## Manpower Shortages in Official Health Agencies

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Figure 1. Percentage of vacancies in budgeted positions for selected categories of professional and fechnical personnel in which 1,000 or more budgeted positions were reported in State and local health departments.

The acute shortage of professional and technical personnel is today the most serious problem in the field of public health. Trained workers, never available in numbers adequate to meet the needs of organized health agencies, are in steadily increasing demand from a number of sources. There are growing populations to be served by public health agencies, newly developed services to be provided, and new and urgent problems in connection with national
defense activities. Nor are the demands limited to personnel in public health. Physicians, nurses, dentists, and other professional workers are being called on to supply needed manpower in civilian activities related to defense. Thus, while the resources of trained health personnel are being depleted, demands for the services they are qualified to provide are constantly increasing.

The Health Resources Advisory Committee
of the Office of Defense Mobilization was appointed, as its name implies, to deal with the various aspects of health resources during a period of mobilization. Of serious concern to the committee is the problem of health manpower. The Public Health Service was called upon to study the staffing of State and local health departments and the utilization of personnel employed in these agencies. Reports on professional and technical personnel employed in official health agencies, as well as inventories of vacant positions and of staff members subject to military service, were requested. Information was submitted by State and local health departments in the continental United States, Alaska, the Hawaiian Islands, Puerto Rico, and the Virgin Islands. In this report, attention is limited to participating health agencies in the continental United States.

The high lights of the 1951 survey findings with respect to manpower needs and resources in the participating State and local health departments are presented in this report, which will be followed by a publication being prepared by the Public Health Service in which the information made available through the survey will be presented in detail.

Traditionally, basic minimum services provided by public health agencies have been built around the teamwork of physician, nurse, and sanitation worker. In the early days, their problems concerned the prevention and control of epidemics, the curbing of infectious diseases, and the provision of healthful physical environment. Present-day health departments, in addition to safeguarding the gains made in meeting earlier problems, face complex demands in many new fields. Chronic illness, the health problems of an aging population such as heart disease, cancer, and diabetes, social and economic factors in modern living, mental health, and new standards of acceptable environment are among the areas which must be taken into account in modern health department operation.

To gain a broad view of health department planning for both the new and the oId concepts of service, information was sought concerning personnel in a number of occupational classes. Positions budgeted for laboratory personnel, public health investigators and health educa-
tors, medical and psychiatric social workers, among others, provided information on the direction in which programs are developing. For the professional and technical groups that make up the health department framework-physicians, nurses, engineers, and sanitarians-additional information as to age, sex, position, and status with respect to military service was requested. Because public health dentists and veterinarians are also subject to military call, they were included in the basic group.

## Budgeted and Vacant Positions Reported

Reports of budgeted but vacant positions represent a gross understatement of total requirements, since, in general, the number of positions budgeted is not related to requirements. Available funds for personnel, rather than need, usually govern the total number of positions budgeted. Actually, budgeted positions as reported fail in many instances to indicate the total unfilled positions. Frequently, positions which remain vacant from one budgeting period to another are abolished when there is convincing evidence that candidates for appointment are not likely to be found. The study is informative, however, in that differences in the percentages of vacant budgeted positions for professional groups give some indication of where the greatest shortages exist. Such vacant positions reflect an immediate need recognized by health authorities as well as by appropriating bodies. Vacancies for physicians ( 20 percent of all positions budgeted for medical personnel), sanitary engineers (14 percent of that group), and dentists ( 21 percent) were greater than the proportion of positions vacant for sanitarians ( 6 percent) or veterinarians ( 10 percent). Although only 9 percent of the nursing positions were vacant, the total number of vacancies exceeded that of any other professional group. These six groups

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Figure 2, Percentage distribution of all local health agencies according to type of department and population served.
make up a considerable part of the staff for basic health department operations. Consequently, vacancies represent serious limitations on the effectiveness of health department programs and services. Some idea of the seriousness of the situation is revealed by figure 1 , showing the percentage of vacant positions for certain categories of professional and technical personnel for which more than 1,000 budgeted positions were reported.

