the 1999-2000 academic year, however, showed greater diversity than the profession as a whole. There were slightly more women (30.4%) among graduates, and substantially more minorities. Only 69% of podiatry graduates in 1999-2000 were non-Hispanic White, while 16% were Asian or Pacific Islander and 7% were Black/African-American. Hispanics/Latinos, who made up 12.6% of the U.S. population in 2000, constituted only 3% of podiatry graduates in that year.

Table 2. Podiatric Physicians and Podiatry Graduates, Sex & Race/Ethnicity, U.S., 2000

Demographic Category	Podiatric physicians 2000	Podiatry Grads, '99-'00	U.S. Pop, 2000
Female	26.0%	30.4%	51.2%
Non-Hispanic White	85.0%	68.7%	69.4%
Black/ African-American	*	6.9%	11.8%
American Indian/ Alaska Native	*	0.0%	0.6%
Asian & Pacific Islander	*	15.6%	3.8%
Hispanic/ Latino	*	3.0%	12.6%

Podiatric physicians are substantially older on average than the civilian labor force overall, with a median age of 45 compared to 39 for the civilian labor force. Only about 6.5% of podiatric physicians are younger than age 30, while about 56% are age 45 or older.

Employment Characteristics

In 2000, most podiatric physicians worked in medical offices and hospitals. Only 3% were self-employed in solo practice (Figure 4).

The number of hours worked weekly by podiatric physicians in 2001 varied with age (Figure 5). Young podiatric physicians tended to work relatively few hours (an average of 27 per week for those age 25-34), probably because many in this age group were still completing residencies and internships that may be combined with classroom education. Those age 35-44 worked an average of 36 hours per week (unlike physicians, podiatric physicians do not typically need to be "on call" for after-hours emergencies), but their average hours worked declined after the age of 44. Those who were age 55 and older worked an average of only 27 hours per week.

Figure 4. Distribution of Podiatric Physicians by Employment Setting, U.S., 2000

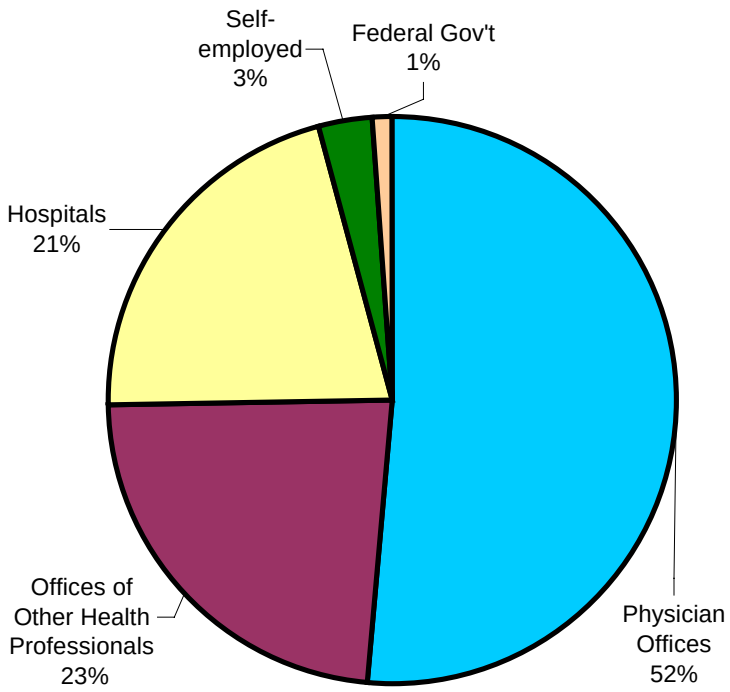
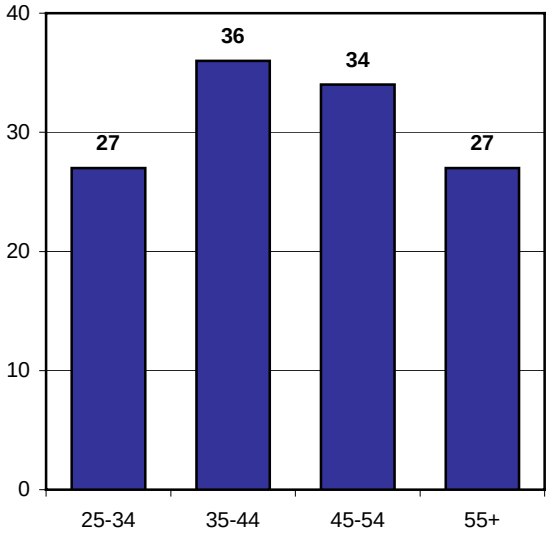


Figure 5. Mean Number of Hours Worked per Week by Podiatric Physicians, by Age, 2001



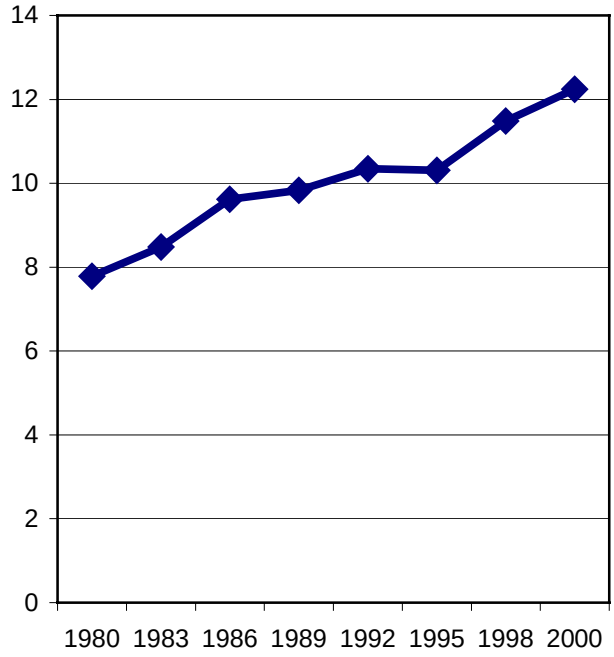
The APMA reported that median net income for all podiatric physicians in 2001 was $134,415. This was comparable to the earnings of chiropractors and dentists, but was less than the earnings of allopathic and osteopathic physicians.

Historical Supply

In 2000, there were approximately 12,000 active podiatric physicians in the U.S., an increase of 57% since 1980 (Figure 6). Growth of the profession was substantial during the 1980s, leveled off between 1990 and 1995, and began to rise noticeably again between 1995 and 2000 (an increase of 18.8% over this five-year period).

