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The descriptive characteristics of South Dakota and Minnesota optometrists: A comparative survey

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Pacific University

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Abstract
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The Descriptive Characteristics of South Dakota and Minnesota Optometrists: A Comparative Survey

Submitted by
Jayne M. Hohn
student researcher

To Dr. Alan W. Reichow, O.D.
thesis adviser

February 1983

Accepted Alan W. Reichow, O.D.
INTRODUCTION

In recent years, the distribution of health manpower has been researched in an attempt to identify if a shortage does exist and what could be done to alleviate it. Repeated tabulations showed that a definite shortage does exist in both the medical and optometric community. It is particularly noteworthy in the rural and inner-city communities which have a difficult time recruiting new health care practitioners. Predictions have also been made that this shortage will continue over the next few decades unless restructuring of the system takes place.

Most of the literature to determine the general factors that influence the practice location was cited in the medical research. Most studies have tended to isolate a single variable that affected this decision. Marshall, et al, deemed population size as the most important element in determining physician location. In contrast, Aaron, et al, suggested that a physician's practice location was strongly associated with where the first 18 years of his/her life had been spent. Several studies have reported multiple variables affecting practice location. The most common variables identified were: 1) the availability of nearby hospital facilities and support personnel; 2) the opportunity to join a partnership or group practice; 3) the climate and geographical features of a given area; 4) a preference for either rural or urban living; 5) the influence of spouse, family and friends; and 6) the quality of the
Several medical studies have also been able to identify some factors that are poor indicators of practice location. Marshall, et al, found in their study that the affluence per se of an area has little attraction for physicians but the degree of urbanization is the more crucial factor. In contrast, Parker states that "physician incomes, hospital stipends and salaries, and state per capita incomes were not very successful explanators of physician location." Also, in a study of Arizona and New Mexico physicians, Stewart, et al, concluded the size of the community of origin of both the physician and his/her spouse seemed to be a poor predictor of practice location.

In contrast, the optometric literature contained few research articles on the important factors that may influence state practice location. A study conducted by Andreas determined the state or region of high school graduation was consistently the best single indicator of an optometrist's eventual location. Olsen and Ingalls study of North Carolina optometrists identified the following factors as significant factors influencing state practice location: 1) climate; 2) home state; 3) heritage; 4) state optometric statutes; 5) existence of an established practice; and 6) the economic condition of the area. Finally, Kegel-Flom cited birthplace as a major reason for both rural and urban optometrists in locating their practices.

After the decision has been made to practice in a given location, numerous studies have factored out the variables which are predictors...
of whether a health care practitioner will choose a rural or urban location. It does appear that there is a difference between medical and optometric providers who have either a rural or urban practice. Medical doctors generally tend not to locate in rural areas due to the fear of professional isolation and lack of quality facilities and support personnel. Studies have also pointed out that many optometric doctors also avoid rural practice due to limited professional interactions that are available.

These same studies have gone on to investigate and list both the advantages and disadvantages that practitioners have identified with either a rural or urban practice. Most practitioners cited a greater interest of the work itself and more patient contact as the main advantages to rural practice. The most common disadvantages listed concern the limited educational, cultural and professional opportunities in a rural community. Urban health care practitioners state the main advantages to their practice location as being the improved interprofessional cooperation and increased social, cultural, economic and educational opportunities available. The reduced status as a health professional and increased urban deterioration are frequent disadvantages listed by urban practitioners.

As stated previously, there is a shortage and maldistribution of health professional manpower. Health professional schools as well as regional and governmental planners have attempted to devise strategies to influence a better distribution of health professionals
to both rural and inner-city communities. Most programs have been centered about financial incentives such as loan forgiveness and federal financing of office and equipment for private and group practices in shortage areas as a basis for dispersing health professionals to needed areas. Admissions to health professional schools have also been modified to incorporate more students from rural and inner-city communities in hopes the majority will return to a similar area to practice. Professional isolation has also been reduced by more continuing education courses and interprofessional cooperation for practitioners in all areas.

