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A study of productivity in optometric practice: Its relation to manpower and planning

Sue Lowe
Pacific University

Christine L. Mayer
Pacific University

Robin Ragsdale
Pacific University

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A STUDY OF PRODUCTIVITY IN OPTOMETRIC PRACTICE: ITS RELATION TO MANPOWER PLANNING

by
Sue Lowe
Christine L. Mayer
Robin Ragsdale

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

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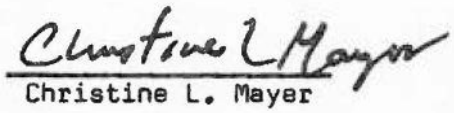
Sue Lowe



Christine L. Mayer

Robin Ragsdale

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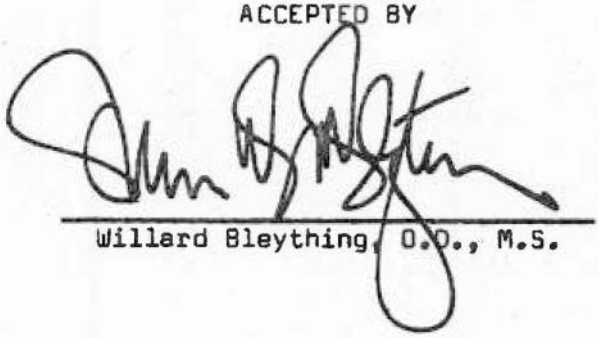

Willard Bleything, O.D., M.S.

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ABSTRACT

A survey of all optometrists in HEW Region X was implemented to assess a number of practice characteristics. Relationships between practice characteristics and productivity were demonstrated and changing trends in these characteristics were determined. Age, years in practice, utilization of supplementary personnel, and practice mode were found to bear a direct relationship to productivity. It was shown that manpower projections must take current trends in these characteristics into account in order to be valid.

INTRODUCTION

Recent interest in health manpower has generated several studies concerning optometric manpower needs, current and future.[1-9] These studies have virtually ignored the effect that productivity of optometrists may have on projected future needs for manpower. In essence, they assume that productivity will remain constant over their projection period. If this assumption is unjustified, their projections are invalid. There is evidence that productivity is related to specific practice characteristics,[10] and there is evidence that trends are developing with respect to these characteristics.[10,11,12] The result is that productivity trends are also developing; productivity is not a constant. Therefore, manpower projections that fail to factor-in productivity are invalid.

The purpose of this study is to determine which characteristics relate to productivity, and in what ways they relate. This information will provide a basis for other studies which can follow the trends in these characteristics and eventually apply this knowledge to manpower planning.

The Need for Manpower Planning

The health professions have a responsibility to provide services to all segments of the population, and with this goal in mind, manpower studies have concentrated on demography. Optometry, the youngest of the major health professions, is still defining itself and still changing; it has a particular need to assess manpower quantitatively and qualitatively. Optometry's assessment of manpower is just one aspect of the profession's total evaluation of its purpose and direction. The profession must be

accountable to the public it serves, for quality assurance, productivity, and cost effectiveness.

The federal government is also playing a substantial role in health manpower planning. In 1963 the Health Professions Educational Assistance Act authorized funds for construction or rehabilitation of facilities for the training of certain health professionals and to establish a student loan program. Schools and colleges of optometry became eligible for these funds in 1965 with the enactment of the Health Professions Assistance Amendments. In 1971 the Comprehensive Health Manpower Training Act extended the program of funding established in 1963 and broadened the loan forgiveness program for health professionals practicing in shortage areas.[13] These legislative efforts all centered around health manpower concerns.

Other legislation has dealt with the health professions in the broader terms of consumer issues such as cost effectiveness and quality control rather than specifically addressing itself to the manpower issue. For instance, in 1968 legislation established Comprehensive Health Planning Agencies which were to serve as "the mechanism to promote the most efficient and effective use of our health resources and the availability and accessibility of health services to all who need them."[14] Legislation in 1975 created Health System Agencies which were to produce cost containment plans for the health care fields. Currently, Professional Service Review Organizations are evaluating services within acute care hospitals and in the future will evaluate long term health care facilities and ambulatory care.[15] Eventually these types of evaluations and cost containment studies will surface in the area of manpower planning as researchers discover that the volume of services produced per professional is as significant to planning as is the number of professionals available.

Review of Manpower Research

Manpower studies basically fall into one of two categories: those dealing with current manpower supply and demand and those dealing with future manpower supply and demand. This study is more concerned with the second category, but a brief review of studies in the first category is appropriate because those studies provide a baseline of data for many of those reserachers who attempt to project future manpower supply and demand. The most comprehensive studies have been pursued by federal agencies. The U.S. Census Bureau[16] reported data from the 1970 Census that characterized the population of employed optometrists by number (17,219), sex (four percent female), ethnic background, patterns of residence, and number of practitioners per resident population (9.0 per 100,000).

More complete information has been compiled by the National Center for Health Statistics (NCHS)[10,17] through National Vision and Eye Care Manpower Surveys conducted in 1968 and 1969. They, too, characterized the population of optometrists by number (18,427 active), sex (three percent female), and ratio of practitioners to resident population (9.3 per 100,000). However, they also obtained detailed information concerning professional characteristics, type of employment, primary activities, and allocation of professional time. Mount and Hudson[17] reported much of this information in 1973 and Koch and Phillips[10] further analyzed the practice activities of optometrists and their supplementary personnel in a report published in 1974.

The most recent comprehensive survey of optometric manpower resources was carried out in 1973 by the Optometric Manpower Resources Project for the U.S. Department of Health, Education, and Welfare (DHEW).[18] This project reported 19,265 active optometrists of which three percent were female. The ratio of active optometrists to 100,000 resident population was 9.2.

In an attempt to "highlight changes and discern possible trends within the profession" comparisons with earlier data, particularly that from the HCHS 1968 study, were emphasized. Principal form of employment was examined in detail by the researchers. They specifically studied its relationship to geographic location, age, sex, racial/ethnic category, and school/college of graduation. Data from this survey was presented on a national basis, by state, and by DHEW region.

A number of reserachers have attempted to convert the type of data collected in these nationwide studies into projections of future manpower supply and demand.[1-8] Birchard and Elliott[3] in 1967 attempted to demonstrate that the then "current" ratio of optometrists to population (1:12,000) would be inadequate assuming a National Health Plan would be in force in the years projected (1970 and 1980). They gathered data by questionnaire from 267 optometrists nationwide concerning desirable frequencies of case studies, time to be allotted to case studies, case studies to be made per week, and weeks per year which should be spent in the office. Through complex manipulations of this data and Census Bureau data, they projected a need for 31,342 optometrists in 1980, a ratio of approximately one optometrist per 8,000 resident population.

Bernstein[1] in 1978 expanded on the report to the President and Congress on the status of health professional personnel in the U.S.[2] Basing his projections on the data gathered for the Optometric Manpower Resources Project[18] he projected a supply of from 26,100 to 26,700 optometrists in 1990 and compared these figures with the requirements projected by Birchard and Elliott[3] (31,342 in 1980), with the best state ratio of 1975 as a standard for all states (arriving at a manpower requirement of 34,000), and with a Bureau of Health Manpower projection based on a "general population-based utilization model" (26,700).

Other projections of manpower shortages include those by Cultice et al[4] who predicted increased demand for physicians, dentists, and allied health manpower in the event that a comprehensive national health insurance plan is implemented. Seitz[8] predicted a critical shortage of optometrists in the thirteen western states by 1990 based on current enrollment trends. A study by Lane et al[6] analyzed the supply of optometric manpower in Missouri and found that the supply of optometrists must increase by 9.1 percent in order to provide the services required by the state's population. Klein et al[5] have also projected future manpower supplies for the thirteen western states based on various enrollment assumptions. They predict future shortage in some states and adequate supplies in others.

The literature provides a number of studies projecting future optometry requirements and supplies. These projections have been based on a variety of assumptions, but virtually ignored has been the possible effects of changing productivity on manpower requirements.

The Issue of Productivity

Manpower studies have generally predicted future shortages of health care providers, including optometrists. Planners have proposed to alleviate these shortages by training more health professionals. More recently, productivity has surfaced as a factor in alternate solutions. "The premise that is gaining acceptance is that the shortage that should be taken into account is not of manpower but of services... The key to the problem, then, is to provide more services to more people more efficiently."[19] An example will easily demonstrate that productivity considerations are crucial to manpower planning. Consider an optometrist who performs six visual

analyses* daily, working four days a week and fifty weeks a year. He/she perform 1,200 analyses annually. A practitioner identical in all respects except that may work five days a week would perform 1,500 analyses a year; a 25 percent increase. As applied to manpower projections, a population of 20,000 optometrists working six days a week would be as productive as a group of 25,000 optometrists working five days weekly. This difference is significant when planning future manpower requirements. In a comprehensive review of health manpower research Butter[20] states, "Although output per manhour or productivity is difficult to measure, it is not invariant and must be taken into account in estimates of present and prospective health manpower requirements."

Of the studies discussed in the previous section, most made no mention of productivity and only some attempted to deal with the issue in its projection methodology. In the 1978 report to the President and Congress[2] productivity was mentioned as a significant factor in developing manpower forecasts, but no method had yet been found to incorporate it into the projection system. The report did identify the "basic measure of productivity" as the number of vision analyses performed annually by an optometrist working in patient care activities on a full-time basis. Lane et al[6] defined productivity as the "total number of annual diagnostic visual analyses performed by an optometrist." Another reference to productivity was made by

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*visual analyses: complete examination, diagnosis, prognosis, and treatment plan for any individual patient, as a measure of productivity. The number of visual analyses performed is limited because it neglects other visits such as contact lens progress exams and visual training sessions. However, it has been previously employed as a measure of productivity,[26] and it does begin to measure the basic element of optometric practice.

Klein et al[5] who stated, "The appropriate standard to be applied to the adequacy of service is dependent on the productivity of the active optometrists...", but they did not incorporate productivity into their projection methodology.

The most complete attempt to incorporate productivity into manpower projections was by Lane et al.[6] Their methodology was an adaptation of Arthur Young's Resource Gap Allocation Process. This process involves several distinct steps. The first step is the determination of the number of full-time equivalent practitioners by age and productivity rate (number of visual analyses performed) as well as data concerning the population and their utilization of optometric services. The second step involves data concerning the number of active, full-time equivalent ophthalmologists in direct patient care and the hours spent weekly by them in patient care activities which may be legally performed by an optometrist. With this information a "resources gap" was calculated by comparing the number of visits required by the population with the number of visits that could be provided by existing optometrists and para-optometric personnel. Also included in this calculation was the number of hours spent weekly in patient care by ophthalmologists. Productivity was incorporated into the calculations of available visits by grouping optometrists by both age and number of full-time equivalent para-optometric personnel and incorporating for each group a mean value of diagnostic visual analyses performed annually.

Lane et al,[6] however, is an exception among manpower studies. Exceptional, too, are the three other studies that assign a numerical value to the basic measure of productivity (annual number of vision analyses performed). These values have been assigned somewhat arbitrarily and are not actual measurements. Bernstein[1] reported a value of 1,350, Birchard

and Elliott[3] reported 1,372, and Evans[21] reported 2,000. More commonly researchers have not mentioned productivity but have approached the issue from other directions. For instance, most studies have identified their populations of practitioners as either full-time or part-time. Redmond and Allen[18] defined full-time as more than 30 hours per week. Mount and Hudson[17] identified full-time (35 or more hours per week), part-time (less than 35 hours per week), a long year (48-52 weeks per year), and a short year (1-47 weeks per year). These measures allowed the researchers to identify their populations in terms that could be applied to productivity. Medicine and dentistry have attempted to evaluate productivity with emphasis on the use of auxiliary personnel.[22,23] Nash et al[22] in 1977 expressed the concept of productivity in numerical form. They expressed productivity based on input to output ratios. The ratios included, among others, average number of patient visits per average dentist hours, average deflated gross billings per average dentist hours, and average deflated gross billings per number of patient visits. In general they found greater productivity in the group practices than in solo or partnership practices. Because dentistry utilized auxiliaries extensively, the profession has also studied the effects of auxiliary personnel utilization on practice efficiency and productivity.[24,25]

As has been recognized by a number of manpower researchers, productivity is a significant factor in manpower planning. However, in order to incorporate productivity into such planning, productivity itself must first be studied thoroughly.