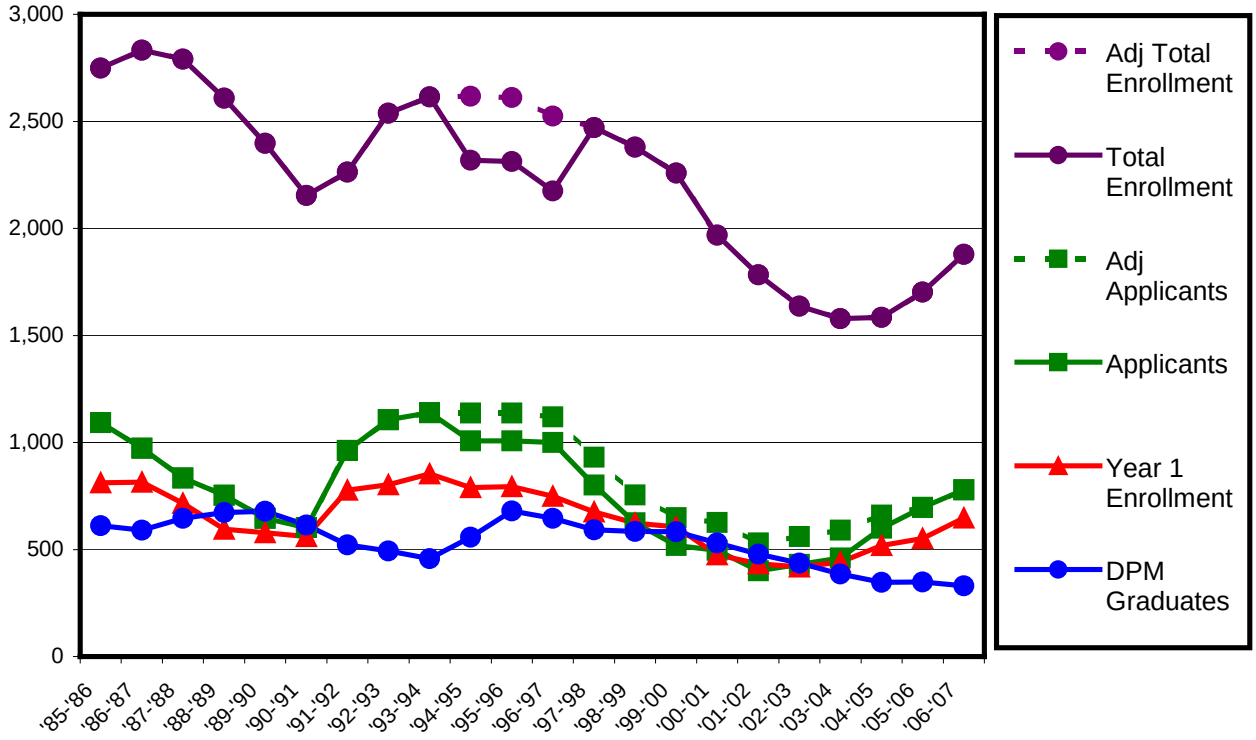
There are currently eight podiatric medical schools in the U.S. Approximately 500-700 applicants apply to podiatric medical school each academic year and approximately 85% are accepted. Total enrollment for the seven colleges of podiatric medicine in existence in 1999-2000 was 2,258 [HRSA, 2002, citing American Association of Colleges of Podiatric Medicine, 2003].

Figure 6. Active Podiatric Physicians, (Thousands) U.S., 1980 to 2000



In the 1999-2000 academic year, the seven DPM programs graduated 583 new DPMs [HRSA, 2002]. The number of podiatry graduates varied widely during the previous decade. The 1990s showed strong cyclical behavior in the number of graduates -- a sharp decline between 1990-91 and 1993-94, followed by an even sharper increase over the next two years, then a brief decline and period of stabilization (Figure 7).

Figure 7. DPM Enrollments, Applicants, and Graduates in the U.S., 1985-86 to 2006-07



Figures 8 and 9 present scatter plots of aggregate admissions and enrollment data for podiatric medicine education programs from 1986 to 2007. Figure 8 includes a polynomial regression line that shows a relation between admissions and enrollment different that would be expected under "normal" circumstances. Figure 9 explores this pattern more directly by estimating two separate regression lines, one for 1986 to 1999 and one for 2000 to 2007.

In cyclical situations like the one shown in Figure 7, one would usually expect that as student demand and enrollments rise, education programs would become more selective, leading to lower admission rates; and conversely, as enrollments decline, programs become less selective, leading to higher admission rates.

Figure 9 shows that this was the case between 1986 and 1999. Figure 9 also reveals that this was clearly not the case from 2000 to 2007. In fact, in these years the programs became more selective, even as total enrollments declined. This pattern could be attributed to a number of factors: e.g., financial difficulties at the schools, difficulty lining up resources (e.g., faculty, clinical opportunities for students), policies designed to reduce the supply of podiatric physicians, or a decline in student demand for podiatric medicine as a career. Discussions with the project advisory committee for this project suggested that the primary reason was an unexpected decline in applications.

Figure 8. Admission Rate vs. Total Enrollment for DPM Programs, 1986 to 2007

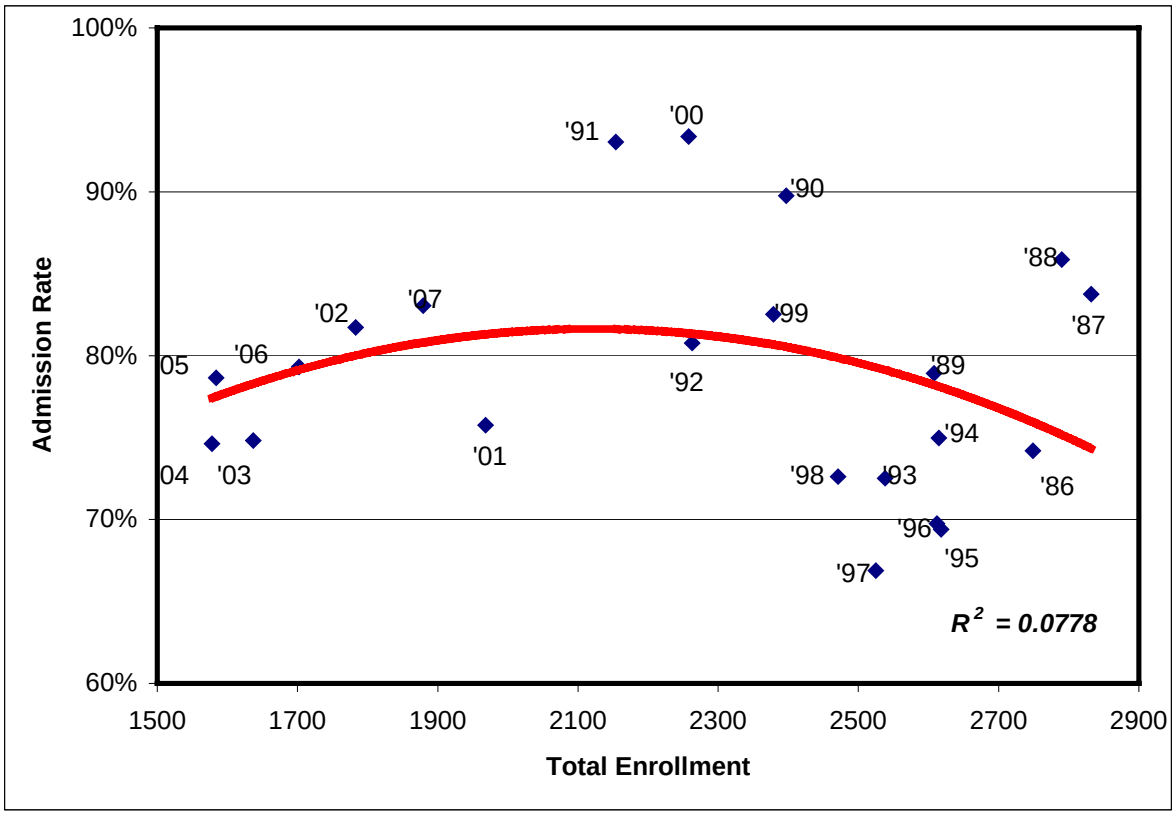
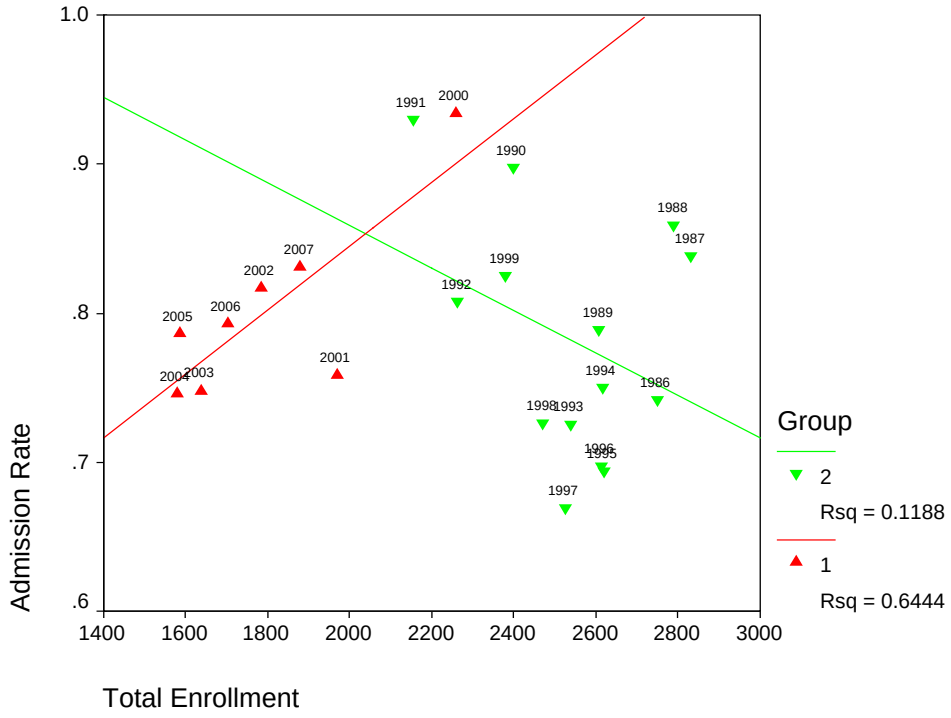


