

AAO SYMPOSIUM ASKS:
ARE THERE TOO MANY OR
TOO FEW OPTOMETRISTS?

Spring 1987
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JOURNAL OF OPTOMETRIC EDUCATION



Association of Schools and Colleges of Optometry

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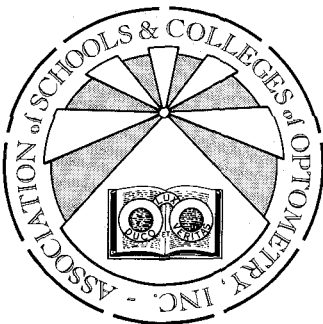
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Table of Contents

Spring, 1987

Volume 12, Number 4

JOURNAL OF OPTOMETRIC EDUCATION

Optometric Manpower Needs: Implications for the Future Structure and Orientation of Optometry Schools

JOE is pleased to publish papers from this symposium which was presented at the meeting of the Section on Optometric Education of the American Academy of Optometry in December, 1986.

Demographics

Henry B. Peters, O.D., M.A.

A brief overview of past enrollment history and the manpower situation within optometry.

104

Technological and Delivery Issues

Barry J. Barresi, O.D.

An exploration of the factors other than available manpower which affect the adequacy of optometric services.

109

Scenario A: The Need to Increase or Maintain Enrollment at Current Levels

David W. Davidson, O.D., M.S.

A discussion of the innovative approaches that may be necessary to maintain quality as well as quantity of students.

114

Scenario B: The Need to Decrease Enrollment

H. Barry Waldman, D.D.S., M.P.H., Ph.D.

An exploration of the process and factors involved in planning for a reduced number of students as illustrated by experiences of the dental profession and schools of dentistry in dealing with enrollment decreases.

121

The Current State of Planning Activities at Schools and Colleges of Optometry

Michael H. Heiberger, O.D., M.A.

An assessment of how optometric educational institutions are planning to cope with the problems and opportunities of the coming years.

125

A Summary Response

Discussant: Willard Bleything, O.D., M.S.

130

Annual Index of the Journal of Optometric Education

Author and Subject Index for Volume 12

134

DEPARTMENTS

Editorial: "Are There Too Many or Too Few Optometrists?"

Michael H. Heiberger, O.D., M.A.

100

Sustaining Member News

102

Abstracts

Robert Rosenberg, M.S., O.D.

103

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Are There Too Many or Too Few Optometrists?

For a long time it was comfortable to speak about the year 2000 and to speculate about what things would be like at the turn of the century. That oft used target of the long-range plan is now a mere thirteen years away. Do we in optometric education know any more now about the factors that influence supply and demand for our profession and our schools than we knew when the first issue of JOE was published in 1975? In that issue's editorial, then ASCO President William R. Baldwin stated the national goals for optometric education and he included these, "... optometric educational programs ... in sufficient numbers" as well as "... graduates in sufficient numbers to meet accepted manpower needs projections."

We are now half way between 1975 and the turn of the century and much has changed optometrically in the last twelve years. The next twelve promise an even more rapid acceleration of the rate of change. Beset by changes in their applicant pools (decreased quantity and possibly decreased quality) as well as by changes in the scope of the profession, schools and colleges of optometry more than ever need to know that their missions, goals and objectives continue to be viable. Is any more known today than was known twelve or twenty or fifty years ago about the question, "Are there too many or too few optometrists?"

A Symposium on Optometric Manpower Needs: Implications for the Future Structure and Function of Optometry Schools, presented in the Section on Optometric Education at the 1986 Annual Meeting



of the American Academy of Optometry in Toronto and published in this issue of JOE, explores a variety of issues that can be viewed either as threats or opportunities for optometric educators. Schools and colleges of optometry are not immune to the environmental factors that have already changed the face of American higher education at the undergraduate and graduate levels.

Dr. Henry B. Peters sets the stage by reviewing and projecting the optometric manpower statistics that are the "bottom line" of the supply side of the equation. Dr. Barry Barresi explores some of the technological and delivery issues that impinge upon the issue of shortage or surplus of optometrists.

Dr. David W. Davidson presents a scenario in which schools and colleges of optometry must maintain or increase the present number of students to meet future vision care needs even in the face of declining numbers of applicants. The opposite scenario, namely the management of decline, is explored by Dr. H. Barry Waldman, a dental educator whose profession has already experienced significant reduction in student numbers and the closing of schools.

This author reports on a survey of optometry school chief administrative officers in which each was queried about his institution's planning activities. Dr. Willard Bleything sums up the presentations and adds his own observations about the future for optometric education.

While much of the symposium discussion centers around numbers and economic issues, there is a recognition that educators' concerns go beyond bottom line considerations. Optometry schools carry the responsibility continually to advance knowledge by nurturing scholarship, clinical innovation and research. They do, however, have a vital stake in monitoring their principal product—the optometric graduate. To produce too many graduates, too few graduates, improperly educated graduates or graduates with unrealistic expectations is not only a disservice to those graduates and the schools from which they emanate; it is a disservice to a public that requires efficient, quality vision care.

Michael H. Heiberger, O.D., M.A.
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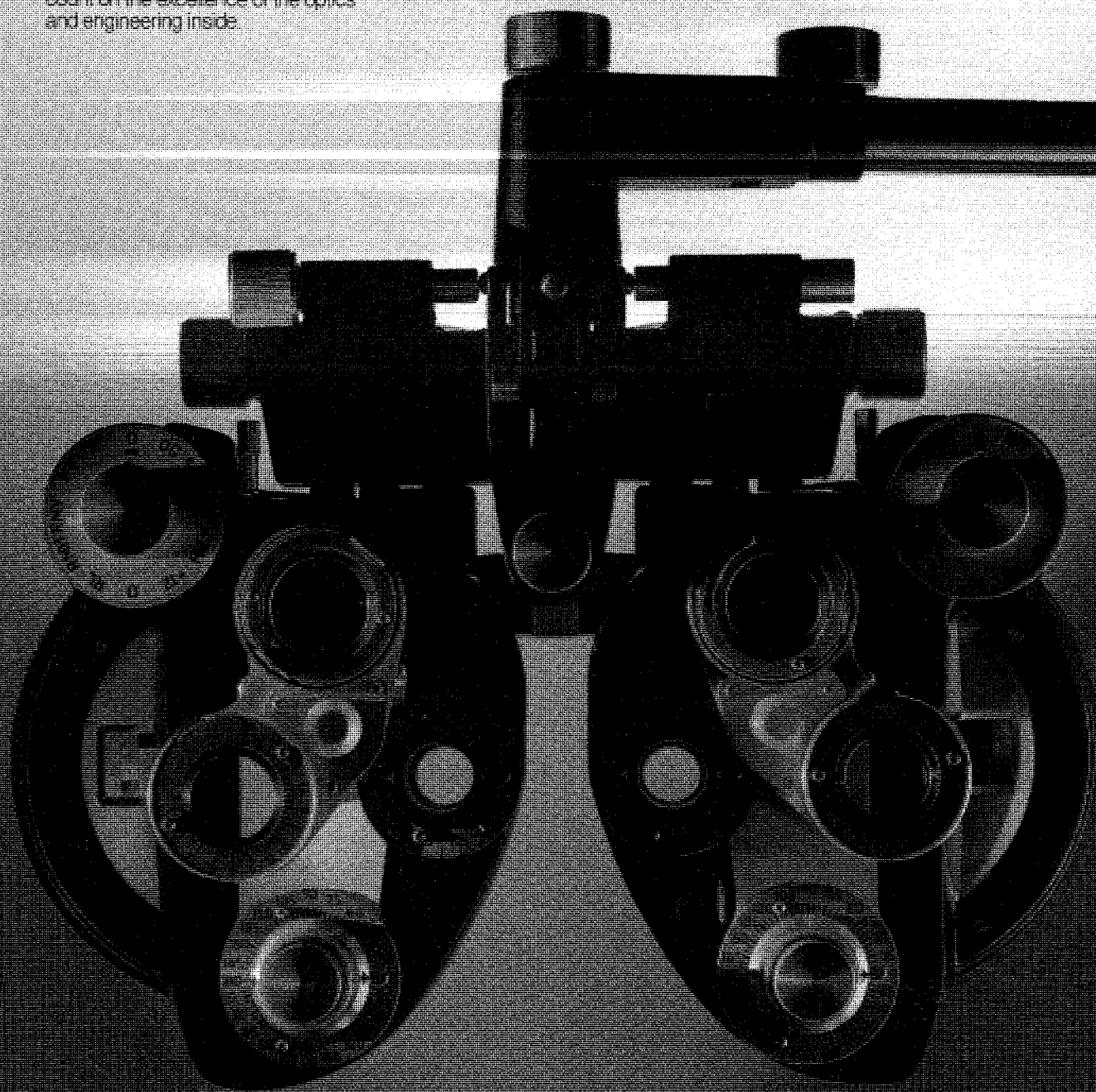
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Allergan Introduces New Preservative-Free Rewetting Drops

In response to the growing demand for preservative-free contact lens care solutions, Allergan Optical, a division of Allergan, Inc. has introduced *Lens Plus® Rewetting Drops*, the newest addition to the preservative-free Lens Plus line of products.

Lens Plus Rewetting Drops is the first and *only single-use, preservative-free product available for rehydrating soft (hydrophilic) contact lenses*. Lens Plus Rewetting Drops restores moisture to lenses, thereby making lenses more comfortable. The preservative-free formulation makes it perfect for *all* soft lens wearers. Patients will appreciate the convenience of the single-use containers, which are simple to use and easy to carry in purse or pocket.

Lens Plus Rewetting Drops is sure to take its place beside preservative-free Lens Plus Sterile Saline Solution as one of the most exciting innovations in contact lens care—both in terms of its preservative-free formulation and its unique delivery system.

Lens Plus Rewetting Drops is now available in pharmacies nationwide and direct from Allergan. Additional information is available from Allergan Optical, 2525 Dupont Drive, Irvine, CA 92715, phone (714) 752-4500.

Momentum Building for Paraperm EW

Since its approval by the FDA on New Year's Eve as the first RGP lens for overnight wear, lens fitting of Paraperm EW (and the sale of trial lens sets) has been steadily increasing. According to several practitioners, sales of contact lenses are up as much as 30% over the same three month period last year.

"We're finding that many practitioners are also fitting the lens for daily and occasional overnight wear," said Donald J. Ratkowski, President of Paragon Optical. "It seems to be a superb lens even if one were not going to wear

the lens overnight," said Dr. James Key, III of Houston. "There is a tremendous pool of patients that will want to know that they can wear this lens safely if they nap, or are out on the weekend camping," said Dr. James Atwood of Sacramento, California.

While some practitioners still express concern about the initial adaptation period compared to hydrogel lenses, most practitioners say that their patients have little or no discomfort adjusting to the lens. "Soft lenses are comfortable initially and then decrease in comfort over time. The comfort of Paraperm EW increases over time," said Dr. William Kadell of Fresno, California.

Practitioners, even those who never fit PMMA or RGP lenses before, are also enthusiastic about fitting Paraperm EW. They appreciate the ability to polish the lens and provide additional service to their patients. "This brings back the art and science of fitting contact lenses," Dr. N. Rex Ghormley of St. Louis, Missouri told *Paranotes*, Paragon Optical's newsletter.

Ready-to-Use Promotion by Varilux

As part of the 1987 Demonstrate The Difference promotion for independent eye care professionals, Varilux is offering a ready-to-use marketing campaign, "A gift incentive to bring presbyopes in."

A useful novelty gift is offered presbyopes who come in to a practice and receive a Varilux demonstration. The gift is a camera hardly bigger than a film cartridge and takes fine snapshots.

The program comes complete from Varilux with the following;

- 60 miniature cameras
- Ready-to-use newspaper ad announcing the offer
- A display kit including eye-catching color counter card and window banner; 3 extra sample cameras; suede dispens-

ing mat; patient lifestyle questionnaires with clipboard and pen supplied; as well as brochures on vision alternatives for the presbyopic patient.

Varilux offers the total promotion for the wholesale cost of the cameras only — \$160.00, 50% of which may be applied to the Varilux 1987 co-op program. Additional cameras are available in lots of 10 for \$25.00.

Contact Varilux distributors or Multi-Optics Corporation directly for further information. Multi-Optics Corporation, 363-E Vintage Park Drive, Foster City, CA 94404. 1-800-227-6779 (CA 1-800-632-2773).

New Bar Code Reader Developed by Vision-Ease

Vision-Ease has developed a computer software program for use with a Telexon product bar code reader, that provides ophthalmic laboratories one-step electronic ordering of products from a variety of manufacturers.

The bar code reader, resembling a calculator, is simple to operate. To order or re-order a product, a hand held scanner is run across the bar code of a product. The bar code reader is plugged into a telephone receiver, a toll free number of the manufacturer is dialed, and the order is recorded confidentially. The information is then electronically processed and prepared for shipment.

The Vision-Ease bar code reader eliminates the need for the lab to acquire separate bar code readers from each manufacturer they utilize, therefore simplifying the ordering process.

Vision-Ease is willing to share the bar code technology in hopes of achieving uniformity throughout the industry.

For more information, write or call Vision-Ease, 700 54th Avenue North, St. Cloud, Minnesota 56302, (612) 251-8782.

Vision-Ease, worldwide manufacturer of optical lenses, has distribution centers throughout the United States and Canada with manufacturing facilities in St. Cloud and Minneapolis, Minn. and Fort Lauderdale, Fla.

Belsheim D.J. Models for Continuing Professional Education. Journal of Medical Education 61 (12) December 1986.

There has been much controversy concerning the outcome of continuing education for professionals. The only documented outcome has been that patient care is more expensive where continuing education is required.

This article presents a series of three models for continuing education endeavors that use theoretical considerations to develop programs that will relate to one of several possible outcomes. In addition, outcomes are described in terms that suggest there might be more reason to present or attend continuing education programs than to simply "know" more.

The article focuses on educational objectives, methods of instruction, and assessment of outcomes of a basic education model (to "know"), a social change model (environmental outcomes), and a problem-based model that deals with problem analyses and methods of solution in the broadest context, from delivery systems to epidemic control.

Considering that continuing education programs are often orphan appendages to otherwise well constructed professional educational programs, this analysis should be useful to deans, faculties and directors.

Hartman M.E. et al. Comparison of Performance of Transfer Students and First Year Acceptees. J. Med. Educ. 61 (3) March 1986.

Although the study is described in terms of assessing clinical performance of "transfer students," it actually compares the first year residency performance of graduates of an accredited American medical school with graduates of the same school who received their two years of preclinical training in foreign medical schools. These graduates were originally *rejected* by American medical schools and therefore sought places in the foreign schools. Although the formal instruments administered did show significant differences when compared with those of four-year American students, final performance

measures in the residency programs did not show such differences.

This article may have implications in the light of the smaller applicant pool in optometry and the consequent admission to our programs of less qualified students.

Leigh H. and Reiser M.F. Comparison of Theoretically Oriented and Patient-Oriented Behavioral Science Courses. J. Med. Educ. 61 (3) March 1986.

Behavioral Science is one of several knowledge bases recently introduced into the professional curricula of medical as well as optometry programs. The literature contains a long saga of varying success in positively affecting student behavior as measured by assessment of student attitudes toward these courses and student knowledge and skills after their completion. Instructors in these courses also have been bombarded with pleas for the establishment of clinical relevance by changes in their classroom behavior.

This article compares success in accomplishing these objectives as the result of (a) intense classroom instruction theory and practice with (b) patient and clinic-based instruction, and clearly demonstrates success of the latter as measured by student attitudes toward the instruction and knowledge and skills competency expressed in both written and performance behaviors.

Barrows H.S. The Scope of Clinical Education. J. Med. Educ. 61 (9) Part 2; September 1986.

The primary product of a professional program in the health professions is a clinician, first and foremost. This article addresses the problem of constructing a curriculum that will result in the production of clinicians whose competence is assured by evaluation that is reliable and valid and where the entire course of study is designed to achieve a stated series of objectives whose clinical relevance provides the starting point for the entire process.

The author addresses the impact and importance of the entire process of education from highly structured preclinical years to the self-directed learning char-

acteristic of continued post graduate competence. The article is a valuable coherent exposition on the elements of curricular design necessary to produce an "effective, efficient and humane clinician."

Kegel-Flom P. Academic Dropout or Academic Success: A Model of Prediction. Amer. J. Opt. and Phys. Opt.; 63 (9) September 1986.

Dr. Kegel-Flom has written in the past about efforts to develop predictors of optometric success (See Kegel-Flom P, Personality Test Measures in Optometry School Admissions, J. Amer. Acad. of Opt. Phys. Optics, 16 (3) March 1984). In this article, she uses the California Personality Inventory (CPI) in a "go, no-go" prediction mode for academic dropouts in optometry schools. Considering the current pressures on admissions committees and changes in the character of our applicant pool and the fact that few, if any, of our schools "over admit" to compensate for attrition, a valid predictor of success is important. The importance of this information is its inclusion of a non-cognitive instrument in a battery of pre-admission tests. If the results are applicable generally, we may have an important new evaluation procedure that gives proper weight to positive personality traits as well as to cognitive achievement.

Bartlett J.D. Editorial: Career Satisfaction in Optometry. Journal of the American Optometry Association 57 (11) November 1986: 797.

One factor affecting optometry's applicant pool has always been competition for competent students from the other health professions, especially medicine. Our own efforts to communicate positive perceptions of the optometric life style have frequently been slighted as self-serving. This article uses data from a medical authority to demonstrate more authoritatively that, indeed, optometry has a great deal to offer today's health career applicant. It might be distributed as an effective recruiting piece; the author would, no doubt, be pleased to give permission if asked. □

OPTOMETRIC MANPOWER NEEDS

Implications for the Future Structure and Orientation of Optometry Schools

In December, 1986, the Section on Optometric Education of the American Academy of Optometry sponsored the symposium: "Optometric Manpower Needs—Implications for the Future Structure and Orientation of Optometry Schools." The focus of the symposium was the schools and colleges of optometry. Speakers were asked to examine how these institutions might be affected by the changes on the horizon in optometry, in health care delivery and the demography of the United States. One speaker reported on a survey of planning activities at the schools and colleges of optometry as conducted by their chief administrative officers. Another speaker examined the experiences of the dental profession and its schools in dealing with a crisis not too different than that being faced in optometry.

Special thanks to Dr. Michael Heiberger, moderator of the symposium, for his organization, enthusiasm and perseverance in overseeing this project through the publication stage.

Demographics

Henry B. Peters, O.D., M.A.

In order to place the demographical information related to optometric education in proper perspective for planning, I propose to review the material from three particular perspectives: changes in the national population, changes within the health professions and changes within optometry. Unfortunately, the information sources readily available are not directly comparable,

encompassing different time periods, different methodologies and certainly different interpretations. In spite of these problems, however, it is possible to draw some general conclusions of value to this exercise.

