

IV-BIOCHEMICAL

**TEN-STATE
Nutrition Survey
1968-1970**



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Chapter IV
BIOCHEMISTRY
TEN-STATE NUTRITION SURVEY

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1. INTRODUCTION

All families participating in the Ten-State Nutrition Survey were invited to attend special clinics where detailed examinations were conducted. Approximately half of the persons in the survey population actually visited the clinics. The characteristics of this clinic population were described in detail in Chapter II.

During the clinic visit, subjects had blood and urine specimens taken for one or more of the following determinations: hemoglobin, hematocrit, serum albumin, protein, vitamin A, vitamin C, folic acid, red blood cell folate, and urinary riboflavin, thiamine, and iodine. Determinations of serum iron and transferrin saturation were made for all subjects with hemoglobin values classified as "low." The biochemical data which resulted from these analyses are presented in this chapter. Other nutritionally relevant biochemical parameters do exist, but they were considered to be methodologically unsuitable for a large-scale epidemiologic survey.

The concentration of certain nutrients in the blood reflects dietary intake. For example, continued high intake of vitamins A and C is usually reflected by high levels of these vitamins in the blood. Conversely, continued low intake of these vitamins generally results in lower blood levels. Low hemoglobin concentrations often reflect inadequate intakes of iron.

But the blood concentration of certain constituents may also be affected by factors other than dietary intake. For example, infections may reduce blood concentrations of vitamin C, blood loss may reduce hemoglobin concentrations, and pregnancy usually decreases albumin levels.

Likewise, while urinary concentration of certain nutrients or their metabolites is often a reflection of dietary intake, analysis of urine, like analysis of blood, must be interpreted with the recognition that non-dietary factors may also be involved.

STANDARDS FOR EVALUATION

Concentrations of blood and urine constituents can vary widely in a normal, healthy, well-fed population. Although there are few absolute values below which concentrations can be considered with certainty as representing nutrient deficiencies, it is important to have standards for comparison of biochemical data in order to determine whether significant public health problems

are present. The Interdepartmental Committee on Nutrition for National Defense (ICNND) established guidelines¹ for the interpretation of biochemical data collected during nutrition surveys conducted in many parts of the world. These guidelines formed the basis for the standards used in the Ten-State Nutrition Survey. However, for use in the Ten-State Nutrition Survey it was necessary to expand these guidelines to include both sexes and all age groups. These standards are presented in Appendix 4 to Chapter I and in the tables and graphs accompanying this chapter.

For each biochemical parameter, values between certain selected concentrations were classified as "low." All values below the lower limit of the low range were classified as "deficient." The limitations of such classifications should be clearly understood. In some cases, available data did not permit the identification of distinct, clear-cut values or ranges of values which might be considered by every investigator as low or below normal. The reader is therefore cautioned against concluding that all persons classified as deficient in a specific blood or urine constituent would exhibit clinical signs of nutrient deficiencies (see Chapter III, Clinical Examinations). On the other hand, it can be assumed that persons with "deficient" and "low" values were more likely to be at risk of developing physiological or metabolic disturbances related to nutrient deficiencies, particularly if subjected to stress conditions such as illness, pregnancy, or additional dietary restrictions.

PRESENTATION OF DATA

In this chapter the results of the analyses for each specific blood and urine constituent are summarized. Data obtained in the "low-income-ratio" states are presented separately from those for the "high-income-ratio" states. Within each group of states the data have been broken down in terms of ethnic groups, age groups, sex, and Poverty-Income-Ratio classifications.

The tabular material shows the percentages of the persons classified as having "deficient" values and "low" values. Other tables include mean values for various subgroups of the population. The data presented make it possible to evaluate the biochemical findings by comparisons between

¹ Interdepartmental Committee on Nutrition for National Defense, *Manual for Nutrition Surveys*, second edition, 1963. U. S. Government Printing Office, Washington, D. C.

various subgroups. In the tables showing the means for nutrient intake by blood or urinary nutrient level, the data for infants and young children less than 36 months of age are presented together. Grouping together infants and children over a three-year age span maximizes the number of study subjects, but it also combines data from infants with that from older children whose dietary patterns are predictably different. The data in this age group should be interpreted with this limitation in mind.

In the Appendix, tables and figures present cumulative percentage distributions of the biochemical data, in most cases separated by age, sex, and ethnic groups. Such presentations of the data make it possible to divide the survey population into groups with biochemical values above and below any selected concentration. Thus, the data may be interpreted with the Ten-State Nutrition Survey Guidelines, or with other guidelines preferred by the reader.

The biochemical data presented in this chapter contribute to the survey's objective: the identification of the extent and nature of malnutrition among low-income populations surveyed in the ten states. In addition, it is hoped that these data, representing over 30,000 persons of all ages, may be useful in better defining relationships between

dietary intakes and biochemical parameters and in developing more meaningful standards and guidelines for future use in the evaluation of nutritional status.

VALIDITY OF DATA

Most of the analyses of blood and urine samples were conducted by laboratories in each of the ten states and New York City. With a few exceptions, the methods were the same in all laboratories. Certain analyses were performed in the United States Army Medical Research and Nutrition Laboratory (USAMRNL) in Denver.

In order to provide for uniformity in methodology and in the performance of the biochemical analyses, the Nutrition Program monitored the participating laboratories. Each laboratory used controls (samples of known composition) provided by the Nutrition Program to monitor inter-laboratory variations. These were analyzed at the same time as the survey samples and the results were reported to the Nutrition Program.

In general, the correlation among laboratories was high enough so that the data could be pooled for evaluation. Occasional exceptions to this generalization will be considered in the following discussion of individual biochemical parameters.

2. HEMOGLOBIN, HEMATOCRIT, AND RELATED MEASUREMENTS

Abstract: *The data presented in this section revealed a high prevalence of "deficient" and "low" hemoglobin values in all population subgroups and particularly in the black populations in both the low-income-ratio and high-income-ratio states. There was a general trend towards higher dietary iron intakes among groups of persons with higher hemoglobin levels and a low but positive coefficient of correlation between hemoglobin and iron intake of individuals. Together with the findings of lower-than-recommended mean iron intakes for selected subgroups of the population, these data suggest that the high prevalence of "deficient" and "low" hemoglobin levels was probably related to inadequate dietary iron intake. It appears from these data that nutritional iron deficiency, producing lowered hemoglobin levels, is a public health problem in the populations studied. Because of the questions that have been raised in regard to the standards of comparison used in the evaluation of this data, the precise magnitude of the problem demands further investigation. This continued investigation will depend in great part on the development of more sophisticated tools to assess iron nutriture. In addition, the initiation of studies to assess the effect of hemoglobin, iron, and folic acid status on morbidity and health is recognized as a high priority need.*

There is substantial evidence that the principal cause of nutritional anemia in the United States is inadequate iron intake. Anemia may also result from certain pathological conditions or from an inadequate intake of nutrients other than iron. Hemoglobin determinations are used in the assessment of anemia.

Anemia represents a last stage in the progression of iron depletion. If there is a sufficient amount of stored iron, hemoglobin concentration will be maintained at a normal level even though iron intake is low. When storage iron becomes exhausted, and if the iron consumed and absorbed does not compensate for the iron lost from the body, the hemoglobin concentration will begin to decrease. In time, anemia results. However, persons with partially depleted iron stores may not be anemic, although such persons are at risk. They could easily become anemic under stress conditions requiring increased amounts of iron for hemoglobin synthesis, e.g., during pregnancy or at times of excessive blood loss.

During the Ten-State Nutrition Survey, more than 33,000 blood samples were collected and analyzed for hemoglobin and hematocrit. The latter procedure involves the measurement of the volume of red blood cells expressed as a percent of whole

blood. In iron deficiency anemia, there are fewer red cells and the cells are smaller than normal, so that they make up a smaller fraction of the blood. In this survey, hematocrit data correlated well with the hemoglobin data (correlation coefficient = 0.85), and, in general, supported the hemoglobin findings. Therefore the hematocrit data are not discussed in detail in this section but are included in full in the Appendix.

Measurements of serum iron and transferrin saturation were made in order to assess the influence of iron status on hemoglobin and hematocrit levels. These parameters give some indication of the amount of storage iron present. The survey protocol called for the determination of serum iron and transferrin saturation on blood samples found to have low hemoglobin concentrations. In addition, a number of samples with normal hemoglobin concentrations were included.

Folic acid, a vitamin of the B complex group, is essential for the normal synthesis of red blood cells. Folic acid deficiency is another potential cause of anemia. Folic acid determinations were made as another means of assessing the etiology of low hemoglobin levels. Folic acid status was evaluated by measurement of serum folate and red-blood-cell folate.

Most of the blood samples selected were sent to a central laboratory¹ for analysis of serum iron, transferrin saturation, and both serum and red-blood-cell folate. Hemoglobin determinations were standardized among participating laboratories and within each laboratory. Thus the hemoglobin data can be evaluated with confidence.

Hemoglobin concentrations vary with age and sex. Boys and girls from infancy up to about 13 years of age show little difference in hemoglobin level, but there is a gradual increase in hemoglobin concentration. For males more than 13 years old, hemoglobin concentrations normally continue to increase until they reach a maximum level at about age 20. For females, maximum hemoglobin levels are reached in early adolescence and generally remain constant through adulthood. Because of these normal variations, hemoglobin data have been evaluated with appropriate consideration for the age and sex of the subjects.

MEAN HEMOGLOBIN VALUES

Age and Sex Differences

The mean hemoglobin concentrations for selected age groups, separated by sex, are shown in Figure 1. Hemoglobin data for all ten states and New York City are included. For males, mean hemoglobin values gradually increased with age, reaching a maximum in the 17-44 year age group. There was a slight decrease in the mean values among males 45 years of age and older. The observed increase with age was consistent with other published data for males.

Up to 12 years of age, mean hemoglobin concentrations were the same for males and females. For older age groups, sex differences in hemoglobin became marked. Women of childbearing age had lower hemoglobin levels than men. Values in older women increased but still remained below the mean for men.

Mean hemoglobin values were higher for white persons than for either blacks or Spanish Americans.² Mean values for blacks were consistently the lowest of the three ethnic groups.

Pregnant or Lactating Females

Hemoglobin data were available for 437 of the 615 pregnant or lactating females included in the survey population. Hemoglobin concentrations normally decrease during pregnancy. Figure 2

compares the mean hemoglobin values for pregnant or lactating females with those for non-pregnant and non-lactating women of similar age (13-44 years). Hemoglobin concentrations show a difference of about 0.5 gm/100 ml. between the two groups. Because this difference is small, and because pregnant and lactating women represented only six percent of all females in the 13-44 age group, the data for all females in this age group were not distorted by the inclusion of data for pregnant or lactating females.

DEFICIENT AND LOW HEMOGLOBIN VALUES

Presentation of mean values does not demonstrate the wide range of hemoglobin values found in the total population and selected subgroups of the population. The complete summary of hemoglobin and hematocrit data, using cumulative percentage distributions, is included in the Appendix. This material, in tabular and graphic form, shows by sex, age, and ethnic group the range of values encountered in the various subgroups.

The hemoglobin data were further evaluated by presenting the percent of individuals with values below the level usually considered to be normal. The norms employed for this purpose varied with sex and age. Below-normal values were further classified as "deficient" or "low" values. The terms "deficient" or "low" may be somewhat misleading. There is not complete agreement among authorities concerning the levels of hemoglobin at which a diagnosis of anemia should be made. Moreover, individuals may have hemoglobin values that are "normal" and healthy for them but are below the usual normal values. Because of these limitations, the standards cannot define "normal" for all individuals within any age or sex group. But they do allow general evaluation and comparison of different populations.

Low-Income-Ratio States

Ethnic Differences. In the low-income-ratio states, white persons had 1.8 percent "deficient" and 13.8 percent "low" hemoglobin values (Table 1A). The corresponding percentages were 7.6 and 29.8 percent for the black population and 8.3 and 12.3 percent for the Spanish-American population. Blacks and Spanish-Americans clearly had a greater proportion of "deficient" values than did whites. The percentage of black persons with "low" values was more than twice that of either white or Spanish-American persons. These differences between ethnic groups generally held for

¹ The United States Army Medical Research and Nutrition Laboratory, Denver, Colorado.

² See Appendix Table 16.

all age groups and both sex groups. There was no obvious change in the prevalence of "deficient" or "low" values with increasing age.

Sex Differences. Comparison of hemoglobin results for males and females showed that in all ethnic groups there was generally a higher percentage of males with "deficient" and "low" hemoglobin values. This was a surprising finding, since girls and women generally have been reported to have lower dietary iron intakes than boys and men, and women lose iron because of periodic menstrual blood losses. General clinical experience has been that, with respect to iron nutriture, males are generally less at risk than women of childbearing age.

