Measures of Longevity of American Indians

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THE HEALTH STATUS of American Indians is frequently expressed by measures which compare their longevity with that of other population groups. Unfortunately, expressions such as "lifespan," "average length (or duration) of life," "average remaining lifetime," "expectation of life," and "average age at death" are often bandied about without a clear understanding of their meaning.

Indians have a smaller chance of surviving to old age than do members of the general U.S. population, because Indian mortality rates are significantly higher at the young and middle ages. To show that Indians live shorter lives, the Indian Health Service has released, from time to time, figures on expectation of life and average age at death, two of many possible gauges concerned with longevity. I shall discuss what the various terms mean, examine their differences, and then look in some detail at actual Indian experience with regard to average age at death. The various methods of calculating life expectancies will not be described because they are numerous, involved, and well developed elsewhere.

Yardsticks of Different Lengths

Lifespan means the maximum length of time that a human being can live. Just how long man can possibly live is unknown, but it is well over 100 years. It has probably remained unchanged throughout history, and there is no reason to think it varies by race or sex. Lifespan, therefore, is not a measure of comparative longevity.

If a group of persons were observed from birth until the death of the last survivor and the age at death recorded for each member of the group, the average of these ages would represent the true average length of life for the group. Because of the difficulties in keeping track of the individuals and the fact that the observation period might be more than a century, this "generation" approach to determining longevity is clearly impractical. Even if the average length of life could be determined in this manner, it would be of little more than historical interest, since it would apply only to a group of persons born a century earlier and would not reflect current conditions.

Longevity of population groups is generally compared on the basis of their mortality experience during a short period, as summarized by the demographic tool known as a mortality table or life table. The basic column of a current life table shows the probabilities of death at successive years of age, based upon the death rates observed for an actual population group during a relatively short, fixed observation period (1 year or 3 years, for example). With the life table, a hypothetical cohort of people is traced from birth until there are no more survivors; the cohort is subject at each age to the mortality

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rate observed in the underlying actual population.

Of the several possible measures of comparative longevity based on life-table calculations, the most common is expectation of life. Life expectancy represents the average number of years of life remaining to persons in the life-table cohort who have attained a given age. Expectation of life, average future lifetime, and average remaining lifetime all mean the same thing.

The most frequently used life expectancy value is the expectation of life at birth, which means the average number of years that a member of the cohort can expect to live at the time of birth. Hence, it is the average length of life, or the average age at death, of the hypothetical cohort of persons experiencing the set of age-specific death rates on which the table is based. For age zero, that is, at birth, the following expressions are all equivalent in the context of a life table: expectation of life, average remaining (or future) lifetime, average length of life, and average age at death. The average age at death of members of the hypothetical cohort who survive to any given age x is simply the past lifetime plus the average future lifetime, in other words, x years plus the life expectancy at attained age x.

Two additional measures of comparative longevity based on the life table are the median length of life (probable lifetime), which is simply the age at which exactly half of the original cohort are surviving, and the number or percent of the cohort surviving to specified ages. These measures are not used as frequently as the expectation of life.

One concept of average age at death does not involve a life table at all, but is defined by the arithmetic mean of the ages of the persons dying in a specified period in an actual population group. To calculate this figure for a given year, the total number of years lived by the persons who die in the year is divided by the number who die. This division yields the average number of years lived per person dying in the year, that is, the average age at death. This definition of average age at death applies whenever the term is used in the rest of my discussion.

Averaging the ages of those in a population group who die is a simple process compared with the rather laborious calculation of life-table values. Since the average age at death entails only death counts rather than age-specific rates, no population figures are necessary. This process is, thus, advantageous when the distribution of the population by age is unknown or of an unknown quality, as is the case with estimates of the Indian population. The expectation of life depends essentially on age-specific rates of death which, in turn, are the quotient of deaths and the populations in the age groups from which those deaths arose. A life expectancy, therefore, can be no more reliable than the system for reporting mortality and the population estimates. A simple average of ages at death is as accurate as the reporting of deaths by age.

The very feature which gives average age at death the computational advantage of simplicity also results in a shortcoming of this measure, since the size and age distribution of the population is neglected. The age composition of a population strongly affects the average age at death. To the extent that the aged form a larger proportion of the total in one population than in another, the average age at death would be expected to be higher. For example, the median age of the Indian population in 1960 was about 17 years compared with 29 years for the country as a whole. A lower average age at death for Indians was therefore to be expected.