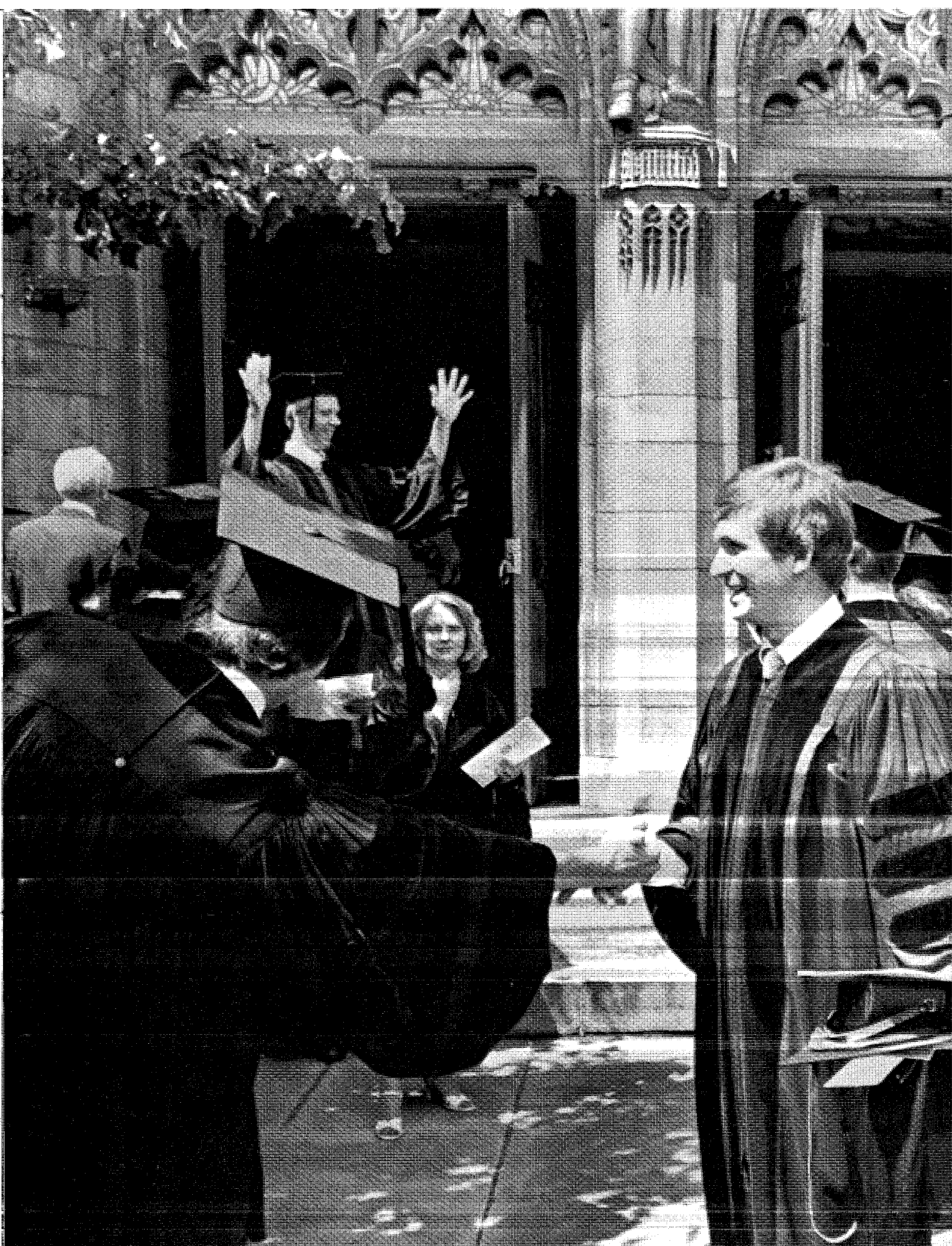
Changes in the National Population

The national population continues to increase (1984 = 236 million) and is projected to continue (1990 = 250 million, 2000 = 268 million).¹ But the increase is not uniform in regard to age,

race or geography. While the number of births continues to rise, the number of young adults (ages 21-26: the target population for students of optometry) continues its 15 year decline. This age group (21-26) will not begin to increase until after 1995. The decline in this age group from 1983 to 1995 is expected to approach 26%.

The other important change in the age distribution of our population is the rapid increase in the number of persons over 65 years of age, particularly striking for those over 75. Both age groups are expected to increase from the cur-

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rent 12% to 16% of the population by the year 2000, with further increases in the years beyond.¹ Of importance to the practicing optometrist, more than half the eyewear population are presbyopes (65 million) and this is expected to increase to 130 million by the year 2000.

Women continue to account for more of the population (52%) and have a longer life expectancy (78.3 years at birth) than males (71.0 years at birth), though the gap appears to be closing.

The Black population grew faster in the last decade than the general population and currently constitutes 12 percent of the population (28 million). The Spanish-origin population numbered about 16 million. About 53 percent of the growth in the Spanish population (10%) since the census of 1980 is attributable to immigration.

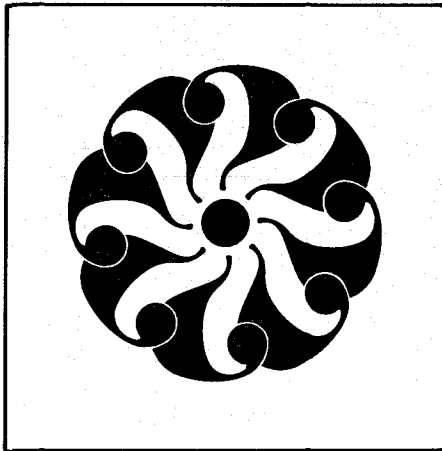
The changes in geographic distribution of the population between 1980 and 1983 show that 94% of the population increase was in the South and Southwest. The largest numerical gain was in California (1.5 million) while four states lost population: Indiana, Iowa, Michigan and Ohio. Three states accounted for 53% of the population increase: California, Texas and Florida. But again the changes were not uniformly distributed. Alabama, Mississippi, Arkansas and Tennessee showed population gains substantially below the national average. Much of this change was due to migration. Sixteen percent of the population changed address in one year; one-fifth moved to a different state.

A reversal has taken place since 1980 in the growth rates of metropolitan versus non-metropolitan areas. For the first time in this century, non-metropolitan counties grew faster than metropolitan areas, though major metropolitan areas continued to grow and three out of four Americans lived in cities of 50,000 or more population.¹

The nation's educational level continues to rise. For example, 87 percent of 25- to 34-year-olds in 1984 were high school graduates, 23 percent of men and 21 percent of women in this age group were college graduates—more than doubling the level of education since World War II. The change has been particularly striking for women. In 1970 women represented 40% of college graduates for that year while in 1980 they represented about 50% of college graduates. Of importance to optometric education, the number of bachelor's degrees in life sciences awarded has decreased since 1977. There were 35,743 such degrees

awarded in 1971. In 1977, the peak year, there were 53,605 awarded. The number has declined steadily to 39,982 in 1983, the last year for which statistics are available.²

Overall, minority enrollment in higher education increased 6 percent between 1980 and 1984, because of increases in Hispanic and Asian enrollments. During this period Hispanic enrollment increased by 12 percent and Asian/Pacific Islander enrollments increased 34 percent. Both Blacks and American Indians/Alaskan Natives experienced declines (3 percent and 1 percent, respectively). Blacks are losing ground at almost all levels of higher education. Between 1980 and 1984, Black undergraduate enrollment declined by 4 percent, while Black enrollment at the graduate level fell 12 percent. During this period Asian/Pacific Islanders enrolled at the first professional level increased 51 percent.³



Clearly these shifts in the demographic factors of population, age distribution, sex, race, geographic distribution, education and minority representation have had, and will continue to have, significant influence on the future of optometric education.

Changes Within the Health Professions

In the area of health manpower production, the most significant factor in these monumental changes has been the shifts in national health policy and particularly its focus on health manpower. Beginning in 1963 with the enactment of the Health Professions Educational Assistance Act, Congress acknowledged a manifest shortage in the nation's supply of physicians and other allied health professions. Through the years since, Congress has provided a succession of enactments designed to

increase the number of health professionals: student assistance, special projects, construction grants, capitation, minority recruitment and more. In the beginning these grants were designed to increase numbers, but as the capacity was increased other issues of specialization, geographic distribution, minority participation and others were addressed. The principal focus was on physician manpower. By 1984 the number of physicians per 100,000 population had increased from 156 in 1965 to 210, an increase of 35.1 percent, with a projection to 235 in 1990 and 260 by the year 2000.

The Graduate Medical Education National Advisory Committee (GMENAC) changed the perception of policy makers and indicated a surplus of physicians (compared to need) of 70,000 by 1990 and 145,000 by the year 2000. The Department of Health and Human Services, based on a different methodology, predicted a surplus of 35,300 physicians in 1990 and 51,800 in 2000. While the numbers differ the conclusions are the same. Already in the pipeline of education are a surplus of physicians. Further studies reported by Dr. Alvin Tarlov, chairman of GMENAC, reported in 1985 that the GMENAC predictions were on target and if anything may have predicted surpluses that were too low.⁴

The Reagan administration, as part of its effort to reduce the budget deficit, has initiated policy changes to reduce the federal support for health manpower development. Not all of these initiatives have been enacted into law but it is apparent that efforts will continue to: reduce the entrants of foreign medical graduates, reduce the graduate medical education support in Medicare and Medicaid, reduce the trend toward specialization and reduce or eliminate student financial aid—capitation is already gone. This scenario has not yet played out but optometric educators should be aware of and prepared for these changes.

Natural forces have an impact on the graduates of medical schools. The number of graduates peaked at 18,486 in 1985 and is predicted to decline to 17,946 in 1990 and to 17,464 by 2000 without the federal interventions mentioned above.⁵ Some of these natural forces are changes in the attitudes of students toward health profession careers,³ changes in the perceived environment and career opportunities in health services and strong competition from business and engineering.

The demographics of dentistry are

particularly instructive. In 1950 there were 49.8 dentists per 100,000 population. While the number of dentists increased the population increased faster and by 1965 there were only 46.5 dentists per 100,000. The increases in dental education created by the Health Professions Educational Assistance Act and subsequent federal support allowed that ratio to increase to 56.3 per 100,000 in 1984. But dentistry has lost some of its appeal and applicants are now down. In one decade it has changed from enrolling 37 percent of dental school applicants to enrolling 78 percent of applicants. In 1975 there were 15,734 applicants, 5,763 students were accepted, and in 1985 there were 6,216 applicants of whom 4,843 were accepted. This year, first year enrollment decreased to 4,555. Graduates are predicted to decline to year 2000.⁶

Dentistry too has seen an increase in the number of women and minority students although the number of Black students has remained constant for the last decade. The geographic distribution of dentists is quite similar to optometry, highest in the Northeast and West and lowest in the South.⁵

Pharmacy is a profession in transition. In 1966 more than 67 percent of pharmacists either owned or worked in independent establishments. By 1984 it is estimated that 30 percent of pharmacists were in independent establishments, and more than 33 percent in chain store pharmacies, with the balance in institutions.⁵

Pharmacy has not established a common educational and degree program and that continues to provoke controversy in the profession. Enrollment peaked in 1975-76 and had declined 25 percent by 1984-85 but appears to have leveled off. Projections by HHS indicate that current enrollment must be maintained in order to maintain the pharmacist-to-population ratio and equal the estimate of need.

Pharmacy schools are currently enrolling women at an increasing rate, 54 percent in 1984, but studies of productivity indicate that a higher proportion of women practice part-time. The proportion of minority students has remained relatively constant for the last decade at about 16 percent but is not expected to increase.

Changes Within Optometry

Optometry is unique among the health professions in that the ratio of optometrists per 100,000 population has remained relatively stable for two decades. While the number of active

optometrists has increased during this period the growth rate has only recently begun to outpace that of the population. The ratio of active optometrists per 100,000 population increased from 8.9 in 1970 to 9.2 in 1975 and to 9.9 per 100,000 in 1984.⁵ Note that this later figure is an estimate and will be validated only by the 1990 census. Note too that the American Optometric Association National Plan for New Academic Facilities and Programs for Optometric Education, 1985,⁹ established a target ratio for optometrists of 12 per 100,000. With the present capacity of the 15 U.S. schools and colleges of optometry this ratio will not be achieved by the year 2000.

The bimodal age distribution of optometrists^{7,8} indicates that a greater-than-average number of optometrists will be leaving active practice in the near future due to death, disability or retirement. If this prediction is correct it would tend to reduce the ratio of optometrist-to-population in the period 1990-to-1995, or at least slow its increase. The effects of the G.I. Bill of the 1950s and the increase in the numbers of graduates in the mid 1970s and subsequent years gave rise to the bimodal distribution still evident. But the increasing number of new graduates has caused the median age of optometrists to fall from 48 years in 1980 to 42 years in 1984.

Table I
Applicants and Matriculants by Year 1980-1985

	OCAT Takers			Matriculants			No. of Schools in Continental U.S.
	Total	New	Repeat	Total	Male	Female	
1980	2,983	2,114	869	1,174	877	297	13
1981	2,186	1,677	509	1,168	846	322	15
1982	2,168	1,734	434	1,119	791	328	15
1983	2,289	1,914	375	1,187	781	406	15
1984	2,198	1,800	398	1,177	769	408	15
1985	2,314	N/A	N/A	1,154	704	450	15

1975* 4,227 3,200 1,027

*Peak year for applicants

Data from OCAT reports, reports of the COE and ASCO

Table II
Optometrists Per 100,000 Population 1984 by Quartile and Rank Order—50 States and District of Columbia

Lowest 25%			Highest 25%		
51	New Jersey	5.7	1	Maine	16.4
50	Georgia	5.8	2	Massachusetts	15.8
49	Louisiana	5.8	3	Montana	15.6
48	Texas	6.9	4	Oregon	13.5
47	Mississippi	7.0	5	Indiana	13.4
46	Maryland	7.3	6	South Dakota	13.3
45	North Carolina	7.5	7	Rhode Island	13.2
44	Alabama	7.6	8	Idaho	12.8
43	Virginia	7.8	9	California	12.7
42	South Carolina	8.0	10	Wisconsin	12.5
41	Delaware	8.1	11	Iowa	12.5
40	Florida	8.4	12	North Dakota	12.3
39	New York	8.4	13	Wyoming	12.3

Of more concern to the schools of optometry is the experience with applicants and matriculants. Table I shows that those taking the Optometric College Admissions Test (OCAT) declined from a peak of 4,227 in 1975-76 to a low in 1982-83 of 2,168. But the number of repeaters taking the OCAT declined steadily from 1,027 in 1975-76 to 398 in 1984-85.

The second point of interest is that while there is some small variability, the number of students matriculating to the first-year of the professional programs (entering class size) has remained relatively constant (varying from 1,119 in 1982 to 1,187 in 1983) during the period since 1980. But the number of male matriculants has declined steadily from 877 in 1980 to 704 in 1985, from 75 percent to 61 percent of the entering class, a decrease of 20 percent, while female matriculants have increased steadily from 297 in 1980 to 450 in 1985, an increase of 52 percent or nearly 40 percent of the entering class.

The number of women active in optometry constituted a small percentage (8%) of presently practicing optometrists in 1984 but is predicted to increase their proportion to 23 percent by the year 2000.

The record of optometry schools in minority recruitment is certainly disappointing. While the total number of minority students doubled in the last 12 years, the number and proportion remain very low for some minority groups. While enrollment of Asian-American students increased from 117 to 293 during this period, Black students increased only from 32 to 88, those with Spanish surnames from 30 to 123, and American Indians from 2 to 18.⁵

The substantial differences in the geographic distribution of optometrists persists. The ratio of optometrists per 100,000 population in 1984 ranged from a high of 11.8 in the West to a low of 8.0 in the South. The ratio for the Midwest is 11.1 and for the Northeast is 9.9.⁵ All of the states in the lowest quartile (25 percent) are in the Southeast except New York and New Jersey. The state with the highest ratio, Maine (16.4), has nearly three times as many optometrists per 100,000 population as the state with the lowest ratio, New Jersey (5.7).

Statistics in 1980 showed that Mississippi ranked last (51, now 47th) and Alabama was 50th (now 44th) of the fifty states and the District of Columbia. States should be attuned to these danger signals: optometry is in danger

in those states where (1) there are fewer than two optometrists for each ophthalmologist, (2) there are fewer than one student applicant per 100,000 population per year, and (3) there are fewer than 10 practicing optometrists per 100,000 population. There are currently twelve states that meet all three criteria.

Finally optometry does not exist in a vacuum. Ophthalmology services overlap significantly with those provided by optometrists. The number of ophthalmologists has increased rapidly since 1970 when the ratio was 2.6 per 100,000, attained 5.8 per 100,000 in 1984 and is projected to reach 6.8 per 100,000 by the year 2000. GMENAC¹⁰ predicted a surplus of 4,700 ophthalmologists (total surplus of 70,000 physicians) by 1990 and a surplus of twice that many by the year 2000, based on its detailed study of "adjusted need." While strenuously contested by the American Academy of Ophthalmology, which argued a serious shortage of ophthalmologists in both 1990 and 2000,^{11,12} other ophthalmologists^{13,14} tended to support the GMENAC report. Tarlov, chairman of GMENAC, argues that the surplus may be understated by as much as 18%,⁴ if full consideration is given to the manpower utilization in the growing number of HMOs. With the increasing interest of federal policy makers in the excess costs of unnecessary cataract surgery and the general concern for the costs of excess specialization, there appears to be an opportunity for optometry to exploit its historical primary care role in eye care and use its political acumen to foster a reduction in federally funded ophthalmological residencies. I believe such an effort is in the public interest. Lending strength to such an optometric argument are the factors of (1) developing role in primary care in HMOs, IPAs, (2) expanding scope in the diagnosis and treatment of eye disorders using new technology as well as drugs, (3) rapidly developing net-working and co-management centers, (4) inclusion in Medicare and other prepayment programs, and (5) the proven cost effectiveness of optometric services.

"There would seem to be two policy choices—governmental intervention to set limits on the number of physicians and non-physicians being trained, and an effort on the part of the medical professions and other medical providers to limit their numbers" Trobe.¹² Written in 1982, there is no evidence in 1987 that ophthalmology has made any attempt to restrict its accelerating growth and the predicted surplus. Government inter-

vention should be supported by optometry.

The preceding material supports the position that current optometric manpower development is conservative, consistent with population growth and attrition, and, except for geographic maldistribution, should be continued at the present level. To do so the various professional organizations and schools of optometry will need to continue a high level of student recruitment activity. □

References

1. US Dept of Commerce, Bureau of the Census, Current Population Reports, Special Studies, Population Profile of the United States 1983/84, September 1985 (Series P-23, No. 145).
2. US Bureau of the Census, Statistical Abstract of the US: 1986, 106th ed Washington, D.C., 1985.
3. Facts in Brief. Higher Education and National Affairs. Newsletter of the American Council on Education. 35(21):3, November 3, 1986.
4. Iglehart JK. Health Policy Report. The Future Supply of Physicians. N Engl J Med March 27, 1986 313(13):860-864.
5. Fifth Report to the President and Congress on the Status of Health Professions Personnel in the United States. US Dept of Health, Education and Human Services, Public Health Service, Human Resources and Services Administration, Bureau of Health Professions, March 1986 (DHHS Publication No. HRS-P-OD-86-1, HRP-0906767).
6. Drop in Dental School Applicants Concerns HRSA. Health Professions Report. The Independent Biweekly Newsletter on the Education and Training of Medical, Nursing and Health Professions. 15(21):1-2, November 24, 1986.
7. Peters HB. Critical Optometric Manpower Issues. J Optom Ed Spring 1979; 4(4):8-12.
8. Peters HB, Kleinstein RN. The Availability of Optometric Manpower in California 1968-2000. Am J Optom & Arch Am Acad Optom April 1969; 47(4):283-293, April 1969.
9. American Optometric Association, National Plan for New Academic Facilities and Programs for Optometric Education, 1985.
10. Summary Report of the Graduate Medical Education National Advisory Committee to the Secretary, US Dept of Health and Human Services, Public Health Service, Human Resource Administration, Volume 1, September 30, 1980.
11. Reinecke RD, Steinberg T, eds. Ophthalmology manpower studies for the United States (Part II): Demand for eye care. A public opinion poll based upon a Gallup poll survey. Ophthalmology April 1981; 88(4):34A-47A, April 1981.
12. Worthen DM, Luxemberg MN, Gutman FH, et al. Ophthalmology (eye physician and surgeon) manpower studies for the United States: III. A survey of ophthalmologists' viewpoints and practice characteristics. Ophthalmology October 1981; 88(10):45A-51A.
13. Trobe JD, Kilpatrick KE. Future requirements for and supply of ophthalmologists. What do the forecasts show. Arch Ophthalmol January 1982; 100:61-66.
14. Trobe JD, Kilpatrick KE. Ophthalmology Manpower: Shortfall or Windfall? Surv Ophthalmol January-February; 27(4):271-275.

Technology and Delivery Issues:

Impact on Personnel Resources in Optometry

Barry J. Barresi, O.D.