It is possible that the finding of an increased prevalence of "deficient" and "low" hemoglobin values for males may be an artifact caused by the standards used. The Ten-State Nutrition Survey standards are slightly higher than those recommended by the World Health Organization *Scientific Group on Nutritional Anemias*. Applying WHO Standards to the Ten-State Survey population would reduce the prevalence of "deficient" and "low" hemoglobin values in males by one-half. It is possible that males, particularly adolescent males who have a higher requirement for iron stemming from rapid growth, may have a higher prevalence of sub-optimal hemoglobin levels related to iron deficiency than has been previously recognized. The relationship of below-standard hemoglobin values to impaired health status in males has not been adequately determined.

Effect of Income Level. Hemoglobin data for persons in the low-income-ratio states with respect to Poverty-Income-Ratio (PIR) level is presented in Tables 1B, 1C and 1D. Among Spanish-Americans the percentages of "deficient" and "low" values were much the same for persons above and below the poverty level. White and black persons below the poverty level had a slightly higher percentage of "low" values than did those living above the poverty level.

The relationship between hemoglobin values and income was examined further by separating the population into five different groups by PIR value. The percentage of white persons with "deficient" values was considerably lower than that of black or Spanish-American individuals for all PIR groups below 3.0 (Figure 3a). It should be noted that the data shown graphically in Figure 3a are for "deficient" values only and that the percentages of such values for all ages and for both sexes

have been combined. For both the white and black populations, the percentage of persons with deficient hemoglobin values decreased with an increase in PIR value. This relationship did not hold for the Spanish-American population. However, the number of Spanish-American persons in the PIR groups 2.00 to 2.99 and 3.00 and above was 52 and 36 respectively, numbers too small to assure meaningful comparisons.

High-Income-Ratio States

Ethnic Differences. The prevalence of "deficient" and "low" hemoglobin values was generally lower in the high-income-ratio states than in the low-income-ratio states (compare Table 2A with Table 1A). This was true for all age groups in the white and the black populations. Comparative findings among Spanish-Americans were less consistent.

The black population had a prevalence of "deficient" and "low" values more than triple that of the white population. The percentage of "deficient" and "low" values for the Spanish-American population was higher than that of white persons, but lower than that of black individuals.

Sex Differences. As in the low-income-ratio states, males generally had higher percentages of "deficient" and "low" values than did females. Again, this finding may reflect the standards applied rather than a true sex difference in hemoglobin status.

Effect of Income Level. In the high-income-ratio states among all ethnic groups, there was no consistent pattern in the prevalence of "deficient" and "low" values in persons with a PIR of less than one as compared to persons with a PIR of greater than one (Tables 2B-D).

Within all PIR groups, the white population consistently had the lowest percentage of "deficient" hemoglobin values (Figure 3b). Black persons had a higher prevalence of "deficient" values, and there was an inverse relationship between PIR level and the percentage of "deficient" values. Among whites there appeared to be no relationship to PIR. Comparison of Figures 3a and 3b shows that for all PIR groups and all ethnic groups the percentage of "deficient" values was lower in the high-income-ratio states, with the exception of the two highest PIR groups. In these groups, however, the relatively small number of persons, particularly of black and Spanish-American individuals, made meaningful comparisons difficult.

For the black population in both groups of states and for the white population in the low-income-ratio states, hemoglobin values appeared to be income dependent. Hemoglobin status also demonstrated regional differences independent of income level for all ethnic groups. At any given PIR value less than 2.0 there was a higher percentage of "deficient" values in the low-income-ratio states than in the high-income-ratio states.

HEMOGLOBIN VALUES AND YEARS OF SCHOOL COMPLETED

Education is considered to be a useful tool for improving nutritional status. The effect of education was assessed by comparing hemoglobin levels in children based on the number of years of school completed by the wife of the head of family or the female head of family, and in adults based on the number of school years completed by the individual.

In both the low- and high-income-ratio states, mean hemoglobin levels increased and the percentage of "deficient" values decreased as higher educational levels were attained. This finding held both for children (Tables 3A and 3B) and for adults (Table 4A and 4B). This relationship was most apparent for post-high-school groups.

HEMATOCRIT VALUES

Hematocrit data correlated well with the hemoglobin data. Figures 4a and 4b show the mean hematocrit values for males and females over 20 years of age in both the low- and high-income-ratio states. Also shown are the mean hematocrit values obtained during the 1960-1962 National Health Survey.¹ The National Health Survey included a broader cross-section of the population of the United States than did the Ten-State Nutrition Survey. In particular, the former included persons with a wide range of annual family incomes. This was in contrast to the predominantly low-income population selected for participation in the Ten-State Nutrition Survey.

Mean hematocrit values from the National Health Survey were higher than values found in the low- or the high-income-ratio states. Within the Ten-State Nutrition Survey, mean hematocrit values for adults were consistently lower in the low-income-ratio states. This finding corresponds well with the hemoglobin data. At all ages, mean hematocrit values for females were lower than those for males, a finding also consistent with the hemoglobin data.

HEMOGLOBIN VALUES AND DIETARY IRON INTAKE

Iron deficiency, a principal cause of anemia, can result from inadequate iron intakes, poor absorption of dietary iron, or from unusually high body iron losses. During the Ten-State Nutrition Survey, food consumption data were obtained and iron intakes were calculated. Dietary information, using the 24-hour recall method, was obtained for selected population groups: infants from 0-36 months, adolescents from 10 to 16 years, persons 60 years of age and older, and pregnant or lactating females.¹ These groups are generally considered to be at risk from a nutritional point of view.

The hemoglobin values for each of the above groups were separated by quartiles, i.e., the first quartile included the lowest 25 percent of the hemoglobin values; the second quartile, the next higher 25 percent, etc. Mean iron intake for all persons in each quartile was then calculated. It was found that mean daily iron intakes increased from the first through the third quartile for all groups, with the exception of the youngest age group (Table 5).²

Iron intake of persons in the fourth quartile for some age groups was higher than the intake of the third quartile, but this trend was not consistent. Despite the general trend towards increased iron intake in groups of persons with higher hemoglobin levels, the coefficient of correlation between individual hemoglobin values and iron intakes within each subgroup was of a very low order.

Mean iron intakes of the adolescents, except those of males 10-11 years, were less than the amount set in the standards for evaluating dietary intake. This was also true for infants, for pregnant or lactating females, and for the first two quartiles of persons 60 years of age and older.

Mean iron intakes were in the order of 5.5 to 6.0 mgs/1000 calories for adolescents and for pregnant and lactating females (Table 5). Values for infants and for persons 60 years and older ranged from 6.88 to 8.73 mgs/1000 calories. There was no consistent relationship between the amount of dietary iron per 1000 calories and the quartile ranking of hemoglobin values.

The data on iron intake and hemoglobin quartile show that the hemoglobin levels were related to iron intake. Data expressing iron intake per 1000 calories in the diet help to further define

¹ Vital Health Statistics, Series II, Number 24.

¹ National Nutrition Survey Guidelines and Procedures, *op cit.*
² See Appendix Table 10.

the relationship between hemoglobin and dietary iron. Calories are used as a basis for expressing iron intake, since calories in a diet correspond to the quantity of food eaten. Persons with high and low hemoglobin levels consume about the same amount of iron per 1000 calories. Although additional calories would improve iron nutriture, in view of the fact that most of the survey population was receiving adequate caloric intake, the more appropriate solution would be the selection of foods with higher iron content.

HEMOGLOBIN VALUES RELATED TO IRON AND FOLIC ACID STATUS

The survey protocol called for samples with low hemoglobin concentrations to be analyzed for serum iron, transferrin saturation, serum folate, and red-blood-cell folate (see Chapter I, Table 3). In addition, the same analyses were done on a number of samples with normal hemoglobin values. Thus, it was possible to evaluate relationships between hemoglobin values and these additional parameters over a range of hemoglobin concentrations. For this evaluation, the hemoglobin values of all blood samples for which these additional tests were made were divided into quartiles and mean values of each biochemical parameter were calculated for each quartile.

Serum Iron and Transferrin Saturation

The mean serum iron concentration in all quartiles for both sexes and for all age groups was 65 ug/100 ml. or higher (Tables 6A-K), a level considered to be acceptable. For many of the subgroups of the population, separated by age and sex, there was a trend towards increasing mean serum iron values from the first through the fourth quartile. The coefficient of correlation between hemoglobin and serum iron values was positive but low ($r = 0.17$, Table 7). It should be noted that serum iron concentrations may fluctuate from day to day, and that they may be increased by recent iron intakes. The blood samples were collected as survey participants visited the clinics, and usually they were non-fasting samples.

The coefficient of correlation between hemoglobin and transferrin saturation values was also low ($r = 0.20$, Table 7). The mean transferrin saturation values for all quartiles were above 15 percent, a value below which there may be insufficient iron available to maintain a normal rate of hemoglobin synthesis (Tables 6A-K). However, the calculation of the percent saturation of transferrin is dependent upon the measurement of serum iron. If serum iron values were unrealistically

high because of the non-fasting nature of the blood samples, the values for transferrin saturation in turn would be too high. The coefficient of correlation between serum iron and transferrin saturation values was high ($r = 0.83$, Table 7).

Figures 5 and 6 show a comparison, for the low- and the high-income-ratio states, of the percent of individuals with either deficient or acceptable hemoglobin levels who have deficient serum iron levels. In almost all age and sex subgroups, there was a higher percentage of individuals with deficient serum iron levels in the group with deficient hemoglobin levels than in the group with acceptable hemoglobin levels. In both groups of states, between 10 and 20 percent of individuals with acceptable hemoglobin levels had deficient serum iron levels. These individuals could be considered at risk of developing lower hemoglobin levels if placed in a stressful situation demanding mobilization of iron from what appears to be partially depleted body stores.

Serum Folate and Red Cell Folate

An inadequate intake of folic acid, a member of the B-complex vitamin group, may result in anemia. For this reason, folate measurements were made and evaluated by comparison with hemoglobin quartiles in the same manner as the serum iron and transferrin saturation data.

The mean serum folate values were, with few exceptions, above the acceptable level of 6.0 ngm/ml. (Tables 6A-K). Likewise the mean red cell folate values were within the acceptable range of 160-650 ngm/ml. The coefficients of correlation between hemoglobin values and the folate values were 0.07 and 0.02 for serum folate and red cell folate, respectively (Table 7). The use of non-fasting blood samples might have caused certain of the serum folate values to be elevated. However, recognizing the limitation of interpreting data based on mean values alone, folate intakes appeared to be adequate in a large percentage of the population.

SUMMARY

The black population in both categories of states had the poorest hemoglobin status, as shown by the higher prevalence of "deficient" and "low" hemoglobin values for this ethnic group. The white populations, with much lower percentages of such values, had the best hemoglobin status. For all ethnic groups, hemoglobin status was less satisfactory in the low-income-ratio states than in the high-income-ratio states.

Within each category of states, hemoglobin status tended to improve with an increase in income level. However, persons in the low-income-ratio states had higher percentages of "deficient" and "low" hemoglobin values than did persons of the same ethnic group and the same PIR value in the high-income-ratio states. Hemoglobin status, therefore, was not solely income dependent.

Hemoglobin status, based on the Ten-State Nutrition Survey, was not age dependent. There was no consistent trend in the prevalence of "deficient" and "low" values with increasing age.

In many instances males had a higher percentage of "deficient" and "low" hemoglobin values than did females of the same age and ethnic group. This finding was not consistent with general clinical experience indicating that women are more at risk with regard to iron nutriture. The data suggest that the higher prevalence of "deficient" and "low" values seen in males may be related to the difference in the standards utilized in the two groups.

In both groups of states, the prevalence of "deficient" and "low" hemoglobin values tended to decrease in both children and adults as the number of years of school completed by the wife or female head of the family increased. The effect was generally not well defined until high-school and post-high-school levels of education were completed.

The mean hemoglobin values of all age groups were consistently lower than generally accepted normal mean values. In addition, as judged by hematocrit values, the population over 20 years of age in the Ten-State Nutrition Survey had a less satisfactory hemoglobin status than did the broader cross-section of the United States population included in the National Health Survey of 1960-1962.

There was a very low degree of positive correlation between hemoglobin values and iron intakes. However, for many of the subgroups selected for evaluation, there was an increase in

mean iron intake from the first through the fourth quartile for persons separated into these quartiles on the basis of hemoglobin values. In general, mean iron intakes of the various subgroups were lower than the recommended standards.

The correlation between hemoglobin values and both serum iron and transferrin saturation values was low. There was, however, a high degree of correlation between the last two parameters. In general, mean values for both serum iron and transferrin saturation for subgroups separated by hemoglobin quartiles were higher than the levels generally considered acceptable.

Mean serum folate and red cell folate values for subgroups separated by hemoglobin quartiles were generally at acceptable levels. Neither serum folate nor red cell folate values correlated well with hemoglobin values. The folate data suggested that folic acid intakes were generally adequate.

The data presented reveal a high prevalence of "deficient" and "low" hemoglobin values, particularly for the black populations in both groups of states. The low but positive coefficients of correlation between hemoglobin and iron intake values, the finding of lower-than-recommended mean iron intakes for selected subgroups of the population, and the general trend toward higher iron intakes among persons with higher hemoglobin levels suggest that the unsatisfactory hemoglobin status was related to inadequate dietary iron.