Even if two populations show the same number of deaths distributed in exactly the same way, they can actually be experiencing different mortality levels. If these two groups are of different overall sizes, their age-specific rates will necessarily differ in one or more age intervals; if the two groups are of the same total size, their rates by age will differ at some point unless the population distributions by age are exactly the same. If the age-specific rates of death differ, so will the life expectancies. Equivalent average ages of death in two groups of people, therefore, do not imply equivalent expectations of life.

As a further example of this fact, consider a single population under two assumed mortality levels A and B, in which the number of

deaths at each age under assumption B is equal to exactly one-half the corresponding number of deaths at each age under assumption A. In this case, the average ages at death will be exactly equal under mortality levels A and B, but the age-specific rates in B will be only half as great as those in A (since the population is unchanged at each age), so that the life expectancy under assumption B will be higher than under assumption A. Carrying this type of example to an extreme, suppose our population consists of 1 million persons and that under mortality level A there were 10,000 deaths distributed so as to produce an average age at death of 63 years and a life expectancy at birth of 70 years. If, under assumption B, there was only one death in this population and it occurred at age 63, then the average age at death would still be 63, but the life expectancy would become astronomical.

There is no direct relationship between life expectancy and average age at death. Nevertheless, it seems safe to say that if mortality has been generally improving for a given population group over a long period (improvement means decreasing age-specific death rates), then the average age at death will be lower than the life expectancy at birth, the gap between the two will be wider the faster improvement is occurring, and both measures will be increasing over time. Conversely, if mortality has been rising (which means increasing death rates by age), the average of the ages of persons dying will be higher than the life expectancy, the gap between the two will be wider the faster mortality levels are rising, and both figures will be decreasing over time.

This lead-lag relationship has an analogy in the financial world. A large investment portfolio usually consists of investments made over a long period at many rates of interest. If interest rates have been rising during this period, investments made in recent years will yield larger returns than those made in earlier years. The rate of return on the overall portfolio will therefore lag behind the new money rate because the portfolio is highly weighted by old investments. Conversely, if the new money rate is decreasing over time, the rate of return on the portfolio as a whole will exceed the current interest level. Expectation of life is analogous to the new money rate in that it reflects current experience. Average age at death is also based on current experience, on the deaths in a current year, for instance. Since, however, the persons who died in a given year were subject to the forces of mortality prevailing during many years before their deaths, average age at death is somewhat analagous to the historically weighted rate of return on an overall investment portfolio.

Under the theoretical conditions of a stationary population, the lead-lag relationship will disappear and the experienced average age at death will equal life expectancy at birth. (In a stationary population, the number of persons living at any age never changes because whenever someone leaves a particular year of age by death or by growing older, his place is immediately taken by someone moving up from the next lower year of age.)

A case could be made that average age at death is a specious measure of central tendency. An average is a single number taken as representative of an entire frequency distribution. It is representative of that distribution only if there is a tendency toward concentration about a central value. In the case of deaths, the frequency distribution is bimodal. Experience generally shows a relatively large number of deaths in the first year of life, decreasing frequencies through about age 10, followed by gradual increases to a second peak in the seventies, after which the frequencies drop off rather sharply. How well the arithmetic mean represents this type of bimodal and skewed distribution is questionable. This objection is valid but not overwhelming. Perhaps the arithmetic mean of the ages at death should be thought of more as an index than as a value truly typical of the whole distribution. If the index (mean) is increasing over time, it is "good" in the sense that the distribution is shifting more toward the higher ages. To eliminate the disproportionate effect of infant mortality, the average can be based only on deaths after the first year of life. Moreover, since the expectation of life is actually the average age at death of the life-table cohort, which shows the same sort of bimodal and skewed distribution of deaths, the expectation of life is just as subject to the charge of being

unrepresentative as is the average age at death in the actual population.

The median of the frequency distribution of deaths (the age which has the same number of deaths above and below it) may be a better measure of central tendency than the mean age at death. In recent years, the median age at death has exceeded the corresponding average age at death by about 4 years for Indians, 5 years for white Americans, and 6 to 7 years for all nonwhite Americans.

