COLLECTION AND UTILIZATION OF VITAL AND HEALTH STATISTICS IN HAWAII

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1. **THE HAWAII SETTING**

After well over half a century as a territory, Hawaii became the fiftieth state of the United States in 1959. It is situated on a group of islands 2000 miles from the North American mainland. The four principal islands comprising the state are Oahu, Hawaii, Maui, and Kauai. About eighty per cent of the population and the major city, Honolulu, are located on Oahu.

The total population is about 700,000. Caucasians and Japanese, almost equal in number, are the largest ethnic groups. The two together comprise sixty-four per cent of the population. Other major groups are Chinese, Filipinos, and native Polynesians. There are also numerous other minority groups of various ethnic extractions.

Following the state pattern of centralization in government, all public health authority is vested in the State Health Department which in the most populous county (Island of Oahu) serves in the dual capacity of both state and local health agency. District health departments in the other counties are less autonomous and receive less financing from local sources than is generally true for county and municipal health organizations in other states.

Hawaii has the oldest state health department in the nation. A Board of Health was established in 1850 while the present state was still a kingdom under the Polynesians. It was not until 1896 that the Board became responsible for vital statistics. A Bureau of Vital Statistics was created in that year. Previously, the Department of Public Instruction had registered births, deaths, and marriages. Some of its vital records go back to 1841.

In 1947, the Bureau of Vital Statistics was reorganized and renamed the "Bureau of Health Statistics". Its work was then extended well beyond the field of vital statistics which dealt exclusively with births, deaths, and marriages. Following statehood, a second reorganization took place in 1960 primarily for the purpose of increasing assistance to all branches of the Health Department in the areas of research and programme planning. The new and enlarged unit was called the "Research, Planning and Statistics Office".

2. **THE RESEARCH, PLANNING AND STATISTICS OFFICE**

2.1 **Major functions**

The major functions of the Office are to advise and assist in all phases of research and programme planning throughout the Health Department; to carry out research projects independent of other units; to maintain a state-wide vital statistics registration system; and to produce the vital and health statistics needed in public health planning and practice.

The Office is divided into two major parts, namely, a statistics branch and a vital records branch.
The director of the office is a physician with special training and experience in statistics. Although head of a staff unit, he carries the same rank category as directors of other major units of the Health Department.

A feature of statistical organization in the Department is that vital statistics, including the registration and compilation of statistics on births, foetal deaths, deaths, marriages and divorces, is maintained as an integral part of the Research, Planning and Statistics Office. This follows the conception that vital statistics contribute essential data to public health planning and research and that every phase of producing them should be under the direction of qualified statisticians.

2.2 Vital statistics registration

One local registrar in each county, assisted by deputies, is appointed to collect and review vital statistics records. In the City and County of Honolulu where the State Health Department is located, the local registrar is a full-time civil service employee; in the outlying counties, the county health officer serves as the local registrar. A "state registrar", who is also assistant director of the Research, Planning and Statistics Office, heads the registration system. Although differing in some respects, the general system of registering births, foetal deaths, and deaths in Hawaii is similar to that in other states of the country. The Physicians' Handbook on Death and Birth Registration published by the United States Public Health Service, indicates in greater detail the general system of the United States.

After securing a review and the signature of the attending physician, the hospital where a birth occurred files a certificate of birth with the local registrar. Nearly all births are in hospitals. The few occurring elsewhere are reported by the birth attendant or family.

Deaths are reported by the funeral director in charge of interment. He obtains personal particulars about the deceased from relatives and a cause of death statement and signature from the attending physician. Upon presenting a satisfactory death certificate, the funeral director receives a disposal permit from the local registrar.

Foetal deaths are also reported on a certificate form by the funeral director in cases where one is employed. If no funeral director is involved, the hospital where the event occurred reports. For most early foetal deaths, it is generally the hospital.

