

The ups and downs of medical school applicants

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The number of students applying to medical schools is shrinking after rising steadily during the 1990s. The decline is the latest turn in the behavior of the applicant pool, which historically has gone through many cycles. Although government policies have strongly influenced the past behavior of the applicant pool, the more recent cycles appear to be related to changes in the Medical College Admission Test (MCAT) and labor market conditions. This article first reviews the cyclical nature of the pool and outlines some of the important factors that have influenced its patterns. Then it focuses on more recent data covering 1990-2000, showing how changes made in 1991 to the MCAT have affected the applicant pool. Data are presented to document the close relationship between the number of students taking the MCAT and the number of medical school applicants in subsequent years. Using this relationship, a projection model has been developed for making projections of the number of applicants for the entering class in osteopathic medical schools in future years. Actual data are compared to the model's projections.

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Medical schools—allopathic and osteopathic—are once again facing a period in which the number of applicants is trending down since reaching a peak in 1997. The latest data from the American Association of Colleges of Osteopathic Medicine (AACOM) and the Association of American Medical Colleges (AAMC) show that the number of applicants for the 2001 entering class dropped from the previous year by about 6% in both osteopathic and allopathic medical schools. These declines are continuations of downward trends that began around 1997 after 8 years of steadily rising numbers of applicants.

Applicant cycles and possible causes

While the direction in which applicant numbers are headed is clear, the initial impetus and the likely length of the current down cycle are less so. However, there are indications that the declining numbers may be a reflection of a strong labor market that has created attractive career opportunities for college graduates in many fields who otherwise might have considered entering medicine or the health professions.

A review of the history and data on numbers of applicants over the past 40 years shows that they tend to follow a cyclical pattern, the characteristics of which have been strongly influenced at times by government policies and socioeconomic trends. A case in point is the draft deferment policies for medical and other health professional students during the Vietnam War. This had a tremendous effect on the number of applicants,

as students flocked to professional and graduate schools to take advantage of educational deferments and avoid service in the war.¹ Medical school applicants and enrollments boomed during the 1960s and early 1970s.

The boom ended when the military draft was replaced by the all-volunteer army in 1973.² Then the number of medical school applicants began a decline that lasted for about 15 years as the applicant numbers adjusted to a more normal growth rate.¹

Another reversal of the applicant pattern occurred in 1991 when the Medical College Admission Test (MCAT) was revised by the AAMC in an attempt to attract a broader spectrum of students to medicine.³ The number of sections in the MCAT devoted to science was reduced and an essay section was added. The net result was that more students from the social sciences and allied health professions began applying to medical schools, touching off another period of rising numbers of applicants that lasted for about 8 years until 1997.

What happened in 1997 to slow the growth in number of applicants and begin the latest downward leg of the cyclical pattern is not readily apparent, but as the downturn was so widely spread—not only in the medical schools, but in many other health professional schools and graduate programs—it appears to be related to general labor market and economic conditions. Reports from various education associations (AAMC, American Association of Dental Schools, American Association of Veterinary Medical Colleges) show that almost all health professional schools are experiencing declining numbers of applicants. In allopathic medical schools, applicant numbers have dropped for 5 straight years after 8 years of steady increases. Dental school applicants peaked in 1997 before the pool began to decrease, and the veterinary school applicant pool peaked in 1998 before dropping in 1999 and again in 2000. The strong demand for college graduates with computing skills, the opportunities opened up by the explosive growth in the Internet, a robust stock market, and an equally