The Relationship of Productivity to Practice Characteristics

A review of the literature turned up no study that was implemented specifically to study the relationship of productivity to practice charac-

teristics. Koch and Phillips,[10] however, did investigate the relationships between some practice characteristics and parameters that could be considered measures of productivity. Volume of patient-care activity was assessed by asking the respondent how many patient visits for all purposes he has during a typical week, and how many patients this actually represents. They found a median of 69 patient visits and 43 actual patients in a typical week. They also found a positive relationship between each of these measures and the following variables: hours worked per week, number of office locations, number of states licensed in, number of optometric services rendered by the practitioner, and mode of practice, eg: those practitioners in group practices saw more patients per week. Their analysis of the utilization of supplementary personnel found positive relationships between those using such personnel and such variables as number of patient visits weekly (76 for users of such personnel vs. 45 for non-users for a 68.8 percent increase), number of actual patients weekly (48 for users vs. 28 for non-users for a 71.4 percent increase), and tendency for the practitioner to render specific optometric services other than basic refractions.

Koch and Phillips did not draw conclusions regarding the relationships they discovered. Others, however, have applied this type of information to manpower issues. Peters and Kleinstein[7] discussed the study by Birchard and Elliott[3] as well as the manpower study by H. G. Mote[9] and commented that neither study provided the detailed information necessary for "realistic planning." They stressed the necessity for age distribution of optometrists, comparison of those licensed in the state to those actually in practice there, and information concerning the "saturation" of practices of present optometrists in order to plan future manpower requirements. They found in 1968 that practices in California varied in saturation from

approximately 68 percent to 95 percent for those optometrists in practice for 20 to 30 years. Other than increasing the younger optometrist's utilization by group practices, the authors found "precious little unused capacity for the services of optometrists." Their solutions to remedy this problem included training more optometric technicians, advancing optometric technology, reorganization of health care delivery systems to use all levels of health manpower at their maximum level, and increasing the number of optometry students.

Seitz[8] states that "...optometric technicians could expand available services by 20 to 25 percent." Haffner and Sherman[12] postulated that the use of ancillary personnel can save an optometrist one third the time spent per patient. Peters[15] indicates that a technician can increase practice productivity by at least 25 percent. Bernstein[1] says that the basic 1,350 vision analyses performed annually can be expanded to 1,600 with the utilization of a full-time auxiliary (18.5 percent). Cultice et al[4] stress the importance of group practice and ancillary personnel to productivity and the importance of productivity to national health insurance. The most often cited factors influencing future productivity are use of supplementary personnel and the increased incidence of partnership and group practices. There is evidence that these trends are in fact developing.

Bleything[11] and Haffner and Sherman[12] both found a positive attitude toward the hiring of trained optometric technicians, indicating that the utilization of technicians is likely to increase as more are trained and available for employment. Koch and Phillips[10] reported data that showed that younger, more recently graduated optometrists also tend to employ more supplementary personnel. This also points to more extensive use of such personnel in the future. The same study[10] also presented evidence that

younger optometrists are more likely to join group practices rather than pursue the more traditional solo mode of practice. Bleything at the HEW Optometric Manpower Workshop[15] also documented the trend toward partnership and associate group practices in HEW Region X. This data indicates that the practice mode of the future may not be predominantly solo as it is today.

The evidence indicates that certain practice trends are changing and that these trends are directly related to productivity. The purpose of this study is to determine if productivity does bear a direct relationship to specific practice characteristics, e.g. age of practitioner, years in practice, population of practice location, mode of practice, and utilization of ancillary personnel. This information will become a basis for future studies so that trends in these relationships can be followed and so that productivity changes can be monitored. This type of knowledge is necessary in order to increase the validity of manpower projection models.

METHODOLOGY

A survey instrument was designed for this project based on the 1973 manpower survey questionnaire of the Department of Health, Education, and Welfare (DHEW). For purposes of comparison to the previous study, the survey instrument was sent to all licensed optometrists in DHEW Region X, which includes the states of Alaska, Idaho, Oregon, and Washington. The mailing list was obtained from the Pacific University College of Optometry computer files.

1019 questionnaires were sent. Self-addressed, stamped return envelopes were enclosed, as well as a letter of explanation. Over a two-month period, a total of 476 completed forms were returned from the four states and were categorized as follows:

Category	Number	Percent
Retired	14	2.9
Part-time	16	3.3
Involved in Education	8	1.7
Health Maintenance Organization	23	4.8
Military/Federally Employed	3	0.6
Full-time (Solo or Group Private Practice)	412	86.5
Total	476	

The breakdown according to state was:

State	Sent	Returned	Percent Rate of Return
Alaska	36	22	61.0
Idaho	116	61	52.5
Oregon	383	176	46.0
Washington	484	217	44.8
Total	1019	476	46.7

Questionnaires that were only partially complete were used where possible, and, therefore, the n (number) may differ for each question. The "main group" considered in this study is full-time practitioners in solo or group private practice.

The survey investigated practitioner and practice characteristics, utilization of ancillary personnel, and productivity, defined as the number of vision analyses completed during one year.

Practitioner characteristics were described in the areas of age, sex, racial/ethnic category, optometry school graduated from and principal form of employment (e.g. self employed/solo practice, etc.). The number of supplementary personnel employed per optometrist was determined as well as a rank ordering of duties delegated to them.

Scatter plots and best fit curves were made to compare number of vision analyses completed in one year as a function of the following: age, years in practice, population of practice location, and number of supplementary personnel per optometrist.

RESULTS AND DISCUSSION

In order to consider the sample of respondents a representative sample of the nationwide population of optometrists, comparisons are made between data obtained in this study and data obtained in the 1968 NCHS survey and the 1973 Optometric Manpower Resources (OMR) survey with respect to demographic characteristics. Because those respondents practicing in Health Maintenance Organizations (HMO's) were consistently exceptional as to response, their data is separated from the "main group" and described separately. The "main group" is identified as optometrists practicing full-time in solo or group private practice.

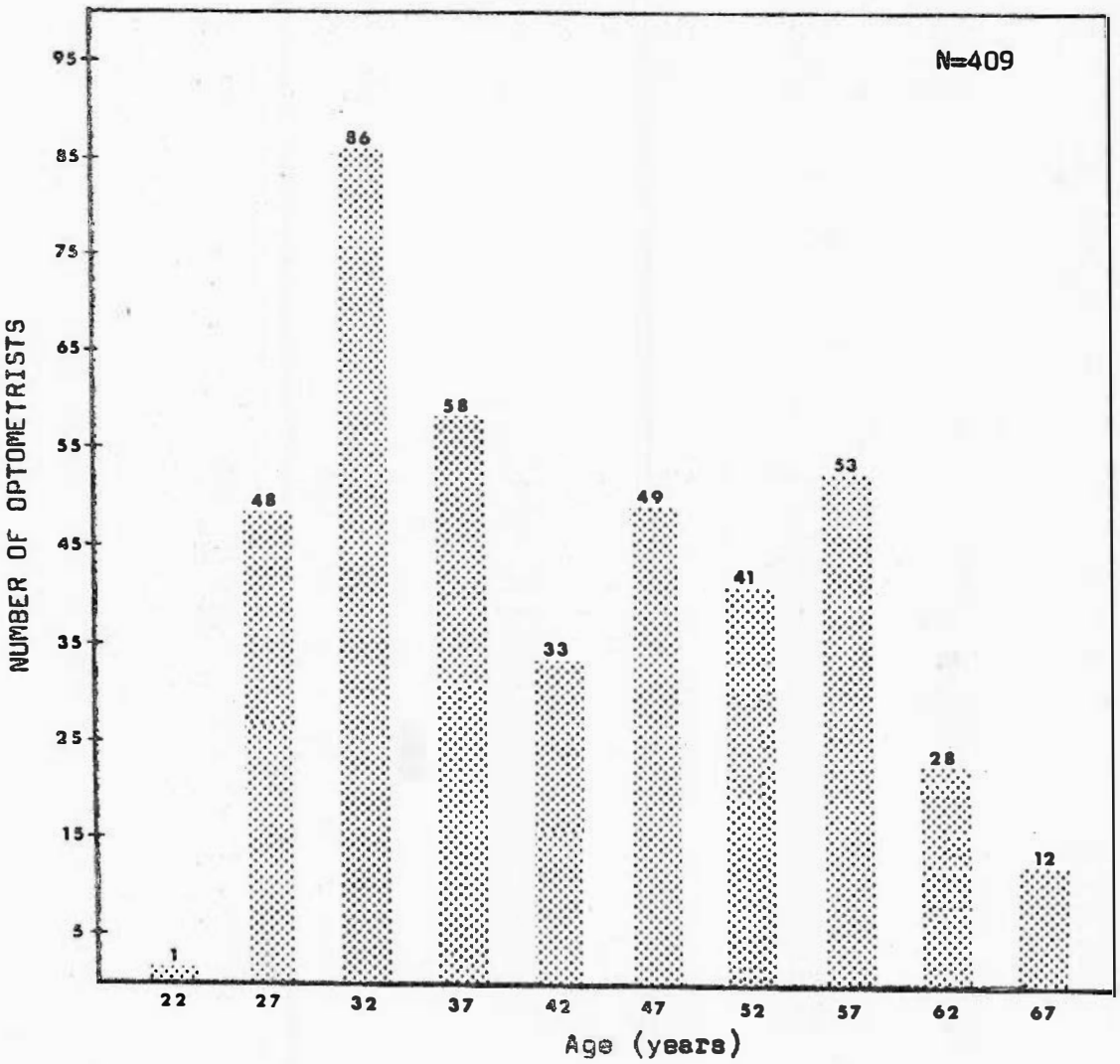
General Demographic and Educational Characteristics

The total group of respondents (476) can be categorized as 87 percent full-time, 3 percent part-time, 7 percent other (education, HMO's, military/federal employment), and 3 percent retired. If these results are categorized as active (97 percent) vs. inactive (3 percent), our study indicates that a higher proportion of the total group is active than do the NCHS findings (90.8 percent active) and the OMR findings both nationwide (88.8 percent) and in DHEW Region X only (90.2 percent).

The age distribution of the main group (Figure 1) shows that 47 percent were under 40 years of age, whereas only 33 percent were 50 years of age or older. This contrasts sharply with the OMR findings for Region X of 26 percent under 40 and 45 percent of age 50 or older (active optometrists). However, information from the State Boards of Optometry which was included in the Optometric Manpower Workshop[15] in 1979 indicates

FIGURE 1

Distribution of Optometrists in
Full-Time Solo and Group Practices by Age



that the population of optometrists in HEW Region X is actually younger than than reported in 1973 by OMR. The State Boards' data established that 39 percent of Region X optometrists were under 40 years of age. Our study is in agreement with this data, indicating a trend toward a younger population of optometrists.

Table I characterizes the main group as to sex, racial/ethnic group and school/college of graduation. The typical respondent was male (98 percent), white/caucasian (98 percent), and graduated from Pacific University College of Optometry (78 percent). Sex and racial/ethnic categories agree well with the OMR nationwide data for active optometrists (2.1 percent female, 2.5 percent non-white/caucasian). The OMR data for Region X indicated that 66.2 percent of the optometrists in this region were graduates of PUCO. State Board information[15] from 1979 agreed closely with this value (66.1 percent). However, this figure (66.1 percent) is based on a sample of all licensed optometrists, whereas our figure (78 percent) is limited to full-time practitioners in solo or group practice. This difference in methodology may explain the discrepancy. Our data indicates a tendency for recent graduates of PUCO to remain in Region X to practice.