Budgeted and vacant positions in 20 categories of health department personnel, about which information was requested, are shown in table 1. The entire range of positions is shown here for purposes of comparison among the basic classes of personnel and those representing occupational fields less commonly found. In this report, attention is directed to selected categories.

## Types of Departments Reporting

Reports on budgeted and vacant positions were submitted by 1,301 health agencies (table 2 ). State health departments accounted for one-fourth of all budgeted positions and reported 12 percent of their positions vacant. County health departments accounted for 20 percent of the total budgeted positions and
reported 9 percent vacant at the time of the survey. City health departments had the highest percentage of the total budgeted positions reported, and 9 percent were vacant.

Nearly half (44 percent) of the reporting local health agencies were single county health departments, providing services for almost onethird of the population covered in the survey. The percentage distribution by type of local health department and population served is shown in figure 2. Health departments classed as "Other" are, in general, one- or two-employee departments rendering limited services in rural areas.

## Community Size

Of the 1,257 local health departments included in the study, only 2 percent were in the largest communities, those of 500,000 population and over (table 3). However, these departments accounted for 37 percent of the budgeted positions, and reported 9 percent vacant. Forty-three percent of the agencies were in communities of under 35,000 population. These health departments reported 9 percent of the budgeted positions, of which 12 percent were vacant.

The local health agencies participating in the

1951 survey which were located in communities of less than 35,000 population provided services for 12 percent of the population residing in health department jurisdictions. In communities with the largest population-500,000 and over-2 percent of the local health departments provided services for 28 percent of the covered population. Figure 3 shows-for communities of varying size-the extent of the relationship among the number of local health agencies, the population which they serve, and the number of budgeted positions. Communities range in size from those with less than 35,000 population to those of 500,000 and over. As may be seen, the percentage of budgeted positions bears a close relation to the proportion of population served in all except the largest communities.

More than one-fifth of the physicians, nurses, and sanitation personnel (sanitarians and engineers) of all county health departments were employed by the health departments in the smallest communities. On the other hand, small city health departments (those serving under

35,000 population) reported only 3 percent of the public health workers in these classes employed by all city health agencies. This suggests serious understaffing for providing even the minimum of essential public health services, and clearly indicates the need for consolidation of small municipal health departments into a broader base for more effective administration.

## Military Reserve and Public Law 779

For the six selected professional and technical categories of health department workers previously mentioned, health agencies participating in the study provided information as to age, sex, position, and liability for military service. Physicians, dentists, and veterinarians were the first professional groups to be registered for military draft under the provisions of Public Law 779.

This law, a 1950 amendment to the Selective Service Act of 1948, required the registration of men under 50 years of age in medical, dental,

Table 1. Budgeted, filled, and vacant positions reported for professional and technical personnel of State and local health departments, continental United States ${ }^{1}$

| Position ${ }^{2}$ | Number of agencies reporting | Number of positions |  |  | Percent of positions vacant |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Budgeted | Filled | Vacant |  |
| All positions | 1, 301 | 31, 318 | 28, 237 | 3, 081 | 10 |
| Graduate nurse | 1,229 | 11, 604 | 10, 542 | 1, 062 | 9 |
| Sanitarian---- | 1, 094 | 5, 469 | 5, 166 | 303 | 6 |
| Other (unspecified) | -243 | 3, 648 | 3, 320 | 328 | 9 |
| Physician.- | 991 | 2, 219 | 1,776 | 443 | 20 |
| Bacteriologist | 202 | 1, 286 | 1, 179 | 107 | 8 |
| Engineer | 245 | 1, 083 | 928 | 155 | 14 |
| Leboratory technician | 187 | 1, 028 | 929 | 99 | 10 |
| Administrative managemen | 179 | 749 | 706 | 43 | 6 |
| Other technician.. | 148 | 703 | 635 | 68 | 10 |
| Public health investigator | 227 | 618 | 578 | 40 | 6 |
| Health educator | 202 | 434 | 349 | 85 | 20 |
| Dental hygienist | 109 | 398 | 344 | 54 | 14 |
| Dentist.--- | 136 | 357 | 281 | 76 | 21 |
| A nalyst and statistician | 110 | 343 | 291 | 52 | 15 |
| Chemist.- | 79 | 337 | 314 | 23 | 7 |
| Veterinarian | 139 | 320 | 287 | 33 | 10 |
| Nutritionist. | 78 | 212 | 179. | 33 | 16 |
| Other medical social worker | 65 | 208 | 170 | 38 | 18 |
| Practical nurse. | 26 | 183 | 173 | 10 | 5 |
| Psychiatric social worker- | 44 | 119 | 90 | 29 | 24 |