There are, then, many arguments against using average age at death as a measure of longevity. On the other hand, to talk about the advantages and disadvantages of one of these measures over the other may be inappropriate, for they represent such different things. Expectations of life are average future lifetimes for the hypothetical cohort of the life table, which is based on the mortality experience of a single year (or perhaps of 3 years). These life-table values do not forecast how long someone in an actual population may be expected to live, since future mortality changes are not considered. Nor is the average age at death a forecast of future longevity. It merely answers the question, On the average, how old were the persons who died?

No single statistic is the correct measure of the general concept of longevity. Life expectancy based on a life-table calculation has one meaning; average age at death based only on deaths by age in an actual population has another. The distinction between them must be clear to the persons using these terms.

Comparison of Average Ages at Death

Tables 1, 2, and 3 present average ages at death of Indians, the total U.S. population, whites, and nonwhites during the period 1955–67. The averages are based on all reported deaths for which the age of the deceased was known. The term "Indians" includes Indian, Aleut, and Eskimo residents of the 24 States in which the Indian Health Service is responsible for providing these peoples with comprehensive health services. The averages for Indians were computed from death counts received by the Indian Health Service from the Vital Statistics Division, National Center for Health Statistics, Public Health Service. The averages for the total U.S. population, whites, and nonwhites were derived from data appearing in *Vital Statistics of the United States*, which is published annually by the center.

One might think that two other groups should be compared, the total U.S. population excluding Indians and total nonwhites excluding Indians. Since Indians represent such a small fraction of the total and nonwhite populations, however, this refinement has not been made.

Indians who died in 1967 averaged 46 years of age at death—19 years less than the average for the country as a whole, 20 years less than that for U.S. whites, and 8 years less than that for the overall U.S. nonwhite population (table 1). The gap, however, is narrowing. In 1955, the Indian average age at death was about 38 years. This figure trailed the average for the country as a whole by about 24 years, the average for whites by about 25 years, and the average for nonwhites by about 12 years. In the 12 years following 1955, therefore, the Indian average increased by 8 years, in comparison with an increase of just over 3 years for whites and of 4½ years for all nonwhites.

Deaths are generally higher in the first year of life than in any other single year, and the average age of all persons dying is strongly affected by this high infant mortality. Infant mortality among Indians is substantially higher than that for the country as a whole, but is improving much faster. In 1967, for example,

Table 1. Average ages at death among Indians, total U.S. population, whites, and nonwhites, 1955–67

Calendar year	Indians [1]	Total U.S. population	Whites	Nonwhites
1967	45.7	64.7	66.3	53.8
1966	44.0	64.5	66.0	53.5
1965	43.4	64.1	65.7	52.6
1964	42.9	63.6	65.2	51.9
1963	42.7	63.6	65.2	52.3
1962	42.1	63.3	64.9	51.8
1961	41.3	62.9	64.5	51.2
1960	40.3	62.6	64.3	50.7
1959	40.7	62.3	63.9	49.8
1958	38.6	62.1	63.8	49.8
1957	39.4	61.9	63.5	49.6
1956	38.0	61.7	63.3	49.5
1955	37.7	61.4	63.0	49.2

[1] Includes Aleuts and Eskimos.

Table 2. Average ages of persons dying after first birthday among Indians, total U.S. population, whites, and nonwhites, 1955–67

Calendar year	Indians [1]	Total U.S. population	Whites	Nonwhites
1967	53.0	67.6	68.7	59.5
1966	52.8	67.6	68.6	59.6
1965	53.2	67.5	68.5	59.4
1964	52.5	67.3	68.4	59.2
1963	53.3	67.5	68.5	59.6
1962	53.1	67.4	68.4	59.4
1961	52.6	67.2	68.2	59.1
1960	52.6	66.9	68.0	58.7
1959	52.4	66.8	67.8	58.2
1958	51.7	66.7	67.7	58.3
1957	52.2	66.4	67.5	57.8
1956	50.1	66.3	67.3	57.5
1955	50.2	66.0	67.1	57.2

[1] Includes Aleuts and Eskimos.

the rate among Indians of 32.2 infant deaths for every 1,000 live births was more than 40 percent above the general U.S. rate of 22.4. This rate, however, represents much improvement over the situation just a dozen years earlier, when the Indian rate was 62.5, nearly 140 percent higher than the total U.S. rate of 26.4.