The survey instrument also identified the size of community in which the respondents practiced. Question #2 (see Appendix B) asked the respondent to indicate the population of the city or town in which was located his/her primary place of practice. Results are skewed (see Figure 2) toward the lesser populated areas (42 percent in a city/town of less than 20,000 population). However, this might be expected in an area that is not predominantly urban.

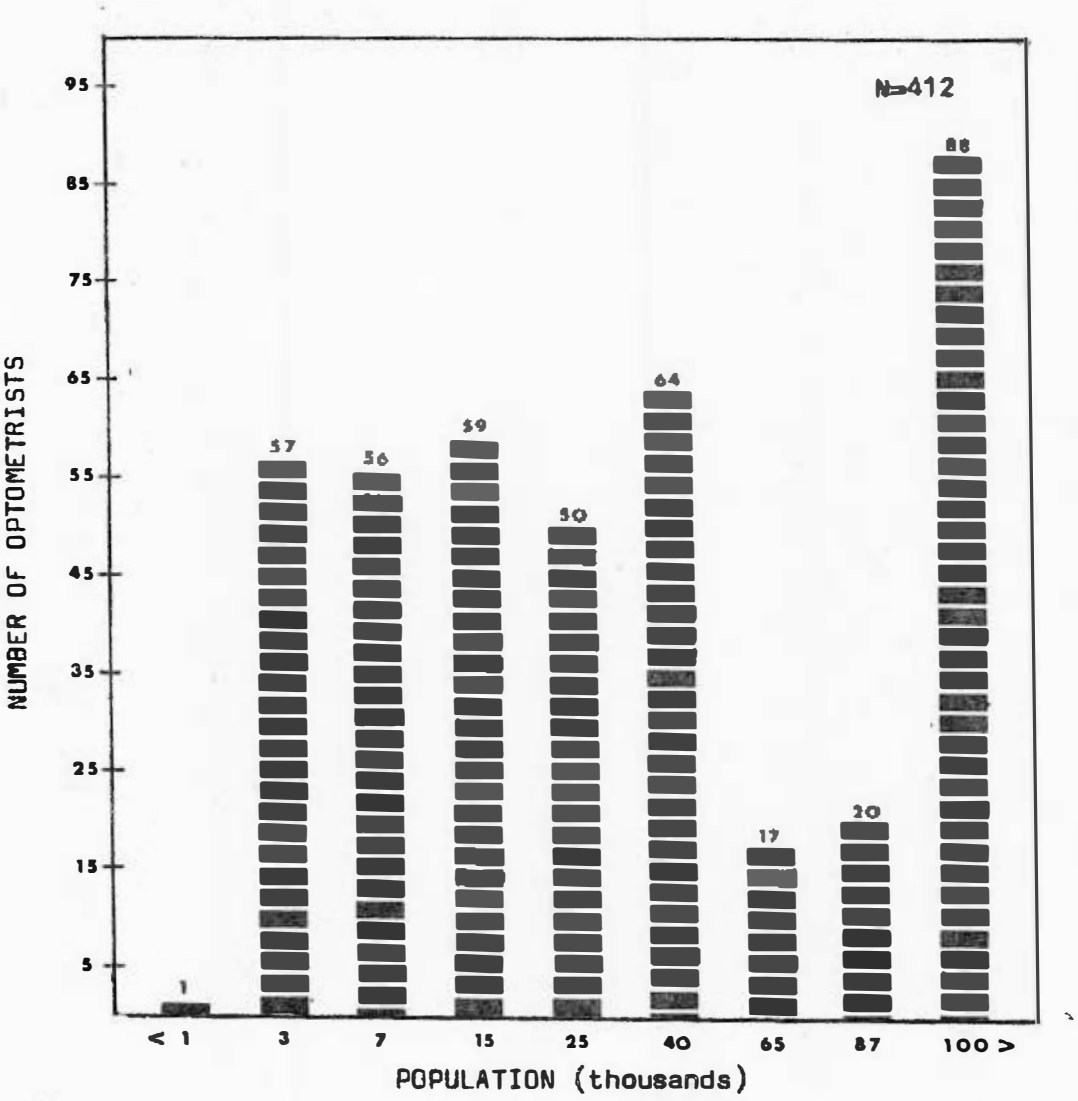
Based on the results of the general demographic and educational characteristics of this sample and the comparison of those nationwide and

STATE	N	Sex		Racial/Ethnic Group		Optometry School	
		Male	Female	White/Caucasian	Other	Pacific	Other
Washington	182	177	3	175	5	125	54
Oregon	152	141	4	148	1	139	12
Idaho	59	57	2	58	1	40	19
Alaska	19	19	0	19	0	13	4
TOTAL	412	394	9	400	7	317	89

Table I: Distribution according to sex, racial/ethnic group, and optometry school attended for full-time practitioners in solo or group private practice.

FIGURE 2

Distribution of Optometrists in Full-Time Solo and Group Practices by Population Size of City/Town of Practice Location



for Region X above, this sample appears to be representative of a national group. The sample is more closely representative of Region X optometrists with respect to school/college of graduation and age distribution.

Characteristics of Optometric Practice

A distribution of optometrists by years in practice is illustrated in Figure 3. Indications are that a large proportion of newly graduated optometrists answered the questionnaire in that 27 percent had only been in practice for one to five years. The large number of respondents in the 26 to 30 years group is typical of optometrist populations because, as was pointed out in the OMR study, there was a large number of graduates in the late 1940's and early 1950's as a result of educational benefits provided by the GI Bill.

An interesting correlate to the information in Figure 3 is planned year of retirement illustrated in Figure 4. Although the response rate is lower (n = 263), there is a pattern that indicates a large group retiring in 1985-1989 and another large group retiring in the years 2000-2004.

The purpose of this study is to determine the relationship of productivity to some of these characteristics of optometric practice. There are a number of ways to express productivity.

One measure, not often utilized in optometric studies, is net income. Figure 5 illustrates the income distribution of this sample and finds 59 percent of those responding (n = 393) had a net income of $30,000 or more annually. This is a greater percentage than that reported by the Review of Optometry[26] in 1979, which reported only 40 percent of their panel to be in this income range. Income has not been considered a good measure of productivity by some researchers[22] and this study does not focus on it as its primary indicator.

FIGURE 3

Distribution of Optometrists in Full-Time
Solo and Group Practices by Years in Practice

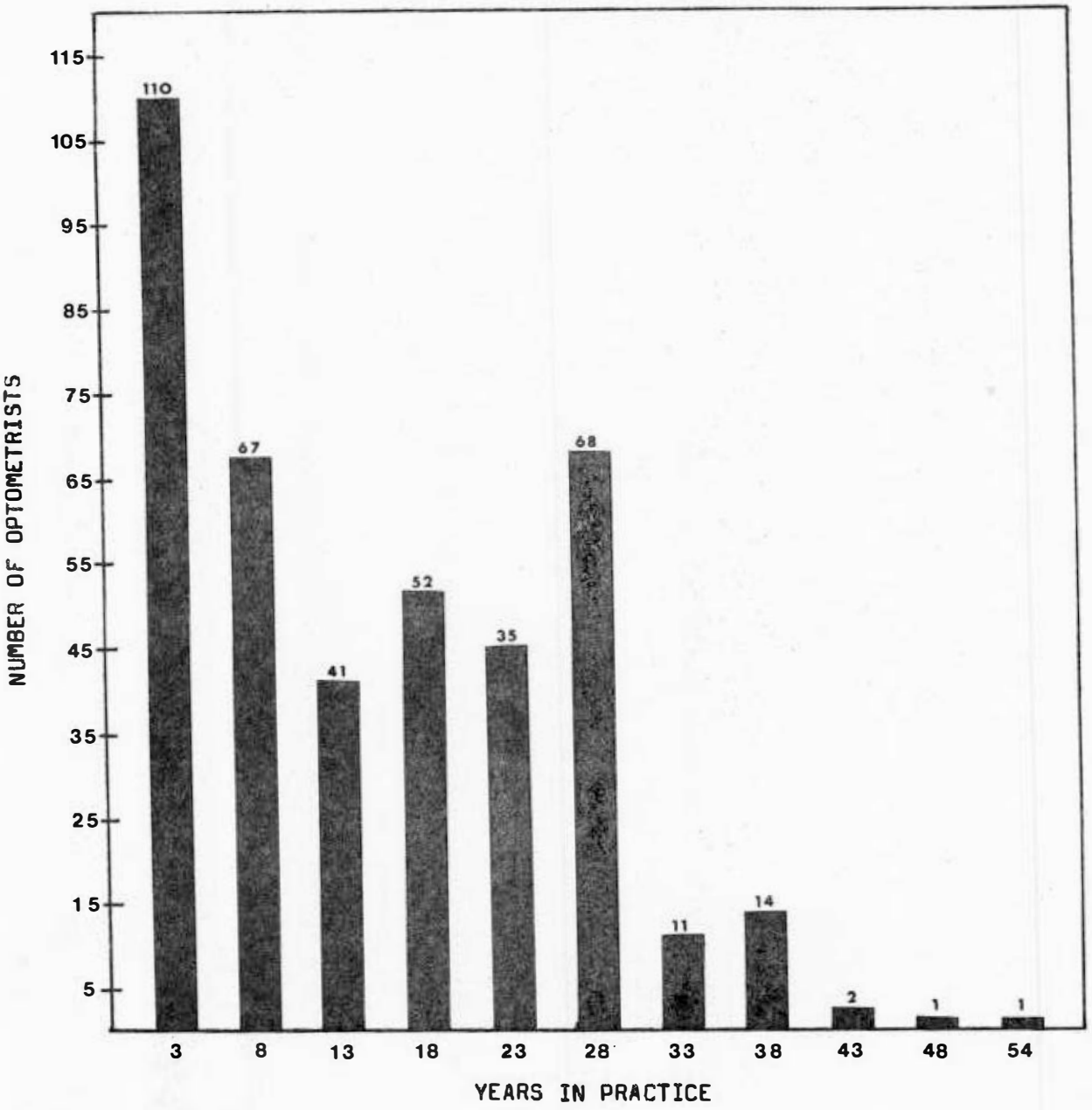
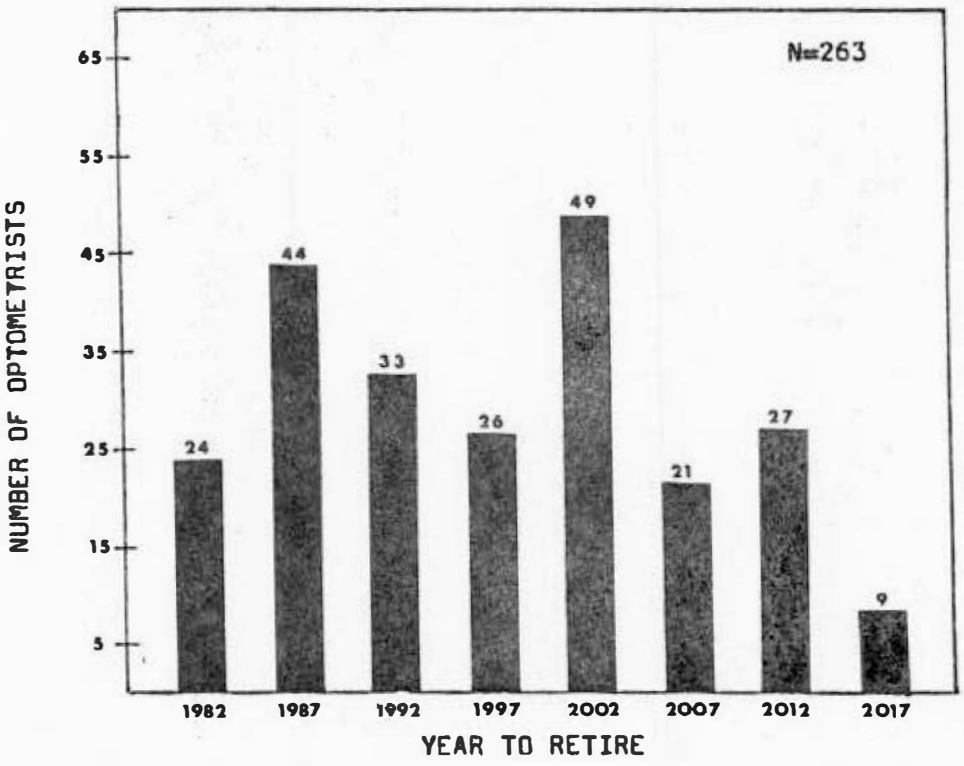