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Figure 3. Percentage distribution of local health agencies, budgeted positions, and population served for communities of various sizes.
and allied specialist categories who were not members of a reserve component of the armed forces. The first registration, in October 1950, included physicians, dentists, and veterinarians in two groups: (1) Those who had participated in specialized training programs of the Army or Navy, or who had been deferred during World War II to pursue their education in one of the special categories and had less than 90
days of active duty in the armed forces or in the Public Health Service after completing their education; (2) the same groups, under the same conditions, who had 90 days or more but less than 21 months of such active duty. These two groups were assigned the first and second priorities for induction into the armed services.

Later registration included persons in the same specialist categories who were not included

Table 2. Number and percentage of agencies, bud geted positions and vacancies, and percentage of vacancies in budgeted positions for professional and technical personnel reported by State and local health departments, according to type of department

| Type of department | All agencies reporting |  | Positions |  |  |  | Percent of budgeted positions vacant |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Budgeted |  | Vacant |  |  |
|  | Number | Percent | Number | Percent | Number | Percent |  |
| All types-- | 1, 301 | 100 | 31, 318 | 100 | 3, 081 | 100 | 10 |
| County | 564 | 43 | 6, 325 | 20 | 564 | 18 | 9 |
| City | 196 | 15 | 10, 152 | 32 | 915 | 30 | 9 |
| City-county | 110 | 9 | 3, 988 | 13 | 244 | 8 | 6 |
| Local district. | 258 | 20 | 2, 236 | 7 | 286 | 9 | 13 |
| State district <br> Other $\qquad$ | 48 81 | 4 6 | 610 155 | 2 1 | 98 | 3 | 16 5 |
| State | 44 | 3 | 7, 852 | 25 | 966 | 32 | 12 |

Table 3. Number and percentage of agencies, budgeted positions and vacancies, and percentage of vacancies in budgeted positions for professional and technical personnel reported by local health departments, according to size of community

| Size of community | Local agencies reporting |  | Positions |  |  |  | Percent of budgeted positions vacant |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Budgeted |  | Vacant |  |  |
|  | Number | Percent | Number | Percent | Number | Percent |  |
| All communities | 1,257 | 100 | 23, 466 | 100 | 2, 115 | 100 | 9 |
| Under 35,000 | 538 | 43 | 2, 136 | 9 | 260 | 12 | 12 |
| 35,000-49,999 | 249 | 20 | 1, 952 | 8 | 199 | 9 | 10 |
| 50,000-99,999 | 267 | 21 | 3, 435 | 15 | 291 | 14 | 8 |
| 100,000-249,999 | 146 | 12 | 5, 008 | 21 | 399 | 19 | 8 |
| 250,000-499,999 | 32 | 2 | 2, 380 | 10 | 214 | 10 | 9 |
| 500,000 and over. | 25 | 2 | 8,555 | 37 | 752 | 36 | 9 |

in the first registration and who had had no active duty after September 16, 1940. The final group included all men in the specified categories, not liable under the earlier registrations, classified according to the number of full months of active service, to be called upon when all those available under higher priorities had been inducted. These two groups were designated as priorities 3 and 4.