Overview and Introduction

Many forces outside the influence of the profession exert significant impact on the personnel resources in optometry. One approach to assessing the influence of these external forces is to apply the methods of microeconomic analysis. Specifically, the assessment presented in this paper employs economic demand analysis to consider a question central to the issue at hand: will current trends in the supply of optometrists result in a glut of eye care services or will shortages in eye care services create undesired reductions in the levels of eye health and vision function of the public?

This paper offers some forecasts of optometric personnel supply and demand trends and reviews the implications regarding the question of glut or underservice. However, the primary goal of this paper is to advocate the use of multifactor demand analysis. This analytic tool can help assess the need for optometrists in the near future and plan educational policy. Other analysts may wish to apply the model presented here to different scenarios—a new set of “what if” questions—and add to our understanding of the dynamics of the supply and demand of optometrists.

Many studies of health manpower and personnel resources rely on estimates of the public's need for health services. Need is generally defined in this context as the amount of health services that a panel of experts believes a person should have to remain or become healthy. For example, the manpower studies by the American Optometric Association and the American Academy of Ophthalmology have used

the need methodology. In fact, the health needs method dominated the approach to health policy analysis and planning in the 1960s and '70s. However, this approach is prone to overestimating realized demand for health services and therefore can misdirect policy.

Rather than a judgmental approach that emphasizes what should be the demand for services based on theoretical need, the model of demand estimation for eye care services presented in this paper emphasizes a more empirical approach. Estimates of demand are based on the observations of the current market for delivery of health services. This market model for health services and the supply of health personnel has in the 1980s emerged as the dominant analytical tool for health policy analysis and planning. This paper describes how a market model can forecast the impact of changes in demographics, health financing and other factors on the need for optometrists.

Theory of Supply and Demand of Health Services

First, a qualification about the limitations of the economic model of supply and demand. To the economist, demand for health services is a value-free concept. Economics provides little insight into the normative issue of what constitutes necessary service. With the economist's market model, utilization simply represents the equilibrium of supply and demand. No distinction is made between unnecessary and necessary utilization.

Typically, demand and supply curves are expressed as a primary function of price. Market forces exert influence in a direction toward equilibrium, the point of interception of the supply and demand curves. In a market model of manpower, it is also assumed that the

supply or demand for services will tend to self-adjust in a competitive market toward a point of equilibrium. The goal of the market analysis of optometric personnel resources is to determine if the disequilibrium is developing and in which direction—oversupply or undersupply of optometrists.

Supply Side for Eye Care

First, consider the supply side of the market model. In theory, the analysis of supply is an analysis of inflows and outflows—the inflow of new graduates into active practice and the outflow of current practitioners out of active practice.

This model relies on the supply estimates reported by the Health Resources and Services Administration, Bureau of Health Professions, a division of the United States Department of Health and Human Services.¹ The Bureau predicts that the number of active optometrists will increase from 23,900 in 1985 to a level of 29,700 in the year 2000. Estimated population ratios will change from 10.0 optometrists per 100,000 population in 1985 to 11.1 optometrists per 100,000 population in 2000.

The change in optometrists to population ratios is modest when compared to the projected change in the ratio of physicians to population—210 MDs per 100,000 in 1985 to 260 MDs per 100,000 in 2000 (ophthalmologists 4.3/100,000 to 7.4/100,000).

Another supply side factor is technology of delivery. What new labor saving equipment will be available to the practitioner? Will new technology further increase the practice capacity of each optometrist? Given the uncertainty of technological development the impact on demand was not quantified in the market model. However, interpretation of the supply and demand forecast must recognize this limitation.⁸

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Figure 1.
Surplus Index Primary Exams

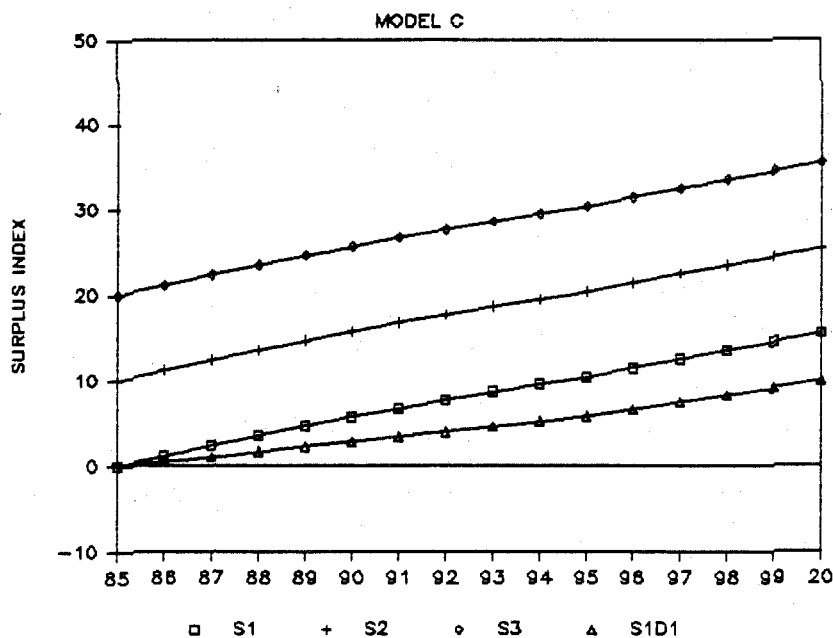


Figure 2.
Surplus Index Secondary Exams

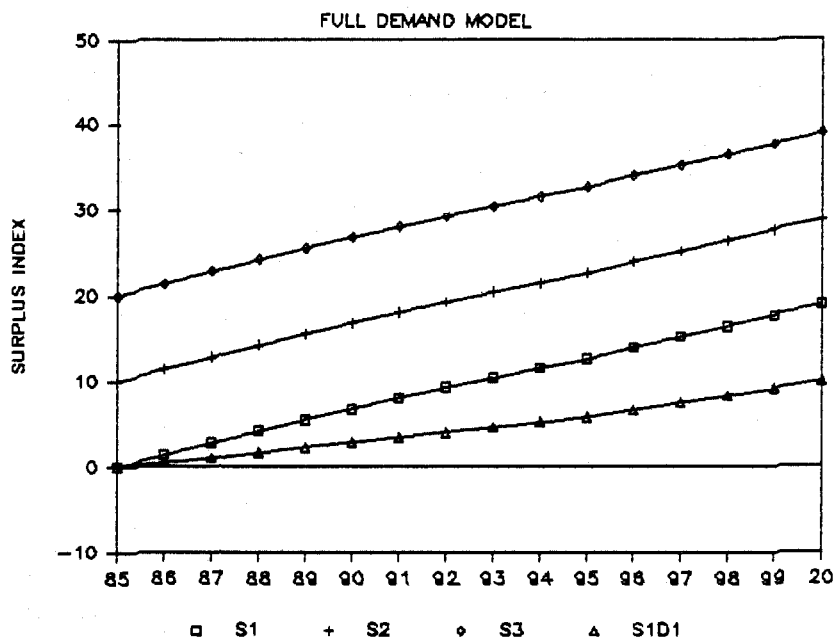


Figure 1. and Figure 2.

Supply = Bureau and Health Manpower estimate + excess capacity adjustment.
Demand = Population Growth + Demographic Change + Managed Care Effect + Moral Hazard Effect

Surplus Index = Supply-Demand

S1 = supply with 0 excess capacity in base year

S2 = supply with 10% excess capacity in base year

S3 = supply with 20% excess capacity in base year

Excess Capacity Adjustment

Another issue on the supply side is provider capacity. At what proportion of full efficiency and capacity are current optometrists providing services? In other words, is it necessary to adjust the number of optometrists in active practice by some excess capacity factor. Robert Refowitz,² in his 1978 manpower study, estimated the contribution of some sources of excess capacity, e.g., empty chair time, duration of office visit, use of ancillary personnel and technical efficiency. He reported practitioner self assessed unused capacity for optometrists and ophthalmologists (mean excess capacity of 15.9% ODs and 8.8% MDs).

If one considers other sources of excess capacity, then it is not unreasonable to expect the demand for eye care could increase 20 to 50% before the typical optometric practice achieves full operating capacity by hiring ancillary staff, shortening visit time per OD and making other efficiency improvements.

Thus, reliance on simply the trend in the number of active optometrists will underestimate the true supply of services by 20 to 50%. Taking a conservative view of the excess capacity factor, the forecast considers three supply scenarios for the analysis: 0% excess capacity, 10% excess capacity and 20% excess capacity.

Demand Side for Eye Care

Demand forecast for optometric services must consider two components: total demand for eye care in the United States and the proportion of total eye care that is provided by optometrists versus ophthalmologists. These components are referred to as aggregate demand and market share demand or net demand.

Elasticity of Demand

The first type of demand, aggregate demand, is driven by population growth and demographic change and in part by some external forces. The responsiveness of the quantity of services demanded to changes in any factor that influences demand is denoted as the elasticity of demand. Elasticity is measured by dividing the observed percentage change in quantity demanded by the observed percentage change in the factor. In other words, from given values for the elasticity of each factor, one can estimate the associated percentage change in demand for services.

The first step in building a demand model is to list the major market factors

that influence aggregate demand. This analysis is limited to four demand factors: population growth, demographic change, managed care effect and moral hazard effect. An additional consideration is the changing relationship between the number of optometrists and the number of ophthalmologists—the market share effect. Changes in the comparative market shares of optometry and ophthalmology are used to transform the aggregate demand for optometrists into a forecast of the net demand for optometrists.

The next step is to calculate the elasticity value for each factor. The data needed for this computation is based on empirically estimated relationships using historical data. Typically, large historical data sets are available and the elasticity values are regression based where the partial correlation coefficients equal the value of the elasticity of demand. However, secondary datasets on eye care are not available, so this model relies on a separate analysis of market condition relationships for each factor. The derivation of elasticities is detailed later.

The third step in quantifying the demand side of the model is to estimate the annual rate of change for each market factor that impacts demand for optometric services. The product of the elasticity and the annual change equal the annual demand. An index method was used to compare units of change in demand and change in supply with 1985 as the base year.

The annual demand for optometrists is estimated by summation of the market factor effects: demand = population growth + demographic change + managed care effect + moral hazard effect + market share effect. The value of the index for each market factor is the product of the elasticity of demand and the annual change rate.

Population Growth

The United States Census Bureau estimates that the United States population will grow to 268 million in the year 2000 (total growth of 15.9%). Elasticities for demand from population growth was set at +1.0. That is, a one percent increase in population will result in a one percent increase in demand for eye care.

Demographic Change

Elasticities and annual change rates for demographic change were calculated to determine the influence on population need. The model assumes,

Figure 3.
Supply-Demand Trends

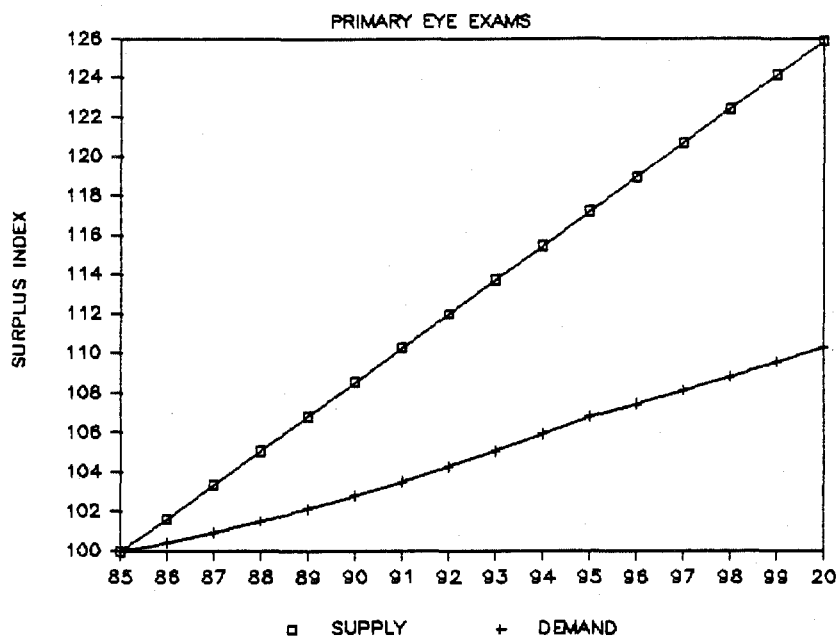


Figure 4.
Supply-Demand Trends

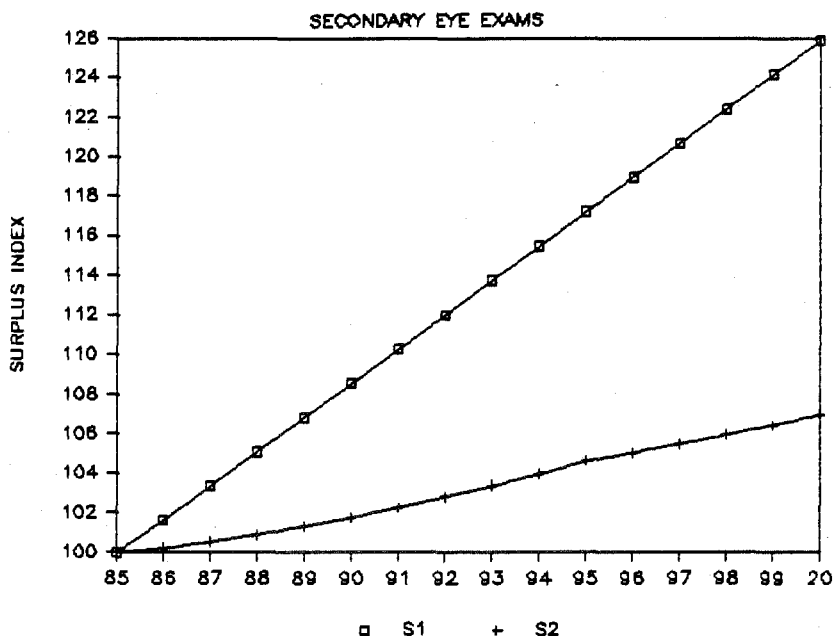


Figure 3. and Figure 4.

Alternative way of depicting the growing gap in the demand and supply forecast for optometry to the year 2000. Supply of optometrists is predicted to reach index of 126, while the demand for primary examinations is lower at a level of 110.5, and the demand for secondary examinations is at a level of 106.

based on actuary data, that the elderly demand primary eye exams at three times the rate of nonelderly (demand elasticity = +0.30). Demographic change has a stronger effect on the need for secondary eye services. Again, actuary data were used to compute an elasticity of demand (demand elasticity = +0.5). Using Census projections on the changes over the next 15 years in the proportion of the American population in the over-40 and over-65 year old segment, the model assumes that each year one percent of the population shifts into a higher utilization segment based on age.

Managed Care Effect

Another influence on the demand for eye care services is the growth of HMO employment of providers and contract care with preferred providers in PPOs, HMOs and other managed care systems. These arrangements steer enrolled populations to selected providers. The result of this planned channeling of demand for eye care by managed care systems is to dampen aggregate demand for personnel resources in optometry.

The enrollee/provider ratios in managed care systems are lower than the current ratio in the predominantly fee-for-service market for eye care services. The elasticities of demand for the managed care effects were computed by comparing those provider/population ratios between fee for service arrangements and managed care arrangements. Using the ratios reported by Interstudy in the analysis of HMO and eye care,³ an elasticity value of -0.16 for the managed care effect on demand for primary exams was computed.

A different elasticity value was estimated for secondary exams because HMOs are even more aggressive in managing the provision of secondary care since it is subject to provider induced demand. By using economic incentives or administrative arrangements, HMOs and PPOs strive to reduce inappropriate secondary services. A recent Johns Hopkins study reported how HMO provider mix and service utilization data can be used to adjust the GMENAC estimates of manpower requirements for physicians as more health care consumers enroll in HMOs.⁴

Using both the Interstudy and the Johns Hopkins study, an elasticity value of -0.20 for demand of secondary eye exams was computed. In this context secondary eye exams refer to any procedure or service provided by optometrists other than the primary exam.

Another assumption of the estimate of the managed care effect is the magnitude of the shift in the proportion of patients receiving fee-for-service care versus managed care. This model assumes that from a base of 9% national enrollment in HMOs in 1985, enrollment growth over the next 15 years will result in 37% of Americans enrolled in HMO and managed care plans by the year 2000.

Moral Hazard and Insurance Effect

The last aggregate demand factor to consider is the stimulative effect of expanding insurance coverage. In economic supply/demand theory, the provision of health insurance has the same effect of lowering the price or budget constraint of the purchaser and changing the slope of the associated demand curve. Insured individuals demand more eye care than persons who must pay the full price out of pocket. The insurance sector refers to this stimulative effect on demand for health services as moral hazard.

For our market model, the elasticity value for the moral hazard effect is an estimate of the difference in utilization rates for eye care between populations with vision care third party coverage and populations without coverage. The elasticity value for moral hazard effect was extracted from data reported in the Rand Insurance Experiment (elasticity of +0.16).⁵

The rate of change in the proportion of American health care consumers covered by vision plans was estimated from trend analysis of Labor Department data on employee benefit plans. The Labor Department has reported over the last 5 years an average annual shift of 2.5 percentage points.⁶ From a base in 1985 of 30% of employees with vision plan coverage, this model assumes that by the year 2000, 65% will be covered by vision plans.

Provider Market Share Shift

In manpower studies by government agencies and in studies of the American Optometry Association, it is commonly assumed that the market share of optometry will remain unchanged. In this context, a given proportionate change in aggregate market demand is expected to translate into the same proportionate change in the demand for services of optometrists. However, this assumption ignores the overlap in services between optometrists and ophthalmologists and the difference in the manpower supply trends for the two professions.

At present, optometrists comprise 70.5% of all eye care professionals (all active optometrists and ophthalmologists). However, the number of ophthalmologists is growing at a faster rate than the number of optometrists. This model assumes a demand elasticity of +1.0 for this shift effect, i.e., for every percentage point shift in the ophthalmology proportion of all eye care professionals, the aggregate demand for optometry services will decline by one percentage point. From 1985 to 2000 the annual shift is expected to be 7%; so that by the year 2000, optometrists will comprise 60% of all eye care professionals (shift of 10.5 percentage points from 70.5% to 60% market share of providers).

Although I chose for this forecast an elasticity of +1.00, the findings of Refowitz and others suggest that the capacity and market attraction of ophthalmologists is greater than optometrists. Additional simulations should consider the impact of market share effects with elasticities ranging from +1.5 to +2.0. Also certain policy changes in government health programs or in operating protocols of managed care systems that favor optometry could reduce the magnitude of this elasticity value. More directly, cutbacks in the training or other drains to the supply of ophthalmologists could slow or reverse the current shift in proportional increase of total eye care providers by ophthalmology.

Net Effects for Market Model Surplus Estimates

Using 1985 as the base year, a demand and supply index was computed through the year 2000. Demand and supply growth was forecast using the estimation equations with the index value of 100 assigned to 1985. The index values are equivalent to percent change in the base year levels. For example, the supply index for the year 2000 is 125.9, i.e., the number of optometrists projected for the year 2000 is 25.9 percent greater than the number of optometrists in 1985. The difference between the supply index and the demand index equals the surplus index (figures 3 and 4).

According to this forecast, by the year 2000 the manpower supply for providing primary examinations will be 15.5 points greater than the demand for service or supply growth index of 126 versus demand growth index of 110.5. The supply of personnel for providing secondary examinations will be 20 points greater than the demand for services or supply growth index of 126 ver-

sus demand growth index of 106. These surplus index estimates of 15.5 for primary examination and 20 for secondary examinations can be translated into a projected surplus by computing the product of the number of optometrists in 1985. Thus the model predicts a surplus of between 4600 and 5640 optometrists in the year 2000. The surplus will be greater if one accepts the fact that some excess capacity already exists.

Other Conclusions

*Supply estimates must be cautious in adjusting for excess capacity—the profession needs new studies to obtain more current estimates on practice capacity.

*One of the most influential factors in estimating the demand for eye care services is health financing. The stimulus on demand from the moral hazard effect and the dampening of demand by the managed care effect are both influential variables in the projection of manpower needs.