It appears from these data that nutritional iron deficiency producing lowered hemoglobin levels is a public health problem in the population studied. However, because of the questions raised in regard to the standards used in the survey, the precise magnitude of the problem needs further investigation. This continued investigation demands the development of more sophisticated tools to assess iron nutriture, and the initiation of studies to assess the relationship between different levels of hemoglobin, iron, and folic acid status to morbidity and health.

Figure 1—Mean Hemoglobin Values by Sex for Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

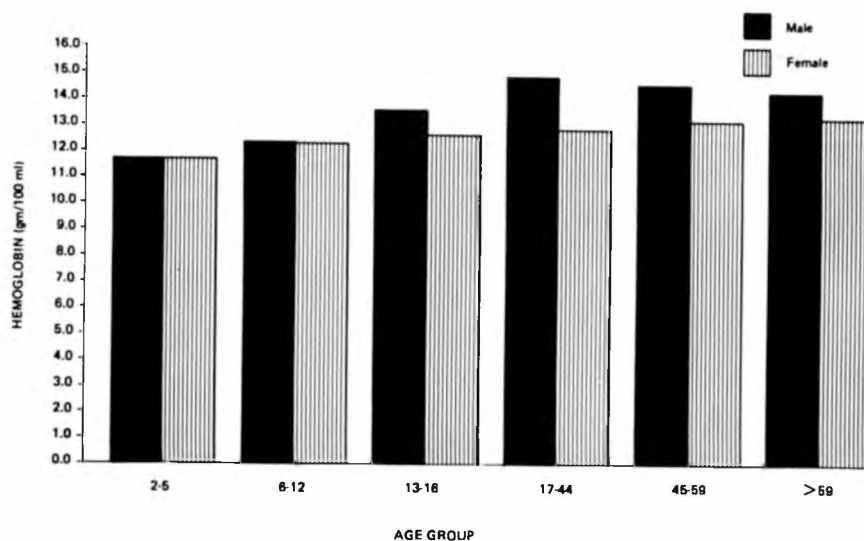


Table Reference: 8 Appendix.

Figure 2—Mean Hemoglobin Values of Females Thirteen through Forty-four Years of Age by Pregnancy Status and Ethnic Group for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

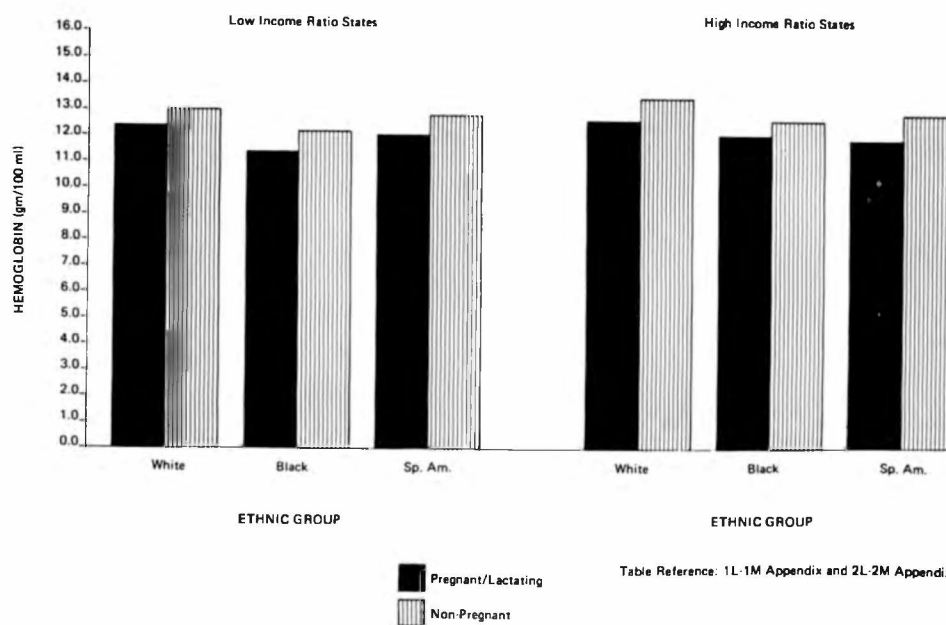


Table Reference: 1L-1M Appendix and 2L-2M Appendix.

Table 1A. *Percent of Persons Having Deficient or Low Hemoglobin Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	3822	1.8	18.8	8590	7.6	29.8	1896	8.3	12.3
<2 All.....	52	3.8	15.4	262	19.8	15.6	16	6.3	6.3
2-5 All.....	313	3.2	9.9	1060	11.2	22.8	158	5.7	8.7
6-12 All.....	876	1.0	12.9	2435	3.9	31.3	572	2.6	7.2
13-16 Male.....	197	5.1	16.8	543	19.0	30.6	126	11.1	14.3
13-16 Female.....	193	0.5	5.7	628	2.9	23.7	156	1.3	9.6
17-44 Male.....	320	2.5	18.1	504	6.7	36.9	137	8.0	18.3
17-44 Female.....	673	1.3	14.7	1504	7.5	31.9	358	7.5	15.4
45-59 Male.....	215	1.4	20.5	251	10.4	42.6	66	9.1	13.6
45-59 Female.....	355	0.8	9.3	593	3.4	23.4	138	8.0	14.5
>59 Male.....	281	3.9	22.8	308	14.9	50.3	82	8.5	36.6
>59 Female.....	347	0.9	9.5	502	4.8	26.7	87	1.1	14.9

Table 1B. *Percent of Persons with a Poverty Income Ratio Less Than One Having Deficient or Low Hemoglobin Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	1325	2.3	14.6	5152	7.7	29.5	1165	5.5	11.9
<2 All.....	20	5.0	25.0	158	16.5	15.2	11	0.0	9.1
2-5 All.....	112	4.5	13.4	668	12.1	20.7	104	6.7	5.8
6-12 All.....	293	1.0	14.0	1554	4.4	32.0	375	2.7	5.9
13-16 Male.....	78	6.4	17.9	337	19.3	30.9	80	8.7	15.0
13-16 Female.....	67	0.0	6.0	381	2.1	22.6	105	1.9	10.5
17-44 Male.....	58	5.2	12.1	254	4.7	36.6	81	4.9	21.0
17-44 Female.....	193	1.6	11.9	872	7.6	31.8	204	7.8	15.2
45-59 Male.....	57	0.0	21.1	111	14.4	36.9	33	9.1	12.1
45-59 Female.....	129	0.0	13.2	304	4.3	24.3	70	11.4	12.9
>59 Male.....	146	5.5	26.7	190	14.2	51.1	48	12.5	87.5
>59 Female.....	172	1.2	9.9	333	5.1	27.3	54	1.9	14.8

¹ Total excludes persons with unknown age and unknown sex.

Hemoglobin Deficient and Low Value Classifications (gm/100ml)

	Deficient	Low
<2 All.....	<9.0	9.0-9.9
2-5 All.....	<10.0	10.0-10.9
6-12 All.....	<10.0	10.0-11.4
13-16 Male.....	<12.0	12.0-12.9
13-16 Female.....	<10.0	10.0-11.4
>16 Male.....	<12.0	12.0-13.9
>16 Female.....	<10.0	10.0-11.9

Table 1C. *Percent of Persons with a Poverty Income Ratio Greater Than One Having Deficient or Low Hemoglobin Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	1725	1.3	11.4	1497	5.3	26.7	422	5.5	11.1
<2 All	21	4.8	9.5	34	17.6	17.6	4	25.0	0.0
2-5 All	133	0.8	7.5	141	6.4	19.9	30	0.0	0.0
6-12 All	379	0.8	9.2	366	1.9	23.5	97	3.1	2.1
13-16 Male	83	3.6	10.8	84	17.9	23.8	21	9.5	14.3
13-16 Female	80	1.3	3.8	99	4.0	16.2	23	0.0	4.3
17-44 Male	192	2.6	17.2	132	4.5	31.1	45	13.3	11.1
17-44 Female	349	0.9	14.3	280	5.4	25.0	85	7.1	17.6
45-59 Male	121	0.8	19.0	81	7.4	44.4	25	8.0	12.0
45-59 Female	155	0.6	5.8	146	2.1	24.0	46	4.3	15.2
>59 Male	89	3.4	12.4	66	9.1	48.5	25	4.0	28.0
>59 Female	123	0.8	8.9	68	4.4	22.1	21	0.0	19.0

Table 1D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Hemoglobin Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

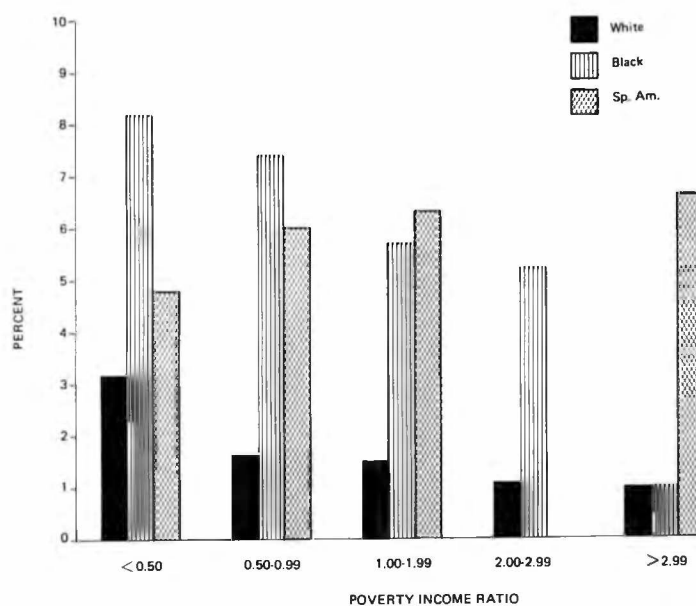
Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	772	2.1	17.7	1941	8.9	33.8	309	5.5	15.2
<2 All	11	0.0	9.1	70	28.6	15.7	1	0.0	0.0
2-5 All	68	5.9	8.8	251	11.6	30.3	24	8.3	0.0
6-12 All	204	1.5	18.1	525	4.0	34.7	100	2.0	17.0
13-16 Male	36	5.6	27.8	122	18.9	34.4	25	20.0	12.0
13-16 Female	46	0.0	8.7	148	4.1	31.8	28	0.0	10.7
17-44 Male	70	0.0	25.7	118	13.6	44.1	11	9.1	27.3
17-44 Female	131	2.3	19.8	352	9.1	37.8	69	13.0	7.2
45-59 Male	37	5.4	24.3	59	6.8	50.8	8	12.5	25.0
45-59 Female	71	2.8	9.9	143	2.8	21.0	22	4.5	18.2
>59 Male	46	0.0	30.4	52	25.0	50.0	9	0.0	55.6
>59 Female	52	0.0	9.6	101	4.0	27.7	12	0.0	8.3

¹ Total excludes persons with unknown age and unknown sex.

Hemoglobin Deficient and Low Value Classifications (gm/100ml)

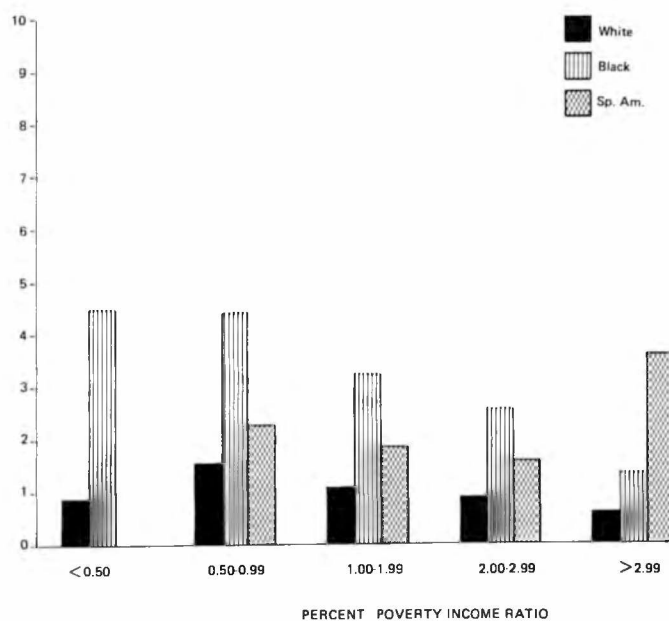
	Deficient	Low
<2 All	<9.0	9.0-9.9
2-5 All	<10.0	10.0-10.9
6-12 All	<10.0	10.0-11.4
13-16 Male	<12.0	12.0-12.9
13-16 Female	<10.0	10.0-11.4
>16 Male	<12.0	12.0-13.9
>16 Female	<10.0	10.0-11.9

Figure 3a—Percent of Persons Having Deficient Hemoglobin Values by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient Value Classifications — Table Reference: 5A Appendix.