Figure 9. Admission Rate vs. Total Enrollment, 1986 to 1999 and 2000 to 2007



DPM Supply and Demand Projections

One of the primary objectives of this study was to prepare and present projections of the supply of and demand for podiatric physicians out to 2030 under different sets of assumptions to help planners and policy makers understand options for the future. Five different supply projections are presented, each representing a different scenario for the production and supply of podiatric physicians. In addition, a number of demographic and health status indicators thought to be related to foot problems and injuries are also presented to reflect possible changes in demand for podiatric services. None of these supply projections is meant to be a formal prediction of what might happen in the future; rather they are designed to suggest a range of possibilities that might be chosen by the profession to reflect its clinical service goals and objectives. The estimates in all of the scenarios have been adjusted for attrition to simplify the calculations.

Supply Projections

To help understand the implications for the supply of podiatric physicians per 100,000 population of different levels of production of new podiatric physicians by DPM education programs, supply projections have been developed for five different scenarios. Each scenario is described verbally below and graphically in Figure 2 on page 3.

Scenario 1: Status Quo

This scenario assumes current production levels continue into the future. It incorporates a modest increase in graduations out to 2010 expected as a result of actual enrollment and applicant increases in recent years. This increase levels off in 2010 at 486 grads per year, the last year for which there are reliable estimates of the actual total class size.

Scenario 2: Planned Expansion (new school at Pomona, CA)

Scenario 2 is the same as Scenario 1, but adds the planned DPM school in Pomona, CA. Its first graduating class is expected in 2013, and it will produce about 50 DPM graduates per year after that. Thus, this forecast adds 50 DPMs annually to the supply starting in 2013. The total number of DPM graduates per year in the U.S. from 2013 on under this scenario will be 536.

Scenario 3: Planned Expansion plus 10% one-time increase in 2012

Scenario 3 is the same as Scenario 2, but in addition it includes a one-time permanent 10% increase in DPM grads for all existing schools beginning in 2012 (the earliest an immediate increase in class size could actually impact graduations). The total number of graduates per year from 2013 on under this scenario will be 590.

Scenario 4: Planned Expansion plus 10% increase plus one additional DPM school in 2017

Scenario 4 has the same specifications as Scenario 3, but also adds an additional school that would graduate its first class in 2017. The class size for the new school is 55 (the median class size at current schools). The total number of graduates per year from 2017 on under this scenario will be 645.

Scenario 5: Planned Expansion plus 10% increase plus additional schools in 2017 and 2021

Scenario 5 has the same specifications as Scenario 4, and also adds another new school that graduates its first class in 2021. The class size for this new school is also 55. The total number of graduates per year from 2021 on under this scenario will be 700. This number is slightly larger than the peak historical production of 680 that occurred in 1995-96.

Estimates of the numbers of active podiatric physicians under these five scenarios are presented in Tables 3, 4, 5, 6, and 7, along with corresponding ratios of podiatric physician per 100,000 population.

Status Quo Projections

The Status Quo Scenario assumes that the production of new podiatric physicians will be stabilized at levels consistent with the enrollment growth experienced by education programs starting in 2005. Thus production will be higher than 2007 levels, but will not continue to increase into the future.

Under this scenario the number of active podiatric physicians will decline steadily out to 2030 and beyond, resulting in a dramatic decline in the number of practitioners per 100,000 population.

Table 3. Projected Supply of Active Podiatric Physicians in the U.S., 2005 to 2030, Under Status Quo Scenario

Age Group	2005	2010	2015	2020	2025	2030
Under 35	1,485	1,370	1,406	1,427	1,440	1,447
35 - 44	4,619	4,288	4,312	4,337	4,359	4,375
45 - 54	5,114	4,689	4,424	4,286	4,219	4,189
55 - 64	3,465	3,593	3,522	3,411	3,317	3,251
65 +	1,485	1,241	1,185	1,147	1,112	1,084
Total	**16,168**	**15,181**	**14,850**	**14,610**	**14,447**	**14,346**
Cum % Change	-	*-6.1%*	*-8.2%*	*-9.6%*	*-10.6%*	*-11.3%*
DPMs per 100K Pop	**5.47**	**4.91**	**4.61**	**4.35**	**4.13**	**3.95**
Cum % Change in DPM / Pop	-	*-10.2%*	*-15.8%*	*-20.5%*	*-24.4%*	*-27.9%*

Population Growth Projections

The Population Growth Scenario assumes that the production of new podiatric physicians will increase just enough in the future to maintain the ratio of podiatric physicians to population as the population increases. Thus the supply will not increase enough to address any increase in per capita demand that might occur over and above that due to population growth.

This scenario shows that an increase in production of new podiatric physicians of approximately 6% over the levels based on 2007 graduation levels would be required to maintain a constant ratio of podiatric physicians to population. These estimates are only approximations because it is not possible to estimate the precise numbers of students, graduates, and new entrants into the profession in each age group with certainty.