FIGURE 4



Distribution of Optometrists in Full-Time Solo and Group Practices by Year Planned to Retire

FIGURE 5

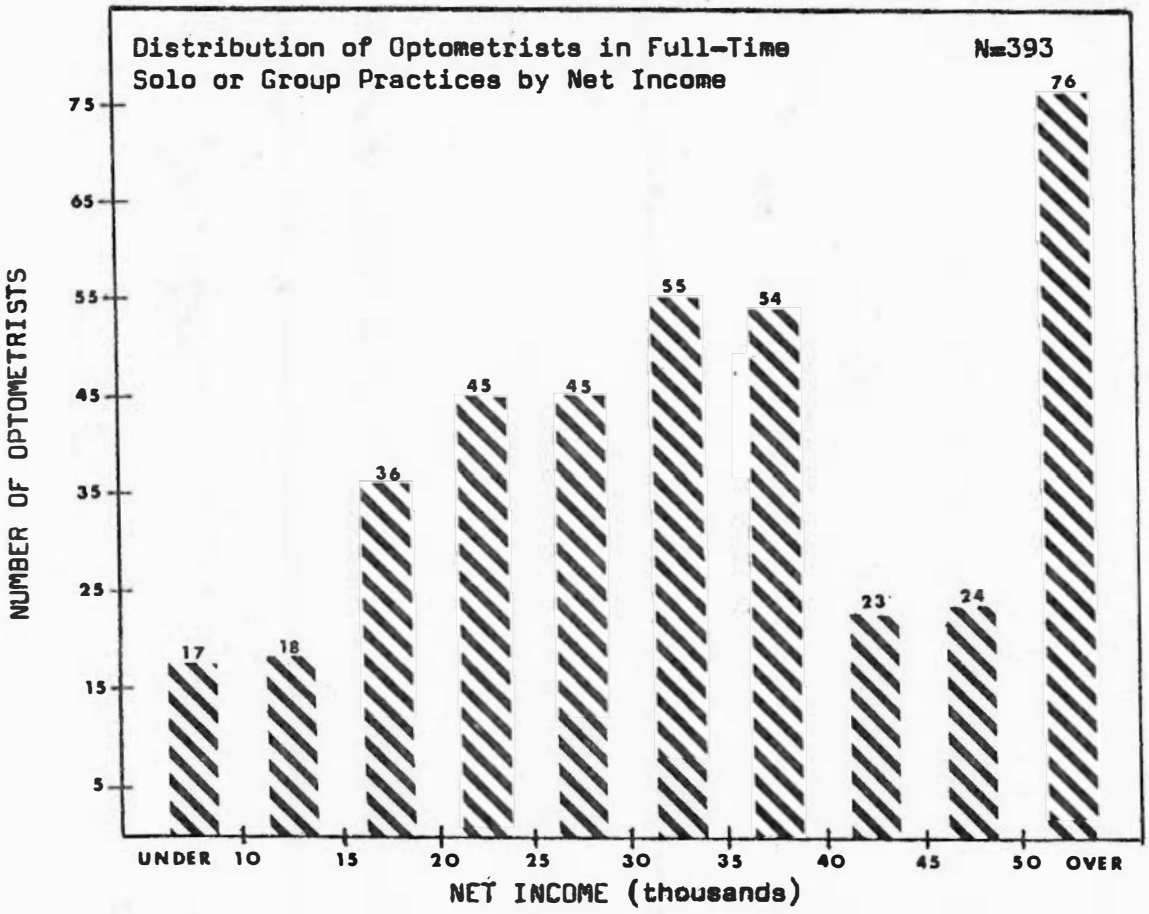


Table II illustrates two factors significant to productivity: weeks worked per year, and hours worked per week. The means do not show significant differences by state with the possible exception of Alaska, which is slightly lower than the other for both measurements.

Also significant to productivity is the appointment - examination information found in Table III. Again, three of the states are comparable, and Alaska is a notable exception. Exams available and exams completed were significantly greater in Alaska whereas "other visits" were much less frequent than in the other three states. The ratio examinations completed: appointments available (E/A) indicates the rate of utilization of optometric services and is close to 70 percent for Oregon, Washington, and Idaho, and 75 percent for Alaska. The ratio, other visits: examinations completed (O/E), is near .85 for Oregon*, Washington, and Idaho and only .49 for Alaska. This great difference might be due to the transient nature of the Alaskan patient population where the typical mode of follow-up of the patient does not occur. Appendix A includes a comment from an Alaskan practitioner noting the atypical nature of practice in that state. One more item of interest in Table 3 is that the reputed percent no shows in all four states (approximately six percent) is minimal compared to the percent that services are not utilized via unfilled appointments (25 to 30 percent).

Researchers[7,22] have indicated that group practices are more efficient and productive than are solo practices. Table IV provides the information from Tables II and III with statistics reported separately for group and solo practices. Solo practitioners tend to work more weeks per year,

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*The value .85 indicates that a typical patient pays 1.85 visits to the optometrist for each visual analysis performed.

WASHINGTON	Weeks per Year	Hours per Week
n	178	165
Mean	48.7	36.7
SD	2.8	5.8
SE of Mean	.2	.4
SE of SD	.2	.3
Mode	50	40
Max	52	54
Min	30	20
Range	22	34
OREGON		
n	148	135
Mean	49.1	37.6
SD	2.4	5.2
SE of Mean	.2	.4
SE of SD	.1	.3
Mode	50	40
Max	52	50
Min	30	24
Range	22	26
IDAHO		
n	57	52
Mean	48.9	37.7
SD	2.4	5.4
SE of Mean	.3	.7
SE of SD	.2	.5
Mode	50	40
Max	52	60
Min	40	28
Range	12	32
ALASKA		
n	19	19
Mean	47.2	35.8
SD	3.3	4.3
SE of Mean	.8	1
SE of SD	.5	.7
Mode	48	35
Max	52	45
Min	40	28
Range	12	17

Table II: Distribution of Weeks Worked per Year and Hours Worked per Week for Full-Time Solo of Group Private Practice

WASHINGTON	Examination Appointments Available per week (A)	Examination Appointments Filled per week	Exams Completed per week (E)	Percent No Shows	Other Visits per week (O)	O/E	E/A
n	170	169	158	158	152		
Mean	36.5	26.3	25.6	6.5	21.4	.84	.70
SD	11.9	10.4	11.9	5	19.2		
SE of Mean	.9	.8	.9	.4	1.6		
SE of SD	.6	.6	.7	.3	1.1		
Mode	40	30	20	5	10		
Max	100	60	100	30	100		
Min	7	4	4	1	3		
Range	93	56	96	29	97		
OREGON							
n	145	140	133	132	131		
Mean	33.8	25	23.4	5.5	20.2	.86	.69
SD	12.7	12	11.4	4	15.7		
SE of Mean	1.1	1	1	.4	1.4		
SE of SD	.7	.7	.7	.3	1		
Mode	30	2-	20	5	10		
Max	100	75	60	22	80		
Min	8	5	1	1	3		
Range	92	70	59	21	77		

Table III: Distribution of Appointments Available, Appointments Filled, Exams Completed, Percent No Shows and Other Visits per week (e.g. contact lens follow-up, vision training session, etc.) for full-time solo or group private practice

IDAHO	Examination Appointments Available per week (A)	Examination Appointments Filled per week	Exams Completed per week (E)	Percent No Shows per week	Other Visits per week (O)	O/E	E/A
n	57	55	52	50	53		
Mean	37.3	27.7	25.4	7.3	21.2	.83	.68
SD	12.7	10.7	8.5	8.6	15		
SE Of Mean	1.7	1.4	1.2	1.2	2		
SE of SD	1.2	1	.8	.9	1.4		
Mode	35	20	20	5	15		
Max	84	65	45	55	60		
Min	3	5	6	1	4		
Range	81	59	39	54	56		
ALASKA							
n	19	18	18	17	19		
Mean	44.7	37.8	33.7	6.4	16.5	.49	.75
SD	18.2	23.1	21.4	5.9	10.2		
SE of Mean	4.2	5.4	5	1.4	2.3		
SE of SD	3	5.8	3.6	1	1.7		
Mode	30	35	30	5	10		
Max	80	80	80	20	40		
Min	28	10	8	1	5		
Range	52	70	72	19	35		

Table III: Continued

WASHINGTON	Weeks per year	Hours per year	Examination Appointments Available per week (A)	Examination Appointments Filled per week	Exams Completed per week (E)	Other Visits per week (O)	O/E	E/A
SOLO								
n	114	107	109	110	103	100		
Mean	49.1	37	35.9	25.2	23.6	20.2	.86	.66
SD	2.6	5.9	11.7	10.7	12.6	18.2		
SE of Mean	.2	.6	1.1	1	1.2	1.8		
SE of SD	.2	.4	.8	.7	.9	1.3		
Mode	50	40	40	25	20	10		
Max	52	54	75	60	100	100		
Min	30	20	8	4	4	3		
Range	22	34	67	56	96	97		
GROUP								
n	62	57	60	60	56	52		
Mean	48.1	36	37.4	28.6	28	23.1	.82	.75
SD	3.2	5.6	12.4	9.6	9.2	21		
SE of Mean	.4	.7	1.6	1.2	1.2	2.9		
SE of SD	.3	.5	1.3	.9	.9	2		
Mode	48	40	40	30	30	10		
Max	52	50	100	50	49	100		
Min	37	24	7	4	4	3		
Range	15	26	93	46	45	97		

Table IV: Distribution showing comparison between solo and group practice for weeks per year, hours per week, appointments available per week, appointments filled per week, exams completed per week, and other visits (e.g. contact lens follow-up, vision training sessions, etc.) per week

ALASKA	Weeks per year	Hours per week	Examination Appointments Available per week (A)	Examination Appointments Filled per week	Exams Completed per week (E)	Other Visits per week (O)	O/E	E/A
SOLO								
n	4	4	4	3	3	4		
Mean	48.3	34.3	40	28	26	16.3	.63	.65
SD	2.4	1.5	8.2	12.1	11.5	9.5		
SE of Mean	1.2	.8	4.1	7	6.7	4.7		
SE of SD	.8	.5	2.9	4.9	4.7	3.3		
Mode	50	35	40	35	35	10		
Max	50	35	50	35	35	30		
Min	45	32	30	14	13	10		
Range	5	3	20	21	22	20		
GROUP								
n	15	15	15	15	15	15		
Mean	46.9	36.3	44.2	39.8	35.3	16.5	.47	.80
SD	3.6	4.8	21.8	24.5	22.9	10.7		
SE of Mean	.9	1.2	5.6	6.3	5.9	2.8		
SE of SD	.7	.9	4	4.5	4.2	1.9		
Mode	48	40	30	64	30	5		
Max	52	45	80	80	80	40		
Min	40	28	10	10	8	5		
Range	12	17	70	70	72	35		