After every marriage ceremony, the officiant files a completed marriage certificate with the local registrar. An officiant is always either a minister of a church or a member of the state's judiciary. To carry out a marriage ceremony legally, he must be commissioned by the State Health Department.

* In this report, statistics pertaining to health other than vital statistics are considered to be "health statistics".
In addition to commissioning officiants to perform the marriage ceremony and filing completed certificates of marriage, the Research, Planning and Statistics Office also issues marriage licenses. This centralized control of the marriage system facilitates the enforcement of marriage laws and regulations, produces uniform procedures and forms throughout the state, and makes changes or improvements within the framework of existing law relatively easy.

The clerk of each circuit court reports divorces on a certificate form. He certifies that the information given therein is that shown in the court's final decree granting divorce.

The content of all certificate forms follows closely recommendations of the biennial "Public Health Conference on Records and Statistics" sponsored by the United States Public Health Service. Hawaii, like every other state, accepts these recommendations which result in similar data from all areas of the country. If all states did not collect essentially similar data, reliable national vital statistics for the nation would not be possible.

Except microfilming for security purposes, only one copy of each certificate is made. After processing, these are bound in books and filed permanently in the Research, Planning and Statistics Office. For possible use should the original certificate be destroyed, microfilm images are stored in an underground tunnel.

The county health officer who is also the local registrar in each of the outlying counties makes ledger entries from birth and death certificates for current use in public health work. In most instances, however, he obtains statistics from the central office.

Plans are under way whereby microfilm images will be used in the near future for making certificate copies needed for legal purposes. This will prevent wear and tear on the original documents and alleviate the problem of readily accessible filing space.

2.3 The utilization of vital statistics

Vital statistics documents, including certificates of birth, death, marriage, and divorce, are widely used by individuals and agencies for legal purposes, such as establishing citizenship, entering school, obtaining licenses, voting, entering employment or military services, proving legal dependency or age of capacity, liquidating estates after death, and obtaining social security benefits.

The documents are also used widely in public health work. For example, photocopies of infant death certificates with matching birth certificates are supplied to a medical group studying infant and maternal health; copies of death certificates are used to determine the incidence of specific cause of death and nature and place of occurrence of fatal accidents; and home deliveries as indicated on birth certificates are visited by public health nurses. Medical health information is part of the certificate of live birth but not reproduced on copies for public use.
Other uses of the documents include the transmittal of copies to the National Vital Statistics Division for use in producing national statistics; notices to consulates of foreign countries concerning the deaths of their nationals; listings sent to county clerks showing the deaths of residents twenty years of age and over for purging voter rolls; notices to the federal Immigration and Naturalization Service relative to the deaths of aliens; tracing genealogy; and daily listings of all vital statistics events for the press. Increasingly, the documents are being used as a basis for research. For example, a project is currently under way using a cohort of births for the investigation of the incidence of mental illness.

In the area of statistics, monthly and annual statistical reports are issued giving a variety of data. A major task of the Research, Planning and Statistics Office is compiling the "statistical supplement" to the Health Department's annual report. About half the tables in this statistical volume pertain to vital statistics; the remainder constitute selected data from other units of the Department. In addition to routine reports, many special tabulations are supplied to individuals and agencies requesting them.

Marriage and divorce statistics are in demand by sociologists, demographers, and certain community agencies such as the Commission on Children and Youth. The subject of interracial marriage is frequently of particular interest. As far back as 1937, a volume appeared on this subject using extensively data from the vital statistics office. Currently, thirty-eight per cent of all marriages in Hawaii are between persons of differing ethnic background.

Vital statistics are used routinely in making estimates of population and in computing life tables. They are also used extensively in research. For example, a recent ten-year study of cardiovascular-renal mortality by major ethnic groups showed that persons of Japanese descent had the lowest death rate and native Polynesians the highest. This led to an extensive research project supported by the United States Public Health Service which is attempting to find reasons for this difference. Medical examinations, laboratory tests, and dietary investigations are being made on a sample of both ethnic groups.