Table 2 presents average ages at death after infant deaths are excluded from the calculation, that is, it shows the average for all deaths occurring after the first birthday. Comparison of tables 1 and 2 demonstrates that when infant deaths are excluded, the average age at death is substantially higher, particularly for Indians. Among Indians who died in 1967 who had lived at least a full year, the average age at the time of death was 53 years, 7 years greater than the average when infant deaths are included. For the country as a whole, exclusion of infant deaths increases the average by 3 years to about 68, or 15 years more than the Indian figure. Whereas the gap between Indians and the general population in 1967 is 19 years when all deaths are included (table 1), it is 4 years less when infant deaths are excluded (table 2). In 1955, the average age at death of Indians, excluding infants, was 50 years, compared with 66 for the total United States, a difference of 16 years. When all deaths for 1955 are considered (table 1), the difference is 24 years.

The higher infant mortality among Indians, therefore, accounts for a share of the difference between the average ages at death of Indians and the total U.S. population, but by no means for all of it. On the other hand, improving infant mortality seems to have been a major factor in the 1955–67 increase of 8 years in the overall Indian average age at death; the improvement is only about 3 years when deaths under 1 year of age are excluded. Both U.S. white and nonwhite population groups also show a greater increase from 1955 to 1967 when the ages of all persons dying are averaged than when those under 1 year of age are omitted. In fact, from 1962 through 1967 there was practically no change in the average age at death, excluding infants, for Indians, whites, or nonwhites. In this period it was about 53 years for Indians, 68½ years for whites, and 59½ years for nonwhites.

If all deaths before the fifth birthday are excluded from the calculation, the averages are as shown in table 3. This procedure results in an increase over table 2 of about 2½–4½ years in the averages for Indians, one-half year for whites, and 1 to 1½ years for nonwhites. Over the 12 years 1955–67 there was almost no increase in the Indian average of ages at death after the fifth birthday. Therefore, practically the entire improvement of 8 years in the overall Indian averages, from 38 to 46 (table 1), was due to decreasing mortality among children under 5 years of age. Since 1955, whites and nonwhites both showed gradual increases in the

Table 3. Average ages of persons dying after fifth birthday among Indians, total U.S. population, whites, and nonwhites, 1955–67

Calendar year	Indians [1]	Total U.S. population	Whites	Nonwhites
1967	55.6	68.1	69.1	60.5
1966	55.8	68.1	69.1	60.7
1965	55.8	68.1	69.0	60.6
1964	55.6	67.9	68.9	60.4
1963	56.9	68.1	69.0	60.9
1962	56.7	68.0	68.9	60.7
1961	55.9	67.8	68.8	60.4
1960	56.5	67.7	68.6	60.2
1959	55.8	67.5	68.4	59.7
1958	55.9	67.4	68.3	59.7
1957	56.3	67.1	68.1	59.2
1956	54.3	67.0	68.0	58.9
1955	54.9	66.8	67.7	58.7

[1] Includes Aleuts and Eskimos.

average age at death when deaths of children under age 5 were excluded. The Indian average was between 54 and 57 years, or about 13 years less than that of whites, and 3 to 5 years less than that of nonwhites.

A Note on Life Expectancy

For the sake of comparison, one should note that in recent years life expectancy at birth has been at a level of 63 to 64 years for Indians, 71 for whites, and 64 for all nonwhites. The expectancy of Indians is generally a bit lower than that of nonwhites, but the expectancy of both groups lags approximately 7 years behind that of whites. As the available population estimates of Indians by age are of unknown accuracy, some concern arises as to the reliability of calculations of their life expectancy.

Methodology for Average Age at Death

Computing average ages at death is a simple process, but care must be taken since approximations are involved. The calculations can be represented symbolically as follows.

If death counts are available for single years of age, and

D_x = total number of deaths at age x,
D = total number of deaths at all ages, that is,
$D = D_0+D_1+D_2+ \ . \ . \ . = \sum_x D_x$, and
Y_x = average number of years lived per person dying at age x,

then, under the assumption of uniform distribution of deaths throughout each year of age (that is, $Y_x=x+\frac{1}{2}$), the average age at death is given by

$$\frac{\sum_x D_x Y_x}{\sum_x D_x}$$

$$= \frac{\sum_x D_x(x+\frac{1}{2})}{\sum_x D_x} = \frac{\sum_x xD_x+\frac{1}{2}D}{D}$$

$$= \frac{\sum_x xD_x}{D}+\frac{1}{2}.$$

At ages for which the distribution of deaths is known not be uniform, as in the first year of life, appropriate modifications can be made, but they will probably have only a small effect on the result.