*The estimates for demand of primary eye exam differ from the trends in demand for secondary eye exams. This model suggests that over the next 15 years the disequilibrium between demand for eye care and the supply of ac-

tive optometrists will increase. Furthermore the demand for primary eye care will grow at a faster rate than the demand for secondary eye care.

*Applying this limited model and assuming that in 1985 a surplus of optometrists does not exist, then over the next 15 years market force will press for a state of supply/demand equilibrium.

*Additional studies are needed to consider the regional variance in supply and demand factors. Additional scenarios also could provide a more complete assessment of supply and demand dynamics.

Implications

The outcomes of the interaction of supply and demand factors in optometry is subject to intervention. If the profession is successful in advocating full scope of practice and favored status with HMOs, then the demand for optometrists will grow more rapidly than predicted. The market share shift could switch in favor of optometry if support of ophthalmology training declines. In addition, dramatic changes in the demand forecast could occur with yet unpredicted technological advances.

The method of analysis presented here has limitations. However, market

analysis is a useful tool to help assess the need for optometrists in the near future and plan educational policy. The application by other analysts of this model to different scenarios and conditions—a new set of “what if” questions—could further clarify our understanding of the dynamics of the supply and demand of optometrists. □

References

1. Report to the President and Congress on the status of health personnel in the United States. US Department of Health and Human Services, May 1984. (HRP-095930).
2. Refowitz R. Manpower for eye care, ophthalmology, optometry, and the future. Ph.D. Dissertation in public administration. New York University, 1978.
3. McClain M. Eye Care in the HMO Setting: Current Status and Potential Cost Savings of Alternative Arrangements. InterStudy, Excelsior, Minnesota, 1982.
4. Steinwachs DM, et al. A comparison of the requirements for primary care physicians in HMOs with projections made by the GMENAC. N Eng J Med. 1986; 314:218-222.
5. Newhouse JP, Manning WG, et al. Some interim results from a controlled trial of cost sharing in health insurance. N. Eng J Med 1981; 305:1501-7.
6. Employee benefits in medium and large firms, 1984. Bureau of Labor Statistics. U.S. Department of Labor, Bureau of Labor Statistics, 1984 (Bulletin 2237).

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The Need to Increase or Maintain Enrollment at Current Levels

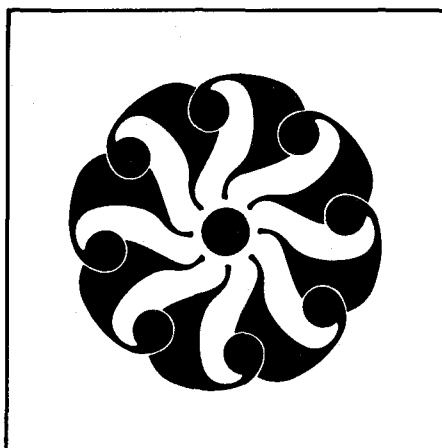
David W. Davidson, O.D., M.S.

Introduction

Every so often, at least once every decade, the optometry profession needs to reexamine its present and future manpower needs. This periodic reexamination of manpower is necessary for a variety of reasons. Of primary concern is the fact that the profession is constantly changing. The profession continues to experience significant changes in terms of scope of practice, modes of practice, patient population shifts and advancing technology. In addition, individual practitioners feel the influence of these changes in their own practices, and when demand for a practitioner's services begins to decline, that practitioner will likely begin to question local manpower needs. Local optometric societies become concerned with apparent growth in the number of practicing optometrists and ophthalmologists, especially if these increases are tied to lowered demand for services from established practitioners. Individual practitioners and leaders within the profession then begin to wonder if the schools and colleges aren't perhaps turning out more new graduates than is desirable. Finally the profession, in compliance with requests from its constituents decides to undertake another study of optometric manpower.

The question of optometric manpower is indeed a complex one. It requires careful study of population demographics and trends, changes in scope of practice, calculations of the time required to complete various types of examinations, modes of practice,

inter-professional interactions, and a host of other considerations. Enormous amounts of data are collected and analyzed in order to determine one simple figure . . . the ideal number of optometrists per 100,000 population. From that figure one can then determine the number of new practitioners that would need to be graduated each year from the schools and colleges of optometry in order to arrive at the ideal optometrist-to-population ratio in a given length of time. The simplicity of the outcome is very misleading. It suggests the result can be determined with



very little effort. There are also considerable regional variations in manpower, and manpower needs, and these differences, among others, make the outcome suspect at best. Nonetheless, the time has come to take another look at the future manpower needs within the optometric profession. Hopefully this symposium, and the discussion it generates, will help individuals better understand the complexities inherent in man-

power studies, and become more knowledgeable and respectful of the many variables that must be considered in a determination of future manpower needs in optometry.

Background

There are 15 schools and colleges of optometry in the continental United States. In addition, two Canadian schools and one school in Puerto Rico constitute the 18 member institutions of the Association of Schools and Colleges of Optometry. Of the 15 optometry schools in the continental United States, nine are situated as components of state-supported colleges or universities, and six exist as free-standing, independent institutions. Two of the mainland schools (and also, the school in Puerto Rico) were established in 1979-1980. There have been no new schools or colleges of optometry mandated into existence since 1980.

The schools and colleges of optometry in the United States currently are graduating approximately 1100 new ODs each year¹. However, this figure has fluctuated dramatically over the years. Figure 1 shows the number of graduates from schools and colleges of optometry each year from 1942 until 1985.

These data demonstrate that the number of graduates peaked in the late 1940s and early 1950s but then declined steadily for twelve years. Optometry graduates decreased from a peak of 1,934 graduates in 1949 to a low of 319 in 1961. The decade from 1955 through 1965 was the leanest in the history of optometric education with an average of only 350 graduates per

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Figure 1
NUMBER OF GRADUATES 1942-1985

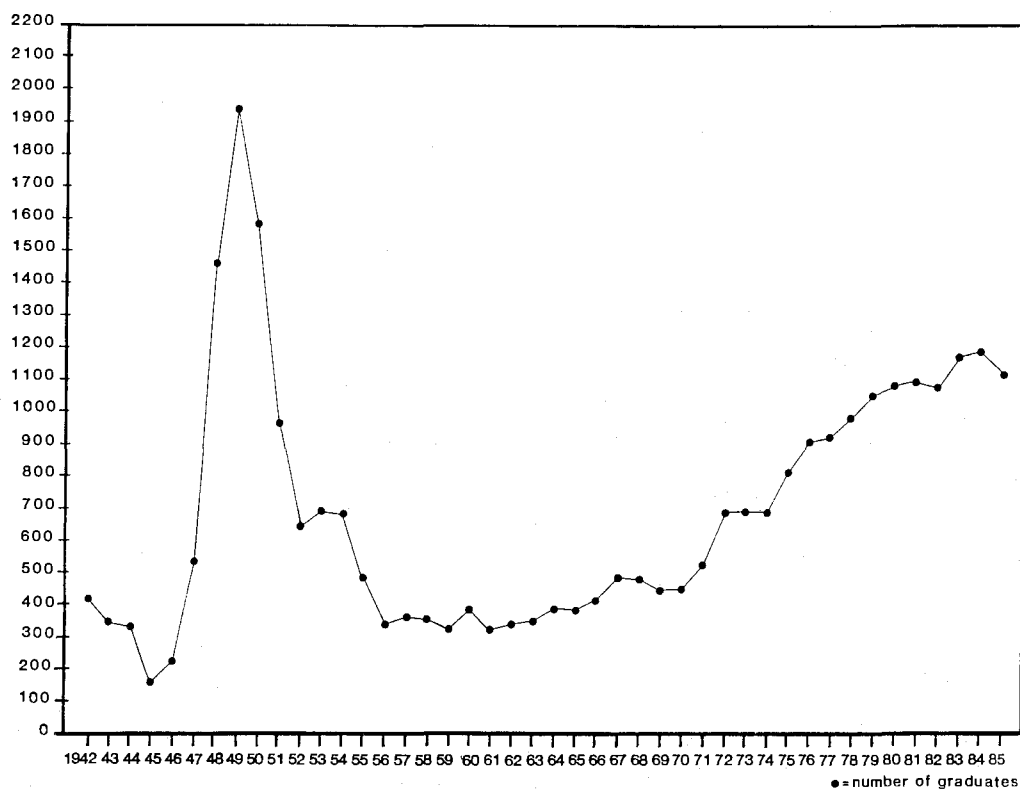


Figure 2
COMPARISON OF ENTERING FIRST YEAR STUDENTS TO GRADUATES

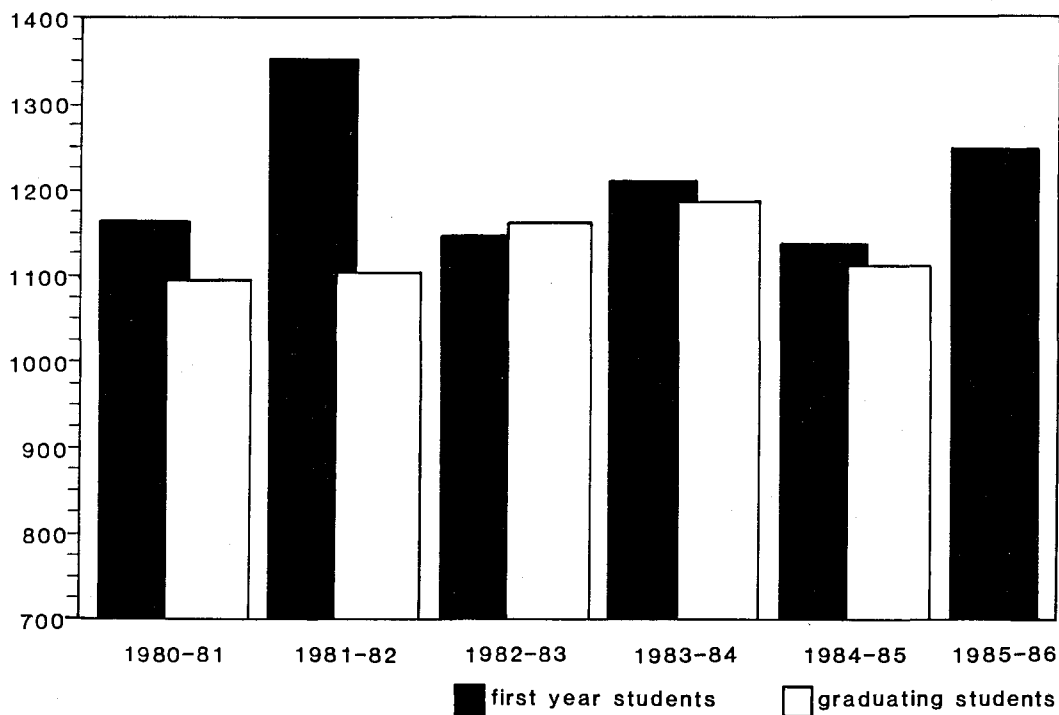


Table 1
COMPARISON OF OPTOMETRIC AND
OPHTHALMOLOGIC MANPOWER
1950 vs. 1980

	1950	1980	% Change
Number of ODs	19724	22799	+ 15.6%
Number of MDs	3723	9926	+ 166.6%
ODs/100 k pop	11.8	10.4	- 11.0%
MDs/100 k pop	2.4	4.6	+ 92.0%
OD:MD ratio	5:1	2.3:1	- 54.0%

year. This downward trend was reversed in the late 60s and 70s as the result of federal capitation funding that made it attractive for new schools and colleges to come into existence, and for existing schools to enroll greater numbers of students. As the result of federal capitation funding, and also partly as the result of improved financial assistance to professional students through government subsidized, low interest rate loans, the number of optometry graduates increased steadily from 1961 until 1984. 1985 saw the first decline in the number of optometry graduates from U.S. schools in 23 years.² Figure 2

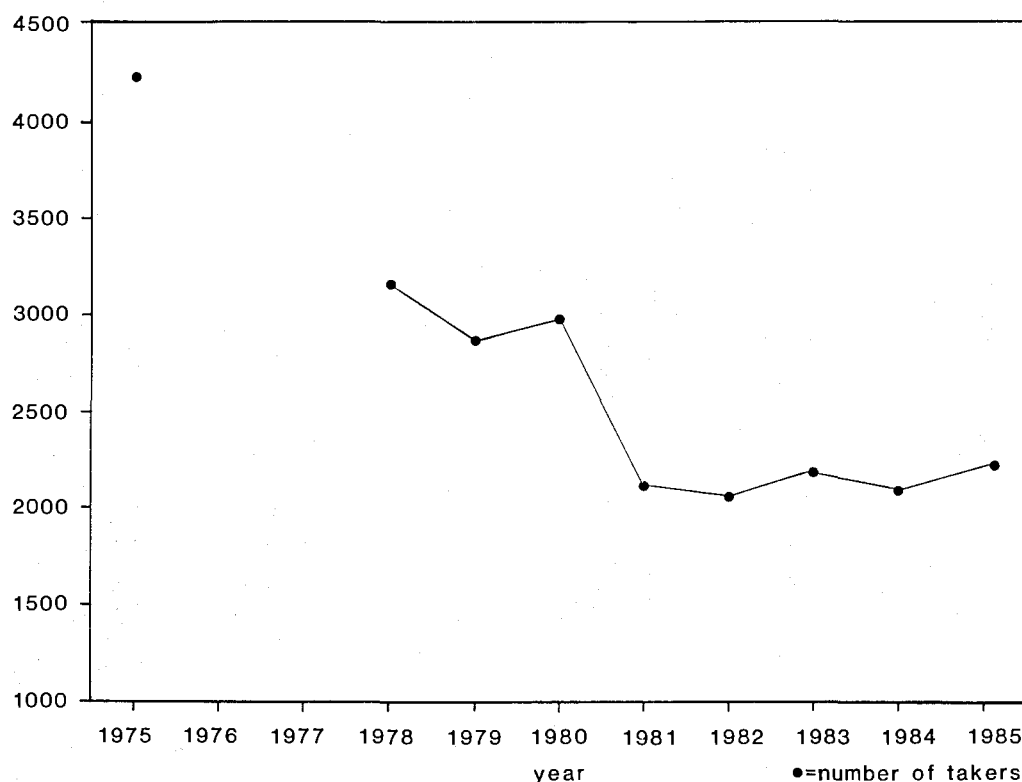
compares number of graduates to new first year enrollments. From these data we can predict that the number of new graduates each year will remain fairly constant, at least through 1989.

While the number of new graduates has been rising gradually through the 1970s and early 1980s, the number of applicants to the schools and colleges has declined dramatically during this same time period.³ The Association of Schools and Colleges of Optometry has only recently begun collecting accurate information on numbers of unduplicated applicants. Therefore, figures on the numbers of Optometry College Ad-

missions Test takers have been used to reflect the trend in applicants from one year to the next. Figure 3 shows the number of OCAT takers for the years 1978-1985. 1975 was the peak year for numbers of applicants and it is included in the figure for comparative purposes.

As can be seen from Figure 3, there was a precipitous drop in applicants from 1975 through 1981, but the applicant pool has remained relatively constant since 1981. It is important to keep in mind that the entering class sizes remained relatively constant through the years when the pool of applicants was declining and has remained constant ever since. This means that the applicant-to-admission ratio has decreased significantly. In other words, the schools and colleges are digging deeper into the applicant pool in order to fill their first year classes. In 1975, the applicant-to-admission ratio (based on OCAT takers) was 4.3:1. That is, there were approximately 4.3 applicants nation-wide for each student admitted. By 1981, that figure had dropped to 1.98:1, and has only gone back up to slightly over 2.0:1 since 1981. More recent data based on a careful analysis of unduplicated applicants indicate the applicant-to-admit ratio for the 1986 applicant pool was

Figure 3
NUMBER OF OCAT TAKERS



1.6:1.⁴ One has to wonder how this decline in the applicant-to-admission ratio has affected the quality of entering students. No clear studies have been conducted to answer this question, but some preliminary data suggest a decrease in grade point averages and OCAT scores for entering students during this same time period.⁵

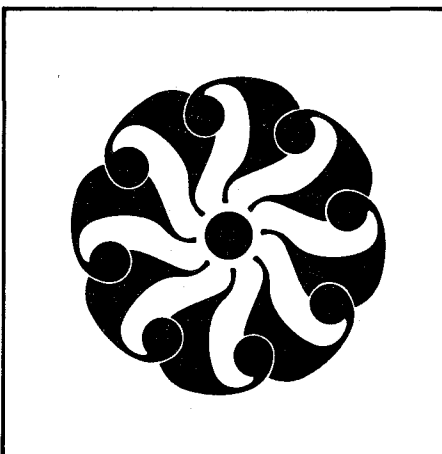
Optometric manpower can be shown to have followed these trends in enrollment in schools and colleges of optometry. Optometry in the '60s and '70s was practiced largely by the individuals who were trained in the "post World War II bulge." Numerous studies were conducted during the '70s that demonstrated that, as this large population of aging optometrists grew older, attrition from retirement, disability and death would outstrip recent graduates, and there would be a serious decline in manpower.^{6,7,8} Indeed, in that same time period, there were steady declines in the optometrist to population ratio. The OD-to-population ratio declined from 11.9 ODs per 100,000 population in 1961 to 8.9 ODs per 100,000 population in 1970.⁹ However, since that time there have been slow but steady increases in this ratio. The ratio of active optometrists per 100,000 population increased from 8.9 in 1970 to 9.2 in 1975 and to 9.9 per 100,000 in 1984. This gradual increase is expected to continue through the turn of the century.¹⁰ There were 23,600 active optometrists in 1984. Health care planners are currently projecting 29,700 active optometrists by the turn of the century bringing the optometrist-to-population ratio up from the 1984 figure of 9.9 optometrists per 100,000 population to 11.1 per 100,000 population by the year 2000. It is worth noting that optometric manpower projections to the year 2000 remain below the 1960 optometrist to population ratio, and are considerably below the ideal ratio recommended by the American Optometric Association.^{11,12}

In determining manpower needs for the delivery of primary eyecare, one has to look at ophthalmological as well as optometric manpower. There have been dramatic increases in ophthalmologic manpower in the last three decades.¹³ In 1950 there were 3,723 ophthalmologists practicing in the United States, or 2.4 ophthalmologists per 100,000 population. By 1980 their numbers had increased to 9,926 or 4.6 ophthalmologists per 100,000 population. Another useful way to look at this 30-year shift in manpower is to look at the OD/MD ratio. In 1950 there were

approximately five optometrists for every ophthalmologist. That number decreased to 2.3 optometrists for every ophthalmologist by 1980. The optometrist-to-population ratio for the 30-year period decreased 11% while the ophthalmologist-to-population ratio over the same time period increased 92%. These data are summarized in Table 1.

Optometric Student Recruitment

This portion of the discussion has been designed to further explain and delineate the need for aggressive optometric student recruitment. Several "non-traditional" recruitment options will be considered. Among these, particular attention will be paid to the need for minority student recruitment. Blacks, Hispanics and Native American Indians are very poorly represented in optometry in proportion to their numbers in the general population. Some in-



formation is offered in an attempt to understand why these minority groups are not better represented in the profession, and to describe the identifiable obstacles that impede access to the profession for minority individuals. Also, an attempt is made to identify those obstacles minority individuals face when considering a doctoral level health profession, with special emphasis on those problems that are unique to the optometric profession.