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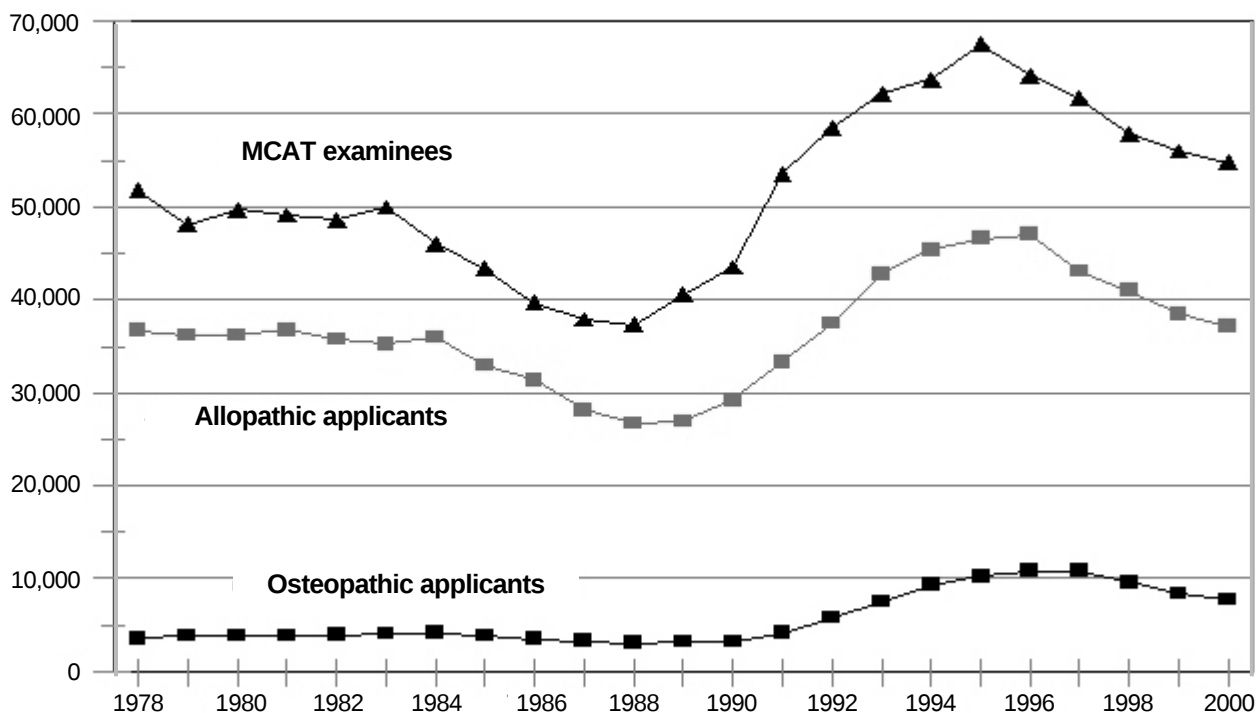


Figure 1. Medical school applicants and Medical College Admission Test (MCAT) examinees, 1978-2000. For applicants, year shown is the entering class year; for examinees, examination year (usually one or more years before entering year) is shown. Sources: AACOM Annual Medical School Surveys; AAMC Data Book.

robust economy (at least up to 2001) all combined to provide attractive career alternatives to students who otherwise might have considered a career in medicine or the health professions.

Enrollment in graduate programs has similarly been affected by the strong labor market, according to the Council of Graduate Schools.⁴ In its 1997 survey, the Council reported that total graduate enrollment fell by 1% in 1997, with especially pronounced declines in the science and engineering fields. Graduate enrollment in the biological sciences—the main feeder field for medical schools—fell by 4% in 1997. The Council cited an extremely tight labor market for skilled workers that has attracted students to careers in business and technology fields to the detriment of the health professions, where additional years of graduate training are required for entry.

The national unemployment rate peaked in 1995 and has also declined

steadily since then to its lowest level in 30 years in 2000 before starting to level off in 2001.⁵ This roughly coincides with the trends in the applicant pool and is one more indication that the pool might be strongly affected by labor market conditions.

Role of the Medical College Admission Test

More evidence of a generally declining interest in the health professions comes from the MCAT, which is required by most medical, veterinary, and podiatric schools. Because the MCAT is part of the pipeline through which applicants must pass, there is a high correlation between the number of students taking the MCAT and the number of medical school applicants in subsequent years. Recently, the number of MCAT examinees has been falling from the peak reached in 1995. Its steady 5-year decline since then has led directly to the cur-

rently shrinking pool of medical school applicants (Figure 1).

Applicants to osteopathic medical schools apply through the centralized application service (AACOMAS) of AACOM. The historical relationship between AACOMAS applicants and prior-year MCAT examinees is shown in Figure 2 for the period 1978-2000.

An important characteristic of the applicant pool is that the relationship between AACOMAS applicants and MCAT examinees changed drastically after the new MCAT was introduced in 1991. Under the old MCAT, each additional 100 examinees yielded about seven additional AACOMAS applicants. But under the new MCAT, which was designed to attract students from a broader range of fields, each additional 100 examinees yielded 31 additional AACOMAS applicants.

The implication of this is that osteopathic medical schools began to attract a

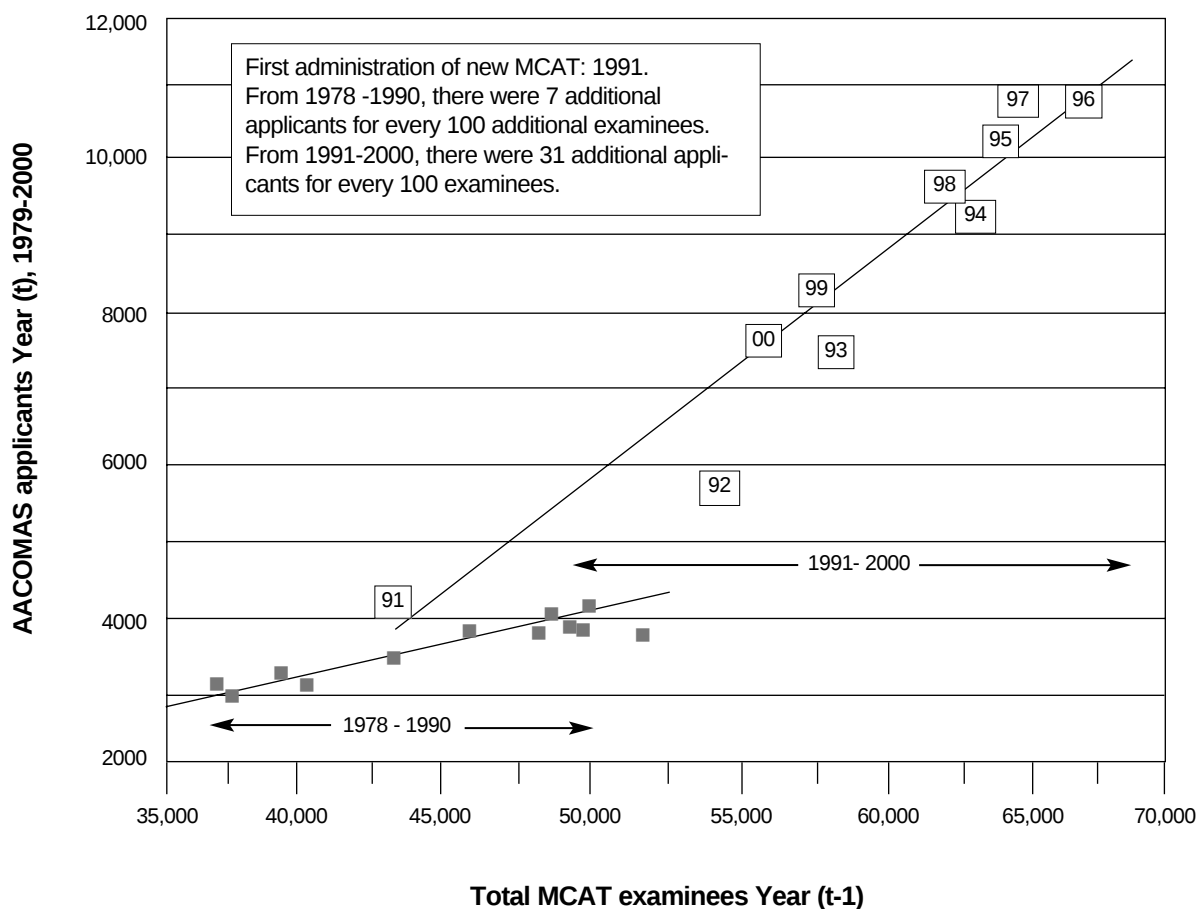


Figure 2. American Association of Colleges of Osteopathic Medicine Application Service (AACOMAS) applicants in Year (t) vs. Medical College Admission Test (MCAT) examinees in Year (t-1); 1978-2000. Sources: American Association of Colleges of Osteopathic Medicine Annual Medical School Surveys; AAMC Data Book.

much greater proportion of their applicants from fields such as psychology, social sciences, and the humanities (that is, the “social science and other” group), and smaller proportions from the traditional feeder fields of physical sciences, engineering, and the health professions (that is, health and sciences group). This is clearly seen in *Figure 3*, which shows the percent change since 1981 in the number of AACOMAS applicants from each group. By 1999, 32% of the applicants to osteopathic medical schools came from the “social science and other” group (up from 22% in 1981), while the health sciences group supplied 69% of these applicants (down from 78% in 1981).