In calculating the averages shown in tables 1, 2, and 3, death counts—as is generally true—were available only for age groups rather than for single years of age. In this case we have

${}_nD_x$ = total number of deaths between ages x and $x+n$, that is,
${}_nD_x = D_x+D_{x+1}+D_{x+2}+ \ . \ . \ . \ +D_{x+n-1}$, and
${}_nY_x$ = average number of years lived per person dying between ages x and $x+n$,

and the average age at death is given by

$$\frac{\sum_x {}_nD_x \, {}_nY_x}{\sum_x {}_nD_x} = \frac{\sum_x {}_nD_x \, {}_nY_x}{D}.$$

${}_nY_x$ can normally be taken as the midpoint of the age interval, that is, ${}_nY_x=x+\frac{n}{2}$, except in the highest, and perhaps the lowest, intervals.

For these calculations, Indian death counts were used in as detailed age intervals as were available. Unfortunately, the detail was not entirely consistent from year to year, and changes in age groups could affect the results. The effect is probably small, however, and is therefore disregarded. Consistent age groupings were available for the United States as a whole, whites, and nonwhites. The age intervals used in these calculations were as follows:

INDIANS

1964, 1966, and 1967

Under 1 year, 1–4 years, 5-year groups through 74 years, and 75 years and over.

1955, 1956, 1959–1963, and 1965

Under 1 year, 1–4 years, 5-year groups through 99 years, and 100 years and over.

1957 and 1958

Weighted average of (a) and (b): (*a*) For Indians in 23 States . . . Under 1 year, 1–4 years, 5-year groups through 99 years, and 100 years and over; (*b*) For Alaska Natives . . . Under 1 year, 1–4 years, 5-year groups through 24 years, 10-year groups through 64 years, and 65 years and over.

TOTAL U.S. POPULATION

All years

Under 1 year, 1–4 years, 5-year groups through 99 years, and 100 years and over.

The average ages used in each of the closed intervals were the interval midpoints. For the top-end open intervals, the following ages were used:

Age interval (years)	*Average age at death within interval (years)*
65 and over	77.0
75 and over	84.0
100 and over	102.5

Summary

Measures of comparative longevity are often misused by persons describing the differences between the health status of American Indians and that of other Americans. In 1967, the expectation of life at birth for Indians was 64 years and the average age at death was 46 years. For the total population in the United States, the life expectancy was 70 years and the average age at death was 65 years. A common mistake is to compare the Indian average age at death with the life expectancy in the general population; another error is to use the terms as if they meant essentially the same thing.

A life expectancy is based on a life-table calculation and represents the average number of years a member of a hypothetical cohort of persons could expect to live at the time of birth. This cohort is assumed to experience throughout its lifetime the set of age-specific death rates observed in the underlying population during a short, fixed observation period. As used by the Indian Health Service, the average age at death simply means the arithmetic mean of the ages of all persons dying during the year in an actual population. The average age at death is of questionable value as a measure of longevity because it ignores the size and age distribution of the population; also, it may not adequately represent the bimodal and skewed age distribution typical of deaths. Nor is a life expectancy meant to forecast; it is based on current death rates rather than on projections of future mortality levels.

Tearsheet Requests

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Packaged Disaster Hospitals To Nigeria

Three packaged disaster hospitals—complete 200-cot hospitals packed in boxes—were sent to Nigeria to help meet the medical emergency created by the recent civil war. To fill a request made by the Government of Nigeria, President Nixon authorized the U.S. Agency for International Development to purchase the hospitals from the Division of Emergency Health Services' Packaged Disaster Hospital Program. The division is part of the Health Services and Mental Health Administration, Public Health Service.

Accompanying the packaged disaster hospitals to Nigeria were Dr. Robert L. Price, deputy director of the division, and a medical equipment specialist, Arthur D. Cruze. Dr. Price's primary objective was to advise and assist Nigerian hospital teams in medical aspects of setting up and using the hospitals; Cruze was to concentrate on equipment performance and maintenance.

There are now four packaged disaster hospitals in Nigeria. One was sent in July 1969, by AID, to restore the Port Harcourt General Hospital to full operation after the hospital had been severely damaged during the fighting.

The Packaged Disaster Hospital is designed to expand existing hospital facilities or convert any appropriate structure—school, factory, store, church—into a hospital. It contains an operating room, laboratory equipment, pharmaceuticals, blankets, cots, bandages, and other equipment necessary for medical care during emergencies. An entire unit, weighing 25 tons, costs the Public Health Service approximately $43,000.