As mentioned previously, there are approximately 24,000 optometrists currently in practice in the United States. Approximately one-half of these individuals are in solo private practice. However, an increasing number of optometrists are seeking group practice opportunities, or practice in clinical settings, and most people would agree that the trend for the foreseeable future is away from the solo private practice of optometry. Another recent trend has

been for greater numbers of optometric practices to be located in suburban communities with fewer and fewer practices to be found in downtown areas and urban inner cities.¹⁴

Blacks, Hispanics and Native American Indians comprise 2% of currently licensed optometrists.¹⁵ That figure has not changed significantly in recent years; however, there is a small percentage increase in students from these minority groups currently enrolled in schools and colleges of optometry.¹⁶ Access to federal financial assistance through Special Health Career Opportunity Grants (SHCOG), and more recently Health Career Opportunity Program Grants (HCOP), has resulted in increasing the number of minority students enrolled in schools and colleges of optometry. However, most people involved in optometric minority student recruitment would agree that the outcome has been rather disappointing when compared to expectations. There are several persistent obstacles which limit the size of the minority applicant pool to schools and colleges of optometry, and impede access for those that are applying. Many of these obstacles affect virtually all potential applicants (minority and non-minority), and are viewed by many as lowering the applicants' motivation for a career in optometry, or impeding their access. Other obstacles are unique to minority applicants. Some of the identifiable reasons for the declining applicant pool are as follows:

1. The lure of medicine.

The vast majority of students (including minority students) aspiring to a doctoral level health profession have medicine as a goal. This is the result of medicine's long-standing prominence in the health care field, its abundance of role models, medicine's widely recognized income earning potential, parental pressure, and media visibility. Furthermore, health advisors at local undergraduate colleges and universities usually have emphasized medicine in preference to other options in the health care field when well qualified students on their campuses have expressed an interest in pursuing a doctoral-level career in one of the health professions.

There is an abundance of career awareness literature promoting careers in medicine; "pre-med" clubs are active on most college campuses; and the general public receives a constant barrage of their senses glamorizing medicine through popular television programming. Many youngsters, when asked

what choices exist if they want to become a "doctor," can identify only two choices: medicine and dentistry. Lastly, many medical schools are far better endowed with scholarship funds to further lure talented students to their institution as compared to the rather low number of scholarships available for talented optometry students.

2. Escalating costs of optometric education.

Recent studies show optometry students are graduating with an average indebtedness of \$25,000, with some students, particularly those attending private institutions, developing an educational indebtedness in excess of \$50,000.¹⁶ This necessity for very high indebtedness has caused many potential applicants to consider other options. Escalating educational costs have made it especially difficult to recruit minority and economically disadvantaged students whose backgrounds and family upbringing result in these students being extremely reluctant to incur heavy indebtedness.

3. Difficulty in securing adequate financial assistance.

This problem serves to exacerbate the problem described previously. There are increasing restrictions being placed on federally sponsored financial aid programs for college students and in particular aid for students in health professional educational programs. With tuition and fees continuing to escalate, and students encountering increasing difficulty in securing adequate financial aid to meet their educational expenses, it has been predicted by some health planners that doctoral-level health professional education will become a reality only for the affluent.

4. Insufficient supply of appropriate optometric role models for minority students to emulate.

There are very few minority optometrists in private practice; consequently most minority youth have never met a minority optometrist. Furthermore, as stated earlier, fewer and fewer optometrists are choosing to practice in the urban inner city and consequently, there is reduced access to optometric vision care for residents of these communities. This trend also has reduced the likelihood that a minority youth will obtain professional optometric vision care and as a consequence of optometric interaction, develop the desire

to become an optometrist. It is quite predictable that, under prevailing conditions, minority youth are not likely to aspire to careers in optometry since there is so little opportunity for interaction with an impressive optometric role model.

5. A blemish in the glamour

In the last few years, some attitudinal changes within our society have adversely affected the recruitment of many students (minority and non-minority) into any of the health professions. The average consumer of health care no longer views the physician with the esteem recognized from an earlier era. With the advent of automation in health care, heavy use of para-professionals, and the disappearance of "house calls," doctors are no longer perceived as being the compassionate healers they once were. Health care costs have escalated at astronomical rates and physician wealth combined with a commercial emphasis in the health care industry have added to the decline of the doctor's esteemed public image.

Most recently, medical careers have received some additional bad press. This has come in two forms:

a. A glut of physicians.

The first indication of a physician manpower surplus came out of the Graduate Medical Education National Advisory Committee Report of 1980 in which it was reported that the United States was entering into an era in which there would be an oversupply of physicians. Manpower projections indicated that by 1990, there would be a surplus of physicians, particularly in the surgical specialties of medicine.¹⁷ The press picked up on this report and the news was widely spread that the "physician glut" would make future medical careers less desirable due to increasing competition. The public interpreted this to mean a decline in the desirability of any doctoral level health career, including optometry (in spite of the fact that optometry was not identified in the GMENAC report as entering into an era of surplus manpower).

b. Alternative delivery modes

Adding to the negative public image was the dawning of alternative modes of health care delivery such as health maintenance organizations. Many leaders in the health care industry were expressing great concern that the demise of the "private practitioner" would act to greatly compromise the quality of health care in the United States. This

demise was blamed on a stifling of the free enterprise system, and a consequent lowering of the motivation toward a health career for some potential applicants because of fears of a decline in physician income earning potential.

Recent corporate and commercial emphasis in health care has been another cause for potential applicants seriously reevaluating their interest in health careers. Many applicants over the years have expressed the desire to "be their own boss" as one of the reasons they were pursuing a health career. However, HMOs and the corporate incursion into health care have increased the number of physicians and other providers of health care who serve their patients as salaried employees. This trend of optometrists and other doctors delivering health care as corporate employees has been a major deterrent to considering a health career for the potential applicant with an entrepreneurial spirit.

6. Optometrists are showing a decline in their traditional enthusiasm toward the profession.

Over the years, numerous studies identified the practicing optometrist as the profession's best recruiter. Questionnaires filled out as applicants took their optometry admissions test have traditionally indicated that over half of the test takers were inspired to pursue a career in optometry as the result of influence from a practicing optometrist.¹⁸ However, recently, the number of applicants indicating that they were influenced to pursue a career in optometry as the result of interaction with an optometrist is declining substantially. Many applicants, during their on-site interviews conducted as part of the formal application process, indicated that an optometrist had actually advised them against pursuing a career in optometry. The optometrists' declining enthusiasm to recruit their talented young patients into the profession poses a serious threat for the future of optometric student recruitment, and is a serious concern for leaders in the optometric profession.

7. Increasing popularity of careers outside the health care field.

Adding to the decline in popularity of the health professions has been a recent increase in interest in career opportunities outside health care. This is because many of these alternative career opportunities have very competitive entry-level incomes requiring fewer years of training as compared to that required in

optometry or other doctoral-level health professions. Some examples of alternative career options which have enjoyed increasing popularity in recent years include computer science, engineering, marketing and management.

8. The bust of the baby boom.

A gradual but constant decline in the birth rate over the last two decades has further fueled the declining applicant pool. Population statisticians have demonstrated a decline in the number of high school graduates—a number that will continue to decline through the turn of the century.¹⁹

Other “Non-Traditional” Optometric Student Recruitment Possibilities:

1. Optometrists educated in foreign countries

Each year the admissions officers of the U.S. schools and colleges of optometry receive a small number of requests for special programs from optometrists who received their optometric education in foreign countries. These requests have been a dilemma for most of the U.S. schools and colleges. The definition and scope of practice in optometry is quite varied from one country to another, and the education optometry students receive in these different countries also varies considerably. Most of the U.S. optometry programs find it very difficult to design a special program around the varied backgrounds of foreign trained optometrists. Most schools ultimately decline these requests for admission. It also is worth noting that the pool of optometrists trained in foreign countries wanting to practice in the United States is sufficiently small that it doesn't represent a significant recruitment potential. There does not appear to be either a need or motivation at this time to increase this pool of potential applicants.

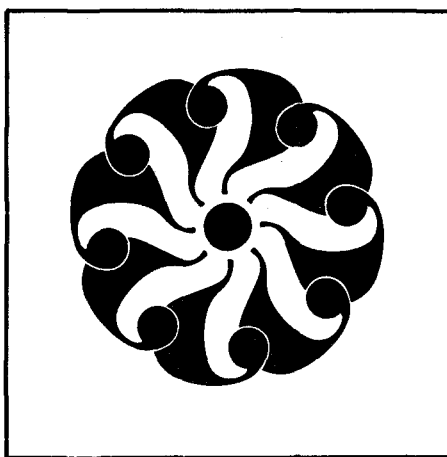
2. Accelerated, decelerated and part-time programs

Every school and college of optometry in the United States and Canada currently requires four years' study beyond undergraduate preparation in order for an individual to earn the doctor of optometry degree. However, many programs have specially designed curricula permitting selected individuals the ability to complete the equivalent of that four year professional program in fewer or greater than four calendar years. Those students who are selected for

programs of modified length fall into one of the following categories:

a. Students who have PhDs or similar advanced degrees in related disciplines. Some schools have designed specific curricula to permit students in this category to complete their optometric education in two calendar years. Those schools that have modified curricula for this purpose actively recruit students with advanced degrees.

b. Students who find themselves in academic difficulty as a result of the very rigorous nature of the traditional four-year optometric curriculum. Most schools permit students in academic difficulty, who show promise of successfully completing the curriculum if placed on a reduced academic load, to be placed into modified curricula where they take the first academic year over two years, or complete the first two academic years over the span of three years. These students will normally take five calendar years to complete the four-



year professional curriculum. These modified programs are not widely advertised, and students are not guided into these “reduced load” five-year pathways until they have demonstrated some significant degree of difficulty in their ability to handle the normal four-year course load.

c. A small number of students at a few schools and colleges, at the time they receive admission, are permitted to pursue the professional curriculum on a part-time basis while they continue working, or are pursuing another degree simultaneously. The length of time to graduation varies but can be from five to seven years or even occasionally longer than seven years. This option holds some appeal for selected applicants, and could prove to be a useful recruitment vehicle for certain students who otherwise would not be able to pursue an optometric education. There are several rather obvious reasons why an

increasing number of potential applicants might prefer to pursue an optometric education on a part-time basis:

As the cost of optometric education continues to escalate, and financial aid becomes less available, more and more applicants may find it desirable, or even necessary, to work a regular job while attending school, in order to afford the high cost of an optometric education.

An increasing number of working adults are finding it desirable to consider alternative career goals. This is due to our nation's changing economy, and the declining opportunity that exists in various careers. Many adults are finding themselves in situations where they have been trained in fields that are less desirable or marketable in today's economy than they were at the time that the career was originally planned. Some of these individuals would consider a career change, but because of family responsibilities or other circumstances, are not in a position to pursue the education necessary for a new career on a full-time basis. These individuals would likely welcome the opportunity to pursue the necessary education on a part-time basis. This option is likely to be fairly marketable, and a significant pool of additional qualified candidates could result from increasing efforts to promote this option.

3. Formal affiliation with undergraduate institutions

The majority of optometry students enter into their professional education having already acquired a bachelor's degree. However, no school requires a bachelor's degree as a requirement for admission, and all schools admit some students without the bachelor's degree. This situation introduces two additional avenues for “non-traditional” student recruitment through liaison with undergraduate institutions. These inter-institutional recruitment policies can be described as follows:

a. Students who are completing requirements for the bachelor's degree while in-route to the OD degree, with the bachelor's degree being conferred by the undergraduate institution.

This option can best be accomplished through formal liaison between the optometric and undergraduate institutions, such that certain negotiated courses taught in the professional curriculum also are counted toward fulfillment of the bachelor's degree requirement. When an institutional relationship of this type is in place and advertised, students will be attracted to both the participating undergraduate institution and subsequently to the optometry school, aiding

recruitment efforts of both institutions.

b. Recruitment of students directly out of high school, with seats in the entering class being reserved for those students once they fulfill the necessary undergraduate qualifications.

This is a more binding and innovative approach to institutional liaison between an undergraduate institution and an optometry school. In this concept, talented high school graduates would be recruited to the participating undergraduate institution with the specific intent of the students attending that institution in order to prepare for an optometric education, as well as to receive a quality undergraduate liberal arts education. The participating students, upon entering the freshman year in college, would be guaranteed a seat in the participating optometry school following completion of undergraduate prerequisites, and provided that various negotiated conditions of admission were met. As with the previous example, a relationship of this type between undergraduate institutions and optometry schools can serve to augment the optometry school applicant pool. With the number of applications down, it behooves the schools and colleges of optometry to develop innovative recruitment policies such as those described that attract qualified applicants and put optometric educational opportunities into the grasp of those seeking it.

Summary and Conclusions

There has been a serious decline in the pool of applicants applying to schools and colleges of optometry. Many of the reasons have been delineated above, and do not show signs of abatement. This decline has caused many optometric educators and leaders in the profession to become concerned with the quality of the students being admitted to the schools and colleges. As the "applicant-to-admission ratio" declines it becomes obvious that students with poorer credentials will be admitted into the programs if the schools and colleges attempt to maintain their enrollments. The manpower projections described above are predicated on the number of individuals admitted into the schools and colleges of optometry remaining about constant.

The data presented argue forcefully for increased and aggressive optometric student recruitment. The schools and colleges of optometry, feeling the brunt of the declining applicant pool, have responded by placing greater emphasis and financial resources into their student recruitment activities. ASCO has responded with additional recruitment

activities intended to support the individual recruitment activities of the schools and colleges.

One of the areas identified as needing substantial improvement is the recruitment of Black Americans, Hispanics and Native American Indians. These discrete minority groups continue to be underrepresented in the optometric profession in proportion to their numbers in the general population. Current enrollment of students in schools and colleges of optometry suggests some modest increases in the proportion of individuals from these minority groups, but the data suggest need for substantial improvement. The data indicate the greatest need to be in the area of recruitment of Black Americans. Optometry must strive to attract greater numbers of students from these underrepresented minority groups into the optometric profession. Attracting a greater number of minorities will require improved optometric visibility in urban inner cities and other communities where members of these minority groups are largely represented. Optometric student recruitment programs must be developed that will attract minority students, and mechanisms must be developed to make these recruitment materials and resources available to institutions where qualified minority students are in attendance. Furthermore, mechanisms must be found to help finance an optometric education for students who are economically disadvantaged. Lastly, the profession should organize financial management seminars designed to help educate minority students to the financial realities in health care, and options available to obtain the necessary financial assistance to obtain a contemporary doctoral-level health education, and to develop effective strategies for meeting these educational expenses.

Optometry is a young, growing profession. It has persevered and in fact prospered in the face of enormous adversity. Today, many of the profession's most aggressive and talented leaders are relatively young, having been graduated from an optometry school or college within the last 20 years. It is this crop of young, dynamic optometrists that will determine the future of the profession. If the growth and prosperity the profession has enjoyed in its past is to continue, it will be the result of the next generation of talented, forward-thinking students. The profession and its future is completely dependent upon the quality of the individuals that are added to its ranks. To ensure a healthy profession for the next generation of practitioners, the optometry schools and colleges

must maintain rigorous admission standards, and must continue to attract highly qualified applicants to fill their classes. Innovative recruitment efforts such as those described above are necessary to ensure there will be no compromise in the quality of students ultimately admitted into the professional programs. Of equal importance, optometrists must continue to serve the schools and colleges as they have in past years by attracting the most talented students possible into optometric education. No charge to the profession can be considered more vital. □

References

1. Annual Survey of Optometric Educational Institutions, Summary of the Council on Optometric Education Report. Journal of Optometric Education, 10(3):26-30.
2. Ibid.
3. Psychological Corporation, Descriptive and Summary Results for the Optometry College Admissions Test, Distributed to Deans and Admissions Officers of the Schools and Colleges of Optometry, November, 1985.
4. Association of Schools and Colleges of Optometry, Applicant Status Report, July, 1986.
5. Davidson DW. Report presented at the 1985 Planning and Implementation Meeting of the American Optometric Association, unpublished.
6. Peters HB. The Declining Applicant Pool, A Presentation to the AOA House of Delegates at its Annual Meeting, Las Vegas, Nevada, 1981.
7. Fourth Report to the President and Congress on the Status of Health Personnel in the United States, DHHS Publication No. HRS-P-OD 84-4, May, 1984.
8. Report of the AOA Task Force on Optometric Manpower, American Optometric Association, March, 1982.
9. Ibid.
10. Fifth Report to the President and Congress on the Status of Health Personnel in the United States, DHHS Publication No. HRS-POD-86-1, March, 1986.
11. Report of the AOA Task Force on Optometric Manpower, American Optometric Association, March, 1982.
12. National Plan for New Academic Facilities and Programs for Optometric Education, approved by the American Optometric Association, 1985.
13. Fifth Report to the President and Congress on the Status of Health Personnel in the United States, DHHS Publication No. HRS-POD-86-1, March, 1986.
14. Association of Schools and Colleges of Optometry, Final Report of a Follow Up Survey of Optometry Graduates to Determine Practice Patterns, Technical Report pursuant to Contract No. HRA 232-81-0054, September 28, 1983.
15. Fifth Report to the President and Congress on the Status of Health Personnel in the United States, DHHS Publication No. HRS-POD-86-1, March, 1986.
16. Association of Schools and Colleges of Optometry, Educational and Indebtedness Data for Schools and Colleges of Optometry 1980-1986, Final Report Pursuant to Purchase Order HRSA 86-259 (P), October 9, 1986.

The Need to Decrease Enrollment

H. Barry Waldman, D.D.S., M.Ph.D., Ph.D.

Introduction

Planning generally means preparing for a larger and improved future. Most of you are trained to prepare grant proposals, budget requests and the like, for more personnel, more equipment, more facilities—an ever forward and enlarging effort.

But what if you were asked to reduce your personnel, your budgets, your facilities, all your resources, by more than 25 percent? What if you were told that your profession has been reasonably successful in accomplishing the theoretical goal of eliminating the need for itself, by preventing the disease that the profession treats? And to add to the dilemma,

- Personnel with less training can now perform (supposedly as well) many of the same procedures for far less money.

- Third party insurers are making every effort to curtail health costs at the expense of your profession's providers.

- The once preferred private practice arrangements are now being submerged by aggressive commercialization.

- Fewer young men and women are seeking entrance into your profession; those who do, present scaled down scholastic credentials from those that were offered just a few years ago.

- These are just a few of the events that are happening to the dental profession.

As a result of fluoridation procedures and other prevention programs, dental decay rates have decreased dramatically.

- Six states permit denturists (i.e. laboratory technicians) to provide removable dentures directly to the patient—in some cases without the involvement of a dentist.

- The state of Colorado now permits unsupervised professional practice by dental hygienists.

- Many practitioners and the official organs of the profession argue that there are just too many dentists.

- Third parties are telling dentists the same things they are telling the rest of the health professions regarding the need to control the costs while improving the comprehensiveness and quality of services.

Forbes magazine summarized the overall situation with the article, "What's good for America isn't necessarily good for the dentists."

As one might expect, these developments have had profound impact on dental education. For example, in the mid 1970s

- Almost 15,000 applicants applied to schools of dentistry. By 1985, there were 6,216 applicants (a 58% decrease).

- 6,301 students entered dental school. By 1985, there were 4,843 entering places in dental schools (a 23.1% decrease).

- There were 2.5 applicants per entering place. By 1985 there were fewer than 1.3 applicants per entering place.

- The mean grade point average of entering students was in excess of 3.20. Now it's barely 3.00 and the mean science grades are below a "B" average.

- There were 60 schools of dentistry accepting students. Since that time, two schools have closed; a number of other

institutions are reportedly experiencing problems.

To some degree, the problems faced by the dental profession in the 1980s are as much of its own making as those arising from external forces. The efforts made during the 1960s and 1970s by the federal government to increase the number of health professionals primarily addressed changing provider to patient ratios with limited attention to evolving systems for the delivery of services and the changing need and demand for care. Health care was viewed as a purchasable commodity and therefore subject to the same forces as any other marketed item. The perception of various agencies of the federal government was that inadequate numbers of providers would not only deprive the general community of necessary services, but also would increase the cost for services. The view followed that an increased number of providers would increase competition, thereby lowering costs. But these economic realities were not the immediate concern of the dental profession. The economy was robust and practitioner income was on the rise.

Start-up and construction grants, scholarships, formula and special project grants and just about any reasonable research proposal provided increased sources for school resources and encouragement for applicants. The number of dental schools increased from 47 in 1960 to 60 in the mid 1970s; the number of entering places increased from 3,600 to 6,300, and applicants increased from 6,100 to 15,000. The academic credentials of accepted students reached all time highs. Who cared if dental students may have been too qualified for the repetitive activities they were to perform during their careers.

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Their academic performance in college could compare favorably with any students—even premeds.