Among the 1,283 male physicians, dentists, and veterinarians under 50 years of age who were included in the survey, 33 percent were reported as having status in the military reserves or in priorities 1 and 2 under Public Law 779 (table 4). This group is most immediately subject to call for military duty as they are needed, either during the period of mobilization or in the event of national emergency.

In six selected categories of professional and technical health department personnel of all

Table 4. Military status of male physicians, dentists, and veterinarians reported by, State and local health departments (through age 50 only)

| Profession | Total | Military reserves or priorities 1 and 2 | Percent |
| :---: | :---: | :---: | :---: |
| Total | 1, 283 | 429 | 33 |
| Physicians | 942 | 298 | 32 |
| Dentists | 189 | 73 | 39 |
| Veterinarians. | 152 | 58 | 38 |

ages and both sexes, 10 percent were reported as having status in some component of the military reserves (table 5). It should be noted that more than one-third of all engineers reported are in this group.

Call to military service therefore threatens to deplete further the available public health workers. Of serious import is the fact that about one-third of all health officers and chiefs of service, those responsible for the direction and administration of programs and activities, are in either the military reserves or registered under Public Law 779.

## Resources and Needs

## Physicians

Among the selected categories of professional and technical public health personnel, the shortage of physicians is perhaps of greatest importance in terms of impact upon health department operation. This critical situation is highlighted by the fact that 991 health departments reported 2,219 budgeted positions for physicians, of which 443 were vacant at the time of the survey. These were vacancies in established positions, and in the agencies where they occurred the full duties and responsibilities involved were not being carried on. The highest percentage of vacancies was in health departments in the smallest communities, where almost one-third of the budgeted positions were vacant. When budgeted positions for physicians average approximately one to each agency,
it is obvious that a health department with a vacant position is usually a health department without medical administrative leadership.

In State health departments, vacant positions do not necessarily imply lack of leadership in medical administration but are more likely to mean less effective operation of established services, delay in initiating néw services, and an overloading of the physicians in the department. In many State health departments there is considerable "doubling up" of the direction of programs and services, so that a single physician will be responsible for the direction of one program and be designated as acting director of one or several others. This procedure is resorted to because essential services must have continued direction, and vacant positions simply cannot be filled. The percentage distribution of budgeted positions for physicians according to the size of the community, the type of department, and geographic area is shown in figure 4. The light areas represent the percentage of vacant positions reported. The geographic areas are:

| Region | States |
| :---: | :---: |
| Northeastern | Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont. |
| Souther | Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia. |
| Centr | Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin. |
| Western | Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washing ton, Wyoming. |

Two-thirds of the physicians reported were health officers or chiefs of service. Thirty-two percent of this group were in either the military reserves or registered in priorities 1 and 2 under the amended Selective Service Act. .Thus, in the event of general call-up to the armed forces, health department operation and program direction and supervision would be jeopardized because of lack of leadership. Shortage of physicians in public health is not a new

Table 5. Professional and technical personnel in six selected categories reported by State and local health departments as having status in the military reserves

| Category | Total | Military reserves | Percent |
| :---: | :---: | :---: | :---: |
| Total | 21, 571 | 2, 186 | 10 |
| Physicians | 2, 074 | 371 | 18 |
| Nurses_ | 12, 044 | 691 |  |
| Engineers | 1, 071 | 411 | 38 |
| Sanitarians | 5, 758 | 590 | 10 |
| Dentists | 305 | 68 | 22 |
| Veterinarians | 319 | 55 | 17 |

development, and it is unlikely that replacements would be generally available, even from staff workers in health departments. Most other physicians reported were at the staff level, with only 5 percent listed as consultants and supervisors.