Figure 3b—Percent of Persons Having Deficient Hemoglobin Values by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient Value Classifications — Table Reference: 5B Appendix.

Table 2A. *Percent of Persons Having Deficient or Low Hemoglobin Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values
Total ¹	12127	1.0	8.3	3446	3.5	23.4	2910	2.3	15.4
<2 All	181	3.9	10.5	87	10.3	14.9	103	4.8	8.7
2-5 All	845	1.5	6.4	305	3.3	15.7	330	4.2	11.8
6-12 All	2650	0.1	4.3	996	1.3	20.3	832	1.0	12.0
13-16 Male	539	3.3	9.5	206	16.0	25.2	151	6.6	21.9
13-16 Female	507	0.0	2.6	221	5.0	16.7	167	1.2	14.4
17-44 Male	1553	0.6	9.4	266	1.5	26.3	297	2.4	18.2
17-44 Female	2475	0.9	9.8	726	1.9	28.1	644	2.0	18.9
45-59 Male	711	1.4	13.6	128	7.8	35.2	95	1.0	23.2
45-59 Female	918	0.8	6.0	254	2.3	22.4	177	1.1	12.4
>59 Male	724	3.7	20.9	101	6.9	43.6	45	2.2	33.3
>59 Female	1024	0.7	6.2	156	2.6	21.8	69	4.3	10.1

Table 2B. *Percent of Persons with a Poverty Income Ratio Less Than One Having Deficient or Low Hemoglobin Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age And Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values
TOTAL ¹	1842	1.5	9.3	1012	4.4	25.7	856	2.0	14.6
<2 All	39	5.1	23.1	35	17.1	20.0	25	0.0	16.0
2-5 All	163	1.8	8.0	103	3.9	16.5	113	4.4	8.8
6-12 All	442	0.0	5.6	333	2.4	21.6	284	1.4	12.3
13-16 Male	57	3.5	14.0	61	24.6	24.6	49	6.1	20.4
13-16 Female	63	0.0	1.6	64	6.2	12.5	60	1.7	20.0
17-44 Male	164	2.4	8.5	49	0.0	32.6	48	2.1	14.6
17-44 Female	344	0.9	8.4	212	1.4	37.7	176	1.1	18.8
45-59 Male	76	1.3	25.0	29	6.9	24.1	24	0.0	16.7
45-59 Female	80	0.0	2.5	51	3.9	31.4	47	2.1	12.8
>59 Male	141	5.7	22.0	26	3.8	46.2	12	0.0	16.7
>59 Female	273	1.5	7.3	49	0.0	20.4	18	0.0	11.1

¹ Total excludes persons with unknown age and unknown sex.

Hemoglobin Deficient and Low Value Classifications (gm/100ml)		
	Deficient	Low
<2 All	<9.0	9.0-9.9
2-5 All	<10.0	10.0-10.9
6-12 All	<10.0	10.0-11.4
13-16 Male	<12.0	12.0-12.9
13-16 Female	<10.0	10.0-11.4
>16 Male	<12.0	12.0-13.9
>16 Female	<10.0	10.0-11.9

Table 2C. *Percent of Persons with a Poverty Income Ratio Greater Than One Having Deficient or Low Hemoglobin Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values
TOTAL ¹	9106	0.9	7.9	1942	2.8	21.9	1558	2.0	15.6
<2 All	124	4.0	7.2	42	4.8	11.9	57	3.5	3.5
2-5 All	607	1.5	6.1	168	3.0	18.1	162	1.8	13.6
6-12 All	1950	0.1	3.9	526	1.0	18.6	420	0.7	12.1
13-16 Male	405	3.2	7.9	109	11.9	26.6	76	6.6	26.3
13-16 Female	388	0.0	2.8	126	2.4	19.0	76	0.0	10.5
17-44 Male	1253	0.3	9.3	160	2.5	26.2	197	2.5	19.8
17-44 Female	1860	1.0	9.9	415	1.7	22.9	350	2.6	18.0
45-59 Male	580	1.0	11.4	87	6.9	35.6	56	1.8	25.0
45-59 Female	770	0.9	6.4	157	1.9	19.7	95	1.1	10.5
>59 Male	519	8.1	20.4	65	6.2	44.6	27	0.0	37.0
>59 Female	650	0.5	5.7	87	3.4	21.8	42	4.8	9.5

Table 2D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Hemoglobin Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values
TOTAL ¹	1179	1.1	9.2	492	4.3	24.6	496	3.6	15.9
<2 All	18	0.0	5.6	10	10.0	10.0	21	14.3	14.3
2-5 All	75	1.3	5.3	34	2.9	26.5	55	10.9	12.7
6-12 All	258	0.0	4.3	137	0.0	23.4	128	0.8	10.9
13-16 Male	77	3.9	14.3	36	13.9	22.2	26	7.7	11.5
13-16 Female	56	0.0	1.8	31	12.9	16.1	31	3.2	12.9
17-44 Male	136	0.7	11.8	57	0.0	21.1	52	1.9	15.4
17-44 Female	271	0.7	10.7	99	4.0	29.3	118	1.7	22.0
45-59 Male	55	5.4	21.8	12	16.7	58.3	15	0.0	26.6
45-59 Female	68	0.0	5.9	46	2.2	21.7	35	0.0	17.1
>59 Male	64	4.7	21.9	10	20.0	30.0	6	16.7	50.0
>59 Female	101	0.0	5.9	20	5.0	25.0	9	11.1	11.1

¹ Total excludes persons with unknown age and unknown sex.

Hemoglobin Deficient and Low Value Classifications (gm/100ml)		
	Deficient	Low
<2 All	<9.0	9.0-9.9
2-5 All	<10.0	10.0-10.9
6-12 All	<10.0	10.0-11.4
13-16 Male	<12.0	12.0-12.9
13-16 Female	<10.0	10.0-11.4
>16 Male	<12.0	12.0-13.9
>16 Female	<10.0	10.0-11.9

Table 3A. Mean Hemoglobin Values and Percent of Deficient and Low Hemoglobin Values for Persons under Seventeen Years of Age in Low Income Ratio States by the Number of Years of School Completed by the Wife of the Head of Family or Female Head of Family—Ten-State Nutrition Survey (1968-1970)

Years of School Completed	Number of Persons	Percent with		Mean Hemoglobin
		Deficient Values	Low Values	
TOTAL.....	7211	6.6	21.6	12.1
None.....	289	6.9	21.1	12.3
1-4.....	960	7.3	21.0	12.2
5-8.....	2619	6.7	22.2	12.1
9-12.....	3063	6.7	21.6	12.1
Post High School.....	161	5.0	27.3	12.1
College.....	112	0.9	8.0	13.0
Other.....	7	0.0	14.3	12.6

Table 3B. Mean Hemoglobin Values and Percent of Deficient and Low Hemoglobin Values for Persons under Seventeen Years of Age in High Income Ratio States by the Number of Years of School Completed by the Wife of the Head of Family or Female Head of Family—Ten-State Nutrition Survey (1968-1970)

Years of School Completed	Number of Persons	Percent with		Mean Hemoglobin
		Deficient Values	Low Values	
TOTAL.....	8180	2.2	10.4	12.7
None.....	183	4.4	13.1	12.6
1-4.....	540	2.2	12.4	12.7
5-8.....	1527	2.4	11.9	12.7
9-12.....	4936	2.1	10.2	12.7
Post High School.....	281	0.7	6.0	12.9
College.....	705	1.6	7.5	13.0
Other.....	8	12.5	0.0	12.2

Hemoglobin Deficient and Low Value Classifications (gm/100ml)

	Deficient	Low
<2 All.....	<9.0	9.0-9.9
2-5 All.....	<10.0	10.0-10.9
6-12 All.....	<10.0	10.0-11.4
13-16 Male.....	<12.0	12.0-12.9
13-16 Female.....	<10.0	10.0-11.4
>16 Male.....	<12.0	12.0-13.9
>16 Female.....	<10.0	10.0-11.9

Table 4A. Mean Hemoglobin Values and Percent of Deficient and Low Hemoglobin Values for Persons Twenty-one Years of Age and Over in Low Income Ratio States by the Number of Years of School Completed—Ten-State Nutrition Survey (1968-1970)

Years of School Completed	Number of Persons	Percent With		Mean Hemoglobin
		Deficient Values	Low Values	
TOTAL.....	5850	5.0	24.7	13.1
None.....	367	6.0	31.3	13.1
1-4.....	1012	6.9	27.5	13.1
5-8.....	2115	4.9	24.4	13.1
9-12.....	1952	4.9	23.6	13.0
Post High School.....	175	2.3	25.7	13.2
College.....	224	1.3	13.8	13.9
Other.....	5	0.0	0.0	14.5

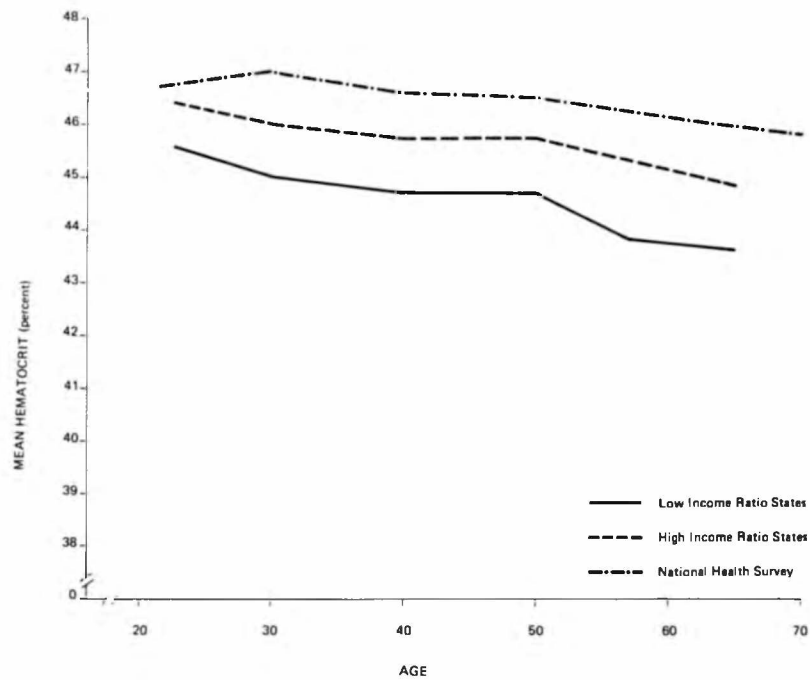
Table 4B. Mean Hemoglobin Values and Percent of Deficient and Low Hemoglobin Values for Persons Twenty-one Years of Age and Over in High Income Ratio States by the Number of Years of School Completed—Ten-State Nutrition Survey (1968-1970)

Years of School Completed	Number of Persons	Percent With		Mean Hemoglobin
		Low Values	Deficient Values	
TOTAL.....	9587	1.5	13.5	13.9
None.....	224	2.2	16.5	13.9
1-4.....	578	2.2	17.5	13.7
5-8.....	2094	2.3	15.7	13.9
9-12.....	4565	1.4	13.1	13.8
Post High School.....	366	0.5	9.8	14.0
College.....	1747	0.8	11.0	14.2
Other.....	13	0.0	15.4	14.4

Hemoglobin Deficient and Low Value Classifications (gm/100ml)

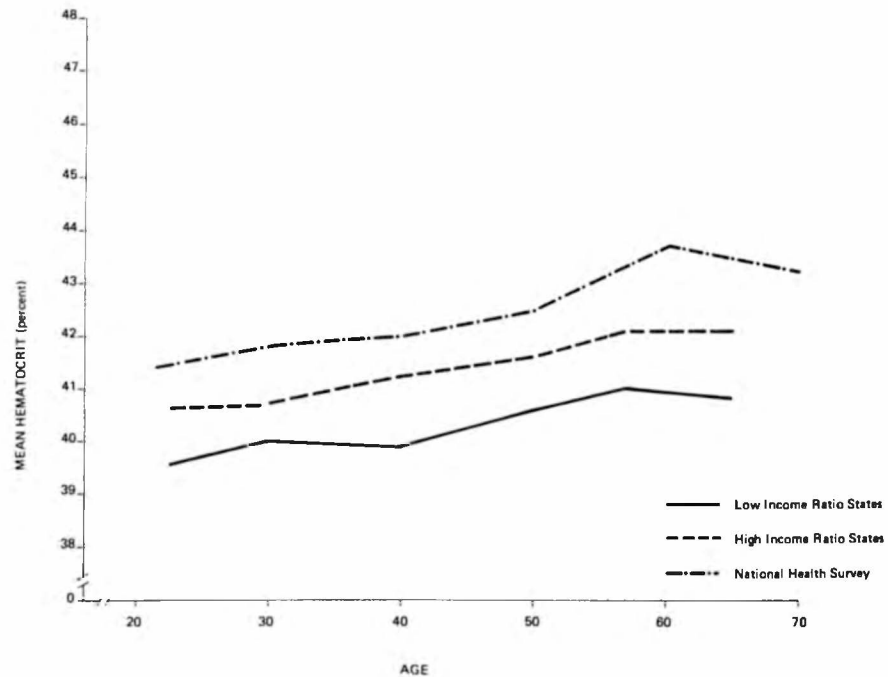
	Deficient	Low
<2 All.....	<9.0	9.0-9.9
2-5 All.....	<10.0	10.0-10.9
6-12 All.....	<10.0	10.0-11.4
13-16 Male.....	<12.0	12.0-12.9
13-16 Female.....	<10.0	10.0-11.4
>16 Male.....	<12.0	12.0-13.9
>16 Female.....	<10.0	10.0-11.9

Figure 4a—Mean Hematocrit Values in Low Income Ratio States and High Income Ratio States Compared with the Mean Hematocrit Values from the National Health Survey (1960-1962) by Age for Males over Twenty Years of Age—
Ten-State Nutrition Survey (1968-1970)



Note: Persons over 59 years of age for Low and High Income Ratio States plotted on scale at 65.