Table IV: Continued

OREGON	Weeks per year	Hours per week	Examination Appointments Available per week (A)	Examination Appointments Filled per week	Exams Completed per week (E)	Other Visits per week (O)	O/E	E/A
SOLO								
n	87	77	85	82	76	74		
Mean	49.3	37.6	31.5	22.8	21.8	19	.87	.69
SD	2.6	5	10.6	9.4	9.4	14.7		
SE of Mean	.3	.6	1.1	1	1.1	1.7		
SE of SD	.2	.4	.8	.7	.8	1.2		
Mode	50	40	30	25	20	10		
Max	52	50	70	50	50	68		
Min	30	24	8	5	1	3		
Range	22	26	62	45	49	65		
GROUP								
n	62	58	60	60	56	57		
Mean	48.9	37.3	37.2	28.2	26.4	21.9	.83	.71
SD	1.9	5.2	14.7	14.1	13.3	17		
SE of Mean	.2	.7	1.9	1.8	1.8	2.2		
SE of SD	.2	.5	1.3	1.3	1.3	1.6		
Mode	48	40	50	20	20	20		
Max	52	50	100	75	60	80		
Min	40	25	12	6	7	3		
Range	12	25	88	69	53	77		

Table IV: Continued

IDAHO	Weeks per year	Hours per week	Examination Appointments Available per week (A)	Examination Appointments Filled per week	Exams Completed per week (E)	Other Visits per week (O)	O/E	E/A
SOLO								
n	40	37	40	38	34	36		
Mean	49	37.7	37.4	28	25.3	20.9	.83	.67
SD	2.7	4.5	12.8	10	7.3	15.1		
SE of Mean	.4	.7	2	1.6	1.3	2.5		
SE of SD	.3	.5	1.4	1.1	.9	1.8		
Mode	50	40	35	30	30	15		
Max	52	48	84	65	40	60		
Min	40	28	3	12	12	5		
Range	12	20	81	53	28	55		
GROUP								
n	17	14	17	17	17	17		
Mean	48.8	37.4	38.2	27	25	22	.88	.65
SD	1.4	7.6	12.9	12.4	10.8	15.2		
SE of Mean	.3	2	3.1	3	2.6	3.7		
SE of SD	.2	1.4	2.2	2.1	1.9	2.6		
Mode	50	40	50	20	20	40		
Max	50	60	72	50	45	59		
Min	45	28	20	6	6	4		
Range	5	32	52	44	39	55		

Table IV: Continued

but the difference is very slight. More significant is the number of examination appointments available. There were approximately from one to six more appointments available per practitioner per week in group than in solo practices. With the exception of Idaho, utilization (E/A) was greater in group than in solo practice. Alaska showed the greatest differences between solo and group utilization (65 percent for solo, 80 percent for group), but this may be due to the small sample size (n=4 for solo, n=15 for group). The number of exams completed weekly also tended to be greater in group than in solo practices. Again, the differences were greater in Alaska (9.3 more exams completed weekly by group than by solo practitioners), but the larger samples in Oregon and Washington also showed notable differences of approximately 4.5 more exams completed weekly by group than by solo practitioners - an 18.8 percent difference. This tendency toward greater productivity for group practices was also reported by Koch and Phillips[10] who found for solo practitioners a median of 65 patient visits per practitioner per week whereas group practitioners showed a median of 93 patient visits per practitioner per week.

The use of ancillary personnel was found to be essentially universal. Of those responding to the question, 97 percent in Oregon, Washington, and Idaho utilize ancillary personnel. In Alaska, 100 percent of those responding indicated utilization of such personnel. Table V shows that use of such personnel is indeed more extensive in Alaska. Of note is the fact that group practices use less supplementary personnel per doctor in all states, although the differences are quite small. This would suggest the possible sharing of this resource in group practice.

The duties performed by these personnel are listed in rank order in Table VI. An inspection of the survey materials also showed that those

	SUPPLEMENTARY PERSONNEL			
	FULL-TIME		PART-TIME	
ALASKA	n*	Mean/Optometrist	n*	Mean/Optometrist
Solo	2	2.5	-	-
Group	34	3.1	2	.5
IDAHO				
Solo	33	2.1	12	1.8
Group	21	1.6	13	.8
OREGON				
Solo	62	1.6	36	1.8
Group	95	1.2	33	.9
WASHINGTON				
Solo	86	1.8	40	2.0
Group	98	1.6	55	1.1

* Number of optometrists

Table V: Mean values for number of supplementary personnel per optometrist in full-time solo or group private practice.

	Percent
Reception, filing, record keeping	100
Telephone answering, routine bookkeeping	99.7
Appointment control	99
Routine billing of patients	92
Incidental housekeeping	90
Credit arrangements/control	89
Recall system control	88.6
Frame selection	85
Check laboratory invoices	83
Compute patient's fees	79
General office management	78
Frame repair	75
Routine stenography	74
Frame adjustments	71
Rx verification	71
Inventory control	69
Instruct patients in contact lens insertion/removal	57.6
Dispensing (new Rx)	57.4
Visual Skills test	36
Visual field testing	28
Lens cutting/edging	24
Contact lens modification	21
Carry out prescribed visual training procedures	16
Record clinical findings from O.D.	10

Table VI: Rank order of activities delegated to supplementary personnel for full-time solo or group private practice.

optometrists using assistants that are graduates of one or two year training programs tended to delegate more activities, particularly frame repair, frame adjustments, prescription verification, and contact lens instructions. Table V when compared with a similar rank order of activities prepared by Bleything[11] is almost identical. The only categories to drop significantly in rank were routine stenography and recording clinical findings from O.D. Those that rose significantly were telephone answering and routine bookkeeping and computing patient's fees. Apparently, no great changes have yet occurred regarding delegation of optometric activities to ancillary personnel. The use of other outside services is reported in Table VII. Solo and group practitioners differed greatly with respect to only two services. Group practitioners utilized an optometrist of another speciality in 93 percent of the replies, whereas solo practitioners did so in only 56 percent of the replies. It is interesting to note that HMO practitioners fell in between with 71 percent. This may suggest the greater use of within-office referrals for group and HMO practices. The use of an autorefractor is greater with group practitioners (15 percent) than with solo (four percent). Other differences deal with the HMO's which utilized dispensing opticians (55 percent) much more than either solo (nine percent) or group (12 percent) practices. HMO's used both contact lens lab technicians and optical laboratories less than both group and solo practitioners.

Figures 6 through 21 are scatter diagrams with best fit curves and lines that described the relationships of productivity to a number of practice and demographic characteristics by state. In these diagrams, productivity is represented by the number of vision analyses performed annually. Figures 6, 9, 12, and 15 show that basically productivity peaks

	YES			NO			NO RESPONSE		
SERVICE	HMO	Solo	Group	HMO	Solo	Group	HMO	Solo	Group
Dispensing Optician	11	18	13	9	188	96	3	65	32
	55%	8.7%	11.9%						
Optical Laboratory	15	249	122	6	11	10	2	11	9
	71%	96%	92%						
Contact Lens Lab Technician	10	221	103	6	27	22	7	23	16
	62%	89%	82%						
Optometrist of Other Specialty	15	116	50	6	93	57	2	4	34
	71%	56%	93%						
Own and Use an Autorefractor	0	11	20	20	257	112	1	4	8
	0%	4%	15%						

Table VII: Distribution showing utilization of outside services and use of autorefractors in Health Maintenance Organizations, and full-time solo or group private practices in Alaska, Idaho, Oregon, and Washington