By the late 1970s, cluttered curriculum schedules included the traditional mandatory training programs for dental licensing examinations and practice, progressively indepth basic and social science materials and increasing amounts of the business courses that would satisfy most MBA aspirants. Naturally, the increasing numbers of more qualified students in entering classes could now absorb increasing quantities of information.

The heady days of the early and mid 1970s did not come suddenly to a dead end. The bubble never really burst suddenly; rather it fizzled to be reincarnated in an altered configuration.

Causes of the Developments

By the late 1970s and early 1980s, a series of events had come together which altered dramatically the practice of dentistry and dental education.

The Bates O'Steen Supreme Court ruling on advertising, as well as a series of Federal Trade Commission rulings, opened the practice of dentistry to the intense system of commercialization. It is practically impossible to describe the impact of such an event on a profession which had long prided itself in being the last bastion of the individualist. Being "one's own boss" was not just a credo of dental practice; it was a way of life.

Also, federal agencies recognized that sufficient numbers (and possibly too many) health professionals were being produced as a result of construction and various capitation and assorted incentive programs. Even more disturbing to federal planners was the reality that increasing numbers of health providers did not produce the desired effects of competition and reductions in health care expenditures. Health care costs continued to rise at rates far in excess of the general rate of inflation. Somehow, health service expenditures didn't respond to the usual marketplace competitive functions. Health care was not just another hamburger, piece of clothing or automobile.

Expenditures continued to spiral upward as increasing numbers of practitioners were produced by professional schools and practitioners sought their economic share of the increasing expenditures for health services.

And then came the recession! Since 1950, the United States has experienced five periods of economic recession (based on decreases in the constant dollar gross national product). During each of the first four periods (during the

early and late 1950s, and the early and mid 1970s) constant dollar dental expenditures increased. However, during the last recession between 1979 and 1981, aggregate constant dollar national expenditures and constant dollar expenditures per active private dentist decreased.

For the most part, dental care tends to be elective, at least the more costly replacement services. Elimination of pain and suffering tends to be relatively inexpensive. An extraction, a scaling or a standard restoration will provide the necessary relief from pain at a price within the means of most individuals. Generally, it is the greater cost of replacements that places dental services beyond the reach of many individuals. Unfortunately, two thirds of the costs for dental services are paid directly by individuals; the government pays for less than 2 percent. Only recently has dental insurance covered approximately one third of costs. However, more than 100 million individuals in the United States still do not have any form of dental insurance. And so, when money becomes tight, as it did in the last recession, expenditures for dentistry decrease. In fact, dental expenditures are so directly related to the economy of an area, the telephone company for many years has used the changing number of dentists listed in its directories as an indicator of the evolving economic well-being of a community.

Things got so bad economically during the last recession, dental practitioners and the organizations of the profession called for the outright closure of schools of dentistry. Private dental practitioners, the traditional recruiters of the next generation of dentists, no longer looked upon young men and women as the future of the profession. They were future competitors! Dental educators were accused of being more concerned with their own fiefdoms and jobs than with the needs of dental profession and the general community. The often strained relations that exist between educators and practitioners reached new lows. The profession in general and dental educators in particular were in trouble!

Then things began to change; first and foremost, the economy rebounded. While not every area of the country has experienced an equal resurgence, in the last two years, the percent increases in national dental expenditures have surpassed all other sectors of health services.

Second, unlike other doctoral level health professions, dentistry has decreased drastically entering places in the schools of training. According to a re-

cent Report to the President and Congress on the Status of Health Personnel in the United States, despite an anticipated oversupply in many of the health fields by the years 1990 and 2000, it is projected that the number of graduates in almost all of the health fields will continue to increase beyond the levels of the early 1980s.

Indeed, there are now reports which indicate that the continued reduction of entering dental classes has reached such a point that there could be a shortage of practitioners to meet population dental needs in the future.

The Current Situation

Young men and women have been convinced that there is a questionable future in dentistry. As a result, there are not enough applicants and the credentials of those applying do not meet expectations that were developed during the mid 1970s. Also, continuing pressure is being exerted on dental schools to alter dramatically their educational programs to meet the changing demand for dental services and the marketing of services.

Related issues also impact on dental education. As a result of the decrease in the number of available teaching positions in dental schools (often these positions are filled by senior tenured faculty members), there has been a marked decrease in the number of younger faculty members. Will this lead to further resistance to change? How much will be lost in the educational experience of the next series of entering dental school classes as a result of decreased contact with younger practitioner-educators?

What Hinders Change?

If we are to keep pace with developments, the need is for change. Yet, there are few ideas which engender as much fear as, "change." Mark Twain allegedly said that "people would sooner die than change, and most do." Consider some of the reasons for this resistance to change, particularly in education.

1. Fear of losing control—once we have learned to do something, there is a strong incentive to keep it familiar, comfortable and secure.

2. Misunderstandings—a lack, or fear of new information. Although many educators and practitioners have made concerted efforts to maintain currency with new research findings and events, inevitably some will fall behind.

3. Lack of skill—many individuals do not have or think they do not have skill and ability to move into a new and demanding environment. The advent of the world of computers is a case in

point. We even have added a new phrase to our jargon to overcome our fears, "user-friendly."

4. Different perceptions about what needs to be done—there can be honest disagreement regarding the appropriate direction for change. Should education programs continue to emphasize the tried and proven skills for practice but with necessary accommodations, or should we consider reevaluating all components with the thought that events demand dramatic innovations.

5. Lack of motivation—how does one stimulate "older" and tenured faculty members.

6. Overloading—when the pace of change becomes too excessive, individuals simply may give up, not in the sense of resigning from their positions, but rather resisting any and all changes. Even when a large number of appropriate changes are required, the approach may need to be incremental and sequential, rather than simultaneous.

7. Lack of resources—emphasis tends to be to allocate scarce resources to those who do creative research, not to those attempting educational innovation. With substantial curtailment of funds, the traditional competition for scarce resources takes on new meaning. Often schools must deal with university and state government administrations which allocate funds on a student count basis. Thus, faculty and general resources would reflect decreasing student enrollments despite requirements for continued resources for components of the education program which must be continued despite decreases in student body sizes.

8. Bureaucratic struggle—educators frequently resist bureaucratic review and evaluation. Regarding curriculum review by internal bodies within the school, the motto long has been, "beware how you review my program, your program is next."

During the past few years, even national dental education accreditation bodies have had to tread carefully as universities and state governments have sought ways to curtail or eliminate dental education programs in an effort to contain rising costs.

9. Turf, ownership and power—the concern that loss of curricular hours may mean loss of power or funding for a department could well impede curricular reform. More battles probably have occurred at faculty meetings over the redistribution of clock hours than over any other problem except parking.

10. Trying to alter values and in doing so, striking directly at one's ego. Loss of control, loss of motivation and loss of power are difficult enough, but accepting changes which undermine

one's pride and substance may be too much for most educators to accept.

Changing Attitudes and Attracting New Applicants

It is only right for a profession to aspire to the highest possible ideals. But increasing requirements and credentials for admission could reflect a subconscious need to prove that one's profession is not second class—rather, it is on a par with other professions.

Whether we accept the argument that increased credentials "improve the breed" or the argument that it's a "buyer's market" and we can choose whomever we wish, the outcome is the same—highly educated aspirants who often possess very particular types of educational experiences. But could these applicants be *too educated or qualified* for a life-long career in the practice of the particular profession? Could it be that in a human effort to improve, we effect an "ersatz Peter Principle," i.e. instead of promoting to incompetence, we educated unnecessarily?

Suddenly, it's not a buyer's market. There are few applicants and many private dental schools are unable to fill entering classes with students that meet the qualifications that were readily attained just a few years ago. Admissions committees now must actively court applicants who never would have been considered for admission in the recent past.

Even more challenging are the results of a recent study on the performance of students enrolled in dental schools. Since 1980, there has been a significant decline in the credentials of accepted first year students; there has, however, been no consistent pattern of decline in the performance of these students in dental school. It would seem that because this national study was carried out over a five year period (a relatively short period of time) that the consistency in academic performance was not a function of "grade inflation" resulting from a change in the instructors in the schools of dentistry.

Yes, it's good news that we have maintained student performance in schools of dentistry, but what of all the efforts to increase credentials at the time of admission? Does it mean that just about anybody can become a dentist? And how does it impact on future recruitment efforts? And most importantly, how does it reflect on the profession?

Fully answering these questions would be beyond the scope of this presentation. But, their existence must be acknowledged as one reviews the efforts being made by the profession to at-

tract increased numbers of "qualified" applicants.

However, it must be noted that the perceptions regarding the decrease in the calibre of applicants is a reflection of a review of the situation since the mid 1970s. Data since this period demonstrate the decreases in the number of applicants to dental schools and the college academic performance of accepted students. Yet, a long term historic review of the admission process to schools of dentistry presents a general picture of a return to a more realistic *state of stability* which existed prior to the establishment of massive federal incentive programs.

For example, between the late 1950s and 1970, the predental grade point averages and dental admission test scores of accepted dental students were lower than the comparable credentials of accepted students in the mid 1970s and beyond. Could it be that this return to a more realistic state of academic and admissions equilibrium exists, not just for dental schools, but for other health professions?

In any event, the American Dental Association and the American Association of Dental Schools have joined together in a program to create an accurate and positive image of dentistry as a career and to attract qualified students. The first phase of this new effort, titled "SELECT," was to conduct career choice surveys to correct inaccurate perceptions of dentistry and to emphasize unrecognized positive aspects of the profession.

The second step of the program is the development of a directory of dentists who would be willing to devote time, in or out of their practices, to advise men and women considering a career in the dental profession. In addition, there will be development of material (including brochures, folders, packets, audio-visual tape cassettes) for distribution to high school and college advisors.

The program is not designed to increase dental school enrollment, but rather to interest highly qualified students to apply. The intent of the effort is to stimulate private practitioners to once again adopt their traditional role recruiting the next generation of practitioners. The emphasis is that the economics of dentistry has changed. In addition, the program emphasizes that the young men and women currently being attracted to the profession would be establishing their careers well into the 1990s and beyond. (It should be noted that women now constitute almost 30% of entering dental school classes—a dramatic change from the one or two women that were in each dental school class in years past.)

In addition, changing and increasing dental care use patterns are emphasized. For example, the development of programs for adult orthodontics can be used to demonstrate the flexibility available in response to the evolving relationship which exists between pedodontists (specialists in dental services for children) and orthodontists. As younger patients increasingly show decreased incidence of dental disease, pedodontists have extended their area of service to include orthodontic treatment for teenagers. In turn, orthodontists have responded successfully by encouraging (often by advertisement in the public media) the adult population to obtain this long neglected functional and esthetic service. No doubt, changing societal attitudes regarding prevention and concerns of health have added to the success of adult orthodontic programs.

Finally, potential students are reminded that the growing use of dental services by the increasing population of older patients portends favorably for the economics of dentistry.

Changing Curriculums

Now that a program has been established to attract more qualified applicants and maybe even mollify our egos, the problem is to bring about the necessary changes in the course of studies at schools of dentistry to better prepare students for the changing realities of practice.

The complexity of this effort has been recognized by the Pew Memorial Trust in its establishment of an \$8.7 million, five year National Dental Education Program to assist dental schools in making strategic decisions in adjusting to changes occurring in dental health care. In 1985, 21 dental schools received up to \$100,000 each to assist them in incorporating planning mechanisms into their management structure.

In addition to the project grant, the program will sponsor management/training seminars for faculty and administrative leaders within the schools.

These activities represent the first of two planning phases of the program. In the second phase, five to seven selected schools will receive up to \$1 million each to implement ideas and innovations that emerge from the first phase of the project.

The infusion of large sums of money does not necessarily assure acceptance of dramatic changes in programs. Nevertheless, it does establish a general environment for change which may be difficult to resist. Dissenters may be brought along with the flow of events and desired and necessary changes may be brought about.

Retrenchment of Faculty

Retrenchment occurs when it happens to the other person. It's unemployment when it happens to us. With a reduction of more than one quarter of entering places in dental schools, the closure of two schools and the possible combining of programs at some institutions, it's obvious that there have been and there are going to be marked reductions in the number of needed dental educators.

The reality is that many senior members of the faculty will remain as a result of long term tenure decisions. Decreases in faculty sizes have occurred primarily by attrition or among faculty members who are employed (or volunteer) as part-time clinic supervisors. In addition, faculty members are being required to generate an increased percentage of their incomes through a variety of faculty sponsored clinical practice arrangements.

While support for research efforts has become increasingly more restricted (primarily government sponsored programs), ties with private research industrial establishments have increased greatly basic and clinical research programs at schools of dentistry. Many of the basic science faculty and staff members who would have been forced to leave as a result of the marked downturn in enrollment have been retained as a result of these community private enterprise—university relationships.

In the area of clinic sciences, major changes in program direction and emphasis have permitted schools to retain needed faculty and staff members. In many instances, programs have been developed to provide necessary educational experiences for students to service populations that traditionally have received minimal dental care. These groups include the burgeoning geriatric population and the physically and mentally handicapped patient as well as AIDS and hepatitis compromised patients.

While the care of some of these groups will require special service environments, the emphasis in the education program should be on the ability and need for the general practitioner to provide necessary services. The difficulty evolves concerning the ability to motivate young men and women to care for these non-traditional patients.

Of these newer programs, caring for the elderly is probably the *safest* but not necessarily the easiest subject to present to young students. The need to deal with the complex psychological and physiological problems of service requirements for the elderly, combined with a need to transform the traditional stereotyped "little old lady" image of all

the elderly, often is beyond the interest of many students. But this barrier can be overcome by stressing the financial benefits to be gained from caring for this population group.

While such a discussion may carry with it the overtones of avarice or the inclination to mercenary actions, the realities are that the practitioner must achieve reasonable financial returns if he/she is to exist to provide health services to particular population groups.

The need to exist in the changing economics of the health delivery are stressed also in the wide range of practice development courses that are presented throughout the dental curriculum. The services of lawyers, accountants, public relations experts and industrial psychologists are but some of the new additions to the faculties.

In addition, a series of programs has been established to familiarize students with a working relationship with expanded duty auxiliaries and independent providers. Often there is a reluctance to present this material in the school environment because of the view that such efforts will serve to encourage further disintegration of the practice of dentistry.

But each of these programs (which incidentally, have served to maintain faculty and staff positions) have sought to prepare the student for the world of health services delivery that will exist in **THEIR** career lifetime—not necessarily during the career of their instructors. □

References

1. Abrahams I. *Jewish Life in the Middle Ages*. Philadelphia, The Jewish Publication Society of America, 1911.
2. Annual Report on Dental Education, 1985/86. Chicago, American Dental Association, 1986.
3. Applicant Analysis, 1985 Entering Class. Washington, D.C., American Association of Dental Schools, 1986.
4. Bodden Jr WR. Recruit highly qualified students. *Journal American College of Dentists*, 1986 Spring; 53:20-21.
5. Green R. What's good for America isn't necessarily good for dentists. *Forbes*, August 13, 1984.
6. Hershey HG. The impediments to curricular change. *Journal of Dental Education*, 1986 February; 50:102-106.
7. Kramer GA and DeMarais DR. Trends in academic qualifications and performance of dental students. *Journal of Dental Education*, 1986 April; 50:213-220.
8. Levit KR et al. National health expenditures, 1984. *Health Care Financing Review*, 1985 Fall; 7:1-35.
9. Ritchie JB. Management strategies for curriculum change. *Journal of Dental Education*, 1986 February; 50:97-101.
10. Waldman HB. Schools are returning to normal—an historic perspective. *Journal of the American College of Dentists*, 1983 Spring; 50:17-23.

The Current State of Planning Activities at Schools and Colleges of Optometry

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Introduction

Planning is not new. It is as old as civilization itself. The ancient Greeks, the Romans, the Chinese and the Incas of Peru planned. Throughout history planning was used in the creation of great cities as well as in social, political and economic development. Planning in higher education, particularly as it relates to management and strategic decision making, is a recent phenomenon. Colleges and universities really didn't get serious about planning until the 1970s.

David Ewing in his book, *Practice of Planning*,¹ utilizes the example of football to explain the need for planning:

"In football, a key step in the game is taken before the whistle is ever blown. It comes when the coaches review the game films of the coming opponent and the condition of their own team, and talk with the players about the strategy for the forthcoming contest. What kind of game should they expect? How should they try to play it?"

While liberal arts colleges and large universities need to know about and adapt to future change, schools which have only one major curriculum (e.g. schools of optometry) have a vital stake in knowing the future and making relatively quick institutional and academic decisions in order to survive it. Not only are schools and colleges of optometry affected by the same demographic factors that affect colleges and universities in general, they are also affected by

changes sweeping the profession of optometry. Consequently, the nature and degree of planning that occurs within a school or college of optometry can determine how well that institution is equipped to meet and cope with change.

What is the status of planning at schools and colleges of optometry? While the schools' organization, ASCO, and the profession-at-large, through the AOA, have engaged in planning activities, there has been no published description of institution-wide planning at any school or college of optometry. During the summer of 1986, a survey of the chief administrative officers of each optometry school in the United States was conducted to determine the status of formal and informal planning activity at each institution.

Method

A questionnaire consisting of fourteen items was sent to the chief administrative officers of each of the U.S. schools of optometry. A cover letter explaining the purpose of the survey and inviting open-ended comments was included along with a postage paid return envelope. In addition, a page which defined the terms planning, long range planning, strategic planning and incremental planning was attached.

Responses were tabulated as a total for all respondents as well as separately for public and private institutions. This was somewhat arbitrary in that two university related schools, Pacific and Inter-American, were grouped with the private schools. Multiple responses were permitted and were tabulated.

Limited analysis by cross-tabulation was done for selected items which were

hypothesized to have a dependent relationship.

Open-ended responses are reported verbatim.

Results

All sixteen U.S. schools and colleges of optometry responded to the questionnaire. Eleven of the sixteen schools indicated that a well-defined process of planning for the future was in place, three did not have such a process in place and two schools did not answer (see Figure 1). The public and private schools responded in about the same proportion. Three chief administrative officers used the comment section to indicate that a new planning process or a significant change in the current process was imminent. Their comments:

"We will not answer the rest of the questionnaire as we are only planning to plan."

"Changes in the procedure will no doubt occur when a new dean is hired."

"As new president of the College I am committed to planning as a means to developing a unified administration and strategic planning to position our institution to meet the needs of our College in the 21st century."

Seven of the nine public schools were participating in a campus-wide or university-wide planning activity. Twelve schools reported that planning occurs for the optometry school as an entity. This was true for all private schools but only for five of the nine public schools. Three schools (all public) carry out planning at the department or unit level. One dean described the planning activity at his institution.

"We do our planning in subsets. The dean does some, the curriculum com-

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Table I
QUESTIONNAIRE TO DETERMINE STATUS OF PLANNING

1. A WELL-DEFINED PLANNING PROCEDURE?

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
YES	6	5	11
NO	1	2	3

2. HOW IS PLANNING CARRIED OUT?

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Part of campus-wide or university-wide planning activity	7	0	7
For the optometry school as an entity	5	7	12
Carried out at the department or unit level within the optometry school	3	0	3

3. PLANNING ACTIVITY ENCOMPASSES THE FOLLOWING:

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Physical space and facilities	8	6	14
Academic and/or clinical programs	8	7	15
Recruitment, admissions and marketing	6	7	13
Faculty development	7	6	13
Student development	5	6	11

4. WHO PARTICIPATES IN THE PLANNING PROCESS?

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Administration	8	7	15
Faculty	8	7	15
Students	6	6	12
Trustees	1	5	6
Alumni	7	4	11

5. TYPE OF PLANNING?

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Long-range	6	2	8
Incremental	5	1	6
Strategic	5	7	12

(continued)

mittee does some and the campus requires some. The result is rational but not ideal."

Five areas of planning activities were identified in the survey and the majority of schools indicated that their planning included all of the areas. The highest response (15) was for academic and clinical program planning; the lowest for student development (11).

Administration and faculty are planning participants in fifteen of the schools. A majority of schools include alumni and students in the process while only six schools involve their trustees or board members. Five of these six are private schools.