2.4 Population estimates

Using primarily birth and death data and the number of civilian passengers arriving and departing, the Research, Planning and Statistics Office makes and distributes semi-annual estimates of population between decennial census years by counties and cities. The beginning base is, of course, the last census. These estimates are widely used by health departments, other governmental agencies, research organizations and business firms both in Hawaii and on the mainland.

The Office obtains the number of births and deaths occurring from its own files; the number of civilian passengers is supplied through monthly reports of commercial carriers and the armed forces. Although no statute exists requiring it, the transportation agencies involved are generally co-operative in sending reports to the Health Department without compulsion.
The estimates are recognized as approximations only without the accuracy of an actual population count. Nevertheless, during the past twelve or more years, they have reflected increases or decreases in the population and they have been in close agreement with findings of the federal decennial census. The method used in making the estimates is applicable because of the state's insular nature with relatively few points of entry and departure. Experimentation appears to indicate that no better method of estimating for this particular state is presently available.

Based principally on building and demolition permits, estimates of population and the number of dwelling units by census tracts of Oahu and by judicial districts of the other major islands were issued for the years 1957 and 1958. Similar estimates for years of the next decade are in preparation. The Planning Department of the City and County of Honolulu is assisting materially in the work.

The State Department of Planning and Economic Development is responsible for projections of future population. Demographic and economic factors are taken into account. These projections are widely used in public health planning and, of course, in many other areas.

2.5 The health surveillance programme

The Research, Planning and Statistics Office, in collaboration with the Public Health Nursing Branch, initiated in 1964 a continuous health surveillance programme or survey whereby a sample of households on the Island of Oahu are to be visited each month for information on health, and matters related to health. The basic purpose of the programme is to obtain data concerning the amount and kinds of illness and injury occurring, and to indicate the effects in terms of disability and chronic impairments. Obviously, reliable information of this type has important implications for programme planning and evaluation in the health field.

In 1958, the National Health Survey Program of the United States Public Health Service, working in collaboration with local health agencies, extended its household survey operation to the Island of Oahu for a period of one year as a special study. Results of this project were widely accepted and used in public health work; moreover, during the course of the project, local statisticians gained invaluable experience in the use of well tested health survey procedures and techniques.

2.6 Case registers

The State Health Department maintains state-wide case registers for tuberculosis, Hansen's Disease, mental illness, and mental retardation; it also collaborates with the Hawaii Medical Association in operating a tumour register. The record of each case in these registers includes such information as results of medical examinations, diagnostic findings, treatment, and socio-economic data. Registers serve to facilitate case management and the production of statistics useful in programme planning and evaluation. They also afford a base for special research projects either by supplying known cases for study or by leads shown in register statistics.
The tuberculosis register was established in 1910 and reorganized in 1946. It contains data on all known cases and follows standards as high or higher than delineated by the United States Public Health Service. All new cases of tuberculosis are reportable to health authorities and kept under surveillance. Local health offices send data to the state register.

A register of Hansen's Disease patients contains records going back to 1866. Data are collected from two institutions and the Department's outpatient services. Case histories after about 1930 are unusually detailed and complete. This register offers an opportunity for the study of leprosy to be found nowhere else in the United States.

A psychiatric case register was established in 1962 in the Division of Mental Health. By means of a centralized reporting system, patient data are collected from all psychiatric services of the Department, including the state hospital. Eventually, data from other sources, such as psychiatrists in private practice and general hospitals with psychiatric services, may also be included.

Co-operatively sponsored by the Hawaii Medical Association, the Hawaii Cancer Society, and the Health Department, the "Hawaii Tumor Registry" was created in 1959. It is a system of individual hospital registers plus a central register. Data on all patients admitted to hospitals with a malignant neoplasm, or with one of several selected benign neoplasms, are included. To a large extent, the system follows recommendations of the Committee on Cancer of the American College of Surgeons.