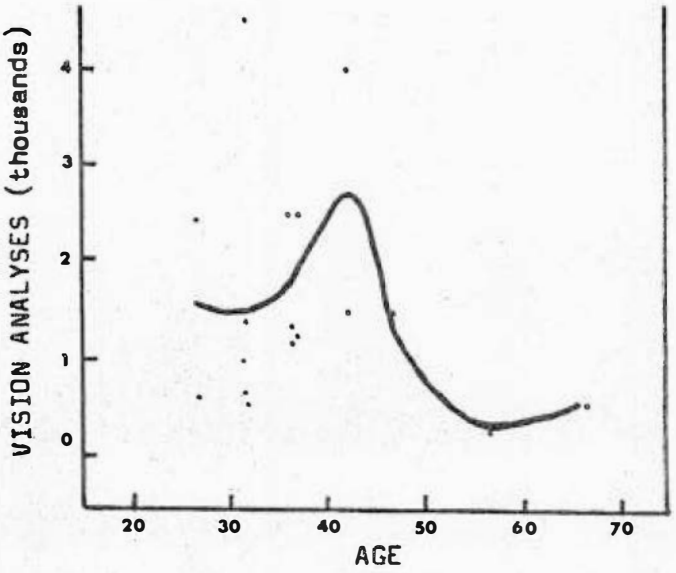

Figure 6: Productivity as a Function of Age in Alaska

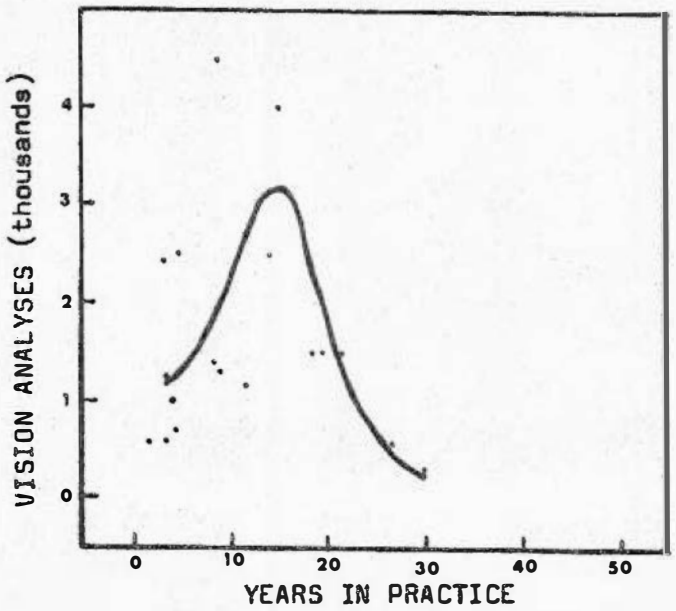

Figure 7: Productivity as a Function of Years in Practice in Alaska

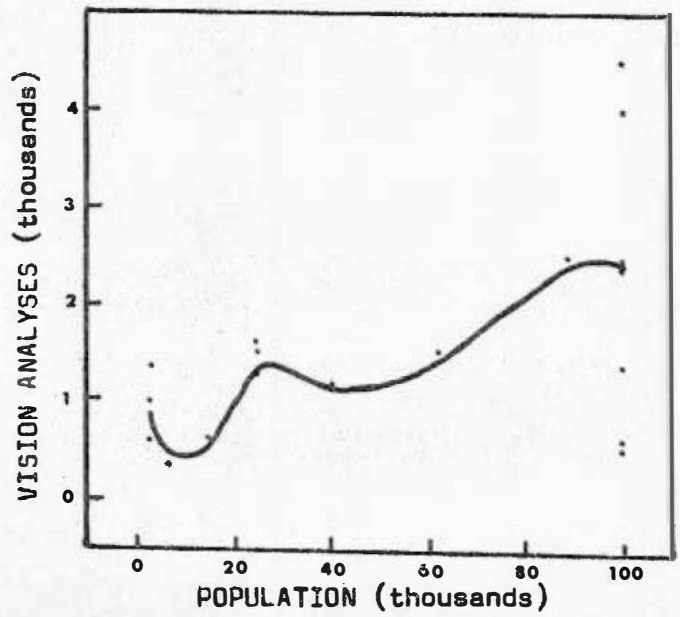

Figure 8: Productivity as a Function of Population in Alaska

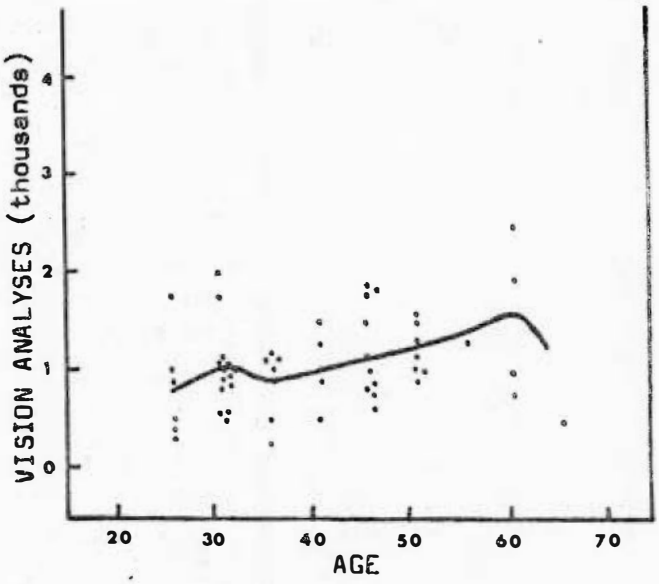

Figure 9: Productivity as a Function of Age in Idaho

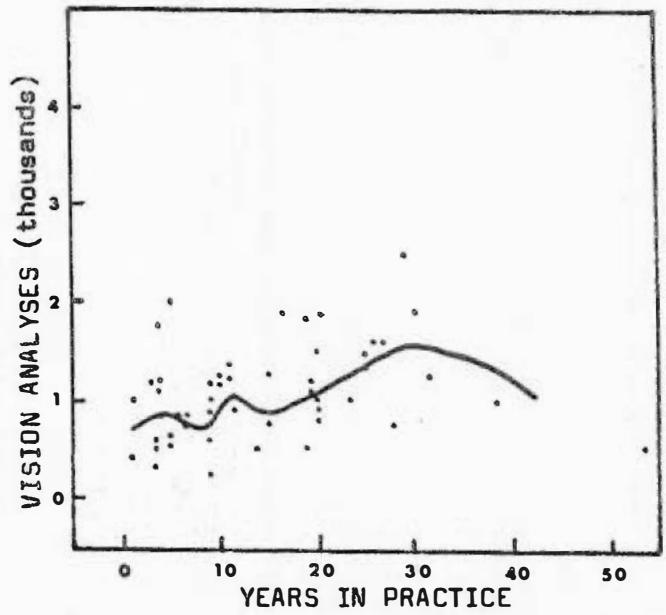

Figure 10: Productivity as a Function of Years in Practice in Idaho

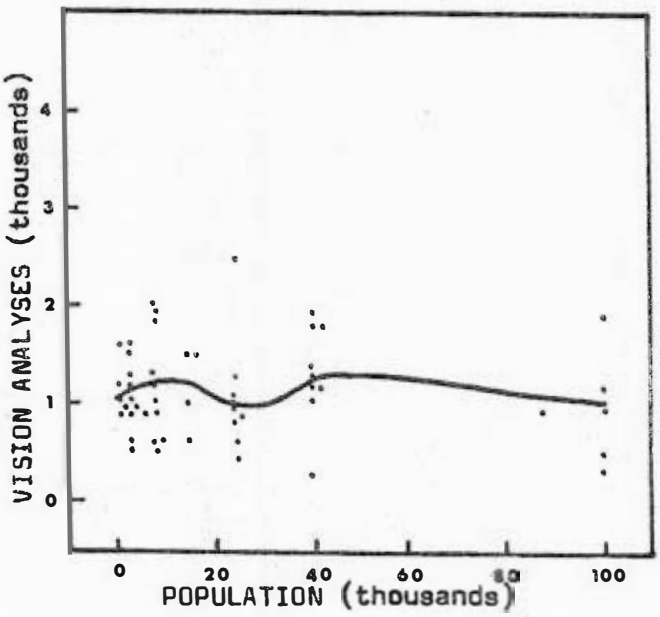

Figure 11: Productivity as a Function of Population in Idaho

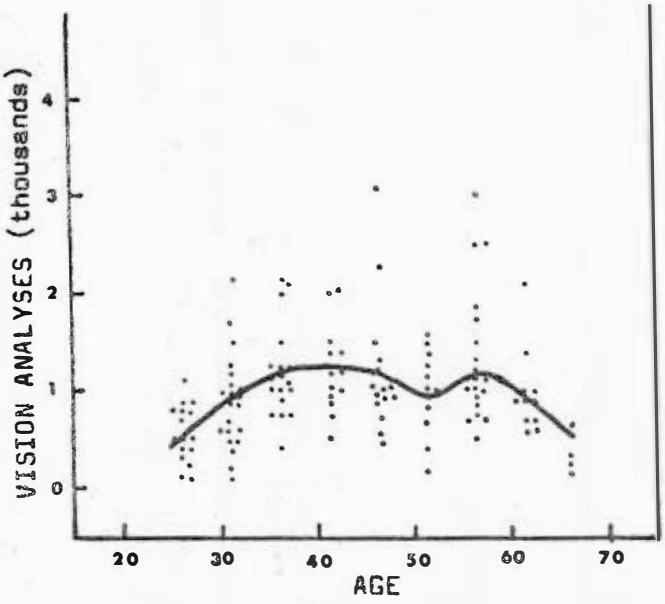

Figure 12: Productivity as a Function of Age in Oregon

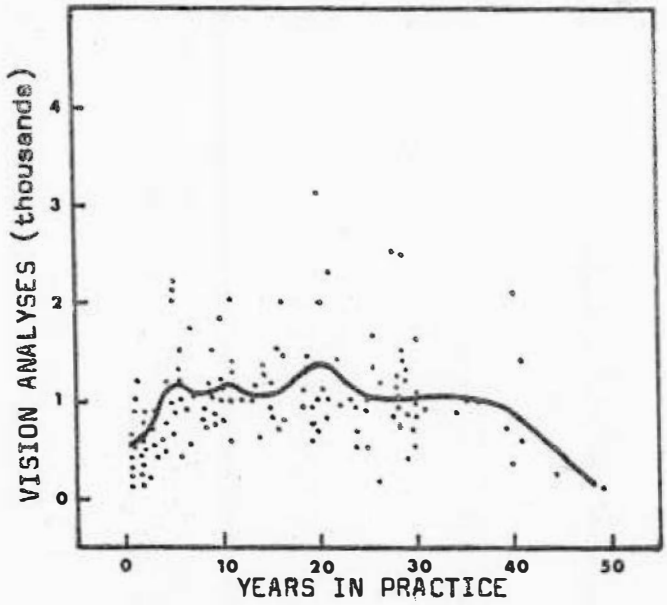

Figure 13: Productivity as a Function of Years in Practice in Oregon

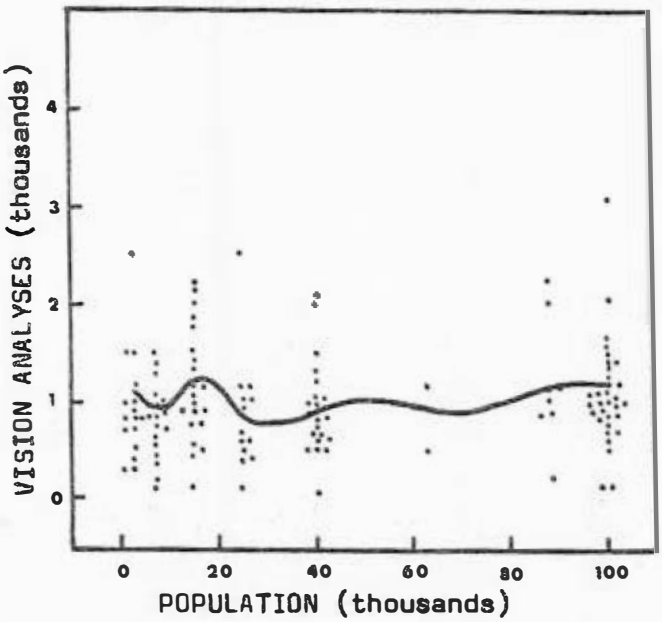

Figure 14: Productivity as a Function of Population in Oregon

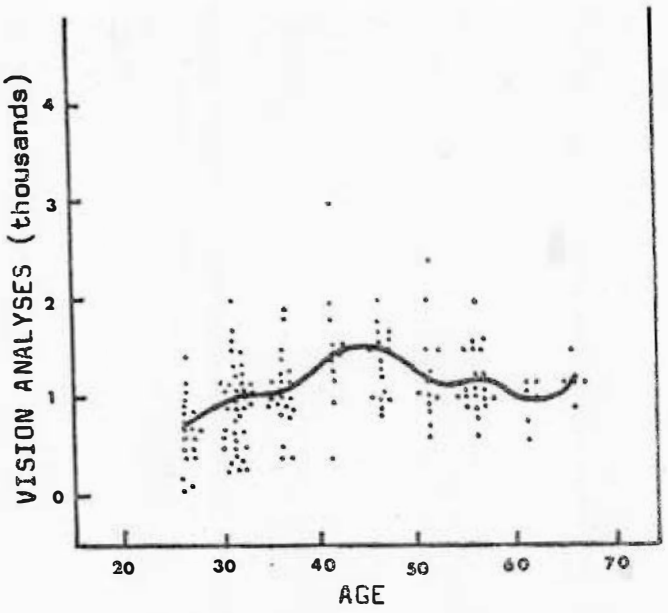

Figure 15: Productivity as a Function of Age in Washington

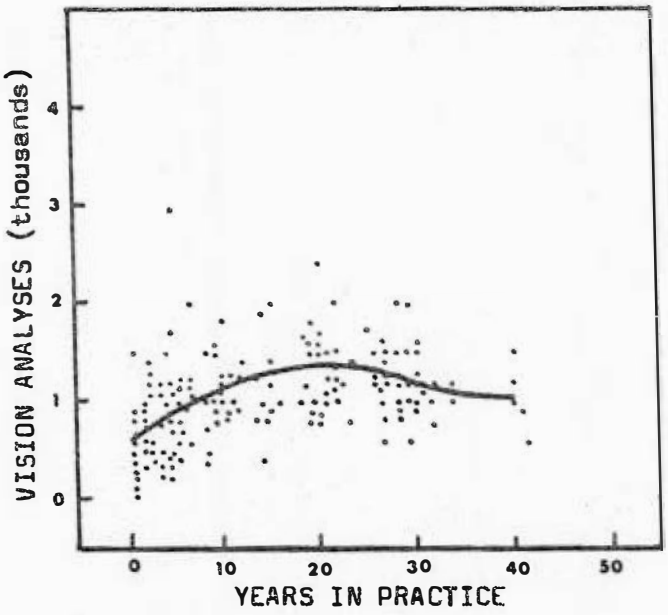

Figure 16: Productivity as a Function of Years in Practice in Washington

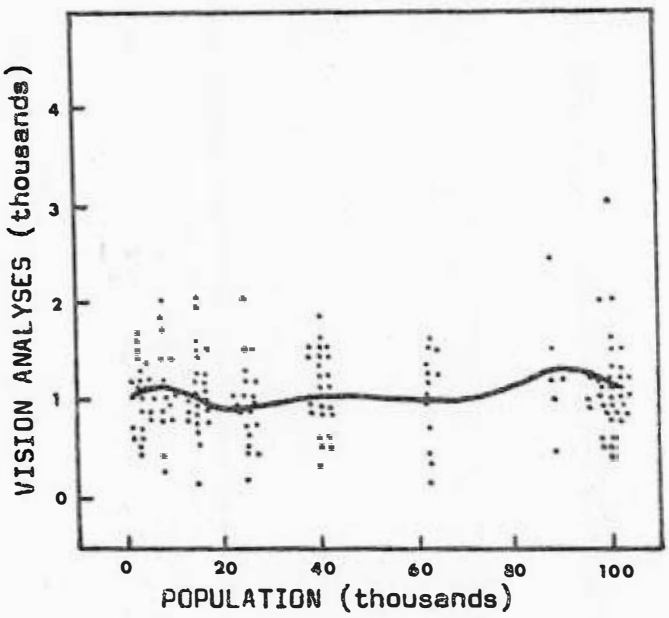

Figure 17: Productivity as a Function of Population in Washington

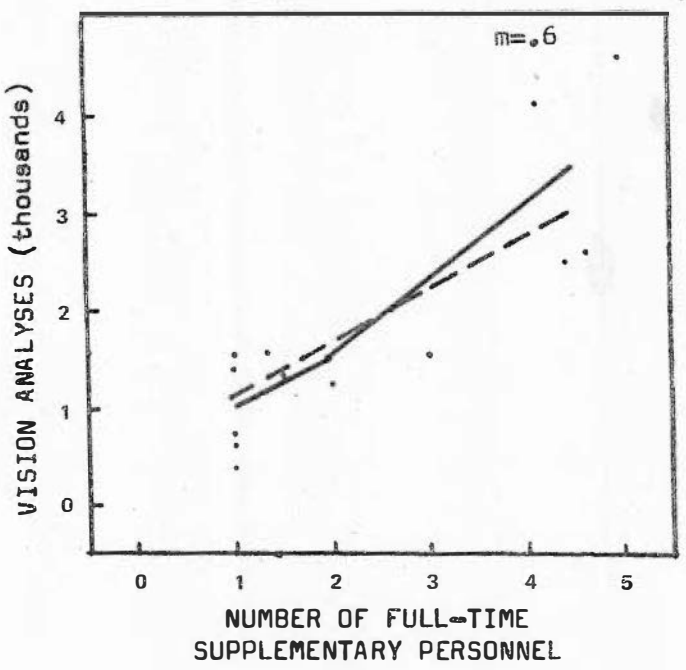

Figure 18: Productivity as a Function of Full-Time Supplementary Personnel in Alaska (per practitioner)

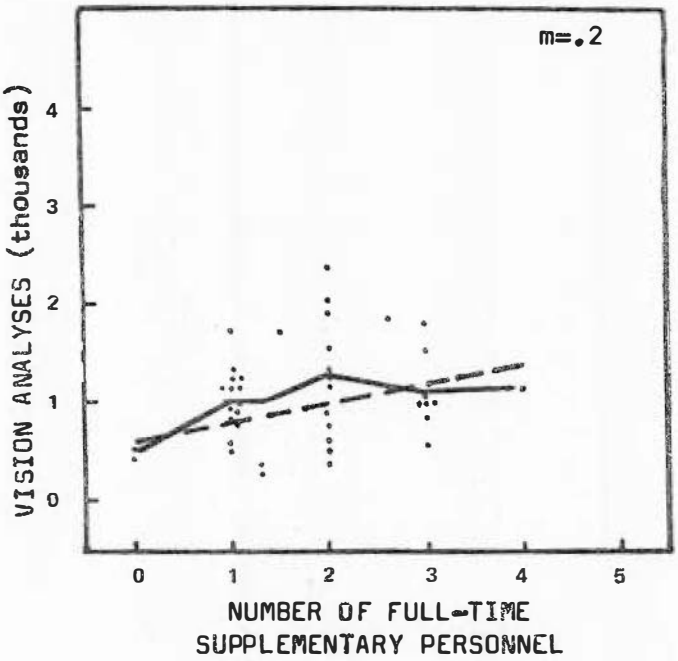

Figure 19: Productivity as a Function of Full-Time Supplementary Personnel in Idaho (per practitioner)

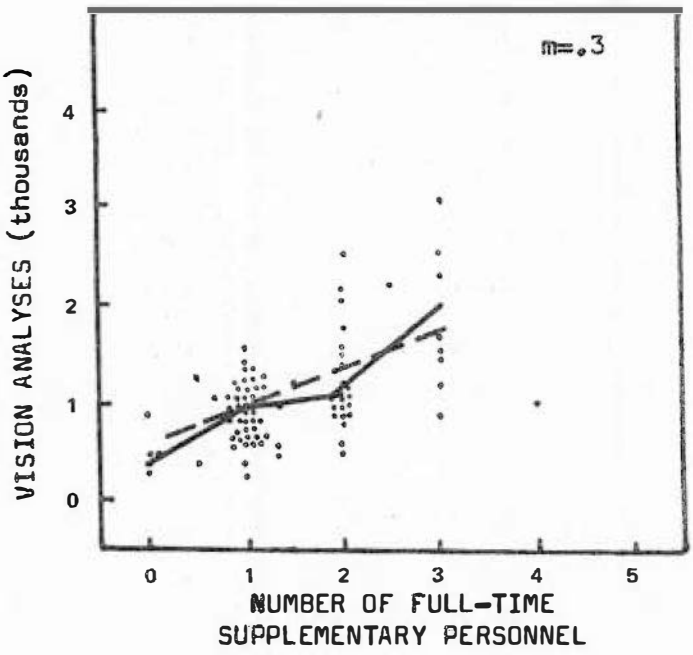

Figure 21: Productivity as a Function of Full-Time Supplementary Personnel in Washington (per practitioner)

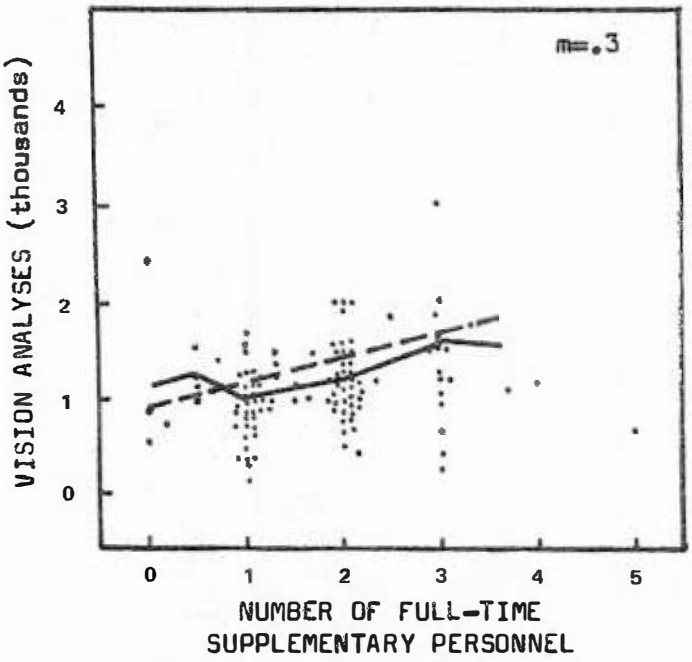

Figure 20: Productivity as a Function of Full-Time Supplementary Personnel in Oregon (per practitioner)

around age 40-50, although it peaked later in Alaska (age 55), possibly an artifact of sample size. Figures 7, 10, 13, and 16 show a similar peak, this time at about 20 to 30 years in practice. Other than Figure 8, which shows a high productivity in highly populated areas, there is no pattern to the relationship between productivity and population of area in which the optometrist practices (see Figures 11, 14, and 17).

Figures 18 through 21 represent the effect that ancillary personnel utilization has on productivity. The best fit lines have slopes of 0.2 (Idaho), 0.3 (Oregon and Washington), and 0.6 (Alaska). These values indicate that productivity increases measure from 20 to 60 percent per ancillary personnel employed. The most common values were from 20 to 30 percent. From the graphs it can be noted that the first person employed has a greater effect on productivity than do subsequent additions of personnel. The effect is most dramatic in Alaska (Figure 18) and Oregon (Figure 20). However, even Idaho and Washington do show an increase in productivity as the number of full-time supplementary personnel increase.

Health Maintenance Organizations

The HMO practitioners were separated out in the statistical analyses because they were so unique in relation to most parameters. Table VIII shows that they were not unique in terms of sex, racial/ethnic category, or school of graduation. However, Table 6 exhibited distinct differences between HMO's and group or solo as has been discussed. In addition, Table IX shows a number of differences. They work about the same number of hours weekly (37.4) but less weeks per year (46.9). In terms of examination appointments available, they are much higher (78.9) than group and solo practitioners in any of the four states, including Alaska in which the highest number of available appointments per week was 44.7.

				Racial/Ethnic Category		School of Graduation	
	n	Male	Female	White/Caucasian	Other	Pacific	Other