Program Notes

Change in Illinois Rabies Law

In Illinois, a dog vaccinated in accordance with the State's recently amended Rabies Control Act may now be confined on the owner's premises. Only if the animal shows suspicious clinical signs or if the county rabies inspector believes the animal might not be adequately confined at home, will confinement in a veterinary hospital be required.

Elderly Leaving State Hospitals

Governor Richard B. Ogilvie of Illnois signed legislation on September 12, 1969, that permits the transfer of thousands of elderly patients from State mental hospitals to private nursing homes and sheltered care facilities.

The legislation specifies that elderly persons whose mental processes are impaired only by advanced age will not be committed to mental institutions. Machinery is to be established to determine whether patients now in mental hospitals might be served better in private nursing homes or sheltered care facilities.

Governor Ogilvie pointed out, after signing the legislation, that there are more than 10,000 elderly persons in State institutions in Illinois "not because they are mentally ill, but simply because they have nowhere else to go." He said that State officials would "waste no time" putting the new program into operation. Medical review teams have already been set up at the Chicago State Hospital to screen patients eligible for transfer, the Governor reported.

Fight Against Encephalitis

During the summer of 1969, approximately 50 clinically diagnosed cases of encephalitis in horses had been reported by the end of August in the State of Washington; 10 of the horses died. There were a few scattered cases of the disease in June, more in July and the first week of August. Cases were expected to appear into early October.

"Continued intensive surveillance" of Western equine encephalitis is therefore of deep concern to public health officials, explained Dr. Byron J. Francis, chief of epidemiology in the State health department. Horse owners are encouraged to watch for the signs of sleeping sickness and call a veterinarian when these occur, he said. Veterinarians are urged to report serious communicable diseases like encephalitis and to obtain appropriate diagnostic blood specimens in as many cases as possible. Prestamped viral diagnostic kits are supplied by the health department for this purpose.

An accurate count of cases in horses gives the health officer an indication of the threat to human beings, said Francis. And when the critical geographic areas are known, citizens and local health officers can decide how best to reduce the mosquito population.

Neurological Disease Team

A new medical team travels to six selected municipalities in Mississippi to conduct 1-day clinics for victims of neurological diseases and related disorders who live too far from Jackson to use facilities in that area. The Mississippi State Board of Health, through its division of general health services, is working with the University of Mississippi Medical Center in Jackson on the project.

The team includes neurologists and resident physicians from the medical center and a social worker. At each clinic, State board of health nurses supplement the team. The team spends one full day in each of six selected municipalities over a 3-month period. At least 35 patients can be seen each clinic day, according to Dr. Frank M. Wiygul, Jr., director of the division of general health services.

This field project was made possible by a grant from the Mississippi Regional Medical Program. Future plans include use of a followup team with an electroencephalogram technician, a physicial therapist, and a speech therapist, as well as possible expansion of clinic sites to areas presently not served.

Hunger After Age 6

Deprived children over age 6 can now obtain free food in Memphis, Tenn., thanks to private donations, such as an initial two carloads of baby foods and freeze-dried products recently supplied free by the H. J. Heinz Company of Pittsburgh, Pa. The U.S. Department of Agriculture has been dispensing surplus food on a prescription basis for children under age 6 to the Memphis Area Project-South, a community self-help organization funded by the Office of Economic Opportunity. Distribution of USDA food, however, is restricted to children under 6 years.

Under an agreement between the Memphis Area Project-South and St. Jude Children's Research Hospital in Memphis, the hospital accepts and cares for persons suffering from severe malnutrition in the city's black ghetto at no cost. This hospital, through its new nutrition clinic, is dispensing the donated food to the needy poor in Memphis.

The freeze-dried meal in small cans is the same type as that the American astronauts ate on their moon-landing flights. Personnel of the hospital and of Memphis Area Project-South are teaching 3,000 area mothers how to prepare the freeze-dried foods. "Each mother will have to attend a class before she can receive these items," said St. Jude dietitian Mary Beth Hutson. Baby food in the Heinz shipment is being distributed as usual.

Items for this page: Health departments, health agencies, and others are invited to share their program successes with others by contributing items for brief mention on this page. Flag them for "Program Notes" and address as indicated in masthead.