While most schools reported that strategic planning was the type of planning carried out, ten of the sixteen schools reported at least two types of planning occurring simultaneously. The private schools all reported using strategic planning while only five of the nine public schools reported using this process. Incremental and long-range planning was more often employed by public schools.

Twelve schools reported that planning was linked to budgeting. In four schools, it was not. One school responded both "yes" and "no" on this item.

Nine of fourteen respondents indicated that planning began at their institution less than ten years ago and for four of the nine, the process began less than two years ago. Public schools seem to have been at it longer than private schools.

Informal planning is prevalent among administrators and faculty at most schools while only three chief administrative officers reported student involvement (all from public institutions) and only one reported board involvement in this activity.

Surprisingly, only ten respondents reported that a declining number of applicants has been a problem within the last ten years. Only seven schools report a decline in the academic quality of students. Severe budget cutbacks have been a problem at eight schools but only three have had to deal with retrenchment of faculty. One chief administrative officer offered this comment:

"Although the entering student grade point average is about the same, it is generally believed that today's student has more difficulty with the curriculum."

In most cases, schools report that plans are currently in place to deal with each of the problems they experienced. The survey did not ask, and perhaps should have, whether or not such plans

were in place when the problem occurred.

Chief administrators at six schools report that information pertinent to management decisions is always available to them. An additional seven report that information is usually available while one chief administrator says it is rarely available.

Planning consultants have been used by six schools. There is essentially no difference between public or private schools in the use of consultants for planning. One private school president reported using different consultants at different times:

"Our initial planning effort began in the late '70s. At the outset, it was long range (five year) planning. Our consultant was associated with the Johns Hopkins Center for University Planning. The current planning phase is strategic planning. Our consultant is a former vice president of Sperry Corporation."

Institutional research is a formalized effort at twelve institutions. This may relate to the response by chief administrators that, with one exception, management information is always or usually available.

Only seven of the chief administrative officers indicated an interest in learning more about planning activities at other optometry schools. Even lesser numbers were interested in the process as it occurs in other settings.

Cross-tabulation of questions 11 and 13 indicates an interesting difference between public and private institutions. All eight public school chief administrators responding to item 11 indicated that information pertinent to management decisions was always or usually available to them. In seven of those eight schools a formal institutional research effort existed. While six of the seven private school chief administrators indicated that information pertinent to management decisions was always or usually available, only three of the private schools had a formalized institutional research effort.

A cross-tabulation was performed between question 6, which asks whether or not planning and budgeting are linked, and the part of question 9 that inquires about whether or not the school has experienced severe budget cutbacks in the past ten years. Three of the eight institutions which reported that they did experience severe budget cutbacks also indicated that planning and budgeting processes are not linked. Of the five public institutions that experienced cutbacks, only one did not link planning and budgeting. Of the three private schools that reported severe

Table 1 (con't)

6. PLANNING PROCESS LINKED TO BUDGETING PROCESS?

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Yes	*7	5	12
No	*2	2	4

*One school answered both yes and no

7. WHEN DID PLANNING PROCESS BEGIN?

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Within the past 2 years	1	3	4
3 to 5 years ago	1	2	3
6 to 10 years ago	2	0	2
More than 10 years ago	3	2	5

8. INFORMAL PLANNING TAKES PLACE:

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Within the administrative structure	8	7	15
At faculty level	8	4	12
Within the budget process	5	7	12
Students	3	0	3
Board of Trustees	0	1	1

9. PROBLEMS WITHIN THE LAST TEN YEARS?

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Declining number of applicants	5	5	10
Decline in academic quality of students	4	3	7
Severe budget cutbacks	5	3	8
Retrenchment of faculty	2	1	3

10. PLAN IN PLACE TO DEAL WITH:

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Declining number of applicants	5	4	9
Decline in academic quality of students	3	2	5
Severe budget cutbacks	6	2	8
Retrenchment of faculty	2	0	2

(continued)

Table 1 (con't)

11. IS INFORMATION PERTINENT TO MANAGEMENT DECISIONS READILY AVAILABLE TO YOU?

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Always	3	3	6
Usually	4	3	7
Rarely	0	1	1

12. HAVE YOU EVER UTILIZED A PLANNING CONSULTANT?

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Yes	3	3	6
No	5	4	9

13. DOES YOUR SCHOOL (OR PARENT CAMPUS) HAVE A FORMALIZED INSTITUTIONAL RESEARCH EFFORT?

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Yes	7	5	12
No	1	2	3

14. I WOULD BE INTERESTED IN LEARNING MORE ABOUT:

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
How to conduct a planning process	2	0	2
Planning at other optometry schools	2	5	7
Planning in higher education	1	1	2
Planning in schools of other professions	3	3	6

**Table II
CROSS-TABULATION BETWEEN QUESTIONS 11 AND 13
INFORMATION AVAILABILITY / EXISTENCE OF
INST. RESEARCH EFFORT**

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Information always or usually available	8	6	14
Existence of a formalized institutional research effort	7	3	10
Percentage of schools where management information appears to be supported by institutional research	88%	50%	71%

budget cutbacks, two did not link the planning and budgeting processes.

Discussion

Formal planning in schools of optometry is a relatively recent phenomenon. In general, the public institutions have been involved in planning longer than have the private schools but the private schools are all involved in strategic planning while only about half of the public schools currently use this type of planning. This is understandable in light of the fact that private school budgets usually are directly dependent upon income. It is vital for a private school to be aware of a changing environment and to adapt quickly to it. This is the essence of strategic planning.

A significantly smaller percentage of private schools has ongoing institutional research efforts than do public schools. Regardless, six of the seven chief administrators representing the private schools feel that adequate management information is always or usually available to them. This apparent inconsistency suggests either that institutional data collection and analysis does go on at private schools, albeit under a different label, or that the chief administrators of these schools have sources of information unrelated to formal internal data collection.

While public institutions have generally been involved in planning longer than have private ones, the survey results suggest that this was largely due to involvement in overall university planning rather than planning specifically directed at the optometry school. The private schools, however, have adopted strategic planning in greater numbers than have the public schools.

Virtually all schools that reported experiencing a decline in quantity or quality of students, severe budget cuts or retrenchment of faculty also report involvement in one or another form of planning. It is not clear, however, from the survey whether or not the planning process was a reaction to the problem or a help in dealing with the problem.

In several instances, the comment section of the survey indicated that planning efforts were either started or renewed coincident with the appointment of a new dean or president. The degree to which a chief administrative officer is committed seems to have a direct effect on the degree to which others at the institution participate.

Formal planning processes at schools and colleges of optometry generally have broad involvement by all segments of the school community. In informal planning, however, the degree to which

Figure 1 SURVEY OF PLANNING ACTIVITIES SCHOOLS AND COLLEGES OF OPTOMETRY

For each question, please check *all* responses that apply. If question does not apply to your situation, leave blank.

- | | | |
|--|---|--|
| <p>1. At the present time, my school uses a well-defined procedure to plan for its future.
 <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>2. The regular formalized planning activity (see last page for definition) is carried out as:
 <input type="checkbox"/> part of a university-wide or campus-wide planning activity
 <input type="checkbox"/> a formalized process for the school of optometry as a separate entity
 <input type="checkbox"/> a formalized process carried out at the departmental or unit level within the school of optometry</p> <p>3. The planning activity encompasses the following:
 <input type="checkbox"/> physical space and facilities
 <input type="checkbox"/> academic and/or clinical programs
 <input type="checkbox"/> recruitment, admissions and marketing
 <input type="checkbox"/> faculty development
 <input type="checkbox"/> student development</p> <p>4. The following are participants in our planning process:
 <input type="checkbox"/> administration
 <input type="checkbox"/> faculty
 <input type="checkbox"/> students
 <input type="checkbox"/> trustees
 <input type="checkbox"/> alumni</p> | <p>5. The type of planning engaged in may be categorized as (see last page for definitions):
 <input type="checkbox"/> long-range planning
 <input type="checkbox"/> incremental planning
 <input type="checkbox"/> strategic planning
 <input type="checkbox"/> other _____</p> <p>6. The planning process is linked to the budget process.
 <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>7. Our formal planning process began in _____ (year)</p> <p>8. In addition to any formal planning process which may or may not be in place, informal planning takes place:
 <input type="checkbox"/> within the administrative structure
 <input type="checkbox"/> at the faculty level
 <input type="checkbox"/> within the budget process
 <input type="checkbox"/> other _____</p> <p>9. Within the past ten years, has your school experienced any of the following?
 <input type="checkbox"/> Declining number of applicants
 <input type="checkbox"/> Decline in academic quality of students
 <input type="checkbox"/> Severe budget cutbacks
 <input type="checkbox"/> Retrenchment of faculty</p> | <p>10. Does your school currently have a plan to deal with:
 <input type="checkbox"/> Declining number of applicants
 <input type="checkbox"/> Decline in academic quality of students
 <input type="checkbox"/> Severe budget cutbacks
 <input type="checkbox"/> Retrenchment of faculty</p> <p>11. Is information pertinent to management decisions readily available to you?
 <input type="checkbox"/> Always
 <input type="checkbox"/> Usually
 <input type="checkbox"/> Rarely
 <input type="checkbox"/> Never</p> <p>12. Whether or not you currently have a planning process in place, have you ever utilized a planning consultant?
 <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>13. Does your school (or parent campus) have a formalized institutional research effort?
 <input type="checkbox"/> Yes
 <input type="checkbox"/> No
 <input type="checkbox"/> Don't know</p> <p>14. I would be interested in learning more about:
 <input type="checkbox"/> how to conduct a planning process
 <input type="checkbox"/> the planning activity at other optometry schools
 <input type="checkbox"/> planning in higher education
 <input type="checkbox"/> planning in schools of other professions</p> |
|--|---|--|

Name of School _____

Name of person responding _____

Comments:

Figure 2 DEFINITIONS (for Questions 1 & 5)

Formalized Planning Activity—A planning process which is carried out according to a clearly defined procedure and on a regular basis. Examples include:

Long Range Planning. A process by which an institution develops a written plan for its growth and development over a finite period (usually five or more years) and attempts to follow that plan until the time comes for the next long-range plan to be developed.

Strategic Planning. A process by which an institution positions itself to either take advantage of or protect itself from external or internal factors in its environment in order to carry out its mission. Such a process is usually a continuous one.

Incremental Planning. A process by which an institution develops plans to deal with specific problems as they arise.

Table III
CROSS-TABULATION BETWEEN QUESTIONS 6 AND 9C
SEVERE BUDGET CUTBACKS / PLANNING AND
BUDGETING LINKED

	PUBLIC (N = 9)	PRIVATE (N = 7)	TOTAL (N = 16)
Severe Budget Cuts	5	3	8
Planning and Budgeting:			
Linked	4	1	5
Not linked	1	2	3
Percentage of schools with severe budget cutbacks where planning and budgeting are linked	80%	33%	63%

students, trustees and support staff are involved decreases markedly; notwithstanding that the process is common across all institutions.

While planning and budgeting are very different processes, when planning reaches the implementation stage a link to budgeting is vital. It is, therefore, difficult to understand why four schools (25% of the total) reported that the two processes were not linked. Three of these four also reported that they had experienced severe budget cutbacks. Planning in a period of diminished re-

sources may be more important than planning in a period of increasing budgetary support.

Conclusion

The other speakers have outlined some of the issues and made some predictions about what the future holds for optometric education. It is clear that we face serious problems as well as myriad opportunities. At issue is whether or not each institution has a process by which it can continuously monitor the world

around it, optometric and otherwise, and reconcile perceived changes with its own mission and goals.

While it would be foolhardy for an individual school not to utilize the results of national planning activity (such as occurs through ASCO, AOA or others), it would be a mistake to be limited to this type of planning alone. No two schools necessarily share the same mission and goals nor are they necessarily beset by the same constraints. Local or regional factors may be more or, at least, equally as important as national trends.

In summary, the future of optometric education and of the profession of optometry is dependent on innovative and visionary planning and skillful implementation of the changes indicated by the planning process. It is vital for each school to encourage its faculty, administration and students to keep in touch with what is happening and what is likely to happen that will affect optometric education. We must all be constant observers of our external and internal environments. In the words of the immortal Yogi Berra, "You can observe a lot just by watching." □

References

1. Ewing, David. *Practice of Planning*. McMillan, 1969.
2. Morrison, James L., Renfro, William L. and Boucher, Wayne I. *Futures Research and the Strategic Planning Process: Implications for Higher Education*. ASHE-ERIC Higher Education Research Reports, No. 9, 1984.

A Summary Response

Willard B. Bleything, O.D., M.S.

Demographics

While the national population continues to increase, such increase is not uniform as to age, race or geography. It is this lack of uniformity that is key to optometry's interest. Population shifts within the United States continue toward the South and Southwest. In-

creases are noted in California, Texas and Florida; decreases are noted in Indiana, Iowa, Michigan and Ohio. It is well to note that the impact on schools of optometry may well be that institutions in the West/Southwest will need to gear up for increased demands for graduates while those serving the Indiana, Iowa, Michigan and Ohio areas will need to gear down due to a decreased demand.

Some of this geographic shift is likely due to individuals living longer and migrating to sunbelt areas as part of retirement. This increases the absolute population numbers in these particular regions, which, in turn places a basic increased demand on all health care services. Of equal importance is the realization that this shifting population is the very group (as to age) that consumes the greatest amount of health

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care services, and this is particularly true for optometry. In other words, that population that is prone to move to the West/Southwest carries with it a higher than normal demand for optometric services. This will tend to further underscore the differences in demand for optometric graduates from a geographic orientation. In addition, there are curriculum implications relative to expertise in geriatrics.

The young adult population group (ages 21-26)—the prime group for student recruiting—continues on a long term decline and it is not expected to reverse itself until 1995. This fact has received national press within higher education circles with baccalaureate institutions employing high-powered marketing techniques to assure they attract "their" portion of this shrinking market. What has received less press is that enrollment in undergraduate programs has not necessarily taken the predicted parallel plunge. This seems largely due to a general rise in numbers of individuals pursuing college degrees and within this group are a larger number of women enrolled along with the non-traditional student.

More and more Asians and Hispanics now are going to college; however, enrollment of Blacks and Native Americans is on the decline. Such a fact will have a significant impact on the availability of various minority candidates in moving toward a career in optometry.

There seems fairly good agreement that we can expect a surplus of physicians in the United States in our future. Two factors are central to this forecast: a large influx of foreign medical graduates and an overbuilding of educational programs in medicine. The Carnegie Commission has stated that the last ten medical schools were unnecessary. The "trickle" effect of this surplus on optometry is worth examining. Within the surplus projected is ophthalmology, thus increasing the density of this discipline within the eye care field. This spreads the medical/surgical pie even thinner thus setting the stage for more ophthalmologists to move into the practice of limited-optometry.

Also there is risk that as optometry seeks to eliminate the legal prohibitions against the use of pharmaceuticals, primarily for anterior segment conditions, the family practitioner physician may be tempted to extend his/her practice to include anterior segment ocular conditions as a means of capturing this part of the primary care market. At this point optometry's argument of rural distribution falls rather flat.

And there are other effects. As long as there was a shortage of physician manpower in our nation there was relative ease in making the case for other health care disciplines. We enjoyed federal support. With the needs in medicine satisfied, the minority professions are left waving their hands for attention while Congress looks the other way. Withdrawal of federal funds has had an adverse effect upon tuitions charged. This, in turn, has created a recruiting barrier for the entering optometry class. And then there is the general tenor of things; if there is a surplus of physicians, there must be a surplus of other health care providers.

Now despite all these factors, and a decreasing applicant pool, the entering class size in optometry has remained essentially constant over the past few years. And, while there is speculation regarding the declining quality of applicants as measured by admissions test scores and entering GPAs the case has yet to be made that those entering study in optometry will not turn out to be very able practitioners. So, is there really a problem and if so, how would we recognize it? Certain measures have been proposed. It has been said that there is danger when:

(1) There are fewer than two optometrists/ophthalmologists in a given area;

(2) There are fewer than one applicant/year/100,000 population in a given area; and,

(3) There are fewer than 10 practicing optometrists/100,000 population in a given area.

As some parallel to the often quoted Peters Principle I propose this be called the "Peters Predicament." Currently 12 states suffer from the Peters Predicament and need immediate attention. The real challenge is getting the attention of these same states.

The demographics argue that current optometric manpower development is conservative, consistent with population growth and should be continued at the present level. Geographic distribution and minority mix still remain the issues, however.

Technology and Delivery Issues: Impact on Personnel Resources in Optometry

Manpower analysis is a function of various methods in estimating need for health services. Through the '70s the methodology that prevailed was to rely upon the judgment of a panel of experts. This methodology translated into practitioners to population ratios as the

key factor. In contrast, economists, in studying market forces, factor in demand for services as the key variable. And so this approach has been favored in the '80s as a dominant analytical tool in determining manpower needs. The claim is that such an approach is more empirical and is based upon the observations of the health services delivery market. Such an approach is not without major limitations too, and the normative issue as to what constitutes "necessary" service is the most glaring. In other words, the economist assumes that if the public does not demand certain services no need exists. I suspect this, "What they don't know won't hurt them," philosophy is more readily accepted by economists and health care insurers than by those who are on the supply and quality assurance side of the health care system. Even so the market-demand approach provides an interesting contrast to other projection systems.

Given this approach there is value in assessing unused operating capacity of current practitioners: this has been estimated at 20 to 50%. Also, such an approach includes changes in rate of demand as a function of various factors, such as age. Still another factor is the current transition to contract care delivery models. Such plans provide contrasting forces. In effect, patients are steered toward selected providers. In the end, this could merely shift who the patient sees, thus keeping the overall demand since it has been well established that insured populations will seek eye care at a higher rate than non-insured populations.

traditional contract provides staff for a much thinner ratio (higher population/provider ratio) the impact could be less overall care "demanded."

The balance for such a shift, however, is that if additional populations are now being covered under eye care insurance, this will cause an increase in demand since it has been well established the insured populations will seek eye care at a higher rate than non-insured populations.

Who provides the care is still another factor. The projection is made that the proportion of ophthalmologists to optometrists will increase. From such a projection the assumption is then made that a corresponding shift in market share will occur. If you put these factors together, then such a model projects a lesser demand for primary eye care in the future. Because the factors and assumptions used in this methodology are characteristically fuzzy, so are the projections. This would suggest that the

projection trends would, of necessity, need to be very bold before one could be anything more than timid in projecting noticeable change.

Scenario A: The Need to Increase or Maintain Enrollment at Current Levels

Multiple factors of change such as scope of practice, mode of practice, patient population shifts and advancing technology cloud the accuracy of any projection analysis. In addition, the orientation and motivation of the questioner can bend a manpower study toward various outcomes. The optometric educator is suspect of creating a market for educational services—the practitioner is suspect of gatekeeping to lessen the competition.

Optometry schools currently graduate about 1100/year; however over the years it has been as low as 319. A slight 1985 decline was noted after many years of gradual growth. Graduates/year are predicted to stay about even for the next few years.

Of greater concern is the number of applicants; with 1975 as peak there has been a steady decline through 1981. While it remains fairly steady since 1981, it could not be described as stable. What of the quality of today's entering class? Has the lesser pool caused standards to be lowered? Application test scores and GPA have declined; however years of pre-opt study have remained high if not increasing. Are students less well prepared?

Scenario B: The Need to Decrease Enrollment

While the bad news in this scenario utilizes the situation in dentistry for comparison the parallels in optometry are startlingly clear. Statements such as, less well trained personnel providing many of the same procedures for less money could describe the optician as well as the dentist/dental hygienist. Third party systems having cost containment as their agenda; the submersion of private practice by commercialism; and fewer applicants with weaker credentials—these sound familiar to the optometric educator as well as to the dental educator.

Ironically, various external forces—no real plan—have kept the growth of optometry schools under control. As a profession we have not overbuilt the manpower training system; this does not seem the case in medicine and den-

tistry. Despite the hard data on numbers graduated and numbers needed there are those in optometry who preach doom and gloom as to oversupply.