Figure 4b—Mean Hematocrit Values in Low Income Ratio States and High Income Ratio States Compared with the Mean Hematocrit Values from the National Health Survey (1960-1962) by Age for Females over Twenty Years of Age—
Ten-State Nutrition Survey (1968-1970)



Note: Persons over 59 years of age for Low and High Income Ratio States plotted on scale at 65.

Table 5. Means of Iron Intake by Quartile of Hemoglobin Values for all Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Age Group														Pregnant or Lactating Females	All Persons 60 Years of Age and Over		
	0-36 Months		10-11 Years				12-14 Years				15-16 Years							
	All		Male		Female		Male		Female		Male		Female					
	mg	mg/ 1000 Cal.	mg	mg/ 1000 Cal.	mg	mg/ 1000 Cal.	mg	mg/ 1000 Cal.	mg	mg/ 1000 Cal.	mg	mg/ 1000 Cal.	mg	mg/ 1000 Cal.				
Number.....	915	915	729	729	1104	1104	1472	1472	1520	1520	521	521	559	559	437	437	1924	1924
First Quartile.....	7.22	6.88	11.97	6.14	10.85	5.97	12.63	5.73	10.71	5.51	14.20	5.75	9.87	5.65	11.71	6.11	9.50	6.91
Second Quartile.....	9.85	8.73	13.06	5.97	11.09	5.65	14.32	5.77	11.31	5.63	15.06	5.58	11.15	5.45	11.55	6.04	9.96	6.95
Third Quartile.....	9.52	8.01	13.61	5.87	11.36	5.64	14.48	5.64	11.36	5.65	16.38	5.88	11.22	5.49	12.34	6.11	12.65	7.00
Fourth Quartile.....	8.79	7.02	13.93	6.02	11.13	5.62	15.50	5.66	11.71	5.51	16.24	5.27	12.12	5.53	11.40	5.82	12.39	6.76
Correlation Coefficient.....	0.07		0.06		0.02		0.13		0.05		0.10		0.10		0.02		0.10	

NOTE: For Hemoglobin quartile values refer to Table 10 Appendix.

Table 6A. Means of Selected Biochemicals by Quartile of Hemoglobin Values for All Persons Two through Five Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron (μ g/100 ml)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	2086	238	164	344	208
First Quartile.....	33	76	23.6	6.4	241
Second Quartile.....	36	86	24.1	7.7	262
Third Quartile.....	36	91	23.7	8.5	262
Fourth Quartile.....	38	98	26.6	8.8	258

NOTE: For Hemoglobin quartile values refer to Table 9A Appendix.

Table 6C. Means of Selected Biochemicals by Quartile of Hemoglobin Values for All Persons Ten through Twelve Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron (μ g/100 ml)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	3777	715	487	1810	1378
First Quartile.....	36	75	22.9	6.0	207
Second Quartile.....	37	86	23.5	6.9	215
Third Quartile.....	39	101	24.4	7.6	224
Fourth Quartile.....	40	98	26.7	7.6	236

NOTE: For Hemoglobin quartile values refer to Table 9C Appendix.

Table 6B. Means of Selected Biochemicals by Quartile of Hemoglobin Values for All Persons Six through Nine Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron (μ g/100 ml)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	4543	690	492	1341	808
First Quartile.....	35	75	22.1	6.6	241
Second Quartile.....	37	84	23.5	8.0	250
Third Quartile.....	38	91	23.9	8.1	242
Fourth Quartile.....	39	93	26.4	8.4	236

NOTE: For Hemoglobin quartile values refer to Table 9B Appendix.

Table 6D. Means of Selected Biochemicals by Quartile of Hemoglobin Values for Males Thirteen through Sixteen Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron (μ g/100 ml)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	2109	623	404	1313	1016
First Quartile.....	37	88	24.7	5.3	196
Second Quartile.....	39	93	25.8	6.6	218
Third Quartile.....	41	94	26.1	6.2	205
Fourth Quartile.....	43	108	29.5	6.5	205

NOTE: For Hemoglobin quartile values refer to Table 9D Appendix.

Table 6E. Means of Selected Biochemicals by Quartile of Hemoglobin Values for Females Thirteen through Sixteen Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	2109	410	277	1208	983
First Quartile.....	36	75	23.5	5.4	199
Second Quartile.....	38	89	23.3	5.4	183
Third Quartile.....	39	108	28.5	6.1	209
Fourth Quartile.....	41	134	26.2	6.6	205

NOTE: For Hemoglobin quartile values refer to Table 9E Appendix.

Table 6G. Means of Selected Biochemicals by Quartile of Hemoglobin Values for Females Seventeen through Forty-four Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	6747	1544	1174	3117	2032
First Quartile.....	36	79	21.5	5.6	245
Second Quartile.....	39	89	22.0	6.1	233
Third Quartile.....	41	99	24.5	6.7	234
Fourth Quartile.....	43	106	27.4	6.4	233

NOTE: For Hemoglobin quartile values refer to Table 9G Appendix.

Table 6I. Means of Selected Biochemicals by Quartile of Hemoglobin Values for Females Forty-five through Fifty-nine Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	2492	358	267	942	643
First Quartile.....	37	65	17.9	6.0	255
Second Quartile.....	40	86	24.8	7.6	256
Third Quartile.....	41	87	23.5	7.2	244
Fourth Quartile.....	44	91	26.6	7.0	241

NOTE: For Hemoglobin quartile values refer to Table 9I Appendix.

Table 6F. Means of Selected Biochemicals by Quartile of Hemoglobin Values for Males Seventeen through Forty-four Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	3423	749	597	1575	1036
First Quartile.....	41	92	25.4	6.0	225
Second Quartile.....	44	105	28.9	6.6	228
Third Quartile.....	45	102	28.8	7.3	237
Fourth Quartile.....	47	115	33.3	7.3	257

NOTE: For Hemoglobin quartile values refer to Table 9F Appendix.

Table 6H. Means of Selected Biochemicals by Quartile of Hemoglobin Values for Males Forty-five through Fifty-nine Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	1470	286	220	627	425
First Quartile.....	41	93	31.4	5.7	245
Second Quartile.....	44	99	29.6	7.7	239
Third Quartile.....	45	114	27.4	7.8	245
Fourth Quartile.....	48	98	28.8	7.4	228

NOTE: For Hemoglobin quartile values refer to Table 9H Appendix.

Table 6J. Means of Selected Biochemicals by Quartile of Hemoglobin Values for Males Over Fifty-nine Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	1677	445	326	1008	800
First Quartile.....	39	82	27.6	5.9	262
Second Quartile.....	43	81	27.3	7.0	263
Third Quartile.....	45	92	28.9	7.2	257
Fourth Quartile.....	47	99	31.6	6.6	243

NOTE: For Hemoglobin quartile values refer to Table 9J Appendix.

Table 6K. Means of Selected Biochemicals by Quartile of Hemoglobin Values for Females Over Fifty-nine Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

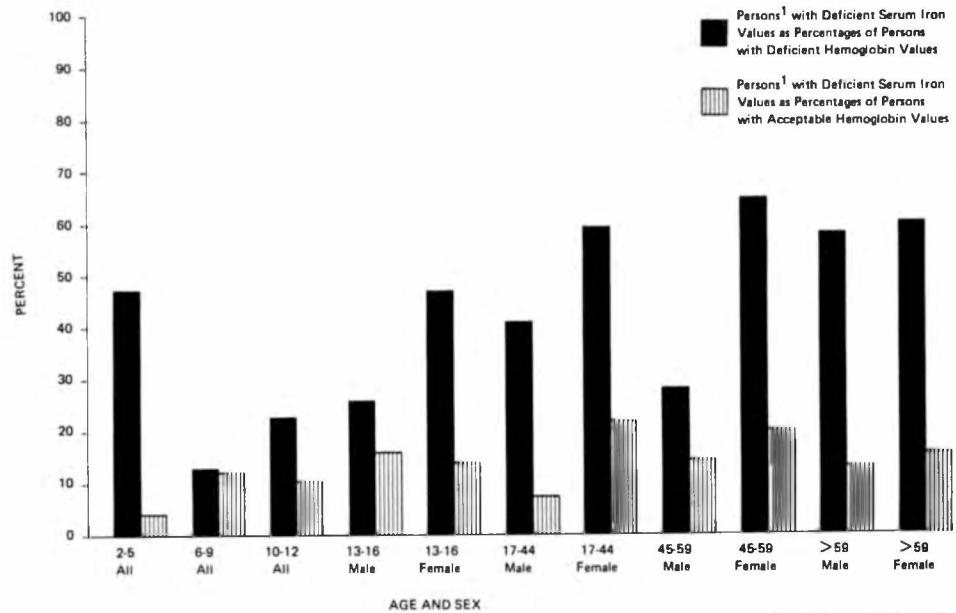
Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron (μ g/100 ml)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	2377	509	379	1360	1098
First Quartile.....	37	78	24.1	6.9	257
Second Quartile.....	40	85	26.5	7.5	275
Third Quartile.....	42	88	26.9	7.8	267
Fourth Quartile.....	44	91	27.7	7.7	273

NOTE: For Hemoglobin quartile values refer to Table 9K Appendix.

Table 7. Number of Known Paired Values and Simple Correlation Coefficients for Selected Biochemicals—Ten-State Nutrition Survey (1968-1970)

Biochemical	Biochemical									
	Hemoglobin		Hematocrit		Serum Iron		Transferrin Saturation		Serum Folate	
	Number	Correlation Coefficient	Number	Correlation Coefficient	Number	Correlation Coefficient	Number	Correlation Coefficient	Number	Correlation Coefficient
Hematocrit.....	33567	.85								
Serum Iron.....	6602	.17	6567	.16						
Transferrin Saturation.....	4807	.20	4776	.17	5149	.88				
Serum Folate.....	14714	.07	14638	.00	6453	.00	4856	-.02		
Red Cell Folate.....	10480	.02	10472	.00	3186	-.03	1946	-.02	10425	.46

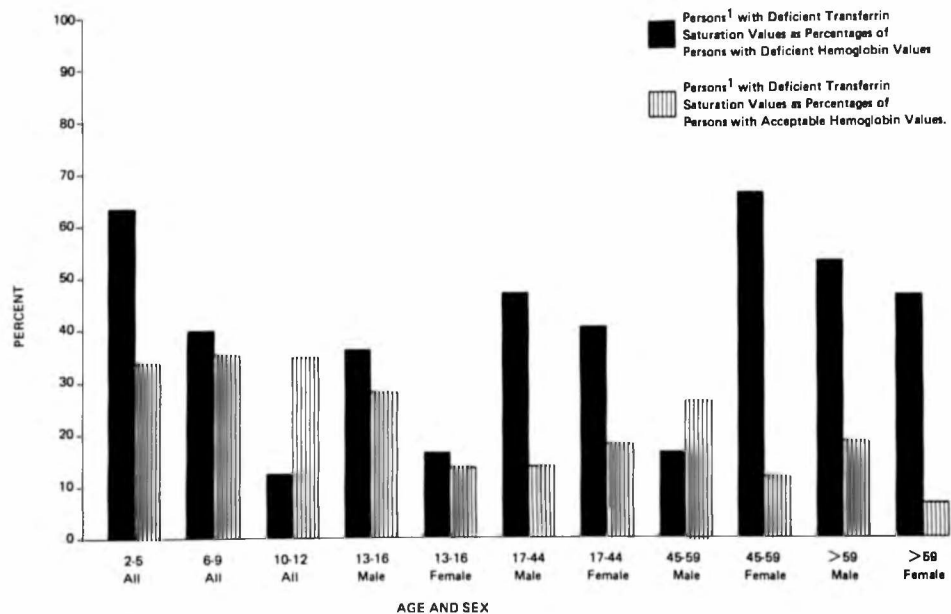
Figure 5—Comparison of Persons with Deficient Serum Iron Values as Percentages of Persons with Deficient or Acceptable Hemoglobin Values by Age and Sex for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient Value Classifications - Table Reference: 7A Appendix.