This original research will attempt to corroborate which general factors tend to influence an optometrist in choosing a particular practice location. The study will attempt to determine if there are different factors for rural versus urban optometrists in determining location. A further aspect of this research is to identify potential ways that health planners could utilize to recruit health practitioners to rural and inner-city communities. The last area of this survey will be the distinguishing practice features such as age, income level, community size of both rural and urban optometrists. The research should demonstrate that in all the subsections included in the survey there will be significant differences between rural and urban optometrists.
METHODOLOGY

An original survey form and cover letter explaining the research was sent to all South Dakota optometrists who were considered as comprising the pool of rural optometrists. The urban optometrist pool consisted of Minnesota optometrists whose practice location was listed on the state optometric association roster as being in either Grand Forks, Duluth, Moorhead, Rochester or the Minneapolis-St. Paul area. These cities were selected since they are considered to be the main industrial centers in the different regions of Minnesota. When the surveys were mailed, there were no identifying codes on them to determine what information came from any individual practitioner. The following two pages are a copy of the original survey form previously mailed to the optometrists.
A. Age

- 20 - 24
- 25 - 29
- 30 - 34
- 35 - 39
- 40 - 44
- 45 - 49
- 50 - 54
- 55 - 59
- 60 - 64
- 65 and over

B. Sex

- Male
- Female

C. Please indicate the state in which each event occurred.

- Birth
- High school graduation
- Pre-optometry college
- Practice location

D. Primary Site of Practice

- Urban/Suburban
- Rural

E. Principal Type of Practice

1. Self-employed
   - Solo practice
   - Partnership practice
   - Group practice

2. Employed by
   - Professional corporation
   - Another optometrist
   - Other

   If a partnership, group practice or a corporation, how many optometrists are there in the practice, counting yourself?

F. Population of city/town

- Under 1,000
- 1,000 - 5,000
- 5,000 - 10,000
- 10,000 - 20,000
- 20,000 - 30,000
- 30,000 - 50,000
- 50,000 - 75,000
- 75,000 - 100,000
- 100,000 - 250,000
- Over 250,000

G. Years in Practice

- Under 1
- 1 - 4
- 5 - 9
- 10 - 14
- 15 - 19
- 20 - 24
- 25 - 29
- 30 and over
H. Primary Specialty (Check **one** and indicate percent of time spent in that specialty.)

- Contact Lenses: ___%
- Vision Training: ___%
- Subnormal/Low Vision: ___%
- Developmental Vision: ___%
- Occupational Vision: ___%
- Sports Vision: ___%
- Other (specify): _______________ ___%

I. Estimate the total number of patients under your care. ____________

J. Pick a **TYPICAL** week and answer the following questions.

- Number of examination appointments available to patients
- Number of examination appointments filled per week
- Number of other visits (e.g., contact lenses follow-ups, vision training session, dispensing visit, consultation, etc.)
- Number of no-shows and cancellations

K. Annual NET Income

- less than $15,000
- $15,000 - $25,000
- $25,000 - $35,000
- $35,000 - $45,000
- $45,000 - $55,000
- more than $55,000

L. Anticipated Year of Retirement ___

M. Select the three (3) most important factors that influenced your choice of a practice location.

1 = most important
2 = second most important
3 = third most important

- availability of interprofessional support
- cultural and social activities
- geographical region/climate
- income potential
- nearness to family and friends
- need for optometric services in the area
- opportunity to join a partnership or group practice
- preference for urban or rural living
- quality of educational system for children
- recreational opportunities
- religious opportunities
- state optometric statutes
RESULTS

A total of 200 surveys were sent out to South Dakota and Minnesota optometrists. The names and addresses utilized were those provided by each state's optometric association. In South Dakota, 105 surveys were mailed with 48 (46% response rate) of those returned being tallied for comparison with Minnesota results. Ninety-five surveys were mailed to selected Minnesota optometrists with 55 (58% response rate) completed questionnaires being returned before the stipulated deadline. Overall, there was a 51.5% return rate for all surveys mailed. Where appropriate the tabulated answers for both South Dakota and Minnesota respondents are compared using a combined frequency histogram.

Fig. 1 showed the age breakdown in five-year increments of all participants in the research project. Fig. 2 charted the region where several major events occurred for the optometrists. Fig. 3 documented the location of the primary site of the optometric practice. Fig. 4 tabulated the different modes of office management utilized by the optometrists. Fig. 5 showed a population breakdown of the city centers where optometrists practice. Fig. 6 tallied the years in practice of each respondant. Fig. 7 was an estimation of the total number of patients the individual optometrist has provided services for.