Unquestionably, this study indicates that the shortage of physicians for service in health departments is critical. One-fifth of the budgeted positions for physicians were vacant at the time of the survey, and a large proportion of those presently employed are subject to recall or induction into the armed services. The problems of health department operation must therefore be considered in the knowledge that physicians are and will continue to be unavailable in anything like the numbers needed even to maintain present services. There must be a continuing critical analysis of the activities of medical personnel, looking toward the most effective utilization of those now serving in official health agencies. Consideration should be given to ways of supplementing their services by a greater use of part-time clinicians and of nonmedical assistance in those activities which can be delegated to such personnel.

## Nurses

In an article on "Nurse Power in Mobilization," Ruth P. Kuehn (1) stated: "A critical deficit in nurse power is already upon us, and this deficit is steadily increasing." The deficit in health department nurses was indicated in the 1951 survey, which showed that 1,062 budgeted positions for graduate nurses were vacant. As with physicians, these vacancies


Figure 4. Percentage distribution of budgeted positions for physicians reported by State and local health departments according to type of department served, and for local health agencies according to community size and geographic region.
in budgeted positions represent pressing needs for nurses in established positions for which funds were available and which were unfilled because of the shortage of "nurse power."

It is recognized that in many communities visiting nurses and school nurses work closely with health departments, and in some instances carry a considerable share of the nursing load. However, this study deals only with health department nurses.

Nurses in health departments serve all programs and provide the hard core of services in the field of personal health, the essential routine tasks of home and school visits, of health edu-
cation and its application to personal living, among many other duties. In this important basic service, 1 budgeted position in 10 was vacant. Needs for additional nurses reveal the greatest deficiency in total numbers in health department personnel. The number of vacant budgeted positions represents about one-tenth of the total number of nurses who would be needed to bring existing health units up to minimum standards-approximately 10,000 rather than 1,062 as reported. For nurses, as for physicians, there must be a continuing critical analysis of activities to assure the most effective utilization of those now employed in offi-

## Type of Department



## Geographic Area



Figure 5. Percentage distribution of budgeted positions for nurses reported by State and local health departments according to type of department served, and for local health agencies according to community size and geographic region.
cial health agencies and to explore and evaluate the potentialities of supplementary workers without the technical skills and training of the qualified nurse.

Shortages of nurses were reported in all types of departments and in communities of every size in every State. The percentages of budgeted positions for nurses according to size of the community, type of department, and geographic region are shown in figure 5. The light areas represent the percentage of vacancies in each category.

Health departments provided information concerning 12,044 nurses. The median age, in
an occupation for which preparation is completed at a relatively early age, was 41 yearssomewhat older than might have been expected. Since only 6 percent of the total number of nurses reported status in the military reserves, it would seem that depletion of the nurse supply in health departments is not particularly due to their being called to active military service. Many nurses, however, are joining the armed forces. Most of the vacancies reported because the incumbents had entered active duty were in nursing positions.

Only 369 nurses were reported as chiefs of service or health officers. The greatest number
of nurses were staff workers, with about 8 percent reported as supervisors and consultants. The shortage of nurses, therefore, bears directly on the provision of day-to-day actual services to individuals, rather than on program direction or leadership, as in some of the other occupations. The nursing profession, which women enter fairly young and leave because of marriage, family responsibilities, and the like, does not have an adequate reserve supply from which to provide replacements. To quote again from Mrs. Kuehn's article, "The present supply of nurses must meet all needs until more graduate nurses can be produced." At present, the production of nurses is insufficient to meet the demands.

## Sanitarians

The third member of the team in providing minimum essential public health services is the sanitarian. Like the nurses, sanitarians carry on the routine tasks essential in safeguarding the public health. Such important duties as the inspection of facilities for storing and serving food, maintenance of safe water supplies, and provision of physical environment favorable to personal health are assigned to the sanitarian.

Activities concerned with environmental sanitation are essential to the health and welfare of all communities. The concentrated populations in urban communities, and more recently in and near military and industrial centers concerned with defense activities, make sanitation services in these areas of vital importance. Although the rate of vacant positions for sanitarians was relatively low, the urgency of maintaining the full range of their services gives these vacancies added importance. As with physicians and nurses, the budgeted positions for sanitarians by no means reflect total need. If all presently organized health departments were to meet minimum staff requirements, it is estimated that more than 1,600 additional sanitarians would be needed.