Applicant projection model

Using the foregoing analysis, AACOM has developed an applicant projection model that would permit better estimates to be made of the number of applicants to osteopathic medical schools in a given year. The model projects the number of applicants in any year on the basis of the number of MCAT examinees in the previous 2 years. For example, projections for the year 2001 entering class can be made on the basis of a weighted average of the number of MCAT examinees in 1999 and 2000. Over time—and especially since 1991—there is a close relationship between AACOMAS applicants and MCAT examinees in previous years.

Methodology

The logic behind this model is straightforward. Because all applicants must take the MCAT, the number of AACOMAS applicants in any year must somehow depend on the number of examinees in prior years. The MCAT is part of the pipeline through which all applicants pass, so the volume in the pipeline becomes an important predictor of the subsequent applicant pool.

Since the relationship between AACOMAS applicants and MCAT examinees obviously changed in 1991, for projection purposes, only data from 1991 to the present have been used in the model, the object of which is to quantify the relationship between AACOMAS applicants

Figure 3. American Association of Colleges of Osteopathic Medicine Application Service (AACOMAS) applicants from each undergraduate major field group, 1981-1999. Source: American Association of Colleges of Osteopathic Medicine.

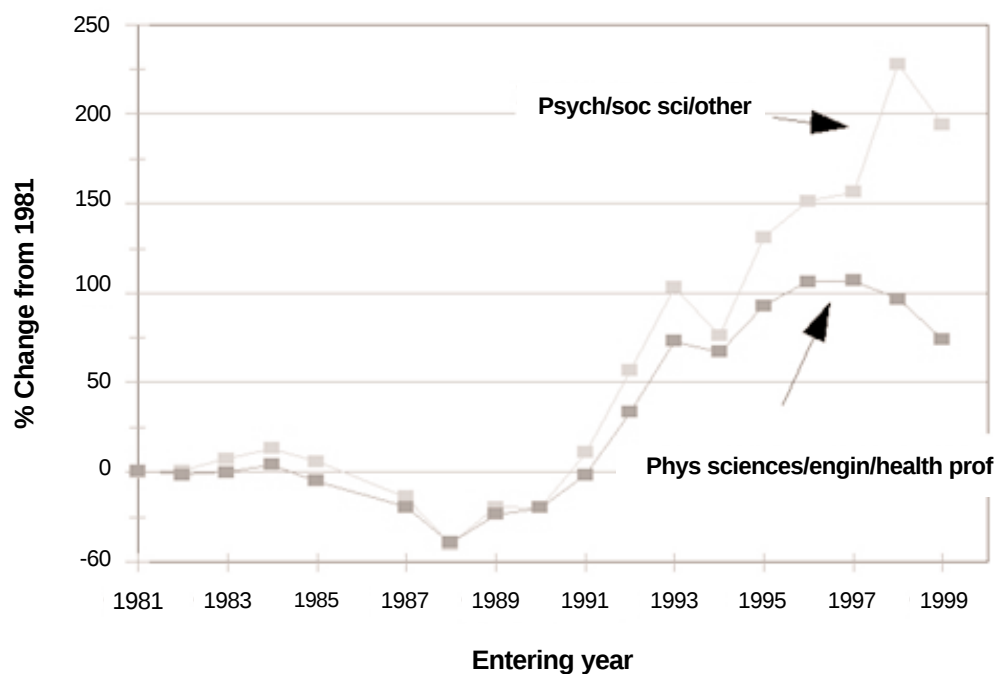
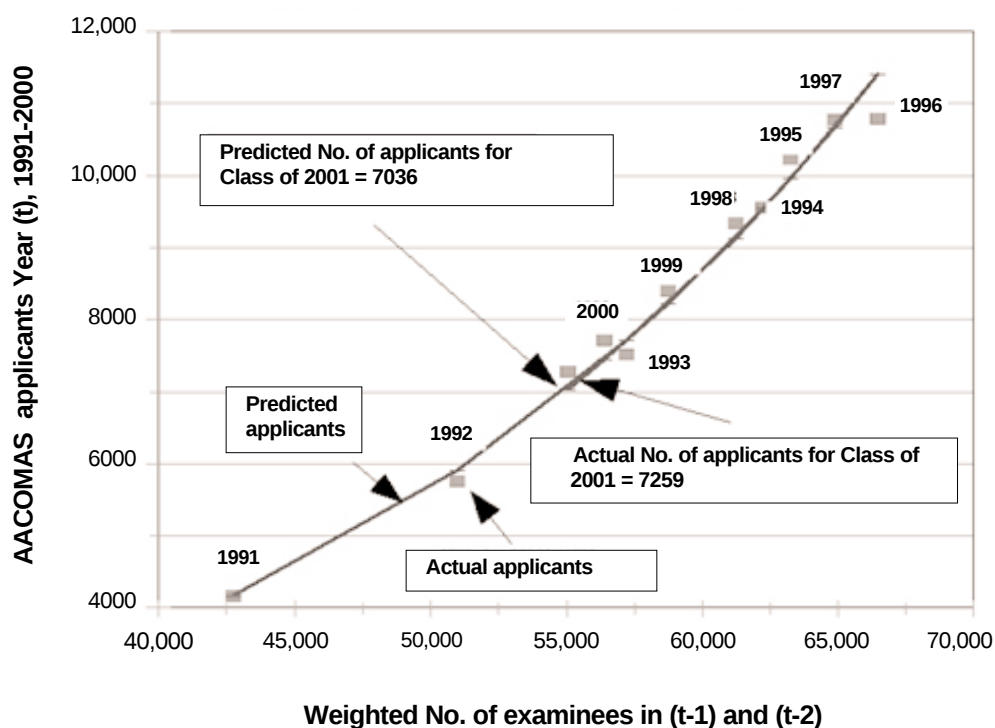