Washington	17	17	0	17	0	17	0
Oregon	6	6	0	6	0	6	0

Table VII: Description of optometrists employed by Health Maintenance Organizations in Oregon and Washington

	WASHINGTON (n=17)		OREGON (n=6)	
	Mean	SD	Mean	SD
Weeks per Year	46.9	2.1	47.5	1.4
Hours per Week	37.4	2.6	37.7	1.4
Examination Appointments Available per Week (A)	78.9	17.0	87.0	4.5
Examination Appointments Filled per Week	76.6	15.0	85.0	5.0
Examinations Completed per Week (E)	68.7	20.4	74.2	7.2
E/A	.87			
Percent No Show	7.2	5.0	9.6	3.3
Vision Analyses Completed in Past 12 Months	3175.6	931.4	3608.0	405.4
Annual Net Income	$35,000	-	$30,000	-

Table IX: Mean and standard deviation values for optometrists employed in Health Maintenance Organizations in Oregon and Washington for several parameters of productivity

SUMMARY AND CONCLUSIONS

A. Various researchers have projected future needs and supplies of optometric manpower. The concensus of these studies is that there will be a shortage of up to 7900 optometrists nationally by 1990.

Year	Projected Need	Projected Supply
1980	Birchard and Elliott[3]	Bernstein[1]
	31,342	22,000
1990	Bernstein[1]	Bernstein[1]
	34,000	26,100
	26,700	26,700

B. In manpower studies that have recognized productivity as a factor in projection methodology the most common measure of productivity has been the number of complete case studies (visual analyses) performed per year. These studies offer some variability in their specification of optimum or estimated number of visual analyses performed annually.

Other Studies	Visual Analyses per year
Birchard and Elliott[3]	1372
Bernstein[1]	1350
Evans[21]	2000
This Study	**Visual Analyses per year**
Solo	1144
Group	1341
HMO	3176 - 3608

C. This study found that while certain characteristics such as the size of the community where a practice is located had no discernable effect on productivity factors; other characteristics - age, years in practice, utilization of supplementary personnel, and practice mode - do bear some direct relationship to productivity. Productivity is at a peak when a practitioner has been in practice for 20 years and is between the age of 40 and 50.

D. The use of supplementary personnel has been estimated to increase productivity by 18 to 33 percent.[1, 8, 12] Koch and Phillips[10] suggested an increase in productivity as high as 68 to 71 percent. In this study we found an increase of from 20 to 60 percent, the most typical values being 20 to 30 percent.

E. Group practice was demonstrated to be productive by up to 35.8 percent more than solo practice. The HMO optometrists report productivity figures of approximately 200 percent more than solo practice. If it is assumed that the base figure of 1372 case studies per year offers the desired load for quality care as was concluded by Birchard and Elliott,[3] then caution must be exercised with respect to quality control measures for case loads exceeding this figure.

Trends toward the greater utilization of supplementary personnel and the group practice mode are evident. Since both are demonstrated variables in increased productivity, it is essential that projection methodology include these as factors in the assessment of future manpower needs.

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APPENDIX A

COMMENTS

COMMENTS

Many of the comments provided by the respondents included interest in personal use of the data to be accumulated from the survey, offers to sell their practice, suggestions to improve the format of this type of study, and other suggestions. Listed below are 20 percent of the comments received.

"Good idea! Think some input should be formulated on the number of O.D.'s needed for a population. I believe current figures are way off as so many M.D.'s are currently practicing and performing optometric care."