County health departments were most numerous among the agencies reporting budgeted positions for sanitarians. However, the greatest number of positions were in city health departments, 156 of which reported 2,312 budgeted positions, with 98 vacant. The distribu-
tion of budgeted positions by community size, by type of department, and by geographic area are shown in figure 6. Light areas indicate the percentage of vacant positions in each category.

State and local health departments listed 5,758 sanitarians employed at the time the study was made, with only 62 women sanitarians reported. The employment of women in greater numbers in this field might be suggested. It seems reasonable to believe that they would be successful, especially in the inspection and supervision of the servicing of food.

Only 10 percent of the sanitarians reported status in the military reserves. Although they are a relatively young group and they may be taken into the military services, their replacement would be less difficult because many sanitarian jobs can be filled by personnel with less professional preparation than can other types of public health positions. Most of the sanitarians were listed as staff workers, and many of them were listed as the only worker in their field in the reporting agency.

## Engineers

In the larger local health organizations and in State health departments, sanitary engineers are employed not only for the handling of and consulting on the more complex aspects of environmental sanitation, but also for the direction of environmental health programs. Their specialized training and skills are required for the supervision of sources of water supply and for the planning, construction, and operation of water treatment systems and sewage treatment and disposal systems; for dealing with problems of water and air pollution, and of industrial health hazards. Because of their specialized training and experience, the services of sanitary engineers are in immediate demand whenever disaster strikes. In the event of a military attack on the United States, and in areas devastated by floods, fires, or tornadoes, they are needed to provide front-line defense against the health hazards that follow serious disruption of environmental sanitation facilities and services.

The demand for sanitary engineers is not limited to official health agencies. Their services are sought by organizations which plan and develop industrial installations involving safe

## Type of Depariment



## Geographic Area



Community Size



Figure 6. Percentage distribution of budgeted positions for sanitarians reported by State and local health departments according to type of department served, and for local health agencies according to community size and geographic region.
and healthful environment, by planning commissions and boards concerned with watersheds, by interstate public carriers, by water pollution control agencies, consulting firms, public works agencies, industry, and academic institutions. The needs of the armed services may well place an additional drain on the limited numbers available in the field of sanitary engineering.

Engineers were the youngest among the six groups for whom age information was supplied. In view of the fact that 38 percent were reported as having status in the military reserves, and are largely of an age to be called to service in case of need, health agencies face a poten-
tially acute problem of depletion of their already limited resources of engineering staff. The greatest number of engineers reported military reserve status in the Army; only a small number were reported in Public Health Service Reserve components. Engineers have not been registered under Public Law 779 up to the present time.

Among all occupational groups in health departments included in the survey, engineers ranked sixth in the number of budgeted positions reported, and seventh in percent of budgeted positions vacant. However, among the six selected categories of public health personnel-


Figure 7. Percentage distribution of budgeted positions for engineers reported by State and local health departments according to type of department served, and for local health agencies according to community size and geographic region.
physicians, nurses, engineers, sanitarians, dentists, and veterinarians-engineers had the third highest percentage of vacancies in budgeted positions. In view of the specialized nature of their work, it was not surprising to find most of them employed in State health departments. Budgeted positions distributed by size of community, type of department, and geographic area are shown in figure 7. The light areas indicate the percentage of vacancies in each category.

## Dentists and Veterinarians

Dentists and veterinarians are employed in
limited numbers in State and local health departments, although there has been a growing recognition of their place in public health.

Public health agencies have been developing programs of dental public health for a number of years. However, in the 1951 survey, budgeted positions were reported by only 136 health agencies, 98 of which were local and 38, State health departments. As was noted earlier, the vacancy rate in budgeted positions for dentists was among the highest reported. More than half of all budgeted positions were in the largest communities. Vacancy rates were relatively high in communities of all sizes, and in all types


Figure 8. Percentage distribution of budgeted positions for dentists reported by State and local health departments according to type of department served, and for local health agencies according to community size and geographic region.
of departments, as indicated by the light areas in figure 8.

Until comparatively recent years, the duties of veterinarians in public health agencies were closely related to those of inspectors in the field of environmental sanitation. However, with emphasis being placed on the control in animals of diseases transmissible to man, a separate professional category has gained recognition in the public health field. It is probable that in the present survey many of the veterinarians whose duties were still largely concerned with the inspection of meat, poultry, meat products, and related activities were reported as sanitarians.

This would account in part for the fact that only 139 agencies ( 126 local and 13 State health departments) reported budgeted positions for veterinarians. The veterinarians were located mostly in the largest communities and in city health departments, with few veterinarians reported in State health departments. The distribution of budgeted positions, with the light areas indicating vacancies, is shown in figure 9.

Because of the small numbers of dentists and veterinarians reported by State and local health departments, the age distribution, status in the military reserves, and priorities established under Public Law 779 are only indicative of the
problems to be faced in filling vacant positions and in enlarging or extending present services in these fields. Almost half of the dentists and one-third of the veterinarians were in either the military reserves or registered in one of the four priorities under the amended Selective Service Act.

With the present shortages of both dentists and veterinarians, even the complete staffing of programs now in operation presents serious problems. The possibility of extension or expansion of work in either dental public health or the field of veterinary medicine seems extremely unlikely, except perhaps through a more general use of supplementary personnel. In public health dentistry, dental hygienists are being used in a relatively small number of agencies. They too, however, had a fairly high rate of vacancies at the time of the survey.

The work of the trained public health veterinarians may be extended to a certain extent by sanitarians. However, wider incorporation of such programs within basic public health services will be seriously restricted until the supply of trained personnel is greatly in-creased-a day which at this time seems far in the future.

## Ratios as a Measure of Needs

Although the use of ratios in determining needs for personnel has many limitations, they do provide some measure of need when care is taken in their interpretation. Recommended ratios of public health personnel to population, as determined by authorities in the field, specify 1 physician as health officer in each organized health department plus 1 physician for each additional 50,000 population living within the health department's jurisdiction. For nurses, the recommended ratio is 1 to 5,000 persons if bedside nursing care is not included, 1 to 2,000 when bedside care is provided; for sanitarians, 1 for 15,000 population.

These minimum staffing requirements, developed over a period of years by representatives of official and nonofficial health agencies working together, represent a concensus of professional judgment. The great disadvantage in using ratios to determine needs for public health personnel is that problems vary greatly in dif-
ferent communities, in different parts of the country, and with differing emphasis given to particular programs and areas of interest. However, there must be some common basis from which to measure personnel requirements, and ratios carefully used provide such a base. Under any circumstances, there could be no firm statement that health departments of a certain kind in a certain community would need a given number of persons to carry out a "public health" program. The best estimates are merely that-a rough measurement of needs-and ratios provide the means to make such general measurements.

## Ratios of Reported Personnel to Population

In all health departments included in the 1951 survey, regardless of the size of community served, the personnel available in relation to the number of persons within the jurisdiction was far from the recommended ratios. The ratio of nurses and sanitarians to population was in general fairly constant. It showed 1 nurse for 10,000 to 12,000 persons. Sanitarians averaged 1 to about 25,000 , except in health departments in communities from 250,000 to 500,000 population, where the number of persons per sanitarian was about doubled. The ratio of persons to health department physicians increased as the size of the community served by the health department increased, ranging from 1 physician for 45,000 persons in the smallest communities to 1 for almost 120,000 in communities of 250,000 to 500,000 . In the largest communities (those of 500,000 and over), the average was 1 physician for about 75,000 people. In these larger communities, however, the problem may be less serious since it is somewhat easier to extend the services of the public health physician by a greater utilization of parttime clinicians.

## Summary

The health manpower survey has not only confirmed the generally known facts concerning shortages of trained public health workers, but has also identified specific critical situations arising from these shortages. In health departments in 1951, 10 percent of all budgeted


Figure 9. Percentage distribution of budgeted positions for veterinarians reported by State and local health departments according to type of department served, and for local health agencies according to community size and geographic region.
positions for professional and technical personnel were vacant. Vacancies were especially numerous in positions for physicians, nurses, and engineers-professions essential to public health program operation.

In budgeted positions for physicians, 443 were vacant. There were 1,062 positions for nurses and 303 for sanitarians reported vacant in the 1951 survey. Vacancies in budgeted positions represent only a fraction of total need for public health personnel. To bring existing local health departments up to minimum recommended standards, it is estimated that there would be need for nearly 1,000 physicians,
more than 10,000 nurses, and about 1,600 sanitation personnel, including both sanitarians and sanitary engineers. To extend basic minimum services in organized health units to the entire country would require in the neighborhood of 1,600 physicians, 13,700 nurses, and 4,000 sanitation personnel.

Most significant to the operation of presently organized health departments, and to the expansion of public health agencies to areas not now covered, is the shortage of physicians. Shortages of engineers are almost equally serious, in view of the nature of their work and the demands for their special kinds of services
in a period of national emergency. Although the shortage of nurses is very large, it is believed that the reservoir of trained nursing personnel-such as nurses who have withdrawn from active participation in health programs for personal reasons-could be drawn on to provide nursing services in the event of a military or natural disaster. They might also be called on to staff new agencies, to provide new services, and to participate in nursing activities at least on a part-time basis if the need arises.

The considerable numbers of public health personnel reported as having status in some component of the military reserves or as liable to call under the amended Selective Service Act, pose additional problems. These public health workers may well be lost to official health agencies because of the needs of the armed forces. There is scant hope that a greatly increased supply of public health workers will be available while the mobilization for defense, with its extensive manpower requirements, continues.

During this period, a demand of formidable
proportions for trained public health personnel will build up, which, under the most favorable conditions, will take years to meet. In view of the findings concerning present health organizations and methods of utilizing available personnel, it is essential to make a purposeful examination of present operations and by prompt and vigorous action to correct wasteful and inefficient practices wherever they exist.

## ACKNOWLEDGMENT

The author acknowledges the assistance of the Division of State Grants of the Public Health Service in planning and conducting the survey of health manpower in State and local health departments. He is indebted to Dr. Marion Ferguson for planning the collection and analysis of the data and for the preliminary tabulations and reports, and to Bess Cheney for assistance in preparing the final tabulations, analyses, and the text of the report.

## REFERENCE

(1) Kuehn, R. P.: Nurse power in mobilization. Am. J. Nursing 5: 395-398 (1951).

## Training Course in Environmental Health

Fourteen technical training courses will be offered by the Public Health Service Environmental Health Center, Cincinnati, Ohio, during fiscal 1952. The first, a course in basic radiological health training, is scheduled for October 6-17.

In addition to seven courses in radiological health, courses will be conducted in the fields of water pollution abatement, sewage, industrial waste and water treatment, milk and food sanitation, and atmospheric pollution control. The courses are designed for professional personnel from State and local health departments, water pollution control agencies, the Public Health Service, and other governmental units. Industrial representatives who are cooperating with these agencies in environmental sanitation and radiological health programs are also eligible to attend.

A bulletin giving the complete schedule, descriptions of the courses, and application information may be obtained upon request from the Officer in Charge, Environmental Health Center, Public Health Service, Cincinnati, Ohio, or from Federal Security Agency Regional Offices.


[^0]:    Dr. Shepard, past president of the American Public Health Association, is a member of the Health Resources Advisory Committee, Office of Defense Mobilization. His report is based on a study conducted in 1951 by the Public Health Service for that committee.

[^1]:    ${ }^{1}$ Study conducted in 1951 for Health Resources Advisory Committee.
    ${ }^{2}$ Arranged in rank order of budgeted positions.