A register of nursing and "care" homes together with data on each individual patient in them is being developed. At present, the major purpose of the register is to ensure that patients are in homes suited to their needs. Eventually, statistics on the homes and patients will be produced periodically from the register.

2.7 Communicable disease and other health statistics

The Epidemiology Branch produces monthly, quarterly, and annual statistics pertaining to communicable diseases. These are based on reports from physicians, nurses, directors of laboratories and others who detect cases. Notification is required by law and reporting may be by telephone or by mail, or by both methods. Telegraphic reports for the State are sent to the Public Health Service to provide national intelligence on occurrence. The entire reporting system follows closely national recommendations on the subject.

Other types of health statistics for administrative and planning purposes, not previously mentioned in this report, are also produced in the more than thirty basic units of the State Health Department. Some of these appear in monthly reports to the Director of Health or in the Department's annual reports; others are retained in the files only for reference.
A few examples of other health statistics might include the number and types of positions in the Department; the number and type of medical practitioners in the State; staphylococcus phage types by source from which specimens were received; sanitary ratings of swimming pools and bathing beaches; laboratory analyses in microbiology, virology, water, milk, foodstuffs; results of screening tests for diabetes; immunizations of pre-school children in child health conferences; types of services to crippled children; the number of beds and bassinets in hospitals; summaries of dental treatments among schoolchildren; the characteristics of patients admitted to the alcoholism clinic; public health nursing activities in school health programmes; X-ray case finding activities for tuberculosis; statistics provided by the institutions for the mentally ill, the mentally retarded, Hansen's Disease, tuberculosis, etc., and the movement of health education films on loan.

2.8 Health research

Hawaii affords a unique laboratory for health research among various ethnic groups living together in the same setting; moreover, all of these people have democratic relations with one another without the wide social and economic gulf frequently separating ethnic and culture groups in other parts of the world. Some recent studies involving ethnic groups include research on the prevalence of gastric and lung cancer in the Japanese; the health of Japanese Americans as indicated in a health survey; a genetics study relative to the progeny of interracial mixtures; and a survey using a "clinitron" to determine the ethnic distribution of diabetes.

Other research projects of note recently completed or under way are: a study in depth of foetal wastage; studies on reservoirs and vectors of plague; chemoprophylactic study of inactive tuberculosis cases; the effects of fluoridation on dental decay rates in a plantation community; remotivation of chronic schizophrenic patients; the prevalence of leptospiriosis antibodies in human population; and studies of human factors in traffic accidents.

As elsewhere in the nation, health research in Hawaii has been greatly stimulated in recent years by the availability of grants from the federal government and private foundations. The State Health Department in 1963 was conducting or collaborating in more than twenty-five projects. The University of Hawaii, voluntary health agencies, and several hospitals are also actively engaged in health research.

The recent establishment of the "Pacific Biomedical Research Center" at the University of Hawaii promises to give further impetus to health research in the State. It is now building up facilities for conducting research and graduate education in all basic fields of medical sciences, excepting the clinical. A Department of Public Health was inaugurated at the University in 1962 and a "College of Biomedical Curricula" (two-year medical school) is being planned.
2.9 Centralized data processing

An integrated state-wide data processing system, as recommended by a well known management consultant firm, is now being implemented. Encompassing the eighteen departments of the state government, the system will include three electronic data processing centres. At the University of Hawaii, the Computer Laboratory facilities with the IBM 1401 and IBM 7040 units provide the most extensive data processing service in this area of the Pacific.

3. CONCLUSION

The collection and uses of vital and health statistics have been an important function of the Board of Health of Hawaii since its early establishment many years ago when it was a kingdom. Today, Hawaii's agencies carry out these functions much more extensively and intensively. They use such data for planning and research. The health workers constantly make use of these essential data for scientific and administrative purposes in their daily activities. Collecting and computing statistics and using them wisely have helped health workers develop and maintain strong programmes in research, training and services for their people.
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