This scenario illustrates that the recent decline in production of new DPMs creates a lag of about eight years in the education pipeline in responding to an initiative to match the growth in DPMs to the continuing increase in population. This dynamic makes careful planning very difficult, especially if the DPM schools all act independently in the education marketplace.

Table 4. Projected Supply of Active Podiatric Physicians in the U.S., 2005 to 2030, Under Scenario 2

Age Group	2005	2010	2015	2020	2025	2030
Under 35	1,485	1,370	1,447	1,513	1,552	1,575
35 - 44	4,619	4,288	4,404	4,547	4,651	4,724
45 - 54	5,114	4,689	4,440	4,364	4,371	4,411
55 - 64	3,465	3,593	3,523	3,428	3,367	3,346
65 +	1,485	1,241	1,185	1,149	1,120	1,104
Total	**16,168**	**15,181**	**14,999**	**15,001**	**15,062**	**15,159**
Cum % Change	-	*-6.1%*	*-7.2%*	*-7.2%*	*-6.8%*	*-6.2%*
DPMs per 100K Pop	***5.47***	***4.91***	***4.65***	***4.47***	***4.31***	***4.17***
Cum % Change in Supply / Pop	-	*-10.2%*	*-15.0%*	*-18.4%*	*-21.2%*	*-23.8%*

Expanded Podiatric Physician Projections

The Expanded Podiatric Physician Use Scenario assumes that the production of new podiatric physicians will increase enough to increase the ratio of podiatric physicians to population to meet increasing demand generated by population growth, plus increases in demand related to aging of the population, and increased levels of diabetes and obesity.

This scenario shows that an increase in production of new podiatric physicians of approximately 10% over the levels based on 2007 graduation levels would be required to meet increasing demand generated by population growth, plus increases in demand related to aging of the population, and increased levels of diabetes and obesity. These estimates are only approximations because it is not possible to estimate with certainty the precise numbers of students, graduates, and new entrants into the profession in each age group.

As in the previous scenario, the recent decline in production of new DPMs creates a lag of about eight years in the education pipeline in responding to an initiative to match the growth in DPMs to the continuing increase in demand for podiatric services. This dynamic makes careful planning very difficult, especially if the podiatric medical schools all act independently in the education marketplace.

Table 5. Projected Supply of Active Podiatric Physicians in the U.S., 2005 to 2030, Under Scenario 3

Age Group	2005	2010	2015	2020	2025	2030
Younger than 35	1,485	1,370	1,501	1,611	1,676	1,715
35 - 44	4,619	4,288	4,529	4,793	4,980	5,109
45 - 54	5,114	4,689	4,467	4,462	4,550	4,663
55 - 64	3,465	3,593	3,526	3,450	3,429	3,457
65 and older	1,485	1,241	1,185	1,152	1,131	1,128
Total	**16,168**	**15,181**	**15,209**	**15,469**	**15,768**	**16,072**
Cum % Change	-	*-6.1%*	*-5.9%*	*-4.3%*	*-2.5%*	*-0.6%*
DPMs per 100K Pop	***5.47***	***4.91***	***4.72***	***4.61***	***4.51***	***4.42***
Cum % Change in Supply / Pop	-	*-10.2%*	*-13.8%*	*-15.8%*	*-17.5%*	*-19.2%*

Table 6. Projected Supply of Active Podiatric Physicians in the U.S., 2005 to 2030, Under Scenario 4

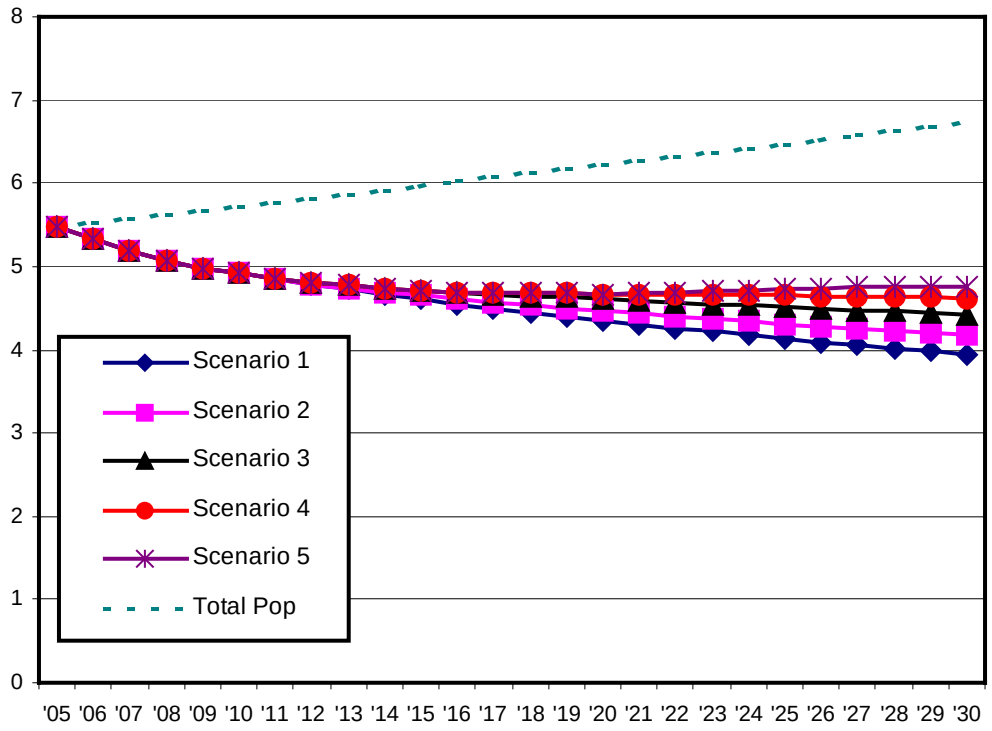
Age Group	2005	2010	2015	2020	2025	2030
Younger than 35	1,485	1,370	1,501	1,668	1,777	1,842
35 - 44	4,619	4,288	4,529	4,923	5,232	5,445
45 - 54	5,114	4,689	4,467	4,491	4,652	4,847
55 - 64	3,465	3,593	3,526	3,453	3,453	3,522
65 and older	1,485	1,241	1,185	1,152	1,134	1,140
Total	**16,168**	**15,181**	**15,209**	**15,687**	**16,249**	**16,795**
Cum % Change	-	*-6.1%*	*-5.9%*	*-3.0%*	*0.5%*	*3.9%*
DPMs per 100K Pop	***5.47***	***4.91***	***4.72***	***4.67***	***4.65***	***4.62***
Cum % Change in Supply / Pop	-	*-10.2%*	*-13.8%*	*-14.6%*	*-15.0%*	*-15.6%*

Table 7. Projected Supply of Active Podiatric Physicians in the U.S., 2005 to 2030, Under Scenario 5

Age Group	2005	2010	2015	2020	2025	2030
Younger than 35	1,485	1,370	1,501	1,668	1,845	1,949
35 - 44	4,619	4,288	4,529	4,923	5,390	5,717
45 - 54	5,114	4,689	4,467	4,491	4,693	4,965
55 - 64	3,465	3,593	3,526	3,453	3,458	3,552
65 and older	1,485	1,241	1,185	1,152	1,135	1,144
Total	**16,168**	**15,181**	**15,209**	**15,687**	**16,521**	**17,327**
Cum % Change	-	*-6.1%*	*-5.9%*	*-3.0%*	*2.2%*	*7.2%*
DPMs per 100K Pop	***5.47***	***4.91***	***4.72***	***4.67***	***4.73***	***4.77***
Cum % Change in Supply / Pop	-	*-10.2%*	*-13.8%*	*-14.6%*	*-13.6%*	*-12.9%*

The projected numbers of podiatric physicians per 100,000 population for these five scenarios are presented graphically in Figure 10. The figure shows clearly the decline in practitioners per capita that will result if educational production is not increased in the future.