Figs. 8 through 11 estimated the utilization of all services available in the optometrist's office during a typical week. Fig. 12 documented the estimated annual net income for the given optometric
practice. Fig. 13 tabulated the predicted year of retirement as estimated by the individual optometrist. Fig. 14 tabled the responses of the survey question which asked the optometrist to check the three most important factors that influenced his/her choice of a practice location. The following pages are the actual tabulated results for each question of the survey.
RESULTS

South Dakota
105 surveys sent
48 returned
46% response rate

Minnesota
95 surveys sent
55 returned
58% response rate

Fig. 1. Age distribution of practicing South Dakota and Minnesota optometrists in five-year increments.
<table>
<thead>
<tr>
<th></th>
<th>South Dakota</th>
<th>Minnesota</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>41</td>
<td>50</td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**State of Birth**

<table>
<thead>
<tr>
<th></th>
<th>Midwest</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>38</td>
<td>40</td>
</tr>
<tr>
<td>Female</td>
<td>5</td>
<td>12</td>
</tr>
</tbody>
</table>

**High school graduation**

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<th></th>
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<th>Other</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>41</td>
<td>44</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

**Pre-optometry college**

<table>
<thead>
<tr>
<th></th>
<th>Midwest</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

Midwest includes No. Dak., So. Dak., Nebr., Iowa, Minn., Wisc.

Fig. 2. Indication of the region where several major events occurred during the optometrist's life.

**Primary site of practice**

<table>
<thead>
<tr>
<th></th>
<th>Urban/Suburban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>Female</td>
<td>52</td>
<td>0</td>
</tr>
</tbody>
</table>

Fig. 3. The location of the primary site of practice.
Fig. 4. Tabulation of the different modes of office management used by optometrists.
Fig. 5. Population of the city centers where optometrists practice.
Fig. 6. Number of years in licensed practice as specified by the individual optometrist.
Fig. 7. Estimation of the total number of patients the optometrist has provided services for.

Patients under your care

<table>
<thead>
<tr>
<th>Range</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 4999</td>
<td>5</td>
</tr>
<tr>
<td>5000 - 9999</td>
<td>10</td>
</tr>
<tr>
<td>10000 - 14999</td>
<td>15</td>
</tr>
<tr>
<td>15000 - 19999</td>
<td>15</td>
</tr>
<tr>
<td>over 20000</td>
<td>15</td>
</tr>
<tr>
<td>Unknown</td>
<td>15</td>
</tr>
</tbody>
</table>

Fig. 8. Number of time slots available per week for full vision exams.
Fig. 9. Estimation of vision exam time slots actually filled with patient visits during a typical week.

Fig. 10. Estimation of other appointment slots used for contact lenses, vision training, consultations, etc.
Fig. 11. Estimation of scheduled patient no-shows and cancellations during a typical week.

Fig. 12. Annual net income for the optometric practice.
Year of retirement

Fig. 13. Predicted year of retirement as estimated by the individual optometrist.
Factors influenced practice location

number listed is those marked by the group as a whole

1 = most important factor
2 = second most important factor
3 = third most important factor

<table>
<thead>
<tr>
<th></th>
<th>South Dakota</th>
<th>Minnesota</th>
</tr>
</thead>
<tbody>
<tr>
<td>availability of interprofessional support</td>
<td>0 0 0</td>
<td>1 2 0</td>
</tr>
<tr>
<td>cultural/social activities</td>
<td>0 2 2</td>
<td>6 2 8</td>
</tr>
<tr>
<td>geographical region/climate</td>
<td>5 6 4</td>
<td>1 6 3</td>
</tr>
<tr>
<td>income potential</td>
<td>7 4 7</td>
<td>15 8 3</td>
</tr>
<tr>
<td>nearness to family and friends</td>
<td>5 11 3</td>
<td>13 10 5</td>
</tr>
<tr>
<td>need for optometric services in the area</td>
<td>5 2 4</td>
<td>9 4 5</td>
</tr>
<tr>
<td>opportunity to join a partnership or group practice</td>
<td>9 1 0</td>
<td>7 1 3</td>
</tr>
<tr>
<td>preference for urban/rural living</td>
<td>7 10 7</td>
<td>2 8 9</td>
</tr>
<tr>
<td>quality of educational system for children</td>
<td>0 0 6</td>
<td>1 2 4</td>
</tr>
<tr>
<td>recreational opportunities</td>
<td>0 4 3</td>
<td>0 1 7</td>
</tr>
<tr>
<td>religious opportunities</td>
<td>0 0 0</td>
<td>0 0 0</td>
</tr>
<tr>
<td>state optometric statutes</td>
<td>0 0 2</td>
<td>0 0 0</td>
</tr>
</tbody>
</table>

Fig. 14. Tabulation of responses of checking the three most important factors of the above list that influenced the optometrist in his/her choice of a practice location.
DISCUSSION

After tabulation of the returned surveys was completed, the results showed no major distinctions in describing practice characteristics between the rural South Dakota optometry pool and the urban Minnesota optometry pool. Therefore, the histograms are analyzed as to the similarities and contrasts between the two optometric pools. The age breakdown documented significant differences between the South Dakota respondants and the Minnesota respondants. In South Dakota, 56.8% of the participants are grouped in the age 20 to 49 brackets while in Minnesota only 42.3% are concentrated in the same age brackets. In addition, Minnesota optometrists approaching retirement within the next 15 years accounted for 57.7% of all Minnesota participants while the South Dakota optometrists in the same age 50 to 65 brackets accounted for 43.2% of the respondants. Consequently, it appeared many more associateships and practice opportunities will be available in Minnesota in the upcoming years for new optometry school graduates who wish to locate here.

Fig. 2 supported the theory that the region where the majority of significant early life events occur was often a good predictor of future practice location. A dramatic number of both South Dakota and Minnesota optometrists had all three major events occur in the Midwest region. Since 88.4% of South Dakota and 76.9% of Minnesota respondants were born in the Midwest, Kegel-Flom was substantiated in her study where she stated that the birthplace was often cited by both rural and
urban optometrists as a major reason for their choice of a particular practice location. These figures contradict Stewart, et al, 24 whose paper indicated that the community of origin was often a poor predictor of a future practice location. Likewise, the data for the region of high school graduation -- 95.3% for South Dakota and 84.6% for Minnesota -- documented the importance of the Midwest as an indicator of possible future returnees. Andreas 2 stated in his research that when each of the three early life events surveyed occurred in different regions more optometrists are likely to return to the region where they graduated from high school. This trend also followed for the region of the pre-optometry college. For 85.4% of South Dakota optometrists surveyed, their pre-optometry college experience occurred in the Midwest while 80.0% of the Minnesota optometrists obtained their pre-optometry college education in the Midwest. These data once again supported Aaron, et al, 1 research which concluded a strong association between practice location with where a physician had spent the first 18 years of his/her life.

Fig. 3 negated the hypothesis that South Dakota optometrists would comprise the rural practice pool since 44.2% stated his/her primary site of practice was located in an urban/suburban setting. As expected all of the Minnesota participants practice in an urban/suburban location. This questionnaire affirmed that optometrists are maintaining the traditional modes of office practice. Fig. 4 charted 86.4% of South Dakota optometrists as self-employed in a solo practice, a partnership or group practice.
while 61.5% of Minnesota optometrists are utilizing these same modes. As was anticipated a higher percentage of Minnesota respondents (38.5%) are employed by a professional corporation or another optometrist as compared to South Dakota respondents (13.6%) under an employment contract. This trend may be due to the larger area of the state a South Dakota optometrist must provide services for as opposed to the denser population base surrounding an urban center which provides a larger economic support base in a smaller area.

Fig. 5 delineated the population centers where optometrists practice. As was predicted, the data demonstrate that 72.7% of all South Dakota optometrists maintain an office in a city of less than 20,000 population. Due to the selection of the Minnesota optometrists, it was predicted a high percentage (94.2%) of respondents were located in an urban/suburban center having greater than a 20,000 population base. This difference is due to a diminished population residing in South Dakota.

Fig. 6 tallied the number of years in licensed practice for the individual optometrist. According to experts in practice management, an optometrist builds a strong practice and clientele in the first 20 years of his/her practice. South Dakota has a significantly higher percentage of practices (54.5%) which are less than 20 years old and therefore may be expanding. In comparison, 63.5% of the Minnesota practices sampled were practices over 20 years old and consequently
may have reached a plateau. These figures correlate with the high number of South Dakota optometrists who are concentrated in the age 20 to 49 brackets.

Fig. 7 estimated the total number of patients the individual optometrist has provided vision services for. In this area, both South Dakota and Minnesota optometrists have approximately equivalent patient loads. 51.0% of all survey respondents manage less than 10,000 cases while 20.8% of the optometrists provide vision services to greater than 10,000 people. A high proportion (28.1%) of optometrists is unaware of the volume of patients the office staff must manage which may make record keeping and storage a critical factor in office management.