"Hope this questionnaire helps you, but Alaska is so atypical. There are 25,000 people living on the Kanai peninsula, two optometrists, and two of those other types - ophthalmologists. My partner and I have two branch offices, one in Seward and the other in Homer. We see many people one time and then they are gone. We have a very transient population. My partner and I have no "specialties" because the only people we would cater to - for reasons other than pathology - would be each other."

"The questionnaires we get almost every year (which I feel are important or I wouldn't take the time) are slanted toward the solo, private practitioner. There is nothing wrong with this except some questions are not answerable by me - I have been with an HMO for 20 years. They are getting better, but still different!"

"Section XI should also include number of visits for dispensings, adjustments of prescriptions, and follow-ups of special patients. Examples may be new bifocal wearers, prism prescriptions, Varilux II wearers, or brief consultations with recently examined patients to reconsider symptoms and findings before deciding whether or not to prescribe.

Section XX: This year, due to extensive capitol investment, an increasing accounts receivable, and losses on them, my net will look pretty poor as compared to my gross."

"I am in military practice. Your questionnaire is really designed only for private group or solo practice. As net income is not related to patient volume, nor patient volume to drawing area (while we have a staff of five optometrists and four ophthalmologists at Madigan Army Medical Center, schedulings of a month in advance are book up in a matter of hours), military data would not seem useful or accurate unless placed in a different category of statistics from solo and civilian group practice. I think your advisor, Dean Bleything, understands this well."

"I'm presently in the process of acquiring several items of new equipment which will allow me to schedule more patients per day by allowing my assistants to do more (i.e. Fieldmaster autoscreener, NCT, and may eventually include an autorefractor)."

"I have attended Optometric Management courses which are almost identical to this questionnaire. Automation in every phase of the office is a must for productivity and efficiency."

"We use alot of audiovisual aids to educate and instruct our patients. We also use a color coded open filing system."

"Considering the caliber of student I understand you are attracting, I cannot understand occupying them with such worthless tasks as computing the above."

"We need more female homemakers than optometrists!"

APPENDIX B

SURVEY INSTRUMENT

A STUDY OF PRODUCTIVITY IN OPTOMETRIC PRACTICE

I. PRIMARY PLACE OF PRACTICE

(1) State

- ☐ a) Alaska
- ☐ b) Idaho
- ☐ c) Oregon
- ☐ d) Washington
- ☐ e) Other

(2) Population of city/town

- ☐ a) under 1,000
- ☐ b) 1,000 - 5,000
- ☐ c) 5,000 - 10,000
- ☐ d) 10,000 - 20,000
- ☐ e) 20,000 - 30,000
- ☐ f) 30,000 - 50,000
- ☐ g) 50,000 - 75,000
- ☐ h) 75,000 - 100,000
- ☐ i) over 100,000

(3) Check one

- ☐ a) urban
- ☐ b) suburban
- ☐ c) rural

II. IN WHICH STATES DO YOU CURRENTLY HOLD AN ACTIVE LICENSE TO PRACTICE OPTOMETRY?

_____ _____ _____ _____

_____ _____ _____ _____

III. AGE

(4)

- ☐ a) 20-24
- ☐ b) 25-29
- ☐ c) 30-34
- ☐ d) 35-39
- ☐ e) 40-44
- ☐ f) 45-49
- ☐ g) 50-54
- ☐ h) 55-59
- ☐ i) 60-64
- ☐ j) 65 and over

IV. SEX

(5)

- ☐ a) male
- ☐ b) female

V. RACIAL/ETHNIC CATEGORY

(6)

- ☐ a) White/Caucasian
- ☐ b) Black/Negro
- ☐ c) Japanese/Chinese
- ☐ d) Other Asian
- ☐ e) Indian/Eskimo/Aleut
- ☐ f) All other (Specify) _____

Also mark if applicable:

- ☐ g) Mexican American
- ☐ h) Puerto Rican
- ☐ i) Other Latin American

VI. YEAR GRADUATED FROM OPTOMETRY SCHOOL:

(7) 19 _____

(8) Name of School

- ☐ a) Ohio State
- ☐ b) Illinois
- ☐ c) Southern
- ☐ d) Pacific
- ☐ e) Houston
- ☐ f) Indiana
- ☐ g) California (Berkeley)
- ☐ h) Los Angeles (SCCO)
- ☐ i) Pennsylvania
- ☐ j) (Do not mark here)

(9)

- ☐ a) Massachusetts (NEWENCO)
- ☐ b) Northern Illinois (ICO)
- ☐ c) Chicago (Monroe)
- ☐ d) Columbia
- ☐ e) Needles
- ☐ f) Rochester
- ☐ g) Montreal
- ☐ h) Waterloo
- ☐ i) Other _____
- ☐ j) (Do not mark here)

(10) Degrees earned in addition to optometric: (Check all that apply and indicate in what field.)

- ☐ a) Doctorate _____
- ☐ b) Master's _____
- ☐ c) Bachelor's _____
- ☐ d) Associate _____
- ☐ e) Other _____
- ☐ f) None

Highest level of formal education attained: (Check appropriate boxes.)

		A	B	C	D	E	F	G
	Years Completed / College	0	1	2	3	4	5	6 or more
(11)	Pre-Optometry							
(12)	Optometry							
(13)	Post-Optometry							

VII. ARE YOU CURRENTLY ACTIVE IN OPTOMETRY? (Include patient care, teaching and administration.)

(14)

- ☐ a) Yes, full time
- ☐ b) Yes, part-time

↓

Proceed to Next Item

- ☐ c) No, retired
- ☐ d) No, unemployed (recent graduate)
- ☐ e) No, unemployed (not recent graduate)
- ☐ f) No, not active in optometry.

In what field are you active? _____

↓

STOP! Remainder of questionnaire does not apply.
PLEASE RETURN QUESTIONNAIRE.

VIII. PRINCIPAL FORM OF EMPLOYMENT:

(15)

- ☐ a) Self-employed/Solo practice
- ☐ b) Self-employed/Partnership practice
- ☐ c) Self-employed/Group practice
- ☐ d) Employed by professional corporation established after 1969.

(17) If in a partnership, group practice, or corporation, how many OPTOMETRISTS are there in the practice, COUNTING YOURSELF? _____

- ☐ e) Employed by - Federal government (non-military) (Specify) _____
- ☐ f) Employed by - Federal government (other) (Specify) _____
- ☐ g) Employed by - State or local government (Specify) _____
- ☐ h) (Do not mark here)

(16)

- ☐ a) Employed by - Optometrist(s)
- ☐ b) Employed by - Ophthalmologist(s)
- ☐ c) Employed by - Physician(s), other than Ophthalmologist(s)
- ☐ d) Employed by - Firm or manufacturer (profit making) (Specify) _____
- ☐ e) Employed by - Non-profit organization or institution (Specify) _____
- ☐ f) Employed in Multidisciplinary Group Practice (Specify) _____
- ☐ g) Other (Specify) _____
- ☐ h) (Do not mark here)

IX. APPROXIMATELY WHAT PERCENT OF YOUR TIME DO YOU USUALLY SPEND IN EACH OF THE FOLLOWING ACTIVITIES?

(18) _____ % Optometric practice

(19) _____ % Teaching (as related to optometry)

(20) _____ % Optometry research

(21) ☐ a) Clinical
☐ b) Basic Science
☐ c) Other

(22) _____ % Administration (in schools or colleges, associations, etc.)

(23) _____ % Other (Specify) _____

100 %

If ZERO% of your time is spent in PATIENT CARE, STOP! and return questionnaire. Otherwise, continue.

X. PRACTICE OPTOMETRY

(24) _____ Weeks per year (excluding vacation)

(25) _____ Hours per week (available for patient care)

XI. PICK A TYPICAL WEEK AND ANSWER THE FOLLOWING

(26) _____ Number of examination appointments available per week

(27) _____ Number of examination appointments filled per week

(28) _____ Number of other visits per week (e.g., contact lens follow-up, vision training session, etc.)

(29) _____ Number of routine examinations completed per week.

(30) _____ Percent of no shows.

XII. NUMBER OF VISION ANALYSES PERFORMED BY YOU IN THE PAST 12 MONTHS

(31) _____

XIII. HOW MANY INDIVIDUALS DO YOU ESTIMATE ARE UNDER YOUR CARE?

(32) _____

XIV. YEARS IN PRACTICE

(33) _____

XV. IN WHAT YEAR DO YOU INTEND TO RETIRE?

(34) _____

XVI. HOW MANY CLOCK HOURS OF PERSONAL ATTENDANCE DID YOU DEVOTE TO CONTINUING EDUCATION DURING THE PAST 12 MONTHS?

(35) In courses offered by schools and colleges?_____ hours

(36) In other sponsored educational meetings? _____ hours

XVII. PRIMARY SPECIALTY: (Check only one and indicate percent of time spent in that specialty.)

(37) ☐ Contact Lenses _____%

(38) ☐ Visual Training/Orthoptics _____%

(39) ☐ Subnormal Vision/Low Vision _____%

(40) ☐ Developmental Vision _____%

(41) ☐ Occupational Vision _____%

(42) ☐ Aniseikonic Therapy _____%

(43) ☐ Other (Specify) _____ _____%

XVIII. IN YOUR OPTOMETRIC PRACTICE, DO YOU EMPLOY SUPPLEMENTARY PERSONNEL TO ASSIST YOU?

(44) ☐ a) Yes ☐ b) No

Please indicate below, the number of personnel in each category that MOST CLOSELY describes their position. (Indicate only one category for each individual.)

	For You Alone		Shared with You and Associates	
	Full-time	Part-time	Full-time	Part-time
	A	B	C	D
(45) Secretary/Receptionist				
Paraoptometric Personnel				
(46) Grad. 1 year program				
(47) Grad. 2 year program				
(48) Received formal training but did not complete program				
(49) Office trained only				
(50) Dispensing Optician				
(51) Optical Technician				
(52) Contact Lens Technician				
(53) Other (Specify) _____				

CHECK ANY OF THE FOLLOWING THAT ARE DELEGATED TO THE ABOVE PERSONNEL

(54) ____ Reception, filing and record keeping
(55) ____ Appointment control
(56) ____ Routine billing of patients
(57) ____ Incidental housekeeping
(58) ____ Recall system control
(59) ____ Telephone answering. Routine bookkeeping.
(60) ____ Credit arrangements/control
(61) ____ Routine stenography
(62) ____ Frame selection
(63) ____ Check laboratory invoices
(64) ____ General office mangement
(65) ____ Frame repair
(66) ____ Frame adjustments
(67) ____ Inventory control
(68) ____ Rx verification
(69) ____ Compute patient's fees
(70) ____ Instruct patients in contact lens insertion/removal
(71) ____ Dispensing (new Rx)
(72) ____ Visual skills test
(73) ____ Record clinical findings from O.D.
(74) ____ Visual field testing
(75) ____ Carry out prescribed visual training procedures
(76) ____ Lens cutting/edging
(77) ____ Contact lens modification

IN YOUR OPTOMETRIC PRACTICE, DO YOU UTILIZE THE OUTSIDE SERVICES OF

(78) Dispensing Optician(s)? ☐ a) Yes ☐ b) No

(79) Optical Laboratory(s)? ☐ a) Yes ☐ b) No

(80) Contact Lens Lab(s)/Technician(s)? ☐ a) Yes ☐ b) No

(81) Optometrist(s) of other specialty(s)? ☐ a) Yes ☐ b) No

XIX. DO YOU OWN AND USE AN AUTOREFRACTOR?

(82)

☐ a) Yes
☐ b) No

XX. ANNUAL NET INCOME

(83)

☐ a) less than $10,000
☐ b) $10,000 - $15,000
☐ c) $15,000 - $20,000
☐ d) $20,000 - $25,000
☐ e) $25,000 - $30,000
☐ f) $30,000 - $35,000
☐ g) $35,000 - $40,000
☐ h) $40,000 - $45,000
☐ i) $45,000 - $50,000
☐ j) more than $50,000

COMMENTS: