(To be made one and eight copies)
FIFTH LEGISLATURE, 1970
STATE OF HAWAII

S.R. NO. 291

COPY

SENATE RESOLUTION

RELATING TO FOREIGN DENTAL GRADUATES.

WHEREAS, H.B. No. 1861-70, H.D. 2 proposes to allow eligible foreign dental graduates to take the Hawaii dental examination; and

WHEREAS, foreign dental graduates claim that their education and training is equivalent to American dental training; and

WHEREAS, the members of the dental profession in Hawaii feel strongly that the licensing of foreign dental graduates after passing the examination will tend to lower the standard of practices in the State of Hawaii because of the special education and training in standards, techniques, philosophy and ethics in American dental schools and that the passing of an examination will not serve to inculcate these principles which they consider to be essential to high quality dental care; and

WHEREAS, the foreign dental graduates claim that they seek only the right to be eligible for the examination and to be tested thoroughly in the skills and theoretical knowledge required; and

WHEREAS, said bill was passed by the House and transmitted to this body on the 54th day of session and as a practical matter there is no time to hold a public hearing to evaluate the divergent views on the merits of this bill; now, therefore,

BE IT RESOLVED that the Legislative Reference Bureau be requested to do research on this question and submit a report twenty days before the convening of the Regular Session of 1971; and

BE IT FURTHER RESOLVED that certified copies of this Resolution be forwarded to the Director of the Department of Health, the Hawaii Dental Association, the Board of Dental Examiners, and Attorney Victor Agmata, Jr.

LICENSURE OF FOREIGN DENTAL GRADUATES

Report No. 4, 1971

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FOREWORD

This report on the licensure of foreign dental graduates has been prepared in response to Senate Resolution No. 291, adopted during the 1970 Regular Session of the Fifth Legislature of the State of Hawaii. The attempt to amend the present manner of licensing foreign dental graduates by removing the American degree requirement is a means to resolve the problem resulting from the presence of foreign dental graduates in Hawaii who are unable to practice their profession because of difficulties encountered in gaining admittance to American dental schools. While it is apparent that foreign dental graduates have only a limited avenue available for licensure under the present law, any amendment must be considered in terms of whether or not public health and safety will be endangered thereby, since licensing statutes are enacted for the protection of the public. We have examined the major issues involved in the licensure of foreign dental graduates and have assessed the feasibility of removing the American degree requirement.

We wish to thank representatives of the many organizations who contributed in the preparation of this study--Department of Health, Hawaii State Dental Association, Board of Dental Examiners, and International Dentists Association. The deans of the various dental schools who participated in the survey were most helpful in providing data employed in the study.

Henry N. Kitamura
Director

January 1971

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INTRODUCTION

Senate Resolution No. 291, adopted during the 1970 session of the Legislature, requests the Legislative Reference Bureau to do research on the licensure of foreign dental graduates[1] and to evaluate the divergent views on the merits of House Bill No. 1861-70, relating to foreign dental graduates. Hawaii's existing law concerning the licensure of dentists includes the requirement that any applicant for licensure must have a diploma or certificate of graduation from an American dental school, recognized and approved by the Board of Dental Examiners, as a condition of eligibility to take the licensure examination.[2] The introduction of House Bill No. 1861-70 intended to remove the requirement of graduation from an American dental school, as a condition of eligibility for the licensure examination for graduates of foreign dental schools.

One of the primary reasons why legislation to remove the requirement of graduation from an American dental school was introduced may have stemmed from the general inconsistency between immigration policies and licensing statutes relating to dentistry throughout the United States. The Immigration and Nationality Act allows third preference to qualified immigrants who are members of the professions or who, because of exceptional ability in the sciences or arts, will substantially benefit, prospectively, the national economy, cultural interest, or welfare of the State.[3] Professionals may also be admitted if they qualify as relatives under the immigration law. Thus, there is a relatively open avenue by which foreign dental graduates are able to enter the United States, but there is a comparatively limited avenue by which foreign dental graduates can become eligible for licensure to practice their profession since all states, with the exception of California and New York, require a D.D.S. (Doctor of Dental Surgery) or D.M.D. (Doctor of Dental Medicine) degree from an accredited school of dentistry.[4]

What exists, in effect, is a conflict between two competing values of the American system--equality of opportunity for all via immigration policies and protection of the public via licensing laws. The former is basically permissive, while the latter is restrictive in nature. The introduction of House Bill No. 1861-70 was an initial attempt to find an equitable solution to resolve this problem as it pertains to the licensure of foreign dental graduates in Hawaii.

The recent enactment of California's Assembly Bill No. 537 (see Appendix A) provided an impetus for changing the requirement of

graduation from an American dental college for foreign dental graduates. California's law allows a graduate of a foreign dental school, listed by the World Health Organization or by a foreign dental school approved by the Board of Dental Examiners, who is licensed to practice dentistry in the country wherein is located the school from which the applicant graduated, to take the licensure examination without obtaining a degree from an accredited American or Canadian school of dentistry.

There are at least seventeen foreign dental graduates in Hawaii[5] who are licensed practitioners in their country of origin but who are ineligible for licensure here because of failure to obtain a D.D.S. or D.M.D. degree from an American dental college. Whatever the reasons for failure, the result is a waste of dental manpower resources in Hawaii, a loss of manpower resources to the foreign country, and a reduction in the dignity of the foreign dental graduate who is either underemployed or unemployed.

Assembly Bill No. 537 was California's way of responding to her problem of foreign dental graduates. Hawaii has a similar problem, but whatever course of action Hawaii chooses, it must be remembered that licensure is a process for determining professional competency and should not be used as a substitute for sound international and immigration policies.[6] The problem should not be misconstrued as simply whether or not foreign dental graduates should be given the opportunity to take the examination for licensure. The problem is whether or not any change in the present requirement of graduation from an American dental school would lower the quality of dental care in Hawaii.

The purposes of this study are (1) to discuss the divergent views on the merits of House Bill No. 1861-70 and (2) to determine the feasibility of changing the present requirement of graduation from an American dental school. In fulfilling these purposes, it is hoped that the study will provide assistance to the Legislature in their decision-making and assurance to the public that quality dental care is maintained.

Due to the paucity of information on the subject of licensing foreign dental graduates, in identifying the major issues involved, it was necessary to rely primarily on the testimonies presented at public hearings on House Bill No. 1861-70, supplemented by personal interviews with proponents and opponents of the bill and with representatives from the Department of Health and the Hawaii Board of Dental Examiners. In the discussion of the divergent views on the

merits of House Bill No. 1861-70 and the question of whether or not any change in the present requirement of graduation from an American dental college is feasible, the primary source employed is data gathered from questionnaires sent to deans of the various dental schools throughout the United States and Canada to survey their experience with, and their opinions on, foreign dental graduates. The experience of the medical profession with foreign graduates were also used for comparison in the discussion.

Chapter II

MAJOR ISSUES CONCERNING THE LICENSURE OF FOREIGN DENTAL GRADUATES

The major issues involved in the controversy concerning the licensure of foreign dental graduates were garnered through the arguments advanced by the proponents and opponents of House Bill No. 1861-70 during the public hearings. Since separate public hearings were held for proponents and opponents of the bill,[1] thus limiting any discussion of either opponents' views, personal interviews were also conducted to further identify the issues.[2] The following arguments do not reflect, solely, the views of any one organization since they include issues presented by various concerned groups and individual citizens.[3]

Arguments Advanced by Proponents

One of the arguments most frequently advanced by the proponents, primarily concerned groups such as church, community, and civic organizations, is that it is unfair to discriminate against foreign dental graduates. The argument was successful in arousing much public concern but is based on the conception that there is no avenue by which a foreign dental graduate can become eligible for licensure. Presently, under Hawaii law, a foreign dental graduate is eligible for licensure if he has undergone additional schooling at, and graduates from, an American dental college. Foreign dental graduates claim, however, that they have been unable to fulfill the graduation requirement largely because of the limited facilities at the American dental schools. In addition, the majority of foreign dental graduates here in Hawaii feel that since most of them were taught in the English language and used American textbooks and instruments their education is equivalent to American dental graduates. Thus, graduation from an American dental school provides not only a very limited avenue for licensure but these foreign dental graduates feel that it is unrealistic since they are already educated in the same manner as American dental graduates.

For these reasons, proponents believe that foreign dental graduates should be given the right to be eligible for the licensure examination without undergoing additional schooling in an American dental college just as foreign dental graduates in California. The examination process would determine whether or not foreign graduates do, in fact, have comparable abilities. Proponents also point to the medical profession, which allows foreign graduates to take the licensure examination without an American degree requirement.[4] If additional safeguards are necessary to assure competency, proponents feel that requirements similar to the medical profession, such as internship,

graduate education, or a number of years of training in an institution, would be more realistic.

Because of the very limited avenue available to foreign dental graduates, proponents cite this as one of the reasons why there is a continued shortage of dentists in Hawaii. The long waiting period necessary to get a dental appointment and the fact that there are twice as many doctors as there are dentists in Hawaii[5] are cited as factors showing that there is a shortage of dentists. By removing the American degree requirement, proponents feel that the shortage of dentists can be alleviated.

Arguments Advanced by Opponents

The major contention of opponents concerning the licensure of foreign dental graduates is that the removal of the American degree requirement would lower the standards of dentistry in Hawaii. They claim that foreign dental graduates have not met the necessary requirement because their education is generally below the standards of American dental schools. Consequently, many foreign graduates are either denied admission to an American dental school due to the inability to meet admission standards or are unable to obtain a degree because of failure to meet academic requirements of the D.D.S. or D.M.D. program. Even if there are some foreign graduates with comparable educational backgrounds, opponents feel additional education in an American dental school is necessary to learn ethics and philosophy of American dentistry which differ substantially from that of foreign countries.

Opponents further argue that the examination process does not adequately test the abilities of an applicant for licensure. The practical examination is conducted within a three-day period and provides, at best, only an overview of the applicant's competence to practice. Assurance that an applicant has had adequate educational preparation, opponents urge, is one of the primary reasons why the American degree requirement is needed as a credential to establish eligibility for the licensure examination.

Although California allows foreign graduates to be eligible for licensure without the American degree requirement, opponents point out the difficulty encountered by the California Board of Dental Examiners in reviewing the large number of applications, including the tremendous task involved in examining these applicants. There is no experience data available to determine the feasibility of California's law, but opponents assume that a large number of

foreign dental graduates will fail the examination, not necessarily because of lesser abilities, but because they are unprepared. Opponents claim that the American degree requirement works for the benefit of the foreign dental graduate in that the schooling helps the individual overcome a language barrier and better prepares him for the national board examination,[6] which is usually taken at the dental college when the subjects are still fresh in his mind. Opponents are afraid that repeated failure of unprepared applicants might obviously bring repercussions and a feeling on the part of failing foreign dental graduates that they are being discriminated against by the Hawaii Board of Dental Examiners.

Opponents further argue that the manner in which foreign medical graduates are eligible for licensure should not necessarily be an example for dentistry. The medical profession has built-in checks and balances, which provide substitute safeguards comparable to an American degree requirement. For example, medical practitioners must undergo internship, in some cases residency, in an approved institution or hospital where there is direct supervision and evaluation by professionals concerning the work of the would-be physician. There is no similar requirement for dentists, who may go directly into private practice after graduation, free from supervision and professional criticism. Thus, removing the requirement of an American dental degree would be detrimental to public safety and would lower the standards of dentistry. Moreover, if an internship requirement similar to the medical profession were imposed upon graduates of foreign dental schools, the opportunities for licensure would not broaden significantly because of the lack of facilities and personnel to provide such dental internships.

Opponents contend that there is generally a sufficient supply of dentists, although admittedly, they agree that there is a shortage of dentists in the rural areas. Allowing foreign dental graduates a more open avenue for licensure would not, opponents point out, guarantee that the rural areas would receive adequate dental services. In their view, it would increase the supply of dentists in the more attractive urban areas. Hawaii already enjoys a high dentist-to-population ratio and compares favorably with the other states. Opponents believe there is no need to change the present requirement, which has been effective in protecting the public and in maintaining quality standards in dentistry.

Chapter III

DISCUSSION OF MAJOR ISSUES

The arguments advanced by the proponents and opponents of House Bill No. 1861-70 will be discussed in this chapter. There is no way to determine the validity of each argument because of the many interrelated variables. What follows is a discussion of each argument advanced as they relate to other conflicting issues.

Data and opinions provided by deans of the various dental schools throughout the United States and Canada is the primary source used in the discussion of the major issues on the licensure of foreign dental graduates. Questionnaires were sent to fifty-nine American dental schools and ten Canadian dental schools (see Appendix B). Replies were received from forty-three deans of the American dental schools and seven deans of the Canadian dental schools.

Whenever the term "respondents" is used in reference to the survey, it means the number of deans responding to a particular item in the questionnaire. The number of respondents fluctuate depending on the item since certain questions may not be applicable to a particular school. For example, a school may not admit foreign graduates in the D.D.S. or D.M.D. program, but may allow foreign dental graduates in a graduate degree program. Thus, items concerning the D.D.S. or D.M.D. programs would not be applicable in this case. In addition, ten of the schools had no formal policy concerning the admission of foreign dental graduates since their schools have only been recently established, but many of them responded to items pertaining to comments and opinions on foreign dental graduates.

Failure to Meet the American Degree Requirement

No conclusion can be drawn as to whether the failure of foreign dental graduates to meet the American degree requirement is due primarily to the lack of facilities of American dental schools or the failure of foreign dental graduates to meet the admission standards of American dental schools. To assess whether the statement of proponents or that of opponents is more accurate, the following question was included in the questionnaire that was sent to the deans of the various dental schools throughout the United States and Canada.

> Proponents of the bill to remove the requirement of graduation from an American dental school claim that graduates of foreign dental schools have not been admitted for enrollment because of lack of facilities. Opponents of the bill, on the other hand, claim that foreign graduates have not been admitted because of failure to meet the academic requirements. Which statement would you say is more accurate?

Eleven respondents felt that both statements were equally accurate. Although there were sixteen respondents who felt that the statement of either the proponents or the opponents is more accurate, six of them further explained that both statements are true. Additional findings from the questionnaire, presented below, also reveal that both the lack of facilities and the failure to meet admission standards contributed to the failure of foreign dental graduates to meet the American degree requirement.

Lack of facilities or failure to meet admission standards. Answers to the questionnaire indicate that graduates of foreign dental schools are usually placed in the same program with American applicants. Seven schools have special programs for foreign dental graduates, while two others place foreign dental graduates in either a special program or the same program as American applicants. This means that graduates of foreign dental schools compete with American applicants for the same positions in the D.D.S. or D.M.D. programs. In 1969, there were at least 10,325 applicants competing for approximately 4,380 first-year positions in American dental schools--an applicant place ratio of 2.36.[1] This estimated number of applicants is reportedly somewhat conservative, and if this is correct, the applicant place ratio would be even higher.

Although a substantial number of applicants may have been denied admission for enrollment in an American dental college because of failure to meet admission standards, it is questionable whether this is a result of inadequate academic preparation. It may be due to high admission standards which have been developed because of limited facilities. A limitation on facilities, compounded with a high applicant place ratio, prompts many schools of dentistry, as well as other professional schools in general, to select the "cream of the crop" for enrollment. Thus, it can be assumed that a number of applicants, who would otherwise qualify for admissions and could successfully complete the D.D.S. or D.M.D. program, are not accepted for enrollment because of high admission standards imposed as a result of limited faclities. Many such applicants will continue to be rejected for admission until such time when enough facilities are available to accommodate all qualified applicants. Since American dental colleges, like other professional schools, do not have enough facilities to accommodate even the qualified American applicants who aspire to the dental profession, the admission of foreign dental graduates is understandably restrictive.

The keen competition for the limited number of positions in American dental schools among American applicants has generally

resulted in admission policies and practices which reflect an obligation "to train our American applicants first", particularly for first-year positions. Some schools do not admit foreign dental graduates for enrollment in the D.D.S. or D.M.D. programs at all. A few schools, which have a policy of admitting foreign dental graduates, have not done so in actual practice because of full capacity enrollment by American applicants. Dental schools have achieved capacity first-year enrollment for the last six years.[2]

While admission policies in other schools are not as restrictive, foreign dental graduates still have only limited opportunities for admission into American D.D.S. or D.M.D. programs. Of the thirty-one American dental schools which admit foreign dental graduates with advanced standing, twenty-three assign them to the second- or third-year level.[3] Although competition for these positions is not as keen as for first-year positions, the number of positions are relatively few, limited to whatever vacancies occur in the upper classes. Typically dental schools experience the lowest attrition rate of any health professional education program--usually, only nine per cent of the entering first-year dental students fail to complete the undergraduate D.D.S. or D.M.D. degree within the four-year period.[4] Foreign dental graduates must still compete with transfer students for these few positions.

In order to be considered for admission, survey findings reveal that the foreign dental graduate must take a special entrance exam as a requirement in twenty out of twenty-two schools where admission requirements were not the same for dental graduate applicants and American applicants. Five schools also reported that a high ranking in the graduating class of the applicant's foreign dental school was necessary. Only eight schools reported that admission requirements were the same for both foreign dental graduate applicants and American applicants.

Twenty-four out of twenty-eight American dental schools responded that in admitting D.D.S. or D.M.D. candidates, at least one of the following preferences is given:

(1) American applicants over applicants who are graduates of foreign dental schools;

(2) Graduates of foreign dental schools who have a number of years of practicing experience over foreign graduates who do not have such experience;

(3) Graduates of foreign dental schools who have been licensed in their country of origin over foreign graduates who do not have such a license; and

(4) Graduates of certain foreign countries or certain foreign schools over other countries and schools.

Among those indicating preferences were six of the eight schools which have the same admission requirements for both foreign dental graduate applicants and American applicants.

Five schools had additional limitations on the number of graduates of foreign dental schools admitted based on the foreign dental school from which the applicant graduated or the proportion of American applicants admitted.

Seven schools have special programs for foreign dental graduates but, again, facilities are limited so that a significant number of qualified applicants may not have been accepted for enrollment. A few schools reported in the questionnaire that the setting up of special programs for foreign dental graduates have been considered but because facilities and resources necessary to expand into such a program are lacking, the idea has been rejected as unfeasible.

Failure to meet academic requirements of the D.D.S. or D.M.D. programs. The findings of the questionnaire reveal that the failure rate of foreign dental graduates admitted into D.D.S. or D.M.D. programs is regarded as equal to or less than that of the failure rate of American enrollees by seventeen out of twenty-six respondents to the following question:

> Is the failure rate of foreign graduates admitted in the D.D.S. or D.M.D. program equal to, less than, or greater than the failure rate of American enrollees?

Of the nine schools which reported that the failure rate of foreign graduates is greater than the failure rate of American enrollees, five pointed out that the failure was not due solely to inadequate academic preparation, but to language or communication problems also. A few schools which require or encourage foreign dental graduates to take English courses if they feel it is necessary, reported that the failure rate of foreign dental graduates is less than that of American enrollees.

The comparability in the success rates of American and foreign dental graduate enrollees is probably due to the careful selection of applicants for admission into the D.D.S. or D.M.D. programs. Enrollees

are admitted in such a manner that usually those with outstanding backgrounds, whether it is academic or practical experience, are selected because of the many applicants competing for positions in the D.D.S. or D.M.D. programs. What can be concluded is that those foreign dental graduates admitted into the American D.D.S. or D.M.D. programs are comparable to American enrollees in their abilities to successfully complete the requirements of the American dental degree curriculum. However, such a comparison cannot be generalized to foreign dental graduates who were not admitted, or who did not apply for admission, into an American D.D.S. or D.M.D. program.

Education--comparable or substandard. There is no feasible way, presently available, to ascertain whether or not the education of foreign dental graduates is comparable to that of American dental school graduates. The admission practices of dental schools indicate that a few foreign dental schools are deemed comparable in dental training, while most of the others are usually substandard. The dental schools most often mentioned as comparable were the schools in England and the Scandinavian countries. This manner of comparison, however, is subject to the individual experience of the various dental schools and is no substitute for accreditation.

Accreditation by the same body which evaluates the American and Canadian schools of dentistry would be the best means to determine whether foreign dental graduates have comparable or substandard training. However, accreditation does not seem likely in the near future, according to the Council on Dental Education of the American Dental Association, which is the accrediting body for American and Canadian dental schools.

> The Council has on many occasions during at least the last 20 years, most recently in 1969, considered the possibility of developing an accreditation program for foreign dental schools. In the Council's view, a worldwide accreditation program is not feasible. The expense, even if it were possible to employ qualified personnel in sufficient numbers, would be prohibitive.[5]

Additional education in American dental schools. It can be assumed that foreign dental graduates probably have as great a range in individual abilities and capacities as American graduates. However, educational curricula is generally designed, out of necessity, for the average enrollee. Outstanding American students are subject to the same program requirements as any other American dental student. Whether or not this is a good feature of the American educational system, is debatable, but all students are required to undergo the same program requirements to assure that certain abilities have been

acquired. Even though foreign dental graduates may vary greatly in abilities and capacities, similar requirements to assure that certain techniques in American practices of dentistry have been learned seem justifiable.

The following question asked in the survey provides an indication of the average foreign dental graduate in comparison to the expectations of an average graduate of an American dental school.

> Do you feel that graduation from an American or Canadian dental school is a fair requirement for licensure?
>
> If yes, in your opinion, what would be the average number of years of American education in a D.D.S. or D.M.D. program that a graduate of a foreign dental school will need to bring him up to the capabilities of an average graduate of an American or Canadian dental school?

Twenty-seven out of thirty-three respondents to the above questions posed replied that the degree requirement is a fair requirement for licensure, insofar as it assures that certain techniques have been learned. In order for foreign dental graduates to acquire comparable techniques as the average American dental graduate, nineteen respondents replied that at least two years, but nor more than three years of American dental training would be necessary. The manner in which various dental colleges admit foreign graduates with advanced standing also underscores the need for two to three years of American dental training.

> Foreign dental graduates are usually assigned to the second year in 13 schools, and to the third year in 8 schools. Six schools placed foreign dental graduates in an unclassified category, and after a certain length of time, assigned those students to a level justified by their achievement.[6]

Placement in an unclassified category allows greater consideration for individual differences, but the average number of years an unclassified foreign dental graduate undergoes is again, at least, two years of American dental training.

Even though some foreign dental graduates are taught with the same textbooks and instruments as American dental students, and some foreign dental graduates may even have comparable abilities, a period of orientation to gain familiarity with American practices of dentistry appear desirable as has been recommended for foreign medical graduates by the National Advisory Commission on Health Manpower.[7] The necessity of an orientation program should not be solely construed

to mean that a foreign dental graduate has lesser abilities in comparison to American dental graduates, but that such a program provides assurance that a foreign dental graduate acquires familiarity with American practices and techniques of dentistry. Although two years of formal American dental schooling has been the usual method for orienting the foreign dental graduate for licensure, any orientation program which could provide training comparable to two years of education in an American dental college might be employed. This provides assurance that minimum standards necessary for public protection would be maintained.

Licensure Examination--Test of the Applicant's Ability

Ideally the examination should test the ability of an examinee to practice dentistry. In theory then, the proponents are justified in saying that foreign dental graduates should be allowed to take the licensure examination without undergoing additional training in an American dental school, since their competence and fitness to practice should be determined during the examination. The extension of eligibility to all dental graduates to take the licensure examination, regardless of educational credentials, therefore, rests heavily on the principle that the examination process does measure competence and fitness to practice dentistry.

The licensure examination is especially important in dentistry. Whereas undergraduate medical education does not produce graduates who are prepared to begin immediate unsupervised practice, graduates of dental schools are considered prepared for, and frequently assume, general practice without internship or other graduate education. Because of the lack of required graduate training, licensure examinations are, at least in theory, more significant for dental candidates than for medical candidates.[8]

The opinion of the majority of the deans of the dental schools is that the state dental board examinations, in general, do not sufficiently test an applicant's ability. Twenty-six of thirty-five respondents to the following item responded in the negative:

> If the American degree requirement was removed, do you feel that the licensure process (state board examination and practical examination) would adequately determine whether or not an applicant for licensure is qualified to practice or not?

The explanation frequently expressed is reflected in the response "the short period of an examination is not as adequate as the longer opportunity of observation available in an educational course". Examination for licensure is usually conducted within a three-day period and can, at best, provide only a cursory glance of the applicant's knowledge. The Hawaii Board of Dental Examiners has also expressed doubt that the Hawaii licensure examination adequately determines competence and fitness to practice.[9]

A few respondents to the survey, on the other hand, felt that the practical or clinical examination given by state boards does eliminate the incompetent applicants because state boards tend to be overcautious and subjective. The following extract from the Report of the National Advisory Commission on Health Manpower, therefore, urges against the giving of practical or clinical examination by individual state boards:

> Examinations for licensure of dentists are prepared by the State licensing agencies and by the National Board of Dental Examiners, formed in 1958 to develop standardized examinations in theory and science of dentistry. Nearly all of the states accept the National Board examination for the written, theoretical examination for dental licensure, but practical or clinical examinations are prepared and administered in all States by the licensing agency. This dichotomy of responsibility for the examination of candidates could militate against uniformly high standards for licensure of dentists, though the American Association of Dental Examiners (a national organization representing State boards) encourages national norms for practical examinations. Complete examination by the National Board of Dental Examiners, and recognition of this examination by all jurisdictions, seem desirable to assure uniform and adequate levels of dental qualifications.[10]

No matter how well an examination is devised, there will be doubt, on the part of a few, as to whether the examination can truly measure ability. One respondent to the survey expressed the view that special course offerings could equip a candidate to pass the examination without determining his ability to practice. This is essentially a problem with all examinations, but it is doubtful whether the probability of its occurrence would be of such great magnitude that it becomes detrimental to the public. What is hoped for is an examination that assures an adequate and realistic level of dental qualifications have been met by all licensees.

Empirical studies would be required to determine whether written examinations adequately test comprehension and recall of dental school education, whether practical examinations accurately measure fitness and competence to practice, and finally, whether these examinations

unnecessarily conform the academic and clinical preparation provided by accredited schools of dentistry.[11] Absent such data and guidelines, the National Advisory Commission on Health Manpower reported that changes in statutory requirements cannot be currently recommended.

If it is assumed that the adequacy of state board examinations is questionable, as expressed by the deans of the various dental schools and the Hawaii Board of Dental Examiners, then the requirement of an American degree as an eligibility standard appears to be necessary to supplement the examination. It provides additional information on the applicant's ability and assures that the applicant has had academic and clinical preparation, as provided by the accredited schools of dentistry.

The questionable adequacy of state board examinations in determining competence, however, also casts some doubt on American dental graduates who have been licensed to practice dentistry. That the possible ineffectiveness of the examination also holds true for American dental graduates has been a counterargument advanced by advocates for the removal of the American degree requirement for foreign dental graduates. Rather than remove the eligibility requirement altogether and further endanger public health and protection, a logical course of action would be to strive toward strengthening the examination so that there can be sufficient assurance that competence and fitness to practice is being measured. After this has been accomplished, reliance on educational credentials would be minimized.

The California Plan

Proponents point to California's Assembly Bill No. 537, enacted in 1969, as an example which Hawaii should follow. Under California's law, any graduate of a foreign dental school is eligible for licensure. In addition to applicants who are graduates of foreign dental schools listed by the World Health Organization, applicants from foreign dental schools not listed by the World Health Organization are accepted upon the satisfactory showing of attendance and graduation from a foreign dental school. The California Board of Dental Examiners is confident that in the interest of dental health of the public, the mechanics of the licensure examination will weed out the incompetent.[12] California's plan would be ideal if it is demonstrated that the licensure examination does successfully weed out the incompetent. The plan affords every foreign dental graduate a chance, at least, to prove his competency via the licensure examination. Opponents, however, are reluctant to support a plan similar to California's. The Council on

Dental Education has delayed comment on the California plan until experience data become available. The Council has not endorsed the plan, nor has it formally advised other states to use the California plan as a guide.[13]

Since the enactment of Assembly Bill No. 537, the California Board of Dental Examiners has received approximately 1,300 inquiries from various countries (see Appendix C). Nearly 950 applications were sent out and about 450 completed applications were received. Of the completed applications, 417 were acceptable for the licensure examination.[14] The foregoing provides an indication of the amount of work involved in processing applications and the magnitude of the task in examining applicants for licensure. Although the adoption of a plan similar to California's would entail a significant increase in the administrative work of the Hawaii Board of Dental Examiners and, the board, with its present staffing, would probably not be able to handle the increased number of applicants for licensure, this should not be the sole reason for rejecting the adoption of such a plan. Basically the California plan involves having the state board, with cooperation from the California dental schools, evaluate the individual with an unknown educational background as opposed to the traditional role of evaluating an individual with a known educational background. A state like Hawaii, without the resources of an established dental school, would find great difficulty in developing and operating an evaluation procedure which would be needed to assure quality dental service for the public.[15]

New York has also passed a law allowing foreign dental graduates to be eligible for licensure without the requirement of graduation from an accredited dental college.[16] No experience data are available either since the effective date of the law, Assembly Bill No. 3164-A (see Appendix D), is January 1, 1971. The examination of a foreign-trained dental applicant will be according to rules and regulations promulgated by the Regents of the University of the State of New York. The New York Board of Dental Examiners had studied the matter in detail for over a year and presented positive details for the assistance of the Regents in establishing the rules.[17] This again, demonstrates the need for a state board of dental examiners to have access to the resources of an established dental school for assistance in the evaluation of foreign-trained dental graduates.

Under California's law, candidates for licensure have an option to take the National Board Examination or California's written examination. The following are results of the written examinations:[18]

National Board Examination

108 candidates took Part I of the National Board Examination
46 candidates passed Part I
27 candidates took Part II of the National Board Examination
9 candidates passed Part II

California Examination

102 candidates took the California examination in lieu of the National Board Examination
37 passed the California examination

Candidates who successfully passed either written examinations became eligible for the practical, clinical examination, which is a progressive examination including diagnosis-treatment planning, prosthetic dentistry, restorative techniques and operative dentistry. The first series of the sequential examination were held in August. All but the first operative clinic part of the examination has been administered thus far. Of the 210 foreign dental graduates who began the licensure examination, only three remain eligible for the operative clinic part of the examination to be administered in 1971.

The poor performance of the foreign dental graduates in the California dental board examination does not necessarily reflect the abilities of the foreign dental graduate. The most frequent problems encountered during the examination were communication and language problems, i.e., the inability of many foreign dental graduates to follow instructions and unfamiliarity with terminology.[19] If proficiency in English were one of the requirements to establish eligibility for the licensure examination, perhaps foreign dental graduates, as a composite group, would perform better on the examination. The results of the examination would also provide a better indication of ability since an English proficiency requirement would eliminate intervening factors resulting from communication and language problems.

Comparison to Foreign Medical Graduates

Since foreign medical graduates are eligible for licensure in all but three states without an American degree requirement,[20] proponents feel that foreign dental graduates should similarly be

eligible for licensure without an American degree requirement. In Hawaii, a foreign medical graduate is eligible for licensure if he is a graduate of a foreign medical school, who has passed the qualifying examination of the Educational Council for Foreign Medical Graduates (ECFMG)[21] or its successor, and, has had at least three years' medical experience or training in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association.[22]

When the medical profession resolved the problem of foreign graduates, a mechanism was established to facilitate the integration of foreign graduates into the American system. Fundamental to the system was the creation of the ECFMG (Educational Council for Foreign Medical Graduates) whose primary function is to screen those physicians who wish to come to the United States and participate in patient care. Any graduate of a medical school listed in the World Directory who has reached a point of being ready to practice in the country in which he was schooled and lived, is eligible to take the Council's examination. Successful candidates of the examination are eligible for appointments to internship, residency, and clinical fellowships in various hospitals, clinics, and institutes, and upon completion of the requirements prescribed by the individual states, are acceptable candidates for full licensure.[23]

There is general agreement that as an emergency measure, when unprecedented demands were placed on universities for medical personnel to operate the health care system and the importation of medical personnel from other countries was necessary to augment the national pool of health manpower, the ECFMG was of significant help in maintaining a basic level of competency in physician manpower during an emergency situation. It is equally apparent that the Health Manpower Commission explored the matter in depth and made a series of recommendations for improvement.[24]

The following question posed in the survey indicates that, unless an examination similar to that administered by the ECFMG is available, a majority (twenty-seven out of twenty-nine) of the respondents would be apprehensive about removing the American degree requirement:

> Do you feel that the American degree requirement should not be removed unless an examination such as the Educational Council for Foreign Medical Graduates is prepared for national use?

At the Eighty-Seventh Annual Meeting of the American Association of Dental Examiners, Dr. Joseph F. Volker, President of the University

of Alabama in Birmingham, in closing his evaluation of education and competence for licensing of foreign dental graduates posed the question: "Why not an Educational Council for Foreign Dental Graduates made up of the dental counterparts of the components of the ECFMG?"[25] Dentistry could benefit from the experience of the medical profession and the ECFMG and, in setting up a mechanism for foreign dental graduates, should incorporate the recommendations of the Health Manpower Commission for improving the program for foreign medical graduates, such as, stricter screening of candidates and orientation-training programs.

While opponents cite the ECFMG as one of the distinctions between the medical profession and the dental profession, a major difference of concern is the internship requirement which provides a check on the abilities of the individual prior to licensure.

> At the present time 48 of the 50 states require a graduate of an American medical school to spend a minimum of 1 year in an approved internship program prior to licensure. The first year after medical school provides an intensive in-hospital experience for the recent graduate. . . . Following the internship and after completion of licensing examination or receiving a license through presentation of his National Board credentials, the graduate may enter practice. Today some 90 percent of American graduates go on to further intensive specialty training at the residency level, prior to practice.[26]

No internship is required for dental licensure. A similar internship requirement comparable to the medical profession could be imposed on foreign dental graduates. Even if the number of dental internships available are limited[27] and would be an unfeasible requirement as opponents claim, it seems just as unfeasible to maintain the American degree requirement, in this regard, since American dental colleges have limited facilities as well, and the number of foreign dental graduates admitted for enrollment is minimal.[28] It is advisable, however, to examine the problems encountered in the medical profession with foreign graduates before endorsing the use of a similar program for foreign graduates in dentistry. Findings of the National Advisory Commission on Health Manpower reveal that the licensure of foreign medical graduates have serious implications for health care in the United States:

> The introduction of large numbers of minimally qualified physicians into the hospital training programs of the United States has almost certainly lowered the levels of graduate medical education and of the quality of medical care available to large segments of the American public, with questionable benefit to the nations from which the physicians have come.[29]

A summary of the findings and recommendations[30] of the Commission on Health Manpower suggests strongly that from all available evidence the foreign medical graduates, as a composite group, have significantly lowered professional competence than do graduates of American medical schools.[31] The means by which foreign graduates become eligible for licensure, therefore, should be improved so that the quality of health care can be maintained and foreign graduates and the American public can truly benefit from the training programs designed to provide quality health care.

Shortage of Dentists

The purpose of licensure is to assure competence for the protection of public health and safety. Licensure laws, therefore, should not be manipulated to balance the supply and demand of dentists particularly if public protection might be endangered. An adequate supply of manpower is the responsibility of the education system, whether it is achieved through formal schooling or manpower training programs. In the area of health, however, dependence upon the education system has proved to be inadequate in supplying medical professionals, such as, physicians and dentists. Fiscal resources available to universities are insufficient. The anticipated demands for health services far exceed the projected increases in the supply of health professionals.

While a shortage of dentists does not appear to be directly related to the licensure of foreign dental graduates, a discussion of the shortage of dentists is provided since arguments advanced by both proponents and opponents include the shortage of dentists. Although the medical profession relied on foreign graduates to alleviate the shortage of physicians when overwhelming demands were placed on American universities for medical personnel, the shortage of physicians persists. Reliance on the importation of medical graduates from other countries has also proved to be inadequate. The most often recommended solution to meet demands for physician and dental services is to increase the productivity of health professionals, primarily through much greater utilization of health professionals. Thus, a shortage of dentists calls for a re-evaluation of the system of delivery for dental services, rather than the licensure of foreign dental graduates without an American degree requirement.

There are several ways to measure the supply of dentists, for example, the number of dentists, the number of dental graduates per

year, the dentist-to-population ratio (or number of dentists per 100,000 population), and the distribution of dentists. To assess whether there is a shortage of dentists, any measure of the supply of dentists must be considered in terms of meeting the demands for services. All evidence reveal that there is a shortage of dentists nationwide, as well as in Hawaii, even though Hawaii's shortage of dentists is not as acute in comparison to other states.

The present supply of dentists. A 1969 publication of the American Dental Association, Facts about States for the Dentist Seeking a Location, shows the number of dentists and the population per dentist ratio in 1968 by region and state (see Appendix E). Hawaii ranked tenth among the states with 479 dentists for an estimated population of 750,000.[32] Hawaii's population per dentist ratio of 1,566 (or 63 dentists per 100,000 population)[33] compares favorably with the United States average of 1,703.

The Health Manpower Source Book by the U.S. Department of Health, Education and Welfare, provides a breakdown of the number of active dentists by state for 1968 (see Appendix F). There is a difference of six dentists per 100,000 civilian population (60 instead of 66), when the number of active dentists (437) is used instead of the total number of dentists (482).[34]

More recent data included in a research report published by The Regional Medical Program of Hawaii shows that in 1969 there were 61 active dentists per 100,000 civilian population for the State as a whole.[35] Although Hawaii's rate of dentists per 100,000 population compares favorably with the national rate (46), this is not an indication that Hawaii's supply of dentists is adequate. An adequate supply of dentists exists when demands for dental services are met.

Inadequacy of the present supply of dentists. The findings of various reports reveal that the present supply of dentists, nationwide and in Hawaii, is inadequate to meet today's demands for dental services. The inadequate supply of dentists can be viewed in terms of:

(1) inability to meet existing demands for dental services,

(2) accumulation of unmet dental needs, and

(3) unavailability of dental services because of an uneven distribution of dentists.

In 1964, Young and Striffler in The Dentist, His Practice and His Community quoted the work of Pelton from the U.S. Public Health Service which estimates that the dentist's time required to treat dental needs accruing each year to be two hours per year.[36] On the average, a dentist works 2,000 hours per year. Thus, one dentist is needed for every 1,000 persons if the ongoing needs are to be met. Hawaii's ratio of active dentists is approximately 1 to 1,645 persons while the City and County of Honolulu has a ratio of 1 to 1,545. Only the ratio for Honolulu alone, 1 to 1,047 persons, approaches the ratio necessary to treat dental needs accruing each year, but the favorable ratio of 1 to 1,000 persons was computed by Pelton in 1964. The ratio for Honolulu does not appear favorable when recent increases in demands for services are considered.

The Department of Health, in their determination that there is a present shortage of dentists, explained:

> The Department of Social Services reported last November [1969] that the percent of welfare recipients requesting dental treatment rose unexpectedly from 14 to over 50 percent between July and November, 1969. This, alone, suddenly created a demand by 9,400 additional people for dental care. Also, more new patients have been going into the market for dental care through "new money" programs such as the Maternity & Infant Care, Children & Youth, and Model Cities programs in the past two years. The Department of Health has received many complaints of the lack of dental services or difficulty in getting appointments from the public. These are indicators that a shortage of dentists exists.[37]

The Greenleigh Associates, in their 1970 audit of the medical assistance programs in Hawaii, attested that there is a shortage of dentists.

> . . .there are services which, though covered in the Hawaii State Plan, are either extremely scarce or nonexistent. For example, dental care, which is a major need of poverty families, is in extremely short supply. Although the DOH [Department of Health] and the Department of Education has a school dental program, many dental needs cannot be met because of the shortage of dentists.[38]

The shortage of dentists seems even greater when statistics are considered in conjunction with accumulated unmet dental needs. In Young and Striffler, Pelton also estimated that six hours of dentist-time would be required for each individual if accumulated needs were to be met within a year. In other words, in order to erase the backlog of existing needs, one dentist working full time for a year would be required for every 250 persons in the population--six hours

for accumulated defects and two hours for those accruing during the year.[39] Unmet needs have continued to accumulate since the 1964 estimate because of insufficient dentist-time to meet needs accruing each year.

An extract from Dr. Volker's presentation to the Eighty-Seventh Annual Meeting of the American Association of Dental Examiners discussed the accumulation of unmet dental needs in America in comparison to those of Sweden and Norway.

> . . .there is substantial evidence that only a very limited segment of the American public receives other than limited dental care. Representative reports indicate that only 23 per cent of the decayed teeth in American children in the 6 to 16 year age group have been filled. This contrasts very unfavorably with Norway where 86 percent of the decayed teeth of children have been restored, or Sweden where 80 percent of the children between 7 and 16 receive complete dental treatment, including orthodontics. It is significant that both of these countries have affirmed that good dental health is a right rather than a privilege and have developed the prerequisite manpower and financing to make a slogan a reality. To meet its manpower demands, it was necessary for Sweden to vastly improve its dentist-to-population ratio. As late as 1933 this was approximately 1 to 7000. Today the ratio is approximately 1 to 1000. . . .If the United States were to approach the present Swedish position, it would have to double its current dental manpower.[40]

The shortage of dentists is accentuated by uneven distribution. According to statistics compiled by the Regional Medical Program of Hawaii, the City and County of Honolulu has a rate of dentists per 100,000 population (65) significantly above the national rate (46). Maui County was below the national rate (42), while Hawaii County was equal to the national rate (46). Kauai County, with fifteen dentists which is the least among the counties, reported a rate slightly higher (50) than the national rate. The breakdown of dentists by judicial districts (see Appendix G) shows the maldistribution of dentists in greater detail. For example, the City of Honolulu had a disproportionate share of dentists (70%), even when the concentration of population in Honolulu (56%) is taken into consideration. Hawaii's favorable ranking among the states is the result of a high concentration of dentists in Honolulu and is not typical of other judicial districts or counties.

Comparable data on physicians in Hawaii show, as expected, that the physicians are also highly concentrated (75%) in Honolulu, the capital and business center of the State (see Appendix H). With respect to the maldistribution of physicians, the Regional Medical Program of Hawaii stated:

LICENSURE OF FOREIGN DENTAL GRADUATES

> Distribution of practicing physicians within an area is the key to basic availability or non-availability of medical care for the people in that area. This is true throughout the nation, but especially in Hawaii where counties and even districts of counties are separate islands. Inter-island travel, even though distances are short and two scheduled airlines are available, involves the expense of airline travel and concomitant difficulties in matching appointment times and flight schedules and sometimes requires arrangements for staying overnight or longer away from home. These factors pose a barrier to the availability of medical care, especially for families with low or moderate incomes.
>
> . . .these figures are based on civilian resident population and do not include the large number of visitors to our state, approximately 1,370,000 per year, many of whom find it necessary to call upon Hawaii's medical resources. When more specific data on the distribution of visitors by districts within the counties become available, these figures should be considered in studies of health manpower needs, especially in the neighbor island and resort areas.[41]

The table below illustrates that dentists and physicians are similarly maldistributed. Thus, the same factors which pose a barrier to the availability of medical care are also applicable to the non-availability of dental care in Hawaii.

Table 1

DISTRIBUTION OF PHYSICIANS, DENTISTS AND POPULATION BY COUNTY AND FOR THE CITY OF HONOLULU

	Physicians (876)	Dentists (428)	Population (560,837)
Oahu	85.7%	84.8%	79.7%
Hawaii	6.1	7.0	9.3
Maui	5.6	4.7	6.7
Kauai	2.6	3.5	4.3
City of Honolulu	74.8	70.3	56.2

Source: Computed from data in Distribution of Medical Manpower in Hawaii, 1969, Research Report No. 12 (Honolulu, Hawaii: The Regional Medical Program of Hawaii, May 1970), pp. 9 and 15.

DISCUSSION OF MAJOR ISSUES

Despite the warning signals that there is a shortage of dentists, consumer concern, as well as professional reaction, has not been as intense with respect to the shortage of dentists as to the shortage of physicians. Concerning this, the report of the Health Manpower Commission explained:

> Over the past decade there has been a modest decline in the ratio of dentists to population. This decline has been accompanied by a substantial (60 percent) increase in per capita consumer spending for dental services, which in turn, was accompanied by an increase in dental fees averaging approximately 2.5 percent per year.
>
> Interesting enough, all this has not given rise to the concern with respect to a shortage that is associated with physicians. Indeed, even within the profession there seems to be little feeling of pressure. A 1965 survey indicated that while 40 percent of the dentists felt they were too busy, almost 25 percent felt they were not busy enough. Queues appear less onerous, and the rationing of dental services is far less severe than that of physician services.
>
> The more relaxed atmosphere of the market reflects, in part, the fact that people generally view dental services with less urgency than they do physician services. By and large, consumers take the position that dental services are more easily postponed, and can be postponed at a lower personal cost. This also contributes to the fact that dentists have not had the degree of market control that physicians enjoy.
>
> In summary, while many evidences of imbalance exist in the market for physician services, such evidences do not appear or seem as important in the market for dental services.[42]

Thus, it is apparent that Hawaii's present rate of dentists per 100,000 population, although relatively good in comparison to other states, is inadequate to meet ongoing demands for dental services, is incapable of handling the accumulation of unmet dental needs, and is maldistributed. Hawaii, along with the other states, will experience an increased strain on dental manpower resources despite an enhanced supply of dentists in the future, which is projected as adequate to meet population growth, but not increased demands for services resulting from rising income and education levels and new methods of financing dental services.

The future supply of dentists. Between 1950 and 1968 the number of dentists increased significantly, but the ratios to population did not improve, according to statistics by the U.S. Department of Health, Education and Welfare in the Health Manpower Sourcebook:[43]

Table 2

NUMBER OF DENTISTS AND DENTIST/POPULATION RATIOS:
SELECTED YEARS 1950-68

Year[1]	Number of Dentists[2]		Population[4] (thousands)	Dentists per 100,000 Population		Active Non-Federal Dentists[3]	Civilian Population (thousands)	Active Non-Federal Dentists Per 100,000 Civilian Population
	Total	Active[3]		Total	Active[3]			
1950	87,164	77,900	152,271	57	51	75,313	150,790	50
1955	94,711	83,509	165,931	57	50	76,087	162,967	47
1960	101,947	89,215	180,684	56	49	82,630	178,153	46
1965	109,320	93,442	194,592	56	48	86,317	191,894	45
1966	111,130	95,400	196,920	56	48	88,025	193,780	45
1967	112,152	98,670	199,118	56	50	90,716	195,669	46
1968	113,636	100,010	201,166	56	50	92,013	197,571	47

[1]As of July 1.

[2]Excludes graduates of the year concerned. Includes dentists in 50 states and the District of Columbia.

[3]Estimated.

[4]Includes the Armed Forces in the United States and abroad and civilians in 50 states and the District of Columbia.

Source: Bureau of Health Professions Education and Manpower Training, Division of Dental Health.
American Dental Association, Bureau of Membership Records. 1968 American Dental Directory. Chicago, The Association, 1968. Also prior annual editions.
American Dental Association, Bureau of Economic Research and Statistics. Distribution of Dentists in the United States by State, Region, District, and County. Chicago, The Association. Annual issues.
Unpublished data from the American Dental Association.
U.S. Bureau of the Census. Population Estimates. Current Population Reports P-25, No. 408.

Projections by the American Dental Association on the number of dental school graduates through 1980 show a similar pattern. Although the number of graduates will increase at an annual rate of about 2.7 per cent and will total approximately 4,450 in 1980, the estimated population per dentist ratio will remain stable at about 2,000 persons per dentist.[44]

Future demands for dental services. Since the ratio of dentists to population is expected to remain the same in future years, this means that adequate dental care will not be available for all persons unless the present system of delivery of dental services is altered. By 1980, demands for dental care are expected to almost double as a result of rising incomes and education levels, and new methods of financing dental services.[45]

Consumer attitudes regarding dental services, as easily postponeable, could very well be changed as newer methods of financing dental services become more widespread. Regarding the crisis in dental manpower if needs were translated into demands, the Health Manpower Commission reported:

> . . . To date, however, needs have not been equalled by demands. According to the National Health Survey in 1963 and 1964, only 42 percent of the civilian noninstitutional population made one or more dental visits in the previous year, and 16.6 percent of the population had never seen a dentist. Children in low-income areas of large cities suffer from almost total dental neglect. If the demand for dental care should only moderately approach the level of need, the shortage of dental personnel could become critical.[46]

Dr. Volker, who addressed the American Association of Dental Examiners at their Eighty-Seventh Annual Meeting, linked the anticipation of an increased shortage of dentists to an atmosphere which would be conducive to legislation stimulating importation. It is probable that anticipation of an increased shortage of dentists was a factor inducing the passage of legislation favorable to foreign dental graduates in California and New York and the consideration of such legislation in Hawaii during the last legislative session.

> . . . Since this [the doubling of current dental manpower] does not seem possible in the foreseeable future, an atmosphere could be created that would be conducive to legislation stimulating importation. It is also probable that such action would be stimulated if our present means of financing dental care were altered. There is general agreement that the development of private insurance and later government funds for medical care provoked the present physician manpower shortage and its sequelae. It is of interest to note that presently 6,500,000 Americans have dental health policies. This is 3 percent of the population. In

Table 3

PROJECTIONS ON THE NUMBER OF GRADUATES, TOTAL NUMBER OF DENTISTS, NUMBER OF PROFESSIONALLY ACTIVE DENTISTS, AND ESTIMATED POPULATION PER DENTIST RATIO TO 1980

Year	Estimated Number of Graduates	Estimated Total Number of Dentists	Estimated Number of Professionally Active Dentists	Population Estimates*	Estimated Population per Dentist Ratio
1969	3,433**	119,700	101,700	204,466,000	2,010
1970	3,500	121,400	103,200	207,326,000	2,009
1971	3,760	123,300	104,800	210,349,000	2,007
1972	3,850	125,300	106,500	213,510,000	2,005
1973	3,900	127,400	108,300	216,804,000	2,002
1974	3,950	129,400	110,000	220,230,000	2,002
1975	4,070	131,500	111,800	223,785,000	2,002
1976	4,160	133,800	113,800	227,466,000	1,999
1977	4,200	136,000	115,600	231,265,000	2,001
1978	4,270	138,300	117,500	235,177,000	2,002
1979	4,360	140,600	119,500	239,189,000	2,002
1980	4,450	142,900	121,500	243,291,000	2,002

*Population projections are 1967 estimates of the Census.
**Actual number of graduates.

> contrast, 85 percent of Americans have some form of medical coverage. One can speculate that if the dental coverage were at a comparable level, there would be an irresistible demand for an extraordinary increase in dental manpower.[47]

Comparisons to the medical profession. Rising incomes and education levels, increasing population, and new methods of financing dental services were the same factors that placed unprecedented demands on universities for medical personnel to operate the health care system. Dr. Volker continued:

> Unfortunately, the fiscal resources available to institutions of higher learning for meeting this challenge have been inadequate, and the national pool of health manpower has been augmented by importation from other countries. This same set of circumstances could very quickly come to pass in American dentistry and the dilemma of medicine could be replicated.[48]

Data, illustrative of the foreign medical graduate increase, are presented in the Health Manpower Commission report:[49]

Table 4

ADDITIONS TO LICENSED MEDICAL PROFESSION

Year	Total United States and FMG's	FMG's
1950	6,002	308
1955	7,737	907
1960	8,030	1,419
1965	8,943	1,488
(Total of all years 1950-65)	(122,281)	(16,950)

From 1950 to 1965, there were approximately 17,000 physicians constituting additions to our licensed profession whose basic education was obtained abroad at no direct cost to the United States. For the past five years the annual increment of newly licensed foreign medical graduates has averaged approximately 1,400. It would have cost the United States near $1 billion to have financed enough additional medical schools to have added 1,400 physicians a year during the period 1960-1965.

Proponents for removing the American degree requirement also argue that the fact that there are more than twice the number of physicians as dentists, 876 physicians and 428 dentists, reveals the shortage of dentists in Hawaii. A greater number of physicians, however, is typical throughout the United States. In the United States, for every 100,000 population, there are 148 physicians and 46 dentists. In Hawaii, the comparable rates are 124 physicians and 61 dentists per 100,000 population. The dental rate is considerably above the national average, while the physician rate suffers by comparison.

The licensing of foreign graduates in the medical profession helped to alleviate the shortage of physicians, but the supply of physicians is still inadequate to meet all demands for physician services. There is generally a greater demand for physician services than for dental services because presently a larger percentage of the population is covered by health plans and the services of physicians are not viewed as easily postponeable. Increasing dental coverage, however, is translating needs into demands. The most widely accepted solution to alleviate the shortage of health professionals, both physicians and dentists, is to substantially increase the productivity of health professionals through the greater utilization of health auxiliaries and allied health personnel. While the licensure process should not be manipulated to balance the supply and demand of dentists but should promote quality standards, if dentistry does not alter its delivery of services to meet more effectively the demands for services, an atmosphere that would be conducive to legislation stimulating importation of foreign dental graduates would prevail.

Chapter IV

REMOVING THE AMERICAN DEGREE REQUIREMENT

As indicated previously, the purpose of licensure is to test competency and fitness of applicants to practice. The shortage of dentists in Hawaii, therefore, should not be the reason for amending licensing requirements relating to foreign dental graduates. Concomitantly, the supply of dentists should not be a consideration for opposing the licensure of foreign dental graduates. If the licensure of foreign dental graduates can be accomplished with sufficient assurance that the public health and safety is maintained, then licensing laws should be amended accordingly.

A D.D.S. or D.M.D. degree from an American dental college, which is necessary to establish eligibility for the examination in dentistry, is the licensure requirement in question concerning foreign dental graduates. If the requirement is a necessary part of licensure to maintain the quality of dental care, then the removal of the American degree requirement is contingent upon an adequate substitute to protect public health and safety.

The American Degree Requirement

The degree requirement calls for an applicant to be a graduate of an American dental school that is recognized and approved by the Board of Dental Examiners. This requirement, which is similarly imposed by nearly all of the other professional regulatory boards, with the exception of medicine, provides assurance to the public that an applicant for licensure has met adequate standards of educational preparation.

It would be unfeasible, as well as of questionable effectiveness, for a local agency or organization to evaluate the standards of various professional schools without the time, resources, and money necessary to undertake an involved task comparable to accreditation, which has been a service generally provided by the national professional association. For this reason, all of the states rely on accreditation by the American Dental Association through its Council on Dental Education, either by statute or administrative regulation or practice, to ascertain the adequacy of an applicant's educational background in dentistry. The Council is the only recognized national accrediting agency for schools of dentistry and dental hygiene, dental laboratory programs, and dental internships and residencies. Three of the nine members of the Council on Dental Education are

appointed by the American Association of Dental Schools, and many of the Council's 170 consultants are members of dental school faculties.[1]

The requirement of graduation from an accredited American dental college as a necessary supplement to the examination process has been discussed in the previous chapter. Thus, the removal of the American degree requirement for dental licensure cannot be recommended unless either of the following conditions are met to maintain, at least, the existing standards of dentistry in Hawaii:

(1) the examination for licensure must be significantly improved, if the validity and reliability of the examination is questionable, to minimize the reliance on educational credentials as supplementary data of the applicant's knowledge, or

(2) if the present examination for licensure continues to be utilized as a test of the applicant's ability and educational credential is used as a necessary supplement, an adequate method of evaluating the applicant's education preparation must be devised in lieu of accreditation to provide continued assurance to the public that all applicants for licensure have a standard of education comparable to the level expected of graduates from American schools of dentistry.

Minimizing Reliance on Educational Credentials

Educational credentials would not be a necessary requirement for licensure if it can be demonstrated that the examination process adequately tests comprehension and recall of dental school education and adequately measures fitness and competence to practice, or confirms the academic and clinical preparation provided by accredited schools of dentistry. Data to determine the validity and reliability of the examination, particularly the written portion, however, must generate from a national organization. In addition, if the examination process is found to be deficient in any respect as indicated by the deans of the various dental schools and the Hawaii Board of Dental Examiners, it would be the responsibility of the National Board of Dental Examiners to devise a better examination. National efforts to assess the adequacy of the examination and to correct deficiencies in the examination should be encouraged in the interest

of public health and safety. This effort should be made despite the problem of foreign dental graduates. The examination should adequately test the competence of all dental licensees, American as well as foreign graduates.

The questionable adequacy of the licensure examination appears to stem largely from the practical or clinical portion, which is prepared and administered by individual state licensing dental boards. Complete examination, written and practical, by the National Board of Dental Examiners should also be encouraged, as has been recommended by the Health Manpower Commission, to assure uniform and adequate levels of dental qualifications. Recognition of such an examination by all jurisdictions would be desirable in the public interest and would encourage the removal of licensure restrictions on dentists' mobility.

Until such time, however, that such an examination can be devised which can adequately test the fitness and competency of all dental graduates to practice, there is still the need to retain the degree requirement from an American dental school, or its equivalent. In effect, this means that Hawaii must rely on assistance from national organizations for a licensure process that will assure quality dental care for Hawaii's people--the National Board of Dental Examiners to devise a sound examination or the Council on Dental Education to evaluate educational credentials of applicants for dental licensure.

Substitutes for the American Degree Requirement

In view of the likelihood that the present examination for licensure will continue to be utilized for some time, the removal of the American degree requirement is contingent upon an adequate method of evaluating the applicant's educational background. Alternative substitutes that have been suggested to allow foreign dental graduates eligibility for licensure are examined below. In addition, substitutes which would appear to result in no loss of public protection, are suggested as amendments to statutory requirements for licensure.

House Bill No. 1861-70. The initial introduction of House Bill No. 1861-70, relating to foreign dental graduates, provided that a person who has a degree of doctor of dental medicine or doctor of dental surgery from a foreign dental school listed by the World Health Organization, or by a foreign dental school approved

by the Board of Dental Examiners, shall be eligible for the licensure examination. The measure further provided that the applicant must submit documentary evidence that he:

(1) has completed, in a dental school or schools, resident courses of professional instruction in dentistry for the full number of academic years of undergraduate courses required for graduation;

(2) has received from the dental school, a diploma or a degree, as evidence of the completion of the course of dental instruction required for graduation; and

(3) has been admitted or licensed to practice dentistry in the country wherein is located the institution from which the applicant graduated.

The House Standing Committee of the Fifth Legislature to which House Bill No. 1861-70 was initially referred reported the following:

> Because most countries follow and adopt American dental training and techniques, your Committee believes that foreign dental graduates should become eligible to take the Hawaii licensure examination. Your Committee stresses the point that the foreign dental graduates become eligible to take the examination--not that they become licensed to practice in dentistry. Dental standards in the licensure examination are another matter.[2]

Despite the fact that American dental training is unparalleled and, therefore, other countries have attempted to emulate American dental training and techniques, survey data indicate that there is a great variation in the success other countries have had in approximating American dental training. England and the Scandinavian countries are the only countries usually mentioned as having comparable dental training. While other countries are listed occasionally, dental training in most countries are generally thought to be quite inferior to American standards. The level at which foreign dental graduates have been admitted with advanced standing in American dental schools, also provides a measure of dental training of foreign dental schools. Usually, foreign dental graduates receive training equivalent to no more than two years of American dental education. It should also be remembered that foreign dental graduates who are accepted into American dental schools are presumably the better qualified applicants.

The premise that "dental standards in the licensure examination is another matter", distinct from eligibility to take the examination, is valid only if the examination process can adequately test comprehension and recall of dental school education and adequately measure fitness and competency to practice, or confirm the academic and clinical preparation provided by accredited schools of dentistry. As mentioned previously, survey findings have revealed that it is doubtful that the examination accomplishes either of these objectives. Thus, eligibility for licensure via an American degree requirement remains, out of necessity, an integral part of licensure to supplement the examination.

House Bill No. 1861-70, H.D. 1. The initial bill was amended to set forth rigorous standards expected of foreign dental graduates: a theory examination and demonstration of skills in prosthetic dentistry, in diagnosis-treatment planning and in restorative techniques and operative dentistry. The bill, as amended, is essentially the same as California's Assembly Bill No. 537. The following summarizes the reasons why it would be undesirable to adopt California's law to solve the foreign dental graduate dilemma in Hawaii at this particular time:

(1) The feasibility of California's law is yet undetermined.

(2) Hawaii does not have the resources of an established dental school, like California and New York, to aid in the implementation of such a law.

(3) Preliminary results of the California law reveal that three of the 210 foreign dental graduate examinees for the first sequential examination since the enactment of Assembly Bill No. 537 qualified for the last portion of the examination. It is probable that more stringent pre-screening procedures must be devised to minimize the work involved in examining applicants with a poor chance of success, particularly those applicants with language and communication problems.

House Bill No. 1861-70, H.D. 2. When the bill was referred to another House Standing Committee for consideration, the Committee reported that it appreciates the distinction between eligibility to take the examination and dental standards in the licensure examination. Toward both ends, the Committee amended the bill as follows:

1. As an eligibility standard, requiring that the foreign dental school shall achieve the status of being recognized and approved by the board of dental examiners only after a public hearing upon that subject in conformity with chapter 91, the Administrative Procedure Act. Thus, the requirement that the foreign dental school be listed by the World Health Organization was deleted.

2. As a licensure standard, by requiring that in addition to satisfactory completion of the standards established in H.D. 1, that the applicant shall have completed at least one year of internship in a hospital or other institution approved by the board or under the direct and continuous supervision and inspection of a licensed preceptor, satisfactory.[3]

These amendments reflect a recognition that the requirement of having a foreign dental school listed by the World Health Organization in no way indicates the quality of dental training of a particular foreign dental school. In an effort to remedy this, a public hearing was required for approval and recognition of a foreign dental school. This illustrates the concern of the Committee for an eligibility standard but, as discussed earlier, the Council on Dental Education, which the local boards of dental examiners look to for guidance, has taken the position that it would be unfeasible to evaluate the educational programs of foreign dental schools.

The internship provision included as a licensure standard is a similar requirement imposed on foreign medical graduates, except that the requirement proposed for dentistry is one year instead of the three years required of foreign medical graduates. The problems of internship in the medical profession, as well as its questionable effectiveness in assuring quality standards, were presented in the previous chapter. However, an internship requirement is still a possible alternative which may provide a means by which the qualifications of the individual foreign dental graduate may be adequately evaluated, in lieu of the American degree requirement. However, before such a program is entered into, consideration should be given, among other things, to the problems encountered by the medical profession in its internship program and the guidelines currently under study by the Council on Dental Education to evaluate the credentials of foreign dental graduates.

For example, in consideration of the medical internship problems, the panel of foreign medical graduates of the National Advisory Commission on Health Manpower reported:

> . . .the panel came to the conclusion that it would be desirable to screen foreign medical graduates more strictly and, in addition, to require that all of them (including American citizens) be required to participate in an orientation and training program before permitting them to start appointment as interns or residents in hospitals in the United States. Such orientation and training programs would be of 3 to 12 months' duration, during which the physician's competence in the basic and clinical medical sciences, in English, and possibly in mathematics and other fields would be assessed, and appropriate remedial instruction would be given.
>
> The length of each physician's participation in the program would be determined by initial evaluation of his needs or deficiencies and subsequent evaluation of his progress.[4]

Another recommendation concerned the conduct of the internship training programs:

> . . . It is recommended that the AMA Council on Medical Education establish and enforce more stringent requirements for approved training programs, to eliminate those programs in which foreign medical graduates are utilized primarily for their service contribution, with inadequate supervision and without true education experience.[5]

Effective control over internships by stricter screening of candidates and establishing more stringent requirements for approved training programs are again responsibilities of a national organization, and in this case, the Council on Dental Education. It is hoped that the Council will adopt these recommendations in their guidelines to assist state boards of dental examiners in resolving the dilemma of foreign dental graduates. During the annual meeting of the American Association of Dental Examiners, November 5-6, 1970, the matter of foreign dental graduates was discussed. The following indicates that adequate guidelines to evaluate the credentials of foreign dental graduates may be developed in the near future:

> . . . The Council on Dental Education is of the opinion that this matter is far more broad than simply dental education and therefore must be considered by several appropriate agencies in order to develop adequate solutions to the problem. On this basis, the Council expressed the opinion that perhaps the best approach to the evaluation of foreign dental graduates might rest with the establishment of guidelines which could be used on a state or national basis to assess the competency of the dental graduate from schools outside the United States and Canada. . . .Further, the Council on Dental Education felt that because of the magnitude of the project, this problem should be considered in depth and therefore recommended the appointment of a special committee representing the American Association of Dental Examiners, the American Association of Dental Schools, the Council of the National

> Board of Dental Examiners, and the Council on Dental Education to develop guidelines for a system to evaluate foreign dental graduates seeking licensure in the United States. . . .This staff committee was recently convened and guidelines were developed which will be submitted to the Council during its December meeting as well as to the AADE for consideration to determine whether the guidelines are responsive to the AADE request.[6]

The amendments as provided in House Bill No. 1861-70, H.D. 2 do offer substitute safeguards with the intent of maintaining quality dental care, but the effectiveness and adequacy of such safeguards remain highly questionable at this time. The above indications caution that it would be inadvisable to remove the American degree requirement as a condition of eligibility for the licensure examination unless more conclusive data become available. For the same reason, it would not be feasible to reconsider the enactment of House Bill No. 1861-70 as the safeguards proposed appear insufficient substitutes for the American degree requirement, which has assured that each applicant for licensure has adequate educational preparation.

Canadian schools of dentistry. The Council on Dental Education, which accredits American schools of dentistry, also accredits Canadian schools of dentistry. Since accreditation is granted only after a particular dental school meets the minimum standards required of all other accredited American schools, all states, with the exception of Hawaii, Indiana, and Ohio,[7] admit applicants who are graduates of Canadian dental schools for licensure. The Hawaii Board of Dental Examiners agrees that there is no reason why graduates from Canadian dental schools should not be eligible for licensure here in Hawaii.[8] An amendment to the law relating to dentistry, requiring that all applicants for licensure must be graduates of dental schools accredited by the American Dental Association's Council on Dental Education, would extend eligibility for licensure to graduates of Canadian dental schools and would result in no loss of assurance to the public that all applicants have adequate educational preparation necessary to maintain public health and safety.

Other foreign schools of dentistry. Accreditation by the Council on Dental Education does not extend to schools of dentistry outside of the United States and Canada. Although, ideally, accreditation of foreign dental schools would be the most equitable means to evaluate an applicant's educational background, the problems of accrediting institutions in other countries has prompted the Council on Dental Education to approach the problem of foreign dental graduates differently.

> In essence, it has been decided over the years, on the basis of many reviews of this problem that evaluation of the individual foreign dental graduate is far more feasible than an attempt to conscientiously evaluate the educational program of the foreign dental graduate.[9]

Thus, the Council on Dental Education felt that the best approach to evaluate foreign dental graduates is by the establishment of guidelines which could be used on a state or national basis. If such guidelines are developed to assess the competency of the dental graduate from schools outside the United States and Canada, a D.D.S. or D.M.D. degree from any school of dentistry would be sufficient as an eligibility requirement for licensure. Until such time that guidelines are developed, however, the removal of the D.D.S. or D.M.D. degree requirement from an accredited school of dentistry cannot be recommended.

Foreign dental graduates with graduate degrees from accredited schools of dentistry. A substitute for a D.D.S. or D.M.D. degree that should be examined to extend eligibility for licensure to a foreign dental graduate is a graduate degree from an accredited school of dentistry. Admission into a graduate degree program in an American dental school appears less restrictive than admission practices into the D.D.S. or D.M.D. program. Presumably, since D.D.S. or D.M.D. degree qualifies an individual for the licensure examination and upon passing the examination he can go directly into private practice, the number of applicants for graduate degree programs is relatively smaller and facilities for graduate programs at dental schools are not as limited. At the annual meeting of the American Association of Dental Examiners, the following concerning foreign dental graduates in graduate degree programs were included in Thomas Ginley's presentation:

> Upon completion of the Masters or certificate advanced education program, the foreign dental graduate frequently requests the same institution to consider his eligibility for admission to the D.D.S. or D.M.D. program in order to be eligible for state board licensure. Because space is extremely limited, this has caused some difficulty at dental schools that have provisions for admitting foreign dental graduates.
>
> A review of the 1969-70 Annual Report on Dental Education prepared by the Council on Dental Education indicates, for example, that 51 foreign dental graduates were admitted with advanced standing in 1969 and that the total enrollment of foreign dentists seeking the D.D.S. or D.M.D. degree was 74 students. . . .As far as advanced or postgraduate education is concerned, 111 were enrolled in graduate eduation programs and 56 were enrolled in post-graduate

> education programs for a total of 167 foreign dental students enrolled in advanced education programs conducted by dental schools.[10]

Under existing law, a foreign dental graduate is not eligible for licensure unless he has a D.D.S. or D.M.D. degree from an American school of dentistry. Hence, even if the foreign dental graduate successfully completes a graduate degree program, he is still ineligible for licensure since he has not been awarded a D.D.S. or D.M.D. degree. Candidates for graduate programs compete on the same basis and must undergo the same program requirements, regardless of whether they are graduates of American or foreign dental schools.

The following question posed in the survey to the deans of dental schools provides an indication of the abilities of a foreign dental graduate candidate for a graduate degree in comparison to an American dental graduate with a D.D.S. or D.M.D. degree.

> Does acceptance of a graduate of a foreign dental school in a graduate program mean that he has abilities comparable to a graduate of an American or Canadian dental school with a D.D.S. or D.M.D. degree?

The respondents were divided in their opinions (16 indicated "yes" while 12 indicated "no"). However, after successful completion of the graduate program, which usually is of two years' duration, the foreign dental graduate has most likely gained familiarity in techniques and practices of American dentistry. In response to the following question:

> If a graduate of a foreign dental school successfully completes a graduate program, would you say that he has abilities at least equivalent to a graduate of an American or Canadian dental school with a D.D.S. or D.M.D. degree?

Twenty-two respondents agreed while 9 respondents disagreed that upon successful completion of a graduate program, the foreign dental graduate has abilities at least equivalent to a graduate of an accredited dental school with a D.D.S. or D.M.D. degree.

It appears, then, that there would be no loss of public protection if a foreign dental graduate is eligible for licensure if he has obtained a graduate degree from an accredited school of dentistry. Graduate education would assure adequate educational preparation and training, and familiarity with American practice of dentistry. The licensure requirement could be amended to require a D.D.S. or D.M.D. degree or a graduate degree from a school of

dentistry accredited by the Council on Dental Education of the American Dental Association.

Rather than allow eligibility to all foreign dental graduates, with adequate guidelines, it appears most appropriate at this time to adopt a wait-and-see attitude with the exception of graduates from Canadian dental schools and foreign graduates with graduate degrees from accredited dental schools. Such a conservative approach in these times does not seem compatible in an age of liberalism nor is it consistent with our immigration policies. However, the concern here is in the health of the public and the danger of irreparable harm warrants such an approach. National efforts to deal with the dilemma of foreign dental graduates will provide direction to the various states in the near future. Any resolution of the foreign dental graduate problem must provide sufficient assurance that the public health and safety will not be endangered.

Chapter V

CONCLUSIONS AND IMPLICATIONS FOR THE FUTURE

The general inconsistency between immigration policies and licensing statutes relating to dentistry, which is the probable reason for removing the licensure requirement of graduation from an American school of dentistry, remains unresolved. This study concludes that the only statutory changes regarding the licensure of foreign dental graduates which can be recommended at the present time are:

(1) allowing Canadian dental graduates eligibility for licensure since schools of dentistry in Canada are accredited by the same body which accredits schools of dentistry in the United States, and

(2) allowing foreign dental graduates with graduate degrees from an accredited school of dentistry to be eligible for licensure.

Both changes recommended would result in no loss of public protection and no reduction in the quality of dental care.

There is insufficient assurance that the same would result if the American degree requirement, or its equivalent, was removed as an eligibility standard for licensure of dentists. Perhaps, at some future date, the American degree requirement, or its equivalent, could be deleted as an eligibility standard if:

(1) the licensure examination is assessed as, or can be designed so that it is, an adequate test of competence and fitness to practice dentistry and reliance on educational credentials is minimal,

(2) guidelines are developed to properly evaluate the individual foreign dental graduate seeking licensure if the present examination is still to be utilized for determining competency of licensees, or

(3) an internship program is devised which would provide assurance that the foreign dental graduate, upon completion of the program, meets the existing standards of dentistry.

These future possibilities, however, are contingent upon efforts of national organizations, such as, the American Association of Dental Examiners, the American Association of Dental Schools, the National Board of Dental Examiners, and the American Dental Association and its Council on Dental Education. The aforementioned are concerns relating directly to the process of licensure with respect to foreign dental graduates.

Maximum utilization of dental manpower resources. The attainment of maximum utilization of dental manpower resources does not seem possible as long as the inconsistency between immigration policies and licensing statutes exists. Limited changes in licensing statutes have been recommended but are insufficient to significantly minimize the problem. The possibility of future changes have been discussed, but if these are not implemented and the inconsistency persists, there will be a continued waste of manpower resources, both to the receiving country and the country of origin, as foreign dental graduates are permitted to enter the United States and remain with only a limited avenue to practice in their profession. This suggests a need for:

(1) timely evaluation of our immigration policies so that these coincide with opportunity available to foreign dental graduates to practice their profession if they intend to remain in the United States, and

(2) expansion of dental schools to provide special programs for foreign dental graduates or the establishment of training and orientation programs for foreign dental graduates who do not meet the standards of American practice of dentistry.

Although locally, there is little that can be done regarding immigration policies other than encouraging that any inconsistency with licensing statutes or available opportunity for foreign dental graduates be examined and minimized, there may be possibilities with respect to orientation and training programs for foreign dental graduates. The Department of Health, the Board of Dental Examiners, the Hawaii Dental Association, and the Advisory Commission on Manpower and Full Employment might examine the feasibility of such a training program for foreign dental graduates and possibilities of federal funding assistance.

Meeting the dental needs of the population. An adequate supply of dental manpower is the responsibility of the education system but fiscal resources available to dental institutions are not sufficient to meet this responsibility. Dental needs and demands far exceed the supply of dentists available to provide necessary dental services. One alternative is to increase government funding for the expansion or establishment of dental schools. Another alternative is to re-evaluate the delivery of dental services and encourage maximum utilization of existing dental manpower through greater use of dental auxiliaries. Efforts have already been initiated in these areas, nationwide and locally. Although these alternatives require much thought and deliberation, further delay means increasing demands and continued strain on the available supply of dental manpower so that immediate action is necessary.

Maintaining quality dental care. Just as licensure is a process for determining competency and fitness to practice and should not be manipulated to balance the supply and demand, licensure provisions which are not concerned with dental competence should not be imposed to restrict the supply and demand of dentists. There is a need to re-examine licensure provisions such as a residency requirement or the absence of licensure provisions for reciprocity and endorsement.

Hawaii is the only state which requires one year of residency to establish eligibility for licensure. With the exception of Utah, which has a residency requirement of 90 days, none of the other states require residency for licensure.[1] National standards for dental education are accepted in theory by the states' universal reliance upon national accreditation by the Council on Dental Education of the American Dental Association, but many states justify their restrictive endorsement policies by alleging marked regional differences in dental education.[2] States with no period of residence required for licensure, who are faced with a considerable influx of dentists, often may rely on stringent reciprocity or endorsement policies to restrict licensure of dentists from other states. There is no provision for reciprocity or endorsement of dentists in Hawaii and, in addition, a one-year residency is required for licensure. These result in restrictions on dentists' mobility and not only affect the supply of dentists, but may deter highly qualified dentists from coming to Hawaii. The only relevant standard for recognition is equivalence of qualifications required by the State of original licensure.[3]

CONCLUSIONS AND IMPLICATIONS FOR THE FUTURE

In summary, licensure laws in dentistry should be examined in the interest of the public to see whether adequate public protection is provided and whether the quality of dental care is being maintained. The dilemma of foreign dental graduates focused attention on the need to maintain quality dental care by retaining the degree requirement from an accredited dental school as an eligibility standard for licensure. However, other implications reveal needs for examining immigration policies, expansion and establishment of dental schools and training programs, better utilization of dental auxiliaries, removal of the residency requirement, and provisions for reciprocity and endorsement, if the ultimate goal is to provide quality and adequate dental care for all the people. Effective licensure laws is only a partial solution to attaining that goal and this study, which concerned the evaluation of the licensure of foreign dental graduates, is but a single attempt to promote the effectiveness of licensure laws.

FOOTNOTES

Chapter I

1. The terms "foreign dental graduates" and "graduates of foreign dental schools" are synonymous in this study, although there is a distinct difference between the two terms. The latter refers to all graduates of foreign dental schools, including Americans who pursued their dental education abroad, while the former excludes Americans. However, because of the frequent use of "foreign dental graduates" to mean "graduates of foreign dental schools", both terms are used interchangeably.

2. Hawaii Revised Statutes, sec. 448-9.

3. U.S. Department of Justice, Immigration and Naturalization Service, United States Immigration Laws (Washington, D.C.: U.S. Government Printing Office, 1967), pp. 7-11.

4. Hawaii, Indiana, and Ohio are listed as states which do not accept graduates of accredited Canadian schools of dentistry for licensure by the Council on Dental Education of the American Dental Association, Bureau of Economic Research and Statistics, in Facts About States for the Dentist Seeking a Location (Chicago, Illinois: American Dental Association, August 1969), p. 13.

5. There are probably more than seventeen foreign dental graduates in Hawaii, but the seventeen foreign dental graduates have formed the International Dentists Association according to a representative of the Association, interviewed in Honolulu, Hawaii, July 31, 1970.

6. U.S. Advisory Commission on Health Manpower, Report of the National Advisory Commission on Health Manpower, Vol. II (Washington, D.C.: U.S. Government Printing Office, November 1967), p. 307.

Chapter II

1. Hearings before the House Committee on Public Health, Youth, and Welfare, Fifth Legislature of the State of Hawaii, Regular Session of 1970, March 11, 1970 and March 25, 1970.

2. Interviews were held with representatives of the Hawaii Board of Dental Examiners, the Hawaii Dental Association, International Dentists Association, and the Hawaii State Department of Health in Honolulu, Hawaii, during July and August 1970.

3. Most of the arguments advanced by the International Dentists Association and by the Hawaii Dental Association are included as major issues since these organizations can be regarded as major proponents and opponents, respectively, concerning the removal of the American degree requirement for the licensure of foreign dental graduates.

4. Hawaii Revised Statutes, sec. 453-4.

5. The Regional Medical Program of Hawaii, Distribution of Medical Manpower in Hawaii, 1969, Research Report No. 12 (Honolulu, Hawaii: The Regional Medical Program of Hawaii, 1970), pp. 5 and 15.

6. The Hawaii Board of Dental Examiners accepts applicants who present a certificate or other bona fide evidence as having passed the theory examination of the National Board of Dental Examiners in lieu of the theory portion of the state dental board examination, Hawaii Revised Statutes, sec. 448-10.

Chapter III

1. American Dental Association, Annual Report on Dental Education 1969/70, Part 1 (Chicago, Illinois: American Dental Association, 1970), p. 5.

2. Thomas J. Ginley, "Comments on Foreign Dental Graduate Licensure" (presented to the American Association of Dental Examiners "Foreign Dental Graduates Symposium", Las Vegas, Nevada, November 5, 1970), p. 3.

3. American Dental Association, Annual Report, p. 3.

4. Ginley, "Comments on Foreign Graduate Licensure," p. 3.

5. Letter from Reginald Sullens, Assistant Executive Director: Education and Hospitals, American Dental Association, Chicago, Illinois, April 20, 1970, p. 2 to Manuel C. W. Kau, Executive Officer of the Dental Health Division, Hawaii State Department of Health.

6. American Dental Association, Annual Report, p. 5.

7. For a discussion on the necessity of an orientation program for foreign medical graduates, see U.S. Advisory Commission on Health Manpower, Report of the National Advisory Commission on Health Manpower, Vol. II (Washington, D.C.: U.S. Government Printing Office, November 1967), p. 97.

8. Ibid., pp. 499-500.

9. Interview with representatives of the Hawaii Dental Association and the Hawaii Board of Dental Examiners, Honolulu, Hawaii, July 16, 1970.

10. U.S. Advisory Commission on Health Manpower, Report, Vol. II, p. 500.

11. Ibid.

12. Letter from Victor A. Hill, Executive Secretary, California Board of Dental Examiners, Sacramento, California, July 22, 1970.

13. Letter from Sullens, p. 2.

14. Telephone conversation with Pete H. Nishimura, President, Hawaii Board of Dental Examiners after his return from the Eighty-Seventh Annual Meeting of the American Association of Dental Examiners, Las Vegas, Nevada, November 5-6, 1970.

15. Letter from Sullens, p. 2.

16. New York, Laws of 1970, Chapter 856.

17. Letter from Donald F. Wallace, Secretary, New York Board of Dental Examiners, Albany, New York, September 1, 1970, p. 1.

18. Telephone conversation with Pete H. Nishimura.

19. Ibid.

20. For a listing of qualifications required by various states for the licensure of physicians educated in foreign medical facilities, see U.S. Department of Health, Education and Welfare, National Center for Health Statistics, State Licensing of Health Occupations (Washington, D.C.: U.S. Government Printing Office, October 1967), p. 117.

21. For a description of the ECFMG and its examination and certification, see U.S. Advisory Commission on Health Manpower, Report, p. 103.

22. Ibid., pp. 80-81, for discussion on approval by the Council on Medical Education and Hospitals of the American Medical Association.

23. Joseph F. Volker, President, University of Alabama in Birmingham, "Evaluation of Education and Competence for Licensing of Foreign Dental Graduates" (presented at the Eighty-Seventh Annual Meeting of the American Association of Dental Examiners, Las Vegas, Nevada, November 5-6, 1970), pp. 4-5.

24. Ibid., p. 3.

25. Ibid., p. 5.

26. U.S. Advisory Commission on Health Manpower, Report, pp. 104-105.

27. American Dental Association, Bureau of Economic Research and Statistics, Facts About States for the Dentist Seeking a Location (Chicago, Illinois: American Dental Association, August 1969), p. 23.

28. American Dental Association, Annual Report, p. 29.

29. U.S. Advisory Commission on Health Manpower, Report, pp. 90-92.

30. Ibid., pp. 71-78.

31. Ibid., p. 71.

32. American Dental Association, Facts About States, p. 6.

33. Dentist-to-population ratios reported in the several sources provided may vary depending on the estimated population figure employed and the number of dentists. For example, the American Dental Association included 1968 graduates while the U.S. Department of Health, Education and Welfare excluded 1968 graduates in their respective tabulations, and the estimated populations for Hawaii were 750,000 and 727,000, respectively.

34. U.S. Department of Health, Education and Welfare, Public Health Service, Health Manpower Source Book, section 21 (Washington, D.C.: U.S. Government Printing Office, 1970), p. 82.

35. The Regional Medical Program of Hawaii, Distribution of Medical Manpower in Hawaii, 1969, Research Report No. 12 (Honolulu, Hawaii: The Regional Medical Program of Hawaii, 1970), p. 14.

36. W. O. Young and D. F. Striffler, The Dentist, His Practice and His Community (Philadelphia, Pennsylvania: Saunders Company, 1964), p. 180.

37. Presentation by the Department of Health at a meeting on dental matters, Honolulu, Hawaii, April 8, 1970.

38. Greenleigh Associates, Audit of the Medical Assistance Program of the State of Hawaii (Honolulu, Hawaii: Office of the Legislative Auditor, March 1970), pp. 64-65.

39. Young and Striffler, The Dentist, p. 180.

40. Volker, "Evaluation of Education and Competence for Licensing of Foreign Dental Graduates", p. 4.

41. The Regional Medical Program of Hawaii, Distribution, p. 4.

42. U.S. Advisory Commission on Health Manpower, Report, pp. 256-257.

43. U.S. Department of Health, Education and Welfare, Source Book, section 21, p. 80.

44. American Dental Association, Annual Report, p. 9.

45. Donald W. Johnson, "Dental Manpower Resources in the United States", American Journal of Public Health, LIX, No. 4 (April 1969), p. 689.

46. U.S. Advisory Commission on Health Manpower, Report, pp. 497-498.

47. Volker, "Evaluation of Education and Competence for Licensing of Foreign Dental Graduates", p. 4.

48. Ibid., p. 3.

49. U.S. Advisory Commission on Health Manpower, Report, p. 82.

Chapter IV

1. U.S. Advisory Commission on Health Manpower, Report of the National Advisory Commission on Health Manpower, Vol. II (Washington, D.C.: U.S. Government Printing Office, November 1967), p. 499.

2. House Standing Committee Report No. 347, Fifth Legislature of the State of Hawaii, Regular Session of 1970.

3. House Standing Committee Report No. 555, Fifth Legislature of the State of Hawaii, Regular Session of 1970.

4. U.S. Advisory Commission on Health Manpower, Report, p. 97.

5. Ibid., p. 76.

6. Thomas J. Ginley, "Comments on Foreign Dental Graduate Licensure" (presented to the American Association of Dental Examiners "Foreign Dental Graduates Symposium", Las Vegas, Nevada, November 5, 1970), p. 4.

7. American Dental Association, Bureau of Economic Research and Statistics, Facts About States for the Dentist Seeking a Location (Chicago, Illinois: American Dental Association, August 1969), p. 13.

8. Interview with representatives of the Hawaii Dental Association and the Hawaii Board of Dental Examiners, Honolulu, Hawaii, July 16, 1970.

9. Ginley, "Comments on Foreign Dental Graduate Licensure", p. 4.

10. Ibid., p. 3.

Chapter V

1. U.S. Department of Health, Education and Welfare, National Center for Health Statistics, State Licensing of Health Occupations (Washington, D.C.: U.S. Government Printing Office, October 1967), p. 45.

2. U.S. Advisory Commission on Health Manpower, Report of the National Advisory Commission on Health Manpower, Vol. II (Washington, D.C.: U.S. Government Printing Office, November 1967), p. 503.

3. Ibid.

Appendix A

LICENSURE OF FOREIGN DENTAL GRADUATES IN CALIFORNIA

Assembly Bill No. 537

CHAPTER 183

An act to add Section 1636 to the Business and Professions Code, relating to foreign dental graduates.

[Approved by Governor June 12, 1969. Filed with Secretary of State June 12, 1969.]

The people of the State of California do enact as follows:

SECTION 1. Section 1636 is added to the Business and Professions Code, to read:

1636. Notwithstanding the provisions of subdivision (c) of Section 1628, a person who has had issued to him a degree of doctor of dental medicine or doctor of dental surgery by a foreign dental school listed by the World Health Organization, or by a foreign dental school approved by the Board of Dental Examiners, shall be eligible for examination as hereinafter provided upon complying with subdivisions (a) and (b) of Section 1628 and furnishing all of the following documentary evidence satisfactory to the board, that:

(a) He has completed in a dental school or schools a resident course of professional instruction in dentistry for the full number of academic years of undergraduate courses required for graduation.

(b) Subsequent thereto, he has had issued to him by such dental school, a dental diploma or a dental degree, as evidence of the completion of the course of dental instruction required for graduation.

(c) He has been admitted or licensed to practice dentistry in the country wherein is located the institution from which the applicant was graduated.

Examination by the board of a foreign-trained dental applicant shall be a progressive examination given in the following sequence:

(1) Examination in writing which shall be comprehensive and sufficiently thorough to test the knowledge, skill and competence of the applicant to practice dentistry, and both questions and answers shall be written in the English language. The board shall waive the written examination for any person who has successfully passed the National Board of Dental Examiners' examination and received a certificate from that board.

(2) Demonstration of applicant's judgment in diagnosis-treatment planning.

(3) Demonstration of applicant's skill in prosthetic dentistry.

(4) Demonstration of applicant's skill in restorative technique and operative dentistry. However, the board shall not permit an applicant to perform a dental operation on a patient until the applicant has successfully completed the requirements of subdivisions (1), (2), and (3) of this section and has successfully demonstrated his skill in restorative technique.

When an applicant for a license under this section has received a passing grade equivalent to that required of other applicants in the examinations of the kind set forth in subdivisions (1), (2), and (3) of this section, he shall be exempt from reexamination in that subject in subsequent examinations before the board held within a two-year period from the date of the examination in which he obtained such passing grade.

The licensure examination for foreign-trained dental applicants shall be held by the board at least once a year with such additional examinations as the board desires to hold. The time and place of the examination shall be fixed by the board at least six months prior to the date that the examination is to be held.

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Appendix B

LIST OF DENTAL SCHOOLS IN THE UNITED STATES AND CANADA
CONTACTED FOR THE SURVEY ON FOREIGN DENTAL GRADUATES

UNITED STATES

University of Alabama
Birmingham, Alabama

University of the Pacific
San Francisco, California

University of California
San Francisco, California

University of California at
Los Angeles
Los Angeles, California

University of Southern California
Los Angeles, California

Loma Linda University
Loma Linda, California

Georgetown University
Washington, D.C.

Howard University
Washington, D.C.

Emory University
Atlanta, Georgia

Loyola University
Maywood, Illinois

Northwestern University Dental
School
Chicago, Illinois

University of Illinois
Chicago, Illinois

Indiana University
Indianapolis, Indiana

University of Iowa
Iowa City, Iowa

University of Kentucky
Lexington, Kentucky

University of Louisville
Louisville, Kentucky

Loyola University of New Orleans
New Orleans, Louisiana

University of Maryland
Baltimore, Maryland

Harvard School of Dental Medicine
Boston, Massachusetts

Tufts University School of Dental
Medicine
Boston, Massachusetts

University of Detroit
Detroit, Michigan

The University of Michigan
Ann Arbor, Michigan

University of Minnesota
Minneapolis, Minnesota

University of Missouri at Kansas City
Kansas City, Missouri

St. Louis University
St. Louis, Missouri

Washington University
St. Louis, Missouri

The Creighton University
Omaha, Nebraska

University of Nebraska
Lincoln, Nebraska

Fairleigh Dickinson University
Teaneck, New Jersey

New Jersey College of Medicine &
Dentistry
Jersey City, New Jersey

Appendix B (continued)

Columbia University
New York, New York

New York University
New York, New York

State University of New York at Buffalo
Buffalo, New York

University of North Carolina
Chapel Hill, North Carolina

The Ohio State University
Columbus, Ohio

Case Western Reserve University
Cleveland, Ohio

University of Oregon Dental School
Portland, Oregon

Temple University
Philadelphia, Pennsylvania

University of Pennsylvania
Philadelphia, Pennsylvania

University of Pittsburgh
Pittsburgh, Pennsylvania

University of Puerto Rico
San Juan, Puerto Rico

Meharry Medical College
Nashville, Tennessee

University of Tennessee
Memphis, Tennessee

Baylor University
Dallas, Texas

The University of Texas Dental Branch
Houston, Texas

Virginia Commonwealth University
Richmond, Virginia

University of Washington
Seattle, Washington

West Virginia University
Morgantown, West Virginia

Marquette University
Milwaukee, Wisconsin

University of Colorado Medical Center
Denver, Colorado

The University of Connecticut
Hartford, Connecticut

University of Florida
Gainesville, Florida

Medical College of Georgia
Augusta, Georgia

Southern Illinois University
Edwardsville, Illinois

Louisiana State University
New Orleans, Louisiana

State University of New York at Stony Brook
Stony Brook, New York

University of Oklahoma
Oklahoma City, Oklahoma

Medical University of South Carolina
Charleston, South Carolina

The University of Texas
San Antonio, Texas

Appendix B (continued)

CANADA

University of Alberta
Edmonton, Alberta

University of British Columbia
Vancouver 8, British Columbia

Dalhousie University
Halifax, Nova Scotia

Universite de Montreal
Montreal 3, Quebec

University Laval
Quebec 10, P.Q.

University of Manitoba
Winnipeg 3, Manitoba

McGill University
Montreal 2, Quebec

University of Saskatchewan
Saskatoon, Saskatchewan

University of Toronto
Toronto 2A, Ontario

The University of Western Ontario
London, Ontario

Appendix C

LIST OF APPLICATIONS RECEIVED BY THE CALIFORNIA BOARD OF DENTAL EXAMINERS FOR THE DENTAL LICENSURE EXAMINATION AS OF JUNE 18, 1970*

Argentina	20	Japan	6
Australia	1	Korea	4
Bolivia	6	Lebanon	2
Brazil	6	Mexico	6
Bulgaria	1	Malaysia	1
Chile	2	Manchuria	1
Curacas	1	New Zealand	4
Canada	5	Norway	1
China	6	Pakistan	1
Costa Rica	3	Peru	8
Cuba	182	Paraguay	1
Czechoslavakia	2	Philippines	223
Columbia	7	Poland	9
Dominican Republic	2	Rumania	8
Egypt	20	Russia	1
Equador	7	Scotland	2
England	16	Singapore	1
El Salvador	2	Sweden	2
Formosa	1	Syria	1
France	12	South Africa	1
Germany	10	Tanzania	1
Greece	8	Thailand	1
Haiti	3	Taiwan	4
Hungary	3	Turkey	5
Hong Kong	2	Uruguay	1
India	24	Venezuela	1
Ireland	1	Yugoslavia	15
Israel	3	Requests from applicants who did not give country of graduation	97
Iran	4		
Indonesia	2		
Italy	1	TOTAL	772

*Enclosure in a letter from Victor A. Hill, Executive Secretary, California Board of Dental Examiners, Sacramento, California, July 22, 1970, to Pete H. Nishimura, President, Hawaii Board of Dental Examiners.

Appendix D

LICENSURE OF FOREIGN DENTAL GRADUATES IN NEW YORK

Chapter 856 - Laws of 1970 - 5/18/70

STATE OF NEW YORK

Cal. No. 1518 3164–A

IN ASSEMBLY

February 3, 1970

Introduced by Mr. BLUMENTHAL--read once and referred to the Committee on Education--reported from said committee with amendments, ordered reprinted as amended and placed on the order of second reading

AN ACT

To amend the education law, in relation to the licensing of foreign dental graduates

The people of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. The education law is hereby amended by adding thereto a new section, to be section sixty- six hundred nine-a, to read as follows:

§ *6609-a. Licensing of foreign dental graduates. Notwithstanding any provision of this chapter to the contrary, a person who has issued to him a degree of doctor of dental medicine or dental surgery by a foreign dental school approved by the regents as maintaining a proper educational standard shall be eligible to be examined by the board of dental examiners upon submitting to the satisfaction of the dental board the following documentary evidence:*

(a) he has completed in a dental school or schools a resident course of professional instruction in dentistry for the full number of academic years of undergraduate courses required to graduate;

(b) subsequent thereto, he has had issued to him by such dental school, a dental diploma or dental degree as evidence of the completion of the course of dental instruction required for graduation;

EXPLANATION—Matter in italics is new; matter in brackets [ ] is old law to be omitted.

Appendix D (continued)

(c) he has been admitted or licensed to practice dentistry in the country wherein is located the institution from which he was graduated.

Examination of a foreign-trained dental applicant shall be according to the rules and regulations promulgated by the regents.

On recommendation of the board, the department may issue a limited permit to a graduate of a dental college who meets the educational qualifications for admission to the licensing examination in dentistry for employment in a hospital or dental facility approved by an appropriate agency, while under the direction or supervision of a licensed dentist, for a period of three years. No such permit shall be issued unless such graduate has a bonafide offer of a position in such a hospital or dental facility.

§ 2. This act shall take effect January first, nineteen hundred seventy-one.

Appendix E

DISTRIBUTION OF DENTISTS AND POPULATION IN 1968
BY REGION AND STATE*

Region and state	Number of dentists	Population per dentist	Estimated population
NEW ENGLAND	7,351	1,546	11,363,800
Connecticut	1,975	1,490 (7)	2,942,500
Maine	433	2,275	985,000
Massachusetts	3,937	1,386 (4)	5,458,100
New Hampshire	327	2,052	671,000
Rhode Island	478	1,889	902,900
Vermont	201	2,011	404,300
MIDDLE EAST	29,485	1,485	43,797,200
Delaware	232	2,246	521,100
District of Columbia	767	1,056 (1)	810,300
Maryland	1,743	2,133	3,717,300
New Jersey	4,476	1,573	7,041,500
New York	14,817	1,230 (2)	18,223,200
Pennsylvania	6,780	1,728	11,717,400
West Virginia	670	2,636	1,766,400
SOUTHEAST	15,736	2,630	41,388,800
Alabama	1,131	3,128	3,538,100
Arkansas	650	3,012	1,958,000
Florida	3,359	1,836	6,166,100
Georgia	1,492	2,993	4,464,900
Kentucky	1,227	2,585	3,171,800
Louisiana	1,395	2,631	3,670,700
Mississippi	647	3,606	2,333,100
North Carolina	1,625	3,073	4,993,800
South Carolina	706	3,726	2,630,400
Tennessee	1,636	2,374	3,884,600
Virginia	1,868	2,450	4,577,300
SOUTHWEST	6,525	2,485	16,215,000
Arizona	783	2,140	1,676,000
New Mexico	342	3,099	1,059,800
Oklahoma	1,032	2,417	2,494,300
Texas	4,368	2,515	10,984,900

Appendix E (continued)

Region and state	Number of dentists	Population per dentist	Estimated population
CENTRAL	27,577	1,827	50,373,800
Illinois	6,394	1,704	10,897,400
Indiana	2,300	2,182	5,018,700
Iowa	1,558	1,802	2,808,100
Michigan	4,597	1,851	8,510,800
Minnesota	2,574	1,413 (5)	3,637,600
Missouri	2,390	1,911	4,567,500
Ohio	5,185	2,056	10,661,700
Wisconsin	2,579	1,656	4,272,000
NORTHWEST	5,370	1,861	9,993,200
Colorado	1,246	1,636	2,038,300
Idaho	348	2,025	704,600
Kansas	1,054	2,176	2,293,100
Montana	375	1,933	724,800
Nebraska	956	1,557 (9)	1,488,500
North Dakota	287	2,254	647,000
South Dakota	303	2,339	708,800
Utah	646	1,606	1,037,200
Wyoming	155	2,264	350,900
FAR WEST	17,161	1,520	26,089,100
**Alaska	95	2,867	272,400
California	12,611	1,544 (8)	19,467,700
Hawaii	479	1,566 (10)	750,000
Nevada	213	2,242	477,500
Oregon	1,552	1,285 (3)	1,993,900
Washington	2,211	1,415 (6)	3,127,600
Total number listed by state	109,205		
FEDERAL DENTAL SERVICES	7,759		
Air Force	1,786		
Army	2,603		
Navy	2,028		
Public Health Service	562		
Veterans Administration	780		
UNITED STATES TOTAL	116,964	1,703	199,220,900

Appendix E (continued)

Region and state	Number of dentists	Population per dentist	Estimated population
OUTLYING AREAS			
American Samoa	3	9,000	27,000
Guam	12	5,467	65,600
Mariana Islands	1	11,000	11,000
Panama Canal Zone	14	3,114	43,600
Puerto Rico	536	4,957	2,657,000
Virgin Islands	17	2,694	45,800

Sources: Number of dentists is the number listed in the 1969 American Dental Directory as of December 1968. Retired dentists and 1968 graduates are included. Populations of states and regions are estimates as of December 31, 1967, from Sales Management, June 10, 1968. Populations of outlying areas are 1966 estimates of the Bureau of the Census, except that population of the Mariana Islands is from the 1969 Rand McNally Commercial Atlas.

**A relatively high proportion of the Alaska population receives dental care from dentists counted in the "federal dental services".

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*American Dental Association, Bureau of Economic Research and Statistics, Facts About States for the Dentist Seeking a Location (Chicago, Illinois: American Dental Association, 1969), p. 6.

Appendix F

NUMBER OF NON-FEDERAL DENTISTS AND
DENTIST/POPULATION RATIOS IN EACH STATE IN 1968*

	Total	Active	Civilian Population July 1, 1968[2] (thousands)	Rate per 100,000 Civilian Population	
				Total	Active
United States	105,636	92,013	197,571	53	47
New England	7,158	6,211	11,352	63	55
Connecticut	1,892	1,685	2,951	64	57
Maine	425	348	963	44	36
Massachusetts	3,855	3,314	5,431	71	61
New Hampshire	327	291	699	47	42
Rhode Island	465	407	883	53	46
Vermont	194	166	424	46	39
Middle Atlantic	25,125	21,587	36,770	68	59
New Jersey	4,297	3,783	7,020	61	54
New York	14,251	12,183	18,040	79	68
Pennsylvania	6,577	5,621	11,709	56	48
South Atlantic	12,031	10,720	29,295	41	37
Delaware	243	226	525	46	43
District of Columbia	829	724	790	105	92
Florida	3,174	2,745	6,048	52	45
Georgia	1,399	1,266	4,452	31	28
Maryland	1,616	1,466	3,677	44	40
North Carolina	1,590	1,423	5,006	32	28
South Carolina	648	581	2,584	25	22
Virginia	1,878	1,725	4,412	43	39
West Virginia	654	564	1,801	36	31
East South Central	4,543	4,088	12,943	35	32
Alabama	1,142	1,038	3,522	32	29
Kentucky	1,178	1,041	3,160	37	33
Mississippi	644	581	2,321	28	25
Tennessee	1,579	1,428	3,940	40	36

[1]Excludes 1968 graduates.

[2]State figures may not add to totals because of rounding.

Appendix F (continued)

Geographic Division and State	Number of Non-Federal Dentists July 1, 1968[1]		Civilian Population July 1, 1968[2] (thousands)	Rate per 100,000 Civilian Population	
	Total	Active		Total	Active
West South Central	6,997	6,270	18,914	37	33
Arkansas	612	543	1,976	31	27
Louisiana	1,368	1,227	3,678	37	33
Oklahoma	994	874	2,475	40	35
Texas	4,023	3,626	10,784	37	34
East North Central	20,797	17,989	39,487	53	46
Illinois	6,357	5,387	10,934	58	49
Indiana	2,298	2,007	5,051	45	40
Michigan	4,472	3,990	8,720	51	46
Ohio	5,136	4,463	10,564	49	42
Wisconsin	2,534	2,142	4,218	60	51
West North Central	8,866	7,419	15,947	56	47
Iowa	1,541	1,288	2,771	56	46
Kansas	993	841	2,262	44	37
Minnesota	2,516	2,127	3,642	69	58
Missouri	2,300	1,903	4,583	50	42
Nebraska	948	793	1,424	67	56
North Dakota	278	228	614	45	37
South Dakota	290	239	651	45	37
Mountain	3,947	3,517	7,771	51	45
Arizona	727	650	1,631	45	40
Colorado	1,197	1,052	1,986	60	53
Idaho	329	299	699	47	43
Montana	366	318	686	53	46
Nevada	197	184	439	45	42
New Mexico	344	315	990	35	32
Utah	634	564	1,029	62	55
Wyoming	153	135	311	49	43
Pacific	16,172	14,212	25,093	64	57
Alaska	95	90	241	39	37
California	11,922	10,419	18,918	63	55
Hawaii	482	437	727	66	60
Oregon	1,547	1,373	2,003	77	69
Washington	2,126	1,893	3,204	66	59

Appendix F (continued)

Source: Bureau of Health Professions Education and Manpower Training, Division of Dental Health.
U.S. Bureau of the Census. Population Estimates. Current Population Reports P-25, No. 414.

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*U.S. Department of Health, Education and Welfare, Public Health Service, Health Manpower Source Book, section 21 (Washington, D.C.: U.S. Government Printing Office, 1970), pp. 81-82.

Appendix G

RATES AND RATIOS OF ACTIVE DENTISTS TO CIVILIAN RESIDENT POPULATION IN HAWAII, BY COUNTY AND JUDICIAL DISTRICT IN 1969*

	Active Dentists 1969	Civilian Resident Population 1967	Rate DDS per 100,000	Ratio
UNITED STATES[1]	90,776	195,669,000	46	1:2,151
STATE	428	703,926	61	1:1,645
CITY AND COUNTY OF HONOLULU	363	560,837	65	1:1,545
Ewa	23	93,372	25	4,060
Honolulu	301	315,305	96	1,047
Koolauloa	1	10,786	10	10,786
Koolaupoko	26	82,177	32	3,161
Wahiawa	9	28,872	32	3,208
Waialua	1	8,006	12	8,006
Waianae	2	22,319	9	11,159
HAWAII COUNTY	30	65,270	46	1:2,176
North Hilo	0	1,998	0	0
South Hilo	23	33,665	70	1,464
Hamakua	2	5,642	40	2,821
North Kohala	1	3,487	33	3,487
South Kohala	0	2,163	0	0
North Kona	1	4,886	25	4,886
South Kona	2	4,300	50	2,150
Kau	1	3,688	33	3,688
Puna	0	5,441	0	0
KAUAI COUNTY	15	30,654	50	1:2,044
Koloa	2	7,609	28	3,804
Hanalei	0	1,212	0	0
Lihue	6	6,919	100	1,153
Kawaihau	3	7,177	43	2,392
Waimea	4	7,737	57	1,934
MAUI COUNTY	20	47,165	42	1:2,358
Hana	1	1,010	100	1,010
Lahaina	3	5,927	60	1,976
Makawao	0	9,571	0	0
Wailuku	14	22,356	63	1,597
Molokai	1	5,270	20	5,270
Lanai	1	3,031	33	3,031

Appendix G (continued)

Sources: Population data for 1967 from State of Hawaii Department of Planning and Economic Development, Population of Hawaii Statistical Report 66. Population data from Department of Planning and Economic Development. General Plan Revision, Vol. 4, Table 48. Medical manpower data from Regional Medical Program of Hawaii.

U.S. Department of Health, Education and Welfare, Public Health Services, National Center for Health Statistics Health Resources Statistics 1968, Washington, D.C., Table 34, page 63 for national rates. Hawaiian rates computed by Regional Medical Program of Hawaii.

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*The Regional Medical Program of Hawaii, Distribution of Medical Manpower in Hawaii, 1969, Research Report No. 12 (Honolulu, Hawaii: The Regional Medical Program of Hawaii, 1970), p. 15.

Appendix H

RATES AND RATIOS OF ACTIVE PHYSICIANS TO CIVILIAN RESIDENT POPULATION IN HAWAII, BY COUNTY AND JUDICIAL DISTRICT IN 1969*

	Active MD's & OD's 1969	Civilian Resident Population 1967	Rate MD & OD per 100,000	Ratio
UNITED STATES	290,420	195,669,000	148	1:674
STATE	876	703,925	124	1:804
CITY AND COUNTY OF HONOLULU	751	560,837	132	1:747
Ewa	26	93,372	28	3,591
Honolulu	655	315,305	208	481
Koolauloa	2	10,786	20	5,393
Koolaupoko	48	82,177	58	1,712
Wahiawa	14	28,872	48	2,062
Waialua	3	8,006	37	2,669
Waianae	3	22,319	13	7,440
HAWAII COUNTY	53	65,270	81	1:1,232
South Hilo	34	33,665	101	990
North Hilo	0	1,998	0	0
Hamakua	3	5,642	53	1,881
North Kohala	2	3,487	57	1,744
South Kohala	4	2,163	185	541
North Kona	3	4,886	61	1,629
South Kona	5	4,300	116	860
Kau	1	3,688	27	3,668
Puna	1	5,441	18	5,441
KAUAI COUNTY	23	30,654	75	1:1,333
Koloa	2	7,609	26	3,804
Hanalei	0	1,212	0	0
Lihue	10	6,919	144	692
Kawaihau	6	7,177	84	1,196
Waimea	5	7,737	65	1,547
MAUI COUNTY	49	47,165	104	1:962
Hana	1	1,010	99	1,010
Lahaina	5	5,927	84	1,185
Makawao	3	9,571	31	3,190
Wailuku	33	22,356	148	677
Molokai	5	5,270	95	1,054
Lanai	2	3,031	66	1,516

Appendix H (continued)

Sources: Population data for 1967 from State of Hawaii Department of Planning and Economic Development, Population of Hawaii Statistical Report 66. Population data from Department of Planning and Economic Development. General Plan Revision, Vol. 4, Table 48. Medical manpower data from Regional Medical Program of Hawaii.

U.S. Department of Health, Education and Welfare, Public Health Services, National Center for Health Statistics, Health Resources Statistics 1968, Washington, D.C., Table 79, page 125 for national rates. Hawaiian rates computed by Regional Medical Program of Hawaii.

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*The Regional Medical Program of Hawaii, Distribution of Medical Manpower in Hawaii, 1969, Research Report No. 12 (Honolulu, Hawaii: The Regional Medical Program of Hawaii, 1970), p. 15.