Figs. 8 through 11 are estimates of the utilization of all vision services available in the optometrist's office during a typical week. Fig. 8 documented the number of time slots available for a full vision exam in the optometrist's appointment book. In South Dakota, the majority of optometrists (58.5%) allot time for less than 50 vision exams per week. Minnesota optometrists are split approximately in half since 49.0% allow the receptionist to schedule more than 50 vision exams per week if needed. Fig. 9 illustrated no significant difference in the vision exam time slots actually scheduled with patient visits. Approximately 69.0% of all South Dakota and Minnesota optometrists are able to schedule 40 and less vision exams per week. These two charts highlight that Minnesota urban optometrists may accommodate more patients in an emergency situation since there are more time slots already available in the appointment book. Fig. 10 graphed the number
of short time slots available for such services as contact lenses follow-ups, vision training sessions, dispensings, consultations, etc. Once again South Dakota and Minnesota optometrists allow equivalent appointment slots -- 63.4% and 68.8% respectively -- for subsidiary vision services. Fig. 11 demonstrated that Minnesota optometrists may fill more appointment slots but they consequently have a higher percentage of patient no-shows and cancellations. According to the survey, 31.0% of South Dakota optometrists experienced three or more no-shows and cancellations during a typical week while 49.0% of the Minnesota optometrists have three or more no-shows and cancellations.

Fig. 12 charted the annual net income as reported by the optometric practice. It appeared South Dakota practices have a higher net income overall since 42.9% of the optometrists showed net income greater than $45,000. In contrast only 32.0% of the Minnesota practices reported net incomes greater than $45,000. This difference may be due to inflated fixed overhead costs for urban-located Minnesota optometrists. The discrepancy may also be attributed to a lowered cost of living in rural South Dakota.

Fig. 13 tabulated the predicted year of retirement as estimated by the individual optometrist. Again the trend in South Dakota demonstrated a low percentage (23.3%) of optometrists planning to retire within the next 15 years. This data correlated with the high proportion of people in the age 20 to 49 brackets as well as with the high number of optometric practices which are 20 years old and less. In comparison,
41.2% of the sampled Minnesota optometrists are predicting retirement within the next 15 years. These figures are linked to the higher percentage of aged Minnesota optometrists and also with the higher proportion of older optometric practices. A high percentage of both South Dakota and Minnesota optometrists -- 27.9% and 27.5% respectively -- was unable to predict the year of retirement and consequently may not be prepared for the changed circumstances that retirement may bring.

Fig. 14 tabled the responses of the survey question which asked the optometrist to check the three most important factors that influenced his/her choice of a practice location. The factors which were important to South Dakota optometrists in choosing a practice location were (in descending order of importance): 1) preference for urban/rural living; 2) nearness to family and friends; 3) income potential; 4) geographical region/climate; 5) need for optometric services in the area; and 6) opportunity to join a partnership or group practice. The availability of interprofessional support, religious opportunities and state optometric statutes were the factors with the least effect on choosing practice location. The factors which were important to Minnesota optometrists in choosing a practice location were (in descending order of importance): 1) nearness to family and friends; 2) income potential; 3) preference for urban/rural living; 4) need for optometric services in the area; 5) cultural/social activities; 6) opportunity to join a partnership or group practice; and 7) geographical region/climate. Once again those factors that had the least effect on South Dakota practice location
were the identical ones for the Minnesota optometrists.

There appeared to be no dramatic differences between South Dakota optometrists and the selected Minnesota optometrists. The main differences are related to the sampling pattern which happened to tag a high percentage of older and more established Minnesota optometrists. The survey supported the hypothesis that the more early life events which occurred in the Midwest the more likely the person is to return to this region since more family, friends and fulfilling moments have already happened in the region. The questionnaire attempted to demonstrate a difference between supposedly rural South Dakota optometrists and urban Minnesota optometrists but this could not be corroborated since almost half of South Dakota optometrists consider themselves to practice in an urban/suburban setting. The majority of the survey gathered information which could describe the optometric practice in detailed terms. The last area covered the factors the optometrist considered most important in choosing a practice location. The order of the factors can give an indication to health care recruitment committees of possible incentives they may offer new practitioners.
REFERENCES