Responding to change and various pressure groups, optometry curriculums can also be described as becoming overpacked, requiring the absorption of increasing quantities of information. The curriculum tree continues to have new limbs added but there is reluctance to do effective pruning. Resistance to change has been a heavy deterrent to moving ahead. However, there exists another element in optometry equally important: the lack of consensus on the part of the profession as to what we wanted to change to. This created a disruptive environment for optometric educators. Fear of change has plagued optometry. There is no question about this and it has been true for both the practitioner and the educator. It is my sense that there is at present far more consensus within the profession as to the new profile of the profession than there was 8-10 years ago. This new consensus has been and will continue to be a positive change agent in itself.

There is worry among all the health professions that we can continue to attract sufficient candidates for entering classes. While it may serve our educational ego well to tout our selectivity quotients, the real bottom line is that we actually need only one applicant for every entering place, as long as that applicant is qualified. The real problem with the process is that we really have never come to grips with the eligibility criteria question. The OCAT/GPA package tends to appraise readiness for the curriculum but is not directed toward measures of competence in practice. Other processes do this.

In actuality the vast majority of those in practice today started their optometry education at a time when entrance standards were far less stringent than those in the '70s. Is there anyone prepared to argue that these individuals, due to lower entrance standards, pose a health hazard to the public? When the pile of applicants ran high we selected from the top of the pile. This is a natural and easy approach. Such an approach created an entering academic profile that would make any educator strut. With a smaller pile we still select from the top but the case has yet to be made we are *graduating* an individual who is less well qualified to practice optometry. We may very well be moving toward more middle ground on the entering educational credentials actually needed for practice.

Such an argument is not meant to promote any relaxing of our efforts in recruitment. The country needs an adequate, steady supply of optometrists and this requires an adequate steady supply of applicants. Optometric education carries the main responsibility for this taking place. And as has been done in dentistry the focus should be on the creation of interest among qualified students to select optometry as *their* chosen career route.

The Current State of Planning Activities at Schools and Colleges of Optometry

We have learned that change is inevitable, that change is difficult. We then turn to a major vehicle for change—the planning process. To a certain extent, the nature and degree of planning that occurs within a particular institution can determine how well that particular institution is equipped to meet the challenge of change. It is of interest to note that in the majority of optometric institutions planning began less than two years ago.

As to the educational environment, about two-thirds of the schools reported that a declining number of applicants has been a problem; slightly less than half reported a decline in academic quality of applicants; slightly more than half have had to deal with severe budget cutbacks; and, one-fifth of the group have found it necessary to retrench on the number of faculty.

While most institutions felt there was adequate institutional information for making planning decisions it is curious that the need for national comparative data was not identified. This has been given high priority in the ASCO planning process and until this resource becomes available local planning will always be compromised. This is not to say we are completely without information on the national scene. Enrollment and faculty data now circulated help tremendously on the home front. But we need more information such as comparable financial ratios.

And it seems appropriate to champion the cause for "strategic planning." Inherent to this methodology is an assessment of the external environment and the impact upon a particular educational program. This seems key to the changes occurring in optometry. Institutions should consider seriously these changes in their planning process or find themselves in an isolated vacuum.

Some Closing Reflections

I should like to introduce a different orientation for optometric education than that typically taken. First, let us consider optometric education as a particular form of "industry." This industry is equipped with a certain output capacity and it needs a constant source of quality raw materials. Questions have been raised as to the market for the products of this industry and to a great extent the consumption of the product drives the supply of raw material. Also, there are reservations in the general market since it is felt that the generation of more service providers introduces increased competition. Perhaps, then, this industry called "optometric education" ought to seek new markets. We are often bound by our own constraints.

State funded institutions often limit their market to a single state. They expand on this market when there are particular financial incentives provided, e.g., contract positions, educational consortiums, etc. or when they can't fill their class with in-state applicants. Our manpower forecasting systems have made the assumption that the only mission of this industry is to provide eye care practitioners to a certain geographic area and collectively that tends to be the United States. We would do well to consider other markets, such as the staggering manpower needs in developing countries. We have a resource that the greater world community sorely needs.

In addition, the general assumption is made that the only proper role for an

optometric graduate is in clinical practice. Such is not the case. Along with the need to look beyond traditional geographic boundaries, an expanded orientation is in order for our industry. The field of medicine recognizes areas such as forensic medicine, executive medicine, industrial medicine and public health roles; I would argue such variations are appropriate in optometry. What are the alternative endeavors that would be well served by those with an optometric education?

Viewing our industry through a 500 mm lens will bring world needs closer; viewing our industry through a 28 mm lens will bring more areas in view. Perhaps it is time we used more than the standard 55 mm lens as the standard for optometric education. □

DISCUSSION PERIOD Symposium on Optometric Manpower December 14, 1986

Dr. Anthony DiStefano: This question is directed to Dr. Barresi. Is the 70% market share estimate for optometry derived from manpower figures or from figures related to services provided?

Dr. Barry Barresi: The 70% estimate of market share is indeed on the basis of manpower estimates. If differences in optometric/ophthalmological practice mode and visit rates are taken into consideration, the market share would likely be closer to 50/50. It also is important to consider that, if the many and varied factors, such as changes in utilization, continue according to current trends, the pendulum would swing drastically in the opposite direction and we could end up with a ratio of 30/70, optometry/ophthalmology and a surplus of optometrists in the 30% to 40% range.

Dr. Henry B. Peters: Dr. Barresi's formulation assumes a "zero sum game"—that there are only so many vision services to be provided, divided between optometrists and ophthalmologists. It is my contention that there is a large

unmet need for vision services—nearly half those with vision problems are not receiving appropriate or timely services. The trick is to translate "need" into "effective demand." Programs such as Vision Service Plans, HMOs, Medicare and Medicaid have all significantly increased the number of vision services provided—the translation of need to effective demand through resource allocation.

I believe one of the major challenges to the profession of optometry is to develop mechanisms that will allow all persons who need their services to obtain them. Clearly such programs would have a positive effect on the need for optometric manpower that, potentially, would far exceed the current capacity of our schools and colleges. At the very least, this challenge should be considered in developing manpower strategy.

Dr. Barresi: I did not assume a "zero-sum game." On the contrary, the model showed that even with the stimulus of an aging population and expanded vision care coverage, a surplus of O.D.s is still imminent.

Dr. Morris Berman: This comment is directed to Dr. Davidson. Accreditation agencies, such as the Western Association of Schools and Colleges are now adopting a posture that profes-

sional schools be discouraged from offering bachelors degrees. They argue that these programs are not all goal directed towards a bachelors degree and that the course credits should be applied to one degree only, namely the professional degree. This casts doubt on the idea of whether or not early admission will be a good strategy to use as an alternative entry scheme into optometry school.

Dr. David W. Davidson: Optometry schools have been steadily moving away from granting the B.S. degree which has usually been given at the conclusion of the second year of optometry school. This change is taking place to avoid (1) the impression that the O.D. degree was only a two year post-baccalaureate program and, (2) the impression that most O.D. matriculants did not possess the bachelors degree.

In contrast, the B.S. degree program that I proposed as a recruitment tool is one in which the bachelors degree is awarded by the affiliated undergraduate institution and not by the optometry school. This sort of approach could provide an attractive inter-institutional recruitment program.

I would like to add that the issue of modest declines in mean GPAs within the applicant pool does not seem to be resulting in diminishing the talent and underlying quality of the enrolled student pool. □

ANNUAL INDEX

of the Journal of Optometric Education

Author Index

A

- AMOS, J.F.: Residency programs: the value added — Vol. 12, No. 2, p55
- ASCO
annual report, 1985-86 — Vol. 12, No. 1, p20
conference on patient management problems and clinical skills assessment — Vol. 12, No. 3, p81
sustaining member news — Vol. 12, No. 1, p27
sustaining member news — Vol. 12, No. 2, p39
sustaining member news — Vol. 12, No. 3, p71
sustaining member news — Vol. 12, No. 4, p102

B

- BALDWIN, W.R.: An expanded scope of practice—three trends converge — Vol. 12, No. 3, p36
- BARKER, F.M.: A symposium overview — Vol. 12, No. 2, p45
Undergraduate clinical training in eye disease management — Vol. 12, No. 2, p51
- BARRESI, B.J.: Technology and delivery issues — Vol. 12, No. 4, p109
- BARTLETT, J.D.: The didactic therapeutics curriculum — Vol. 12, No. 2, p49
- BLEYTHING, W.: Discussant — A symposium response — Vol. 12, No. 4, p130

C

- CARLSON, N. — see Heath, D.A.
- CARLSON, P.T. — see Potter, J.W.
- CASSER, L.C.: O.D./M.D. interactions — when, where, how and who — Vol. 12, No. 2, p53
- COHEN, K.: The minority recruitment program at the Pennsylvania College of Optometry — Vol. 12, No. 3, p72

- CUMMINGS, R.W.: Laboratory preparation in the ocular therapy curriculum — Vol. 12, No. 2, p48

D

- DAVIDSON, D.W.: The need to increase or maintain enrollment at current levels — Vol. 12, No. 4, p114
- DUNSKY, I.L.: An instructional design for the optometric teacher — Vol. 12, No. 3, p88

H

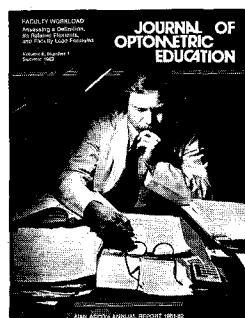
- HEATH, D.A., Carlson, N. and Kurtz, D.: Team teaching optometry — Vol. 12, No. 3, p76
- HEIBERGER, M.H.: The alumni survey: a tool in curriculum evaluation — Vol. 12, No. 1, p16
The current state of planning activities at schools and colleges of optometry — Vol. 12, No. 4, p125

K

- KURTZ, D. — see Heath, D.A.
- KOCH, D.J. and Newcomb, R.D.: Characteristics of optometric residencies in the veterans administration — Vol. 12, No. 1, p12

M

- MANNY, R.E. and Yeager, M.D.: Computer aided instruction—anomalies of binocular vision — Vol. 12, No. 3, p82
- MULLEN, C.F.: Optometry/medical school affiliations — Vol. 12, No. 2, p58



N

- NEWCOMB, R.D. — see Koch, D.J.

O

- O'ROURKE, P.C. — see Potter, J.W.

P

- PETERS, H.B.: Demographics, Vol. 12, No. 4, p104
- POORMAN, D.H.: Faculty development strategies — Vol. 12, No. 2, p56
- POTTER, J.W.: Face-to-face: an interview with Henry B. Peters — Vol. 12, No. 2, p40
The neglected and abused case report — Vol. 12, No. 1, p4
and the Editorial Review Board of the Journal of Optometric Education: Presenting a paper at the American Academy of Optometry — Vol. 12, No. 2, p60
and Carlson, P.T. and O'Rourke, P.C.: Publication guidelines for the Journal of Optometric Education — Vol. 12, No. 1, p28

S

- SMITH, L.W.: National Institutes of Health — 1887-1987, Vol. 12, No. 3, p68
- SOROKA, M.: The need for expanded scope of practice — Vol. 12, No. 2, p46

W

- WALDMAN, H.B.: The need to decrease enrollment — Vol. 12, No. 4, p121

Y

- YEAGER, M.D. — see Manny, R.E.

Subject Index

A

- American Academy of Optometry, presenting a scientific paper, Potter, J.W., Vol. 12, No. 2, p60

ASCO

annual report 1985-1986, Vol. 12, No. 1, p20
conference on patient management problems and clinical assessment, Vol. 12, No. 3, p81
publication guidelines for the *Journal of Optometric Education*, Potter, J.W., O'Rourke, P.C. and Carlson, P.T., Vol. 12, No. 1, p28
sustaining member section, Vol. 12, No. 1, p27; Vol. 12, No. 2, p39; Vol. 12, No. 3, p71; Vol. 12, No. 4, p102

C

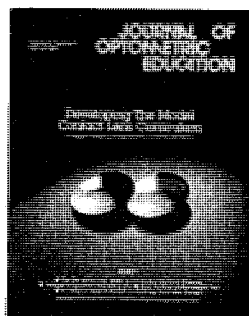
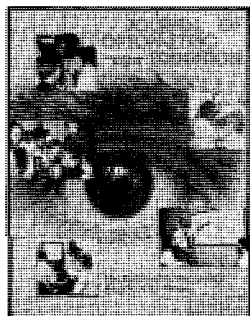
Computer aided instruction, Manny, R.E. and Yeager, M.D., Vol. 12, No. 3, p82
Curriculum
team teaching optometry, Heath, D.A., Carlson, N. and Kurtz, D., Vol. 12, No. 3, p76
Curriculum evaluation
alumni survey, Heiberger, M.H., Vol. 12, No. 1, p16

E

Editorials

An expanded scope of practice — three trends converge, Vol. 12, No. 2, p36
Are there too many or too few optometrists? Vol. 12, No. 4, p100
National Institutes of Health — 1887-1987, Vol. 12, No. 3, p68
The neglected and abused case report, Vol. 12, No. 1, p4

Eye Disease Treatment—a symposium
a symposium overview, Barker, F.M., Vol. 12, No. 2, p45
faculty development strategies, Poorman, D.H., Vol. 12, No. 2, p56
laboratory preparation in the ocular therapy curriculum, Cummings, R.W., Vol. 12, No. 2, p48
O.D./M.D. interactions — when, where, how and who, Casser, L.C., Vol. 12, No. 2, p53
optometry/medical school affiliations, Mullen, C.F., Vol. 12, No. 2, p58
residency programs; the value added,



Amos, J.F., Vol. 12, No. 2, p55
the need for expanded scope of practice, Soroka, M., Vol. 12, No. 2, p46
the didactic therapeutics curriculum, Bartlett, J.D., Vol. 12, No. 2, p49
undergraduate clinical training in eye disease management, Barker, F.M., Vol. 12, No. 2, p51

I

Interview, Henry Peters, Potter, J.W., Vol. 12, No. 2, p40

J

Journal of Optometric Education, publication guidelines, Potter, J.W., O'Rourke, P.C. and Carlson, P.T., Vol. 12, No. 1, p28

M

Manpower needs—a symposium
current state of planning activities at schools and colleges of optometry, Heiberger, M.H., Vol. 12, No. 4, p125
demographics, Peters, H.B., Vol. 12, No. 4, p104
discussant: a symposium response, Bleything, W., Vol. 12, No. 4, p130
technology and delivery issues, Barresi, Vol. 12, No. 4, p109
the need to increase or maintain enrollment at current levels, Davidson, D.W., Vol. 12, No. 4, p114
the need to decrease enrollment, Waldman, H.B., Vol. 12, No. 4, p121
Minority recruitment program, Cohen, K., Vol. 12, No. 3, p72

P

Pennsylvania College of Optometry, minority recruitment program, Cohen, K., Vol. 12, No. 3, p72

R

Residencies, optometric in the Veterans Administration, Koch, D.J. and Newcomb, R.D., Vol. 12, No. 1, p12

Resource Reviews

A handbook for clinical teachers, Vol. 12, No. 1, p6
Common eye diseases and their management, Vol. 12, No. 1, p7
Modern management of ocular diseases, Vol. 12, No. 1, p30
Ocular accommodation, convergence and fixation disparity, Vol. 12, No. 1, p30
Ophthalmic pathology—an atlas and textbook, Vol. 12, No. 3, p95
Pediatric ophthalmology, Vol. 12, No. 1, p30
Primary care of glaucoma, Vol. 12, No. 3, p95
Recognizing patterns of ocular childhood diseases, Vol. 12, No. 3, p95
The fundus periphery, Vol. 12, No. 3, p95

S

Survey

alumni, Heiberger, M.H., Vol. 12, No. 1, p16
Sustaining Members, Vol. 12, No. 1, p27; Vol. 12, No. 2, p39; Vol. 12, No. 3, p71; Vol. 12, No. 4, p102

T

Teaching

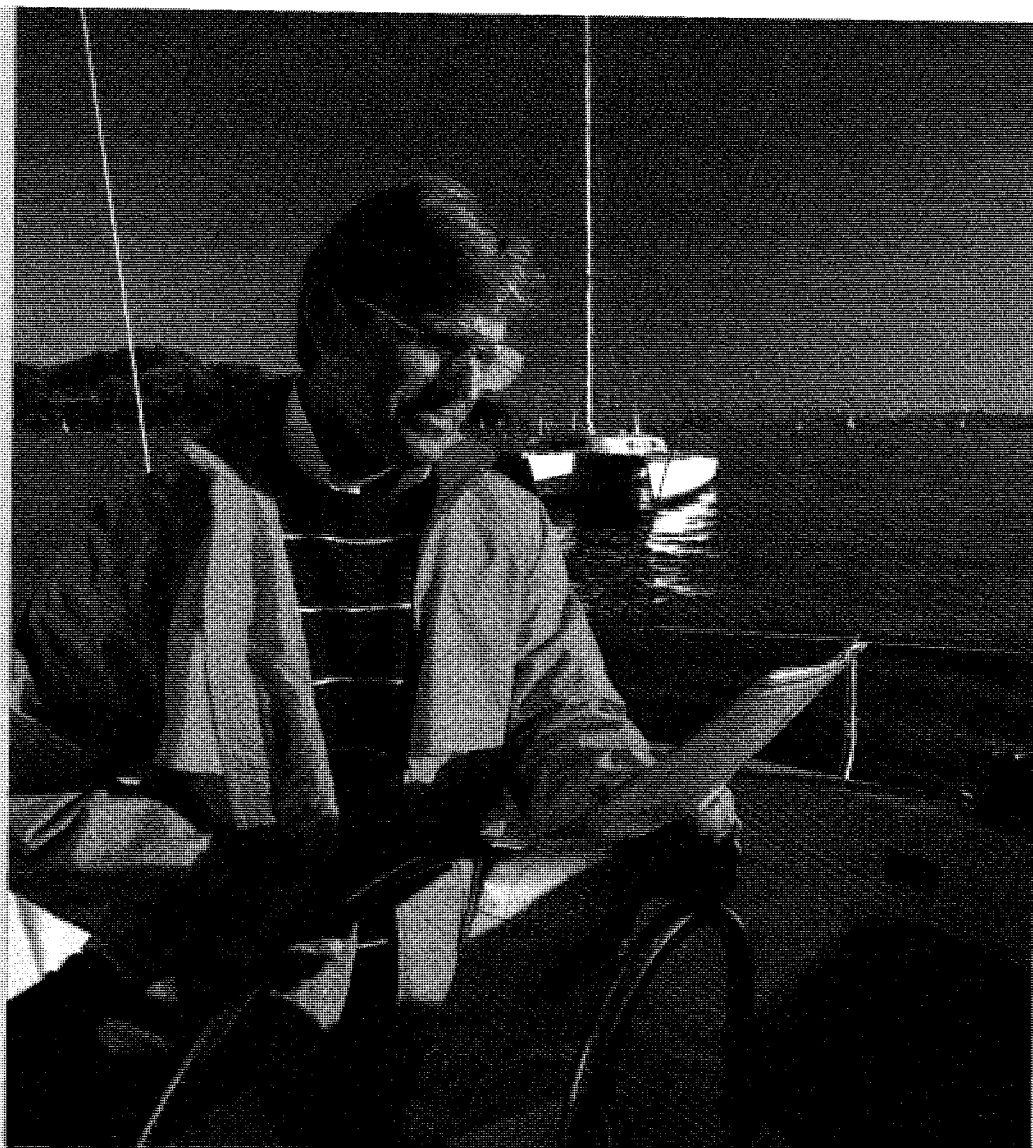
An instructional design for the optometric teacher, Dunskey, I.L., Vol. 12, No. 3, p88
Computer aided instruction, Manny, R.E. and Yeager, M.D., Vol. 12, No. 3, p82
Team teaching optometry, Heath, D.A., Carlson, N. and Kurtz, D., Vol. 12, No. 3, p76
Team teaching optometry, Heath, D.A., Carlson, N. and Kurtz, D., Vol. 12, No. 3, p76

V

Veterans Administration residencies
Koch, D.J. and Newcomb, R.D., Vol. 12, No. 1, p12



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