Figure 4. Predicted number of applicants in 2001 based on number of examinees in 1999 and 2000. Source: American Association of Colleges of Osteopathic Medicine.



in year (t) and the number of MCAT examinees in year (t-1) and prior years. The projection procedure is to fit a curve to the observed data as shown in *Figure 4*.

AACOM's experience with its centralized application service (AACOMAS) over the past 20 years has shown that most applicants take the MCAT and submit their applications in the year immediately preceding the desired entering class year. For example, most applicants for the 1999 entering class took the MCAT and submitted their applications in 1998. But a considerable number of applicants submit MCAT scores from the examination taken several years before they apply; therefore, the number of applicants in any year depends not only on the number of MCAT examinees in the immediately preceding year, but also on prior years' examinees. Good data on the exact proportions of applicants in any given year submitting scores from prior years are not available. So for this version of the projection model, a weighted average of the prior 2 years of examinees has been used as the predictor variable, where the estimated weights are 0.75 for the number of examinees in year (t-1) and 0.25 for examinees in year (t-2).

The relationship between the number of applicants in any given year and the weighted average of the number of examinees in the prior 2 years is shown in *Figure 4* along with the projected number of applicants resulting from the model. The best fitting curve to these data from 1991-2000 turns out to be a logistics growth curve, which explains almost all of the variance in applicants ($R^2 = 0.991$), demonstrating the closeness of this relationship.

Comparing projections with actual data and conclusions

The number of applicants processed by AACOMAS for the year 2001 entering class in osteopathic medical schools was 7259.* This is 3% higher than the 7036 predicted by the model, but well within the model's 95% confidence interval of 6528-7585. Thus, the first data point beyond the range of the observed data set on which the model was based conforms to the model's assumptions, that is, that the number of applicants to osteopathic medical schools in any year can be viewed as a function of the number of MCAT examinees in the prior 2 years.

It may be concluded that this model describes the relationship that existed in 1990-2000 between AACOMAS applicants and MCAT examinees fairly well and may be useful for short-term projections of applicants to osteopathic medical schools. It may help us to understand a little more of the recent patterns of the applicant pool. However, because the model only projects 1 year ahead, it has limited usefulness for policymakers and others interested in the more general issues of physician supply and distribution, unless one is willing to make longer-term estimates of MCAT examinees. But for these more general issues and long-term projections, it would be helpful to have a greater understanding of the forces that shape the applicant pipeline, which encompasses not only the number of MCAT examinees, but also its predecessors in the pipeline, including the annual number of college graduates and their fields of study. In

*This is the total number of applicants who submitted to AACOMAS plus those who applied directly to the University of North Texas Health Science Center College of Osteopathic Medicine, which did not participate in AACOMAS in 2001 but did participate in prior years.

addition, the historical record shows how strongly the pipeline can be affected by changes in federal policies, labor market conditions, and the structure of the MCAT itself. Should any of these powerful forces change (and the labor market does appear to be softening in 2001), it is likely that the relationship between MCAT examinees and AACOMAS applicants would also change, necessitating modification to the model's parameters and possibly its basic structure.

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