¹White, Black and Spanish American Persons.

Figure 6—Comparison of Persons with Deficient Transferrin Saturation Values as Percentages of Persons with Deficient or Acceptable Hemoglobin Values by Age and Sex for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient Value Classifications - Table Reference: 8A Appendix.

¹White, Black and Spanish American Persons.

APPENDIX

2. Hemoglobin, Hematocrit, and Related Measurements

Table 1A Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for All Persons Under Two Years of Age for Low Income Ratio States—Ten-State Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	52	100.0	100.0	262	100.0	100.0	15	100.0	100.0
<9.0	2	3.8	3.8	52	19.8	19.8	1	6.7	6.7
9.0-9.9	8	15.4	19.2	41	15.6	35.4	1	6.7	13.4
10.0-10.9	12	23.1	42.3	58	22.1	57.5	1	6.7	20.1
11.0-11.4	12	23.1	65.4	44	16.8	74.3	1	6.7	26.8
11.5-11.9	7	13.5	78.9	21	8.0	82.3	1	6.7	33.5
12.0-12.9	9	17.3	96.2	33	12.6	94.9	3	20.0	53.5
13.0-13.9	1	1.9	98.1	4	1.5	96.4	4	26.7	80.2
14.0-14.9	—	—	98.1	5	1.9	98.3	2	13.3	93.5
15.0-15.9	—	—	98.1	2	0.8	99.1	1	6.7	100.2
16.0-16.9	—	—	98.1	—	—	99.1	—	—	100.2
>16.9	1	1.9	100.0	2	0.8	99.9	—	—	100.2
Mean	11.1			10.5			12.3		
Median	11.2			10.7			12.8		

Table 1B Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for All Persons Two through Five Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	313	100.0	100.0	1060	100.0	100.0	158	100.0	100.0
<9.0	2	0.6	0.6	37	3.5	3.5	2	1.3	1.3
9.0-9.9	8	2.6	3.2	82	7.7	11.2	7	4.4	5.7
10.0-10.9	31	9.9	13.1	242	22.8	34.0	6	3.8	9.5
11.0-11.4	53	16.9	30.0	242	22.8	56.8	15	9.5	19.0
11.5-11.9	48	15.3	45.3	155	14.6	71.4	22	13.9	32.9
12.0-12.9	117	37.4	82.7	211	19.9	91.3	58	36.7	69.6
13.0-13.9	39	12.5	95.2	84	7.9	99.2	33	20.9	90.5
14.0-14.9	8	2.6	97.8	7	0.7	99.9	14	8.9	99.4
15.0-15.9	6	1.9	99.7	—	—	99.9	1	0.6	100.0
16.0-16.9	—	—	99.7	—	—	99.9	—	—	100.0
>16.9	1	0.3	100.0	—	—	99.9	—	—	100.0
Mean	12.0			11.3			12.3		
Median	12.1			11.3			12.5		

Table 1C Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for All Persons Six through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	876	100.0	100.0	2435	100.0	100.0	572	100.0	100.0
<9.0.....	3	0.3	0.3	33	1.4	1.4	8	1.4	1.4
9.0-9.9.....	6	0.7	1.0	63	2.6	4.0	7	1.2	2.6
10.0-10.9.....	31	3.5	4.5	297	12.2	16.2	15	2.6	5.2
11.0-11.4.....	82	9.4	13.9	465	19.1	35.3	26	4.5	9.7
11.5-11.9.....	112	12.8	26.7	380	15.6	50.9	40	7.0	16.7
12.0-12.9.....	358	40.9	67.6	757	31.1	82.0	217	37.9	54.6
13.0-13.9.....	196	22.4	90.0	361	14.8	96.8	169	29.5	84.1
14.0-14.9.....	80	9.1	99.1	68	2.8	99.6	74	12.9	97.0
15.0-15.9.....	8	0.9	100.0	8	0.3	99.9	14	2.4	99.4
16.0-16.9.....	—	—	100.0	2	0.1	100.0	1	0.2	99.6
>16.9.....	—	—	100.0	1	0.0	100.0	1	0.2	99.8
Mean.....	12.5			11.9			12.8		
Median.....	12.6			12.0			12.9		

Table 1D Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	197	100.0	100.0	543	100.0	100.0	126	100.0	100.0
<9.0.....	1	0.5	0.5	3	0.6	0.6	1	0.8	0.8
9.0-9.9.....	—	—	0.5	4	0.7	1.3	1	0.8	1.6
10.0-10.9.....	2	1.0	1.5	15	2.8	4.1	4	3.2	4.8
11.0-11.4.....	3	1.5	3.0	36	6.6	10.7	4	3.2	8.0
11.5-11.9.....	4	2.0	5.0	45	8.3	19.0	4	3.2	11.2
12.0-12.9.....	33	16.8	21.8	166	30.6	49.6	18	14.3	25.5
13.0-13.9.....	50	25.4	47.2	162	29.8	79.4	38	30.2	55.7
14.0-14.9.....	56	33.5	80.7	76	14.0	93.4	41	32.5	88.2
15.0-15.9.....	33	16.8	97.5	30	5.5	98.9	12	9.5	97.7
16.0-16.9.....	5	2.5	100.0	4	0.7	99.6	1	0.8	98.5
>16.9.....	—	—	100.0	2	0.4	100.0	2	1.6	100.1
Mean.....	13.9			12.9			13.5		
Median.....	14.1			13.0			13.8		

Table 1E Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	193	100.0	100.0	628	100.0	100.0	156	100.0	100.0
<9.0	—	—	—	6	1.0	1.0	—	—	—
9.0-9.9	1	0.5	0.5	12	1.9	2.9	2	1.3	1.3
10.0-10.9	6	3.1	3.6	58	9.2	12.1	6	3.8	5.1
11.0-11.4	5	2.6	6.2	91	14.5	26.6	9	5.8	10.9
11.5-11.9	19	9.8	16.0	92	14.6	41.2	5	3.2	14.1
12.0-12.9	62	32.1	48.1	209	33.3	74.5	52	33.3	47.4
13.0-13.9	67	34.7	82.8	138	22.0	96.5	45	28.8	76.2
14.0-14.9	29	15.0	97.8	20	3.2	99.7	33	21.2	97.4
15.0-15.9	3	1.6	99.4	2	0.3	100.0	3	1.9	99.3
16.0-16.9	1	0.5	99.9	—	—	100.0	1	0.6	99.9
>16.9	—	—	99.9	—	—	100.0	—	—	99.9
Mean	13.0			12.1			12.9		
Median	13.1			12.3			13.1		

Table 1F Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Males Seventeen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	320	100.0	100.0	504	100.0	100.0	137	100.0	100.0
<9.0	—	—	—	3	0.6	0.6	3	2.2	2.2
9.0-9.9	—	—	—	5	1.0	1.6	3	2.2	4.4
10.0-10.9	3	0.9	0.9	6	1.2	2.8	1	0.7	5.1
11.0-11.4	1	0.3	1.2	7	1.4	4.2	3	2.2	7.3
11.5-11.9	4	1.3	2.5	13	2.6	6.8	1	0.7	8.0
12.0-12.9	12	3.8	6.3	49	9.7	16.5	9	6.6	14.6
13.0-13.9	46	14.4	20.7	137	27.2	43.7	16	11.7	26.3
14.0-14.9	102	31.9	52.6	161	31.9	75.6	34	24.8	51.1
15.0-15.9	102	31.9	84.5	82	16.3	91.9	38	27.7	78.8
16.0-16.9	41	12.8	97.3	34	6.7	98.6	20	14.6	93.4
>16.9	9	2.8	100.1	7	1.4	100.0	9	6.6	100.0
Mean	14.8			14.0			14.5		
Median	14.9			14.2			15.0		

Table 1G Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Females Seventeen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	673	100.0	100.0	1504	100.0	100.0	358	100.0	100.0
<9.0.....	3	0.4	0.4	44	2.9	2.9	14	3.9	3.9
9.0-9.9.....	6	0.9	1.3	69	4.6	7.5	13	3.6	7.5
10.0-10.9.....	28	4.2	5.5	136	9.0	16.5	14	3.9	11.4
11.0-11.4.....	33	4.9	10.4	170	11.3	27.8	21	5.9	17.3
11.5-11.9.....	38	5.6	16.0	174	11.6	39.4	20	5.6	22.9
12.0-12.9.....	172	25.6	41.6	457	30.4	69.8	112	31.3	54.2
13.0-13.9.....	220	32.7	74.3	321	21.3	91.1	94	26.3	80.5
14.0-14.9.....	137	20.4	94.7	116	7.7	98.8	53	14.8	95.3
15.0-15.9.....	32	4.8	99.5	11	0.7	99.5	15	4.2	99.5
16.0-16.9.....	4	0.6	100.1	6	0.4	99.9	1	0.3	99.8
>16.9.....	—	—	100.1	—	—	99.9	1	0.3	100.1
Mean	13.1			12.1			12.6		
Median	13.3			12.3			12.9		

Table 1H Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Males Forty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	215	100.0	100.0	281	100.0	100.0	66	100.0	100.0
<9.0.....	1	0.5	0.5	3	1.2	1.2	2	3.0	3.0
9.0-9.9.....	—	—	0.5	—	—	1.2	1	1.5	4.5
10.0-10.9.....	—	—	0.5	8	3.2	4.4	1	1.5	6.0
11.0-11.4.....	1	0.5	1.0	5	2.0	6.4	2	3.0	9.0
11.5-11.9.....	1	0.5	1.5	10	4.0	10.4	—	—	9.0
12.0-12.9.....	9	4.2	5.7	38	15.1	25.5	3	4.5	13.5
13.0-13.9.....	35	16.3	22.0	69	27.5	53.0	6	9.1	22.6
14.0-14.9.....	71	33.0	55.0	71	28.3	81.3	28	42.4	65.0
15.0-15.9.....	66	30.7	85.7	36	14.3	95.6	15	22.7	87.7
16.0-16.9.....	24	11.2	96.9	8	3.2	98.8	6	9.1	96.8
>16.9.....	7	3.3	100.2	3	1.2	100.0	2	3.0	99.8
Mean	14.7			13.7			14.3		
Median	14.9			13.9			14.6		

Table 1I Appendix. Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Females Forty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	355	100.0	100.0	593	100.0	100.0	138	100.0	100.0
<9.0	1	0.3	0.3	11	1.9	1.9	7	5.1	5.1
9.0-9.9	2	0.6	0.9	9	1.5	3.4	4	2.9	8.0
10.0-10.9	10	2.8	3.7	28	4.7	8.1	9	6.5	14.5
11.0-11.4	6	1.7	5.4	50	8.4	16.5	4	2.9	17.4
11.5-11.9	17	4.8	10.2	61	10.3	26.8	7	5.1	22.5
12.0-12.9	96	27.0	37.2	180	30.4	57.2	22	15.9	38.4
13.0-13.9	115	32.4	69.6	175	29.5	86.7	45	32.6	71.0
14.0-14.9	77	21.7	91.3	60	10.1	96.8	27	19.6	90.6
15.0-15.9	21	5.9	97.2	16	2.7	99.5	11	8.0	98.6
16.0-16.9	7	2.0	99.2	3	0.5	100.0	2	1.4	100.0
>16.9	3	0.8	100.0	—	—	100.0	—	—	100.0
Mean	13.4			12.6			12.8		
Median	13.4			12.8			13.4		

Table 1J Appendix. Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Males Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	281	100.0	100.0	308	100.0	100.0	82	100.0	100.0
<9.0	1	0.4	0.4	3	1.0	1.0	2	2.4	2.4
9.0-9.9	—	—	0.4	5	1.6	2.6	2	2.4	4.8
10.0-10.9	2	0.7	1.1	5	1.6	4.2	1	1.2	6.0
11.0-11.4	4	1.4	2.5	17	5.5	9.7	2	2.4	8.4
11.5-11.9	4	1.4	3.9	16	5.2	14.9	—	—	8.4
12.0-12.9	23	8.2	12.1	68	22.1	37.0	12	14.6	23.0
13.0-13.9	41	14.6	26.7	87	28.2	65.2	18	22.0	45.0
14.0-14.9	107	38.1	64.8	76	24.7	89.9	21	25.6	70.6
15.0-15.9	64	22.8	87.6	25	8.1	98.0	18	22.0	92.6
16.0-16.9	31	11.0	98.6	3	1.0	99.0	5	6.1	98.7
>16.9	4	1.4	100.0	3	1.0	100.0	1	1.2	99.9
Mean	14.5			13.3			13.8		
Median	14.6			13.5			14.2		