Figure 10. Projections of Podiatric Physicians per 100,000 Population in the U.S., 2005 to 2030, Under Five Different Scenarios of the Production of New Podiatric Physicians



Geographic Penetration of Podiatry

Figure 11 shows the geographic penetrations of podiatric physicians in terms of practitioners per 100,000 population across the 50 states as of 2006 [CHWS, 2006]. The penetration is the highest in the Northeast and Florida, and lowest in the rest of the Southeast, the North Central, and the Southwest. The supply appears to be higher in states containing or near an education program, except for the new program in Arizona. If leveling out the supply of practitioners across the states is an important APMA objective, locating a new school in Tennessee or Texas would seem a germane choice. A school in Washington, Oregon, or Minnesota would also seem logical.

Salary Implications

Figure 12 shows the average hourly wages of salaried podiatric physicians based on the BLS Occupation and Employment Survey. The range of $28 to $85 is relatively large compared to most health professions. The correlation between wage levels and the supply of practitioners (from Figure 11) is -0.337, an indication that shorter supplies of practitioners are related to higher wage levels. The correlation between hourly wages and estimated percentage of podiatric physicians that are salaried is –0.195, which is a crude indication that salaries of podiatric physicians tend to be lower than self-employment wages.

Figure 11. Podiatric Physicians per 100,000 Population, 2006

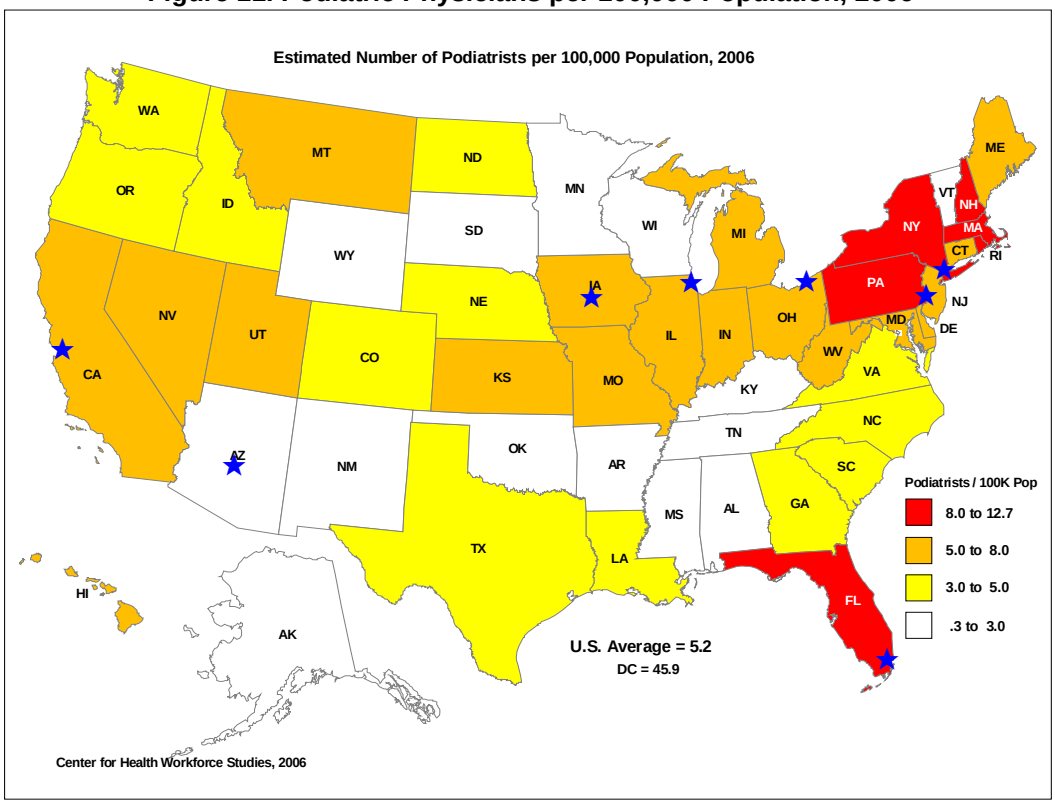
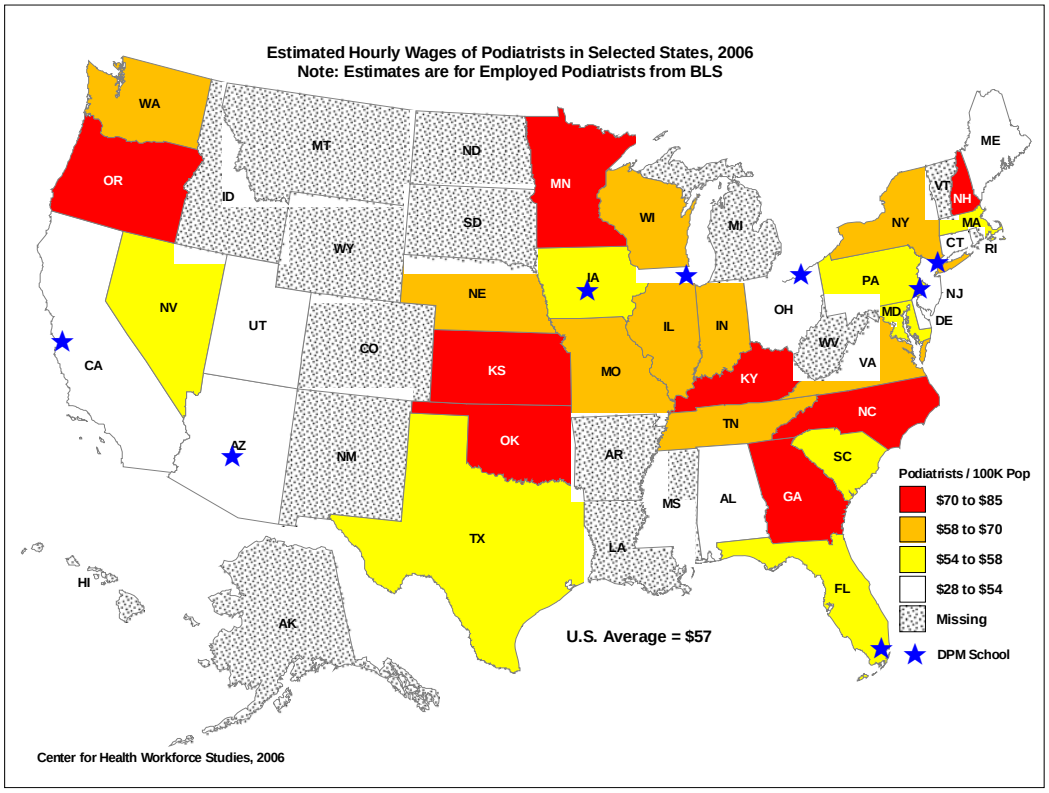


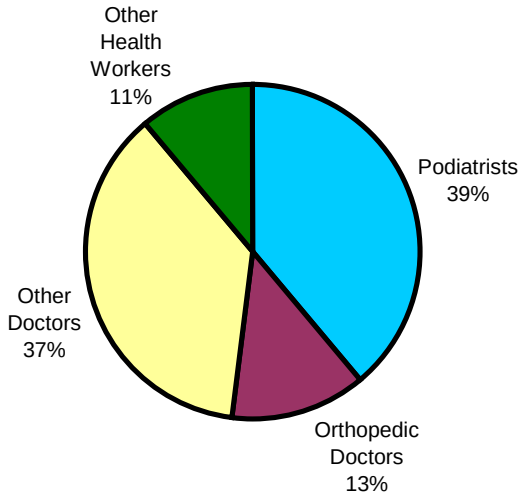
Figure 12. Estimated Hourly Wages of Salaried Podiatric Physicians, 2006



Demand Projections

About 19% of the U.S. population (52 million people) experience foot problems each year. In 2002, podiatric physicians provided 39% of all foot care services, compared to 13% for orthopedic physicians, 37% for other physicians (primary care or specialists), and 11% for PTs and others (Figure 13). Podiatric physicians treat about 5% of the U.S. population every year.

Figure 13. Providers of Foot Care Services to U.S. Population, 2002



Source: American Podiatric Medicine Association, 2003

The BLS projects job growth of about 14% in podiatric medicine between 2000 and 2010 (about average for all professions and occupations). Per capita use of podiatric physicians is expected to increase as the population ages, due to the greater proneness to foot problems on the part of the elderly. The BLS predicts that 6,000 job openings for podiatric physicians will occur between 2000 and 2010, with about 3,000 of these due to increased demand for the profession and the other half due to replacement needs [BLS, 2001].

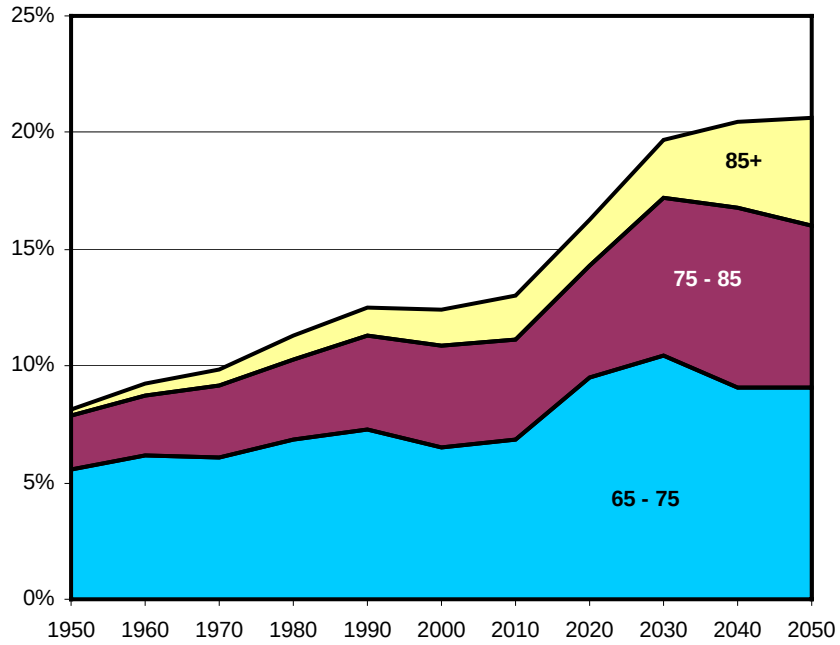
Factors Related to Demand

The demand for podiatric physicians is driven by the prevalence of disorders, diseases, and injuries to the foot. Current discussions of the future demand for podiatric physicians focus on three main factors that will drive future increases in demand: the aging of the population; the increase in the prevalence of obesity, which places greater stresses and strains on the feet; and the current increase in the prevalence of diabetes, which often involves circulation problems in the feet (and other extremities) that can result in problems requiring medical attention. The discussion below provides projections of the future levels of these three factors, and discusses some possible implications for the podiatry profession. It is important to keep in mind that, although population projections are generally quite reliable, projections of the prevalence of specific illnesses are much less reliable due to the continuing efforts of researchers and clinicians to diagnose and treat these illnesses with new technologies and techniques.

Aging of the Population

Figure 14 shows the dramatic aging of the U.S. population that will start in about 2010 as the so-called baby boom generation passes age 65. Nearly 60% of the 49 million in U.S. population growth from 2010 to 2030 will be in the 65+ age group. Because these older adults require proportionately more health care services, they are expected to place disproportionate demands on all parts of the health care system, including the podiatry workforce.

Figure 14. Percent of U.S. Population 65-75, 75-85, and 85+, 1950 to 2050

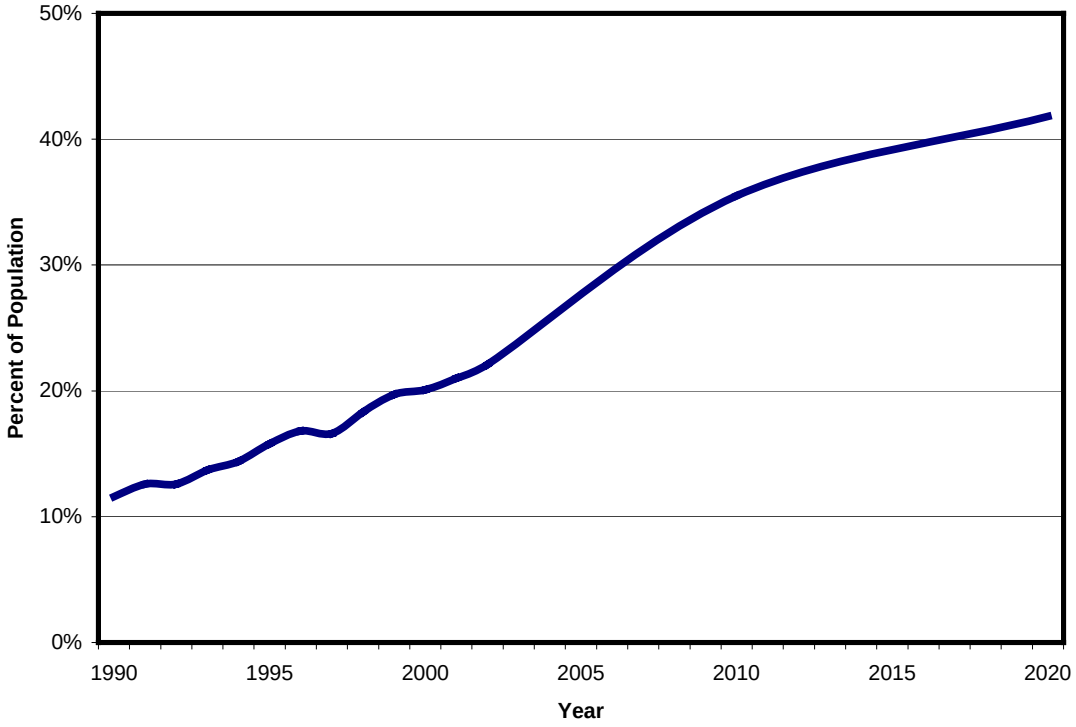


Source: US Census Bureau

Obesity

Obesity is another factor expected to increase dramatically over the next 20 years. Figure 15 shows that the percentage of the population that is obese has already increased from about 10% in 1990 to over 25% today, and is expected to increase to greater than 40% in 2020. Whether these projections overstate future increases, there is little argument in official circles these days that unless more attention is devoted to slowing the weight gain of people in all age groups, obesity is almost certain to grow significantly. This, in turn, will create more foot injuries and problems that will require services of podiatric physicians.

Figure 15. Projections of the Percent of U.S. Population That Is Obese, 1990 to 2020

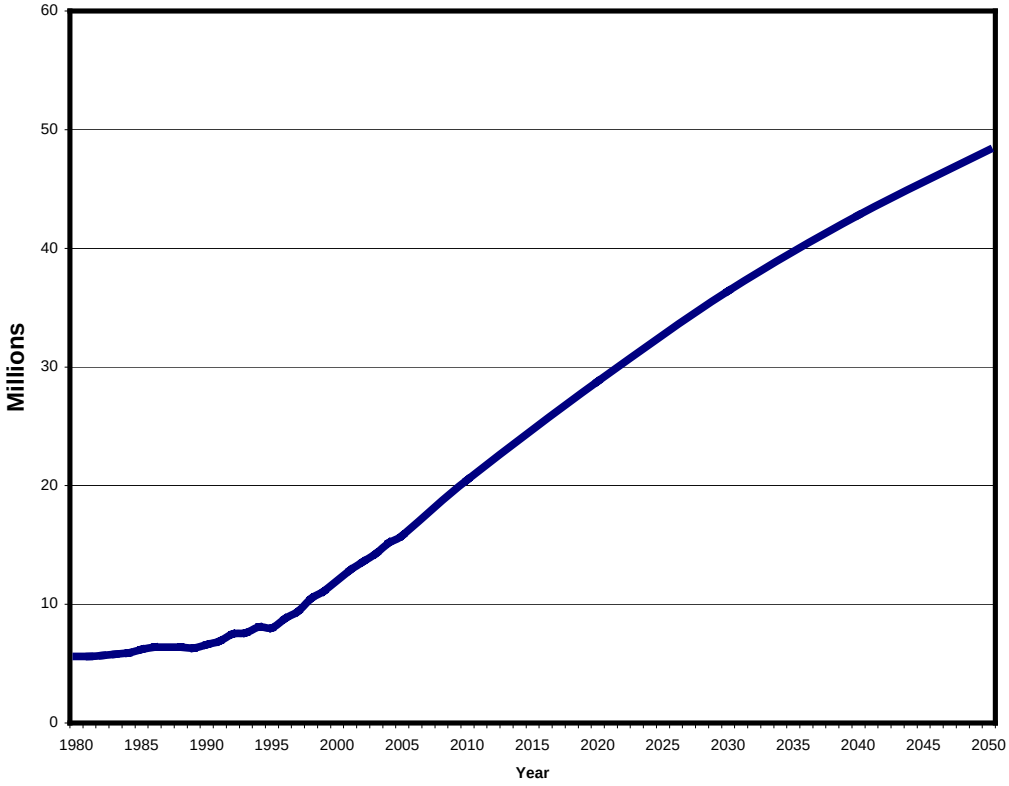


Source: Health Affairs, 23, no. 2 (2004): 199-205 doi: 10.1377/hlthaff.23.2.199

Diabetes

Diabetes is another factor that contributes to the demand for foot and ankle care, especially related to the circulatory and neurological problems in the extremities often associated with disease. Projections developed by the Centers for Disease Control and Prevention (CDC) [Venkat Narayan, et al., 2006] shown in Figure 16 suggest that this factor will also generate significant additional demand for podiatry services. The estimates show an increase of 13 million people (82%) with diabetes between from 2005 and 2020, which seems almost certain to result in significant increases in the demand for podiatric services.

Figure 16. Historical and Projected Numbers of Individuals Diagnosed with Diabetes, U.S., 1980 to 2050



Source: Venkat Narayan, 2006.

These three factors are projected to increase faster than total population over the next 25 years and beyond. Because this will almost certainly result in accelerated increases in demand for podiatric medicine services, standardized versions of these three trend lines have been included in Figure 3 (page 3) to reflect the supply-demand gap that will likely grow in years to come.

A Wild Card: Excess Capacity of Existing Practitioners

One possible way of dealing with the projected supply-demand gap would be through the efforts of existing podiatric physicians. This might happen in at least two different ways:

- Servicing the gap by tapping any excess capacity in existing podiatric medicine (and other) practices. For example, if any podiatric physicians (or other professionals providing podiatric medicine services) were working less than full time, they could provide needed services to additional patients, thus filling the service gap shown in Figure 3 (page 3).
- Servicing the gap using new technologies or techniques that result in greater productivity by existing practitioners.

Unfortunately, data are not readily available to assess the extent to which either of these options might be possible. This is a potential avenue for additional research to address this issue.

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Appendix – Supplementary Tables

Several supplementary tables are presented below that provide additional insights about the supply of and demand for podiatric medicine services.

Table A-1: 2003 Medicare Part B, Top 38 DPM Services
Submitted Frequency Data by Specialty, Place of Service = ALL
(ranking based on 2003 allowed charges for podiatry specialty category)

APMA Short Descriptor	All Physicians	Podiatric Physicians	% of Row Ttl	% of Col Ttl	Cum Col %
Top 300 codes	464,906,394	31,347,399	6.7%	100%	100%
Nail debridement, any method, 6+	6,731,512	6,675,474	99.2%	21.3%	21.3%
Office/outpatient visit, estab, level 2	27,187,784	2,561,253	9.4%	8.2%	29.5%
Office/outpatient visit, estab, level 3	108,808,817	2,533,412	2.3%	8.1%	37.5%
Nail debridement, any method, 1-5	1,912,477	1,894,797	99.1%	6.0%	43.6%
Trimming nondystrophic nails, any number	1,482,327	1,469,160	99.1%	4.7%	48.3%
Paring/cutting benign hyperkeratotic les, 2-4	1,318,609	1,310,214	99.4%	4.2%	52.5%
Debridement, skin, partial thickness	1,319,401	1,165,787	88.4%	3.7%	56.2%
Trim nail(s)	951,464	945,249	99.3%	3.0%	59.2%
Office/outpatient visit, new, level 2	2,978,839	752,801	25.3%	2.4%	61.6%
Office/outpatient visit, new, level 3	5,050,555	718,191	14.2%	2.3%	63.9%
Nail avulsion, partial/total, single	716,001	681,399	95.2%	2.2%	66.1%
Paring/cutting benign hyperkeratotic les, 1	690,298	667,687	96.7%	2.1%	68.2%
Xray, 2 views foot, AP/lateral	957,799	627,907	65.6%	2.0%	70.2%
Debridement, skin, full thickness	728,262	586,425	80.5%	1.9%	72.1%
Xray, minimum 3 views foot	1,709,182	549,251	32.1%	1.8%	73.8%
Nursing fac care, subseq, per day, level 1	5,188,747	431,447	8.3%	1.4%	75.2%
Debridement, skin & subcut tissue	877,876	407,238	46.4%	1.3%	76.5%
I&D abscess, cutaneous/subcut, simple	655,384	402,846	61.5%	1.3%	77.8%
Inject, tend sheath, lig, gang cyst	986,656	320,392	32.5%	1.0%	78.8%
Nursing fac care, subseq, per day, level 2	7,819,768	293,078	3.7%	0.9%	79.7%
Paring/cutting benign hyperkeratotic les, 4+	270,078	268,036	99.2%	0.9%	80.6%
Strapping, ankle	264,981	256,988	97.0%	0.8%	81.4%
Perm removal nail, partial/total	277,425	247,747	89.3%	0.8%	82.2%
Home visit, est pt, E/M, self-limit, minor, 15 min	315,656	206,318	65.4%	0.7%	82.9%
Appl modality, ultrasound, ea 15 min	2,870,024	199,502	7.0%	0.6%	83.5%
Arthrocent, aspir, injct; sm jt/bursa	390,973	186,816	47.8%	0.6%	84.1%
Home visit, est pt, E/M, low-mod sever, 25 min	505,554	181,847	36.0%	0.6%	84.7%
Unna boot application	452,320	169,942	37.6%	0.5%	85.2%
Debridement, eczematous/infect skin	205,758	155,091	75.4%	0.5%	85.7%
Office/outpatient visit, estab, level 4	50,230,817	152,631	0.3%	0.5%	86.2%
Destruc, any meth, benign/premalig les, 1st	4,836,079	149,736	3.1%	0.5%	86.7%
Inj triamcinolone acetonide	6,405,450	142,428	2.2%	0.5%	87.1%
Injection, anesthetic, peripheral nerve	236,814	141,724	59.8%	0.5%	87.6%
Office/outpatient visit, estab, level 1	12,621,767	127,942	1.0%	0.4%	88.0%
Arthrocent, aspir, injt; intermed jt	500,554	125,950	25.2%	0.4%	88.4%
Rest home visit, estab pt, level 1	320,160	113,921	35.6%	0.4%	88.7%
Appl modality, electrical stim, ea 15 min	1,740,887	109,361	6.3%	0.3%	89.1%
Inj betamethasone acet or sod phosp	1,058,263	105,101	9.9%	0.3%	89.4%

Table A-2. Podiatric Medical School Applicants, Enrollments, and Graduates

Academic Year	Applicants	Adj Applicants	Year 1 Enrollment	Total Enrollment	Adj Total Enrollment	DPM Graduates	Admission Rate
'85-'86	1,093	1,093	811	2,749	2,749	612	74.2%
'86-'87	973	973	815	2,832	2,832	590	83.8%
'87-'88	834	834	716	2,790	2,790	645	85.9%
'88-'89	754	754	595	2,608	2,608	673	78.9%
'89-'90	645	645	579	2,397	2,397	679	89.8%
'90-'91	603	603	561	2,154	2,154	615	93.0%
'91-'92	962	962	777	2,263	2,263	521	80.8%
'92-'93	1,106	1,106	802	2,538	2,538	494	72.5%
'93-'94	1,139	1,139	854	2,615	2,615	458	75.0%
'94-'95	1,007	***1,137***	789	2,318	***2,618***	558	69.4%
'95-'96	1,007	***1,137***	793	2,312	***2,612***	680	69.7%
'96-'97	1,000	***1,120***	749	2,175	***2,525***	645	66.9%
'97-'98	801	***931***	676	2,471	2,471	592	72.6%
'98-'99	625	***755***	623	2,379	2,379	584	82.5%
'99-'00	519	***649***	606	2,258	2,258	583	93.4%
'00-'01	497	***627***	475	1,968	1,968	531	75.8%
'01-'02	401	***531***	434	1,783	1,783	478	81.7%
'02-'03	430	***560***	419	1,637	1,637	436	74.8%
'03-'04	461	***591***	441	1,578	1,578	386	74.6%
'04-'05	600	***660***	519	1,584	1,584	347	78.6%
'05-'06	696	696	552	1,702	1,702	348	79.3%
'06-'07	779	779	647	1,879	1,879	331	83.1%

Note: Bold-italics are estimates developed by the CHWS to fill in gaps in original data.

Table A-3. Selected Statistics Used in Maps

State	Pop '06	Pod ' 06	Pod/Pop	Ave Wage	BLS '06	% Salaried
Alabama	4,520,548	99	2.19	50.15	60	60.6%
Alaska	654,545	18	2.75			
Arizona	5,746,606	127	2.21	50.89	240	189.0%
Arkansas	2,758,621	40	1.45			
California	35,889,070	2,200	6.13	45.46	1000	45.5%
Colorado	4,601,064	173	3.76			
Connecticut	3,503,448	254	7.25	53.92	150	59.1%
Delaware	829,987	62	7.47	50.23	70	112.9%
District of Columbia	553,497	254	45.89			
Florida	17,393,075	1,708	9.82	55.69	650	38.1%
Georgia	8,820,375	329	3.73	80.40	270	82.1%
Hawaii	1,261,770	67	5.31			
Idaho	1,391,863	65	4.67			
Illinois	12,711,370	872	6.86	58.75	390	44.7%
Indiana	6,236,162	338	5.42	61.95	100	29.6%
Iowa	2,955,466	219	7.41	55.16	90	41.1%
Kansas	2,734,531	137	5.01	75.13		
Kentucky	4,143,646	75	1.81	79.54		
Louisiana	4,515,366	191	4.23			
Maine	1,317,460	83	6.30	44.88	40	48.2%
Maryland	5,555,556	425	7.65	56.94	230	54.1%
Massachusetts	6,417,112	600	9.35	58.06	100	16.7%
Michigan	10,108,108	748	7.40		390	52.1%
Minnesota	5,101,351	151	2.96	70.75	120	79.5%
Mississippi	2,907,801	82	2.82			
Missouri	5,756,458	312	5.42	68.05	160	51.3%
Montana	926,694	67	7.23			
Nebraska	1,748,252	75	4.29	58.07	50	66.7%
Nevada	2,336,634	118	5.05	56.80	60	50.8%
New Hampshire	1,299,559	118	9.08	74.63	40	33.9%
New Jersey	8,703,956	638	7.33	50.02	570	89.3%
New Mexico	1,902,655	43	2.26		120	279.1%
New York	19,230,165	2,448	12.73	60.74	920	37.6%
North Carolina	8,539,326	304	3.56	75.73	160	52.6%
North Dakota	634,146	26	4.10			
Ohio	11,450,382	600	5.24	49.85	510	85.0%
Oklahoma	3,521,127	75	2.13	78.18		
Oregon	3,595,238	151	4.20	84.97		
Pennsylvania	12,402,597	1,337	10.78	55.69	630	47.1%
Rhode Island	1,080,774	95	8.79			
South Carolina	4,193,548	143	3.41	54.95	100	69.9%
South Dakota	772,201	20	2.59			
Tennessee	4,617,414	175	2.97	67.27	140	80.0%
Texas	11,122,715	852	3.79	57.07	390	45.8%
Utah	8,755,981	183	7.66	28.15		
Vermont	312,500	13	2.09			
Virginia	6,458,333	310	4.16	64.50	170	54.8%
Washington	4,257,143	298	4.80	70.15	100	33.6%
West Virginia	4,319,728	127	7.00			
Wisconsin	5,510,204	162	2.94	59.48	100	61.7%
Wyoming	512,821	2	0.39			
US	**293,784,666**	**18,009**	**6.13**	**56.97**	**9020**	**50.1%**