Table 1K Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Females Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	347	100.0	100.0	502	100.0	100.0	87	100.0	100.0
<9.0	2	0.6	0.6	7	1.4	1.4	1	1.1	1.1
9.0-9.9	1	0.3	0.9	17	3.4	4.8	—	—	1.1
10.0-10.9	12	3.5	4.4	28	5.6	10.4	5	5.7	6.8
11.0-11.4	9	2.6	7.0	53	10.6	21.0	2	2.3	9.1
11.5-11.9	12	3.5	10.5	53	10.6	31.6	6	6.9	16.0
12.0-12.9	75	21.6	32.1	156	31.1	62.7	20	23.0	39.0
13.0-13.9	107	30.8	62.9	115	22.9	85.6	26	29.9	68.9
14.0-14.9	96	27.7	90.6	56	11.2	96.8	16	18.4	87.3
15.0-15.9	28	8.1	98.7	12	2.4	99.2	9	10.3	97.6
16.0-16.9	5	1.4	100.1	4	0.8	100.0	2	2.3	99.9
>16.9	—	—	100.1	1	0.2	100.2	—	—	99.9
Mean	13.4			12.5			13.1		
Median	13.6			12.6			13.4		

Table 1L Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Females Thirteen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	866	100.0	100.0	2132	100.0	100.0	514	100.0	100.0
<9.0	3	0.3	0.3	50	2.3	2.3	14	2.7	2.7
9.0-9.9	7	0.8	1.1	81	3.8	6.1	15	2.9	5.6
10.0-10.9	34	3.9	5.0	194	9.1	15.2	20	3.9	9.5
11.0-11.4	38	4.4	9.4	261	12.2	27.4	30	5.8	15.3
11.5-11.9	57	6.6	16.0	266	12.5	39.9	25	4.9	20.2
12.0-12.9	234	27.0	43.0	666	31.2	71.1	164	31.9	52.1
13.0-13.9	287	33.1	76.1	459	21.5	92.6	139	27.0	79.1
14.0-14.9	166	19.2	95.3	136	6.4	99.0	86	16.7	95.8
15.0-15.9	35	4.0	99.3	13	0.6	99.6	18	3.5	99.3
16.0-16.9	5	0.6	99.9	6	0.3	99.9	2	0.4	99.7
>16.9	—	—	99.9	—	—	99.9	1	0.2	99.9
Mean	13.1			12.1			12.7		
Median	13.2			12.3			12.9		

Table 1M Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Pregnant Females Thirteen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	22	100.0	100.0	80	100.0	100.0	80	100.0	100.0
<9.0	—	—	—	4	5.0	5.0	1	3.3	3.3
9.0-9.9	—	—	—	7	8.8	13.8	2	6.7	10.0
10.0-10.9	3	13.6	13.6	19	23.8	37.6	1	3.3	13.3
11.0-11.4	1	4.5	18.1	12	15.0	52.6	2	6.7	20.0
11.5-11.9	3	13.6	31.7	6	7.5	60.1	6	20.0	40.0
12.0-12.9	10	45.5	77.2	18	22.5	82.6	12	40.0	80.0
13.0-13.9	4	18.2	95.4	12	15.0	97.6	4	13.3	93.3
14.0-14.9	1	4.5	99.9	2	2.5	100.1	2	6.7	100.0
15.0-15.9	—	—	99.9	—	—	100.1	—	—	100.0
16.0-16.9	—	—	99.9	—	—	100.1	—	—	100.0
>16.9	—	—	99.9	—	—	100.1	—	—	100.0
Mean	12.3			11.4			12.0		
Median	12.4			11.4			12.3		

Table 2A Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for All Persons Under Two Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	181	100.0	100.0	87	100.0	100.0	103	100.0	100.0
<9.0	7	3.9	3.9	9	10.3	10.3	5	4.9	4.9
9.0-9.9	19	10.5	14.4	13	14.9	25.2	9	8.7	13.6
10.0-10.9	21	11.6	26.0	29	33.3	58.5	20	19.4	33.0
11.0-11.4	23	12.7	38.7	12	13.8	72.3	21	20.4	53.4
11.5-11.9	37	20.4	59.1	14	16.1	88.4	20	19.4	72.8
12.0-12.9	50	27.6	86.7	5	5.7	94.1	21	20.4	93.2
13.0-13.9	18	9.9	96.6	4	4.6	98.7	2	1.9	95.1
14.0-14.9	4	2.2	98.8	—	—	98.7	3	2.9	98.0
15.0-15.9	1	0.6	99.4	—	—	98.7	1	1.0	99.0
16.0-16.9	1	0.6	100.0	1	1.1	99.8	—	—	99.0
>16.9	—	—	100.0	—	—	99.8	1	1.0	100.0
Mean	11.6			10.6			11.4		
Median	11.3			10.7			11.4		

Table 2B Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for All Persons Two through Five Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	845	100.0	100.0	305	100.0	100.0	330	100.0	100.0
<9.0	2	0.2	0.2	3	1.0	1.0	4	1.2	1.2
9.0-9.9	11	1.3	1.5	7	2.3	3.3	10	3.0	4.2
10.0-10.9	54	6.4	7.9	48	15.7	19.0	39	11.8	16.0
11.0-11.4	82	9.7	17.6	46	15.1	34.1	46	13.9	29.9
11.5-11.9	120	14.2	31.8	56	18.4	52.5	58	17.6	47.5
12.0-12.9	328	38.8	70.6	101	33.1	85.6	97	29.4	76.9
13.0-13.9	203	24.0	94.6	32	10.5	96.1	59	17.9	94.8
14.0-14.9	39	4.6	99.2	10	3.3	99.4	15	4.5	99.3
15.0-15.9	5	0.6	99.8	1	0.3	99.7	2	0.6	99.9
16.0-16.9	—	—	99.8	1	0.3	100.0	—	—	99.9
>16.9	1	0.1	99.9	—	—	100.0	—	—	99.9
Mean	12.4			11.9			12.0		
Median	12.5			11.9			12.1		

Table 2C Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for All Persons Six through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	2650	100.0	100.0	996	100.0	100.0	832	100.0	100.0
<9.0	1	0.0	0.0	3	0.3	0.3	—	—	—
9.0-9.9	1	0.0	0.0	10	1.0	1.3	8	1.0	1.0
10.0-10.9	34	1.3	1.3	78	7.8	9.1	28	3.4	4.4
11.0-11.4	79	3.0	4.3	124	12.4	21.5	72	8.7	13.1
11.5-11.9	192	7.2	11.5	198	19.9	41.4	97	11.6	24.7
12.0-12.9	933	35.2	46.7	395	39.7	81.1	308	37.0	61.7
13.0-13.9	1000	37.7	84.4	162	16.3	97.4	234	28.1	89.8
14.0-14.9	354	13.4	97.8	24	2.4	99.8	76	9.1	98.9
15.0-15.9	47	1.8	99.6	1	0.1	99.9	8	1.0	99.9
16.0-16.9	4	0.2	99.8	—	—	99.9	1	0.1	100.0
>16.9	5	0.2	100.0	1	0.1	100.0	—	—	100.0
Mean	13.0			12.2			12.6		
Median	13.1			12.2			12.7		

Table 2D Appendix. Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	589	100.0	100.0	206	100.0	100.0	151	100.0	100.0
<9.0	—	—	—	—	—	—	1	0.7	0.7
9.0-9.9	—	—	—	2	1.0	1.0	—	—	0.7
10.0-10.9	—	—	—	3	1.5	2.5	1	0.7	1.4
11.0-11.4	4	0.7	0.7	8	3.9	6.4	5	3.8	4.7
11.5-11.9	7	1.3	2.0	20	9.7	16.1	3	2.0	6.7
12.0-12.9	58	10.8	12.8	52	25.2	41.3	33	21.9	28.6
13.0-13.9	141	26.2	39.0	61	29.6	70.9	35	23.2	51.8
14.0-14.9	173	32.1	71.1	46	22.8	93.2	40	26.5	78.3
15.0-15.9	116	21.5	92.6	9	4.4	97.6	25	16.6	94.9
16.0-16.9	35	6.5	99.1	4	1.9	99.5	8	5.8	100.2
>16.9	5	0.9	100.0	1	0.5	100.0	—	—	100.2
Mean	14.3			13.2			13.8		
Median	14.3			13.3			13.9		

Table 2E Appendix. Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	507	100.0	100.0	221	100.0	100.0	167	100.0	100.0
<9.0	—	—	—	3	1.4	1.4	1	0.6	0.6
9.0-9.9	—	—	—	8	3.6	5.0	1	0.6	1.2
10.0-10.9	3	0.6	0.6	20	9.0	14.0	10	6.0	7.2
11.0-11.4	10	2.0	2.6	17	7.7	21.7	14	8.4	15.6
11.5-11.9	21	4.1	6.7	34	15.4	37.1	12	7.2	22.8
12.0-12.9	134	26.4	33.1	76	34.4	71.5	59	35.3	58.1
13.0-13.9	199	39.3	72.4	51	23.1	94.6	50	29.9	88.0
14.0-14.9	117	23.1	95.5	10	4.5	99.1	17	10.2	98.2
15.0-15.9	22	4.3	99.8	2	0.9	100.0	2	1.2	99.4
16.0-16.9	1	0.2	100.0	—	—	100.0	1	0.6	100.0
>16.9	—	—	100.0	—	—	100.0	—	—	100.0
Mean	13.4			12.2			12.6		
Median	13.4			12.4			12.8		

Table 2F Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Males Seventeen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	1553	100.0	100.0	266	100.0	100.0	297	100.0	100.0
<9.0	2	0.1	0.1	1	0.4	0.4	—	—	—
9.0-9.9	1	0.1	0.2	—	—	0.4	—	—	—
10.0-10.9	3	0.2	0.4	2	0.8	1.2	—	—	—
11.0-11.4	—	—	0.4	—	—	1.2	—	—	—
11.5-11.9	3	0.2	0.6	1	0.4	1.6	7	2.4	2.4
12.0-12.9	22	1.4	2.0	15	5.6	7.2	11	3.7	6.1
13.0-13.9	124	8.0	10.0	55	20.7	27.9	43	14.5	20.6
14.0-14.9	428	27.6	37.6	83	31.2	59.1	84	28.3	48.9
15.0-15.9	582	37.5	75.1	71	26.7	85.8	83	27.9	76.8
16.0-16.9	282	18.2	93.3	31	11.7	97.5	50	16.8	93.6
>16.9	106	6.8	100.1	7	2.6	100.1	19	6.4	100.0
Mean	15.3			14.6			15.0		
Median	15.3			14.7			15.0		

Table 2G Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Females Seventeen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	2475	100.0	100.0	726	100.0	100.0	644	100.0	100.0
<9.0	10	0.4	0.4	4	0.6	0.6	5	0.8	0.8
9.0-9.9	13	0.5	0.9	10	1.4	2.0	8	1.2	2.0
10.0-10.9	51	2.1	3.0	47	6.5	8.5	27	4.2	6.2
11.0-11.4	74	3.0	6.0	64	8.8	17.3	42	6.5	12.7
11.5-11.9	117	4.7	10.7	93	12.8	30.1	53	8.2	20.9
12.0-12.9	572	23.1	33.8	223	30.7	60.8	203	31.5	52.4
13.0-13.9	868	35.1	68.9	203	28.0	88.8	204	31.7	84.1
14.0-14.9	577	23.3	92.2	69	9.5	98.3	85	13.2	97.3
15.0-15.9	152	6.1	98.3	13	1.8	100.1	11	1.7	99.0
16.0-16.9	35	1.4	99.7	—	—	100.1	5	0.8	99.8
>16.9	6	0.2	99.9	—	—	100.1	1	0.2	100.0
Mean	13.4			12.6			12.8		
Median	13.5			12.7			12.9		

Table 2H Appendix. Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Males Forty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	711	100.0	100.0	128	100.0	100.0	95	100.0	100.0
<9.0	1	0.1	0.1	—	—	—	—	—	—
9.0-9.9	2	0.3	0.4	1	0.8	0.8	—	—	—
10.0-10.9	2	0.3	0.7	1	0.8	1.6	—	—	—
11.0-11.4	4	0.6	1.3	4	3.1	4.7	1	1.1	1.1
11.5-11.9	1	0.1	1.4	4	3.1	7.8	—	—	1.1
12.0-12.9	22	3.1	4.5	15	11.7	19.5	7	7.4	8.5
13.0-13.9	75	10.5	15.0	30	23.4	42.9	15	15.3	24.8
14.0-14.9	192	27.0	42.0	44	34.4	77.3	30	31.6	55.9
15.0-15.9	245	34.5	76.5	20	15.6	92.9	22	23.2	79.1
16.0-16.9	131	18.4	94.9	7	5.5	98.4	17	17.9	97.0
>16.9	36	5.1	100.0	2	1.6	100.0	8	8.2	100.2
Mean	15.1			14.1			14.8		
Median	15.2			14.2			14.8		

Table 2I Appendix. Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Females Forty-five through Fifty-nine Years of Age for High Income Ratio State—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	918	100.0	100.0	254	100.0	100.0	177	100.0	100.0
<9.0	3	0.3	0.3	2	0.8	0.8	1	0.6	0.6
9.0-9.9	4	0.4	0.7	4	1.6	2.4	1	0.6	1.2
10.0-10.9	14	1.5	2.2	22	8.7	11.1	7	4.0	5.2
11.0-11.4	12	1.3	3.5	17	6.7	17.8	7	4.0	9.2
11.5-11.9	29	3.2	6.7	18	7.1	24.9	8	4.5	13.7
12.0-12.9	158	17.2	23.9	67	26.4	51.3	38	21.5	35.2
13.0-13.9	314	34.2	58.1	78	30.7	82.0	64	36.2	71.4
14.0-14.9	262	28.5	86.6	36	14.2	96.2	38	21.5	92.9
15.0-15.9	91	9.9	96.5	8	3.1	99.3	12	6.8	99.7
16.0-16.9	28	3.1	99.6	2	0.8	100.1	1	0.6	100.3
>16.9	3	0.3	99.9	—	—	100.1	—	—	100.3
Mean	13.6			12.8			13.2		
Median	13.8			13.0			13.4		

Table 2J Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Males Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	724	100.0	100.0	101	100.0	100.0	45	100.0	100.0
<9.0	—	—	—	1	1.0	1.0	1	2.2	2.2
9.0-9.9	1	0.1	0.1	1	1.0	2.0	—	—	2.2
10.0-10.9	12	1.7	1.8	1	1.0	3.0	—	—	2.2
11.0-11.4	5	0.7	2.5	3	3.0	6.0	—	—	2.2
11.5-11.9	9	1.2	3.7	1	1.0	7.0	—	—	2.2
12.0-12.9	33	4.6	8.3	19	18.8	25.8	6	13.3	15.5
13.0-13.9	118	16.3	24.6	25	24.8	50.6	9	20.0	35.5
14.0-14.9	236	32.6	57.2	28	27.7	78.3	16	35.6	71.1
15.0-15.9	187	25.8	83.0	15	14.8	93.1	6	13.3	84.4
16.0-16.9	84	11.6	94.6	7	6.9	100.0	6	13.3	97.7
>16.9	39	5.4	100.0	—	—	100.0	1	2.2	99.9
Mean	14.7			13.8			14.3		
Median	14.8			14.0			14.4		

Table 2K Appendix. *Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Females Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	1024	100.0	100.0	156	100.0	100.0	69	100.0	100.0
<9.0	3	0.3	0.3	1	0.6	0.6	1	1.4	1.4
9.0-9.9	4	0.4	0.7	3	1.9	2.5	2	2.9	4.3
10.0-10.9	5	0.5	1.2	9	5.8	8.3	2	2.9	7.2
11.0-11.4	18	1.8	3.0	6	3.8	12.1	1	1.4	8.6
11.5-11.9	40	3.9	6.9	19	12.2	24.3	4	5.8	14.4
12.0-12.9	182	17.8	24.7	56	35.9	60.2	13	18.8	33.2
13.0-13.9	341	33.3	58.0	34	21.8	82.0	20	29.0	62.2
14.0-14.9	273	26.7	84.7	24	15.4	97.4	18	26.1	88.3
15.0-15.9	116	11.3	96.0	4	2.6	100.0	6	8.7	97.0
16.0-16.9	31	3.0	99.0	—	—	100.0	2	2.9	99.9
>16.9	11	1.1	100.1	—	—	100.0	—	—	99.9
Mean	13.7			12.7			13.3		
Median	13.8			12.7			13.6		

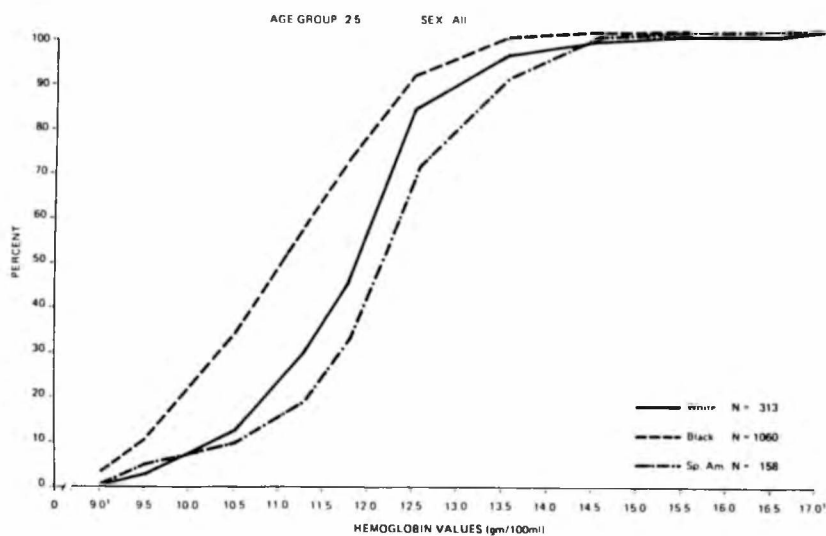
Table 2L Appendix. Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Females Thirteen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	2982	100.0	100.0	947	100.0	100.0	811	100.0	100.0
<9.0	10	0.3	0.3	7	0.7	0.7	6	0.7	0.7
9.0-9.9	18	0.4	0.7	18	1.9	2.6	9	1.1	1.8
10.0-10.9	54	1.8	2.5	67	7.1	9.7	37	4.6	6.4
11.0-11.4	84	2.8	5.3	81	8.6	18.3	56	6.9	13.3
11.5-11.9	138	4.6	9.9	127	13.4	31.7	65	8.0	21.3
12.0-12.9	706	23.7	33.6	299	31.6	63.3	262	32.3	53.6
13.0-13.9	1067	35.8	69.4	254	26.8	90.1	254	31.3	84.9
14.0-14.9	694	23.3	92.7	79	8.3	98.4	102	12.6	97.5
15.0-15.9	174	5.8	98.5	15	1.6	100.0	13	1.6	99.1
16.0-16.9	36	1.2	99.7	—	—	100.0	6	0.7	99.8
>16.9	6	0.2	99.9	—	—	100.0	1	0.1	99.9
Mean	13.5			12.6			12.9		
Median	13.5			12.5					

Table 2M Appendix. Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Pregnant Females Thirteen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hemoglobin Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	203	100.0	100.0	102	100.0	100.0	49	100.0	100.0
>9.0	—	—	—	—	—	—	1	2.0	2.0
9.0-9.9	2	1.0	1.0	5	4.9	4.9	2	4.1	6.1
10.0-10.9	14	6.9	7.9	15	14.7	19.6	7	14.3	20.4
11.0-11.4	18	8.9	16.7	17	16.7	36.3	4	8.2	28.6
11.5-11.9	35	17.3	34.0	17	16.7	53.0	11	22.4	51.0
12.0-12.9	66	32.5	66.5	29	28.4	81.4	18	36.7	87.7
13.0-13.9	48	23.6	90.1	16	15.7	97.1	4	8.2	95.9
14.0-14.9	19	9.4	99.5	3	2.9	100.0	2	4.1	100.0
15.0-15.9	—	—	99.5	—	—	100.0	—	—	100.0
16.0-16.9	1	0.5	100.0	—	—	100.0	—	—	100.0
>16.9	—	—	100.0	—	—	100.0	—	—	100.0
Mean	12.5			11.9			11.8		
Median	12.5			11.9			12.0		

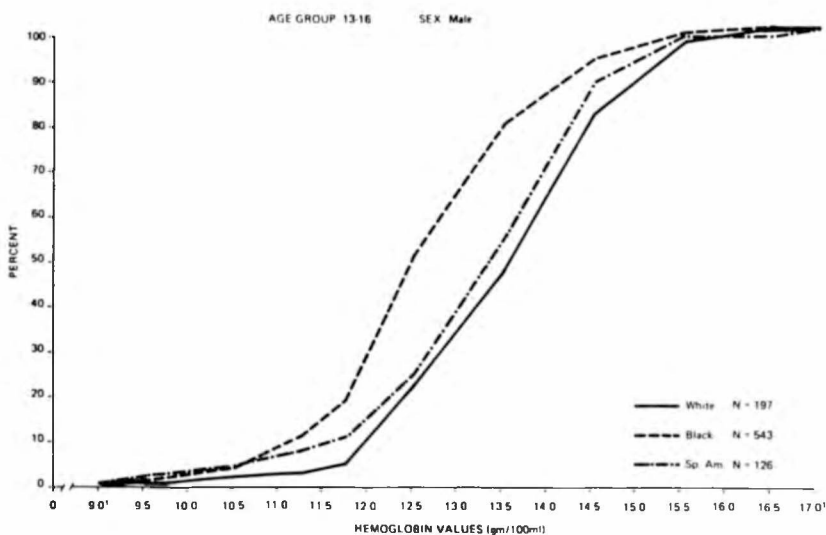
Figure 1a Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 9.0 or > 16.9

Table Reference 18 Appendix

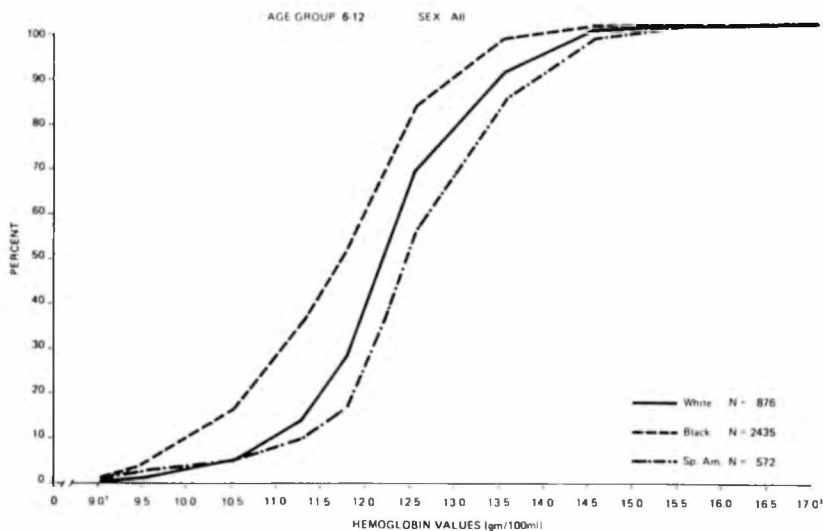
Figure 1c Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 9.0 or > 16.9

Table Reference 1D Appendix

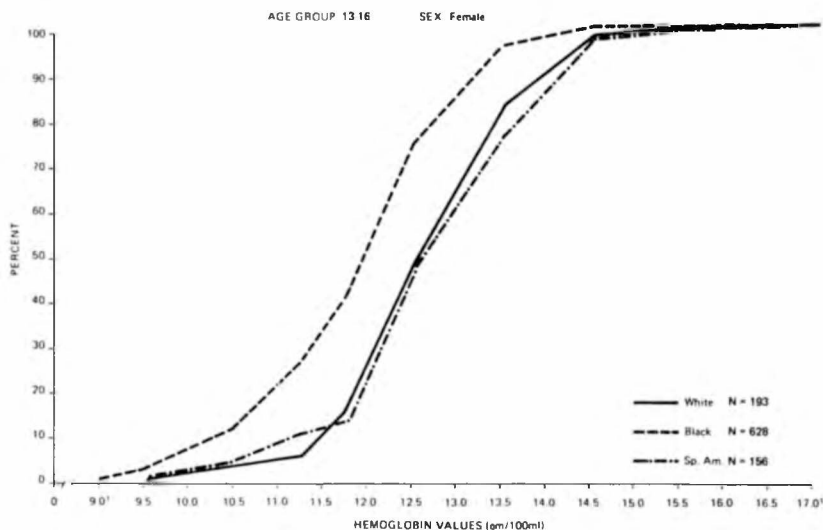
Figure 1b Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference: 1C Appendix

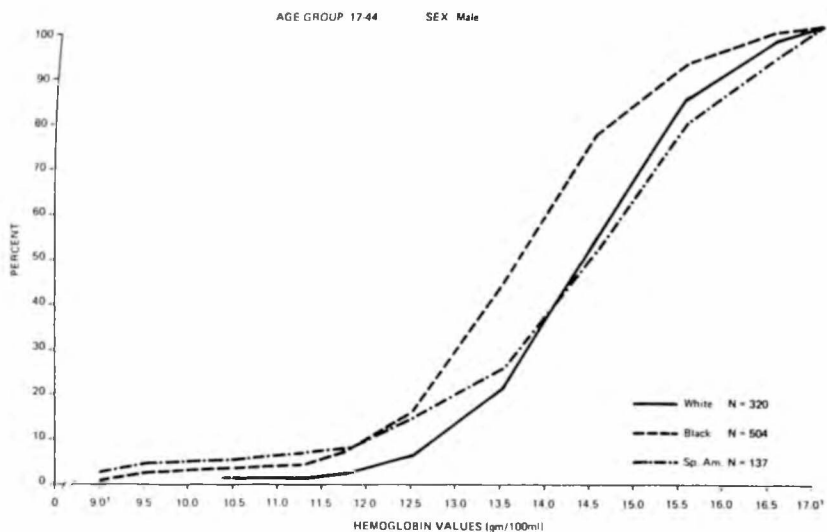
Figure 1d Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference: 1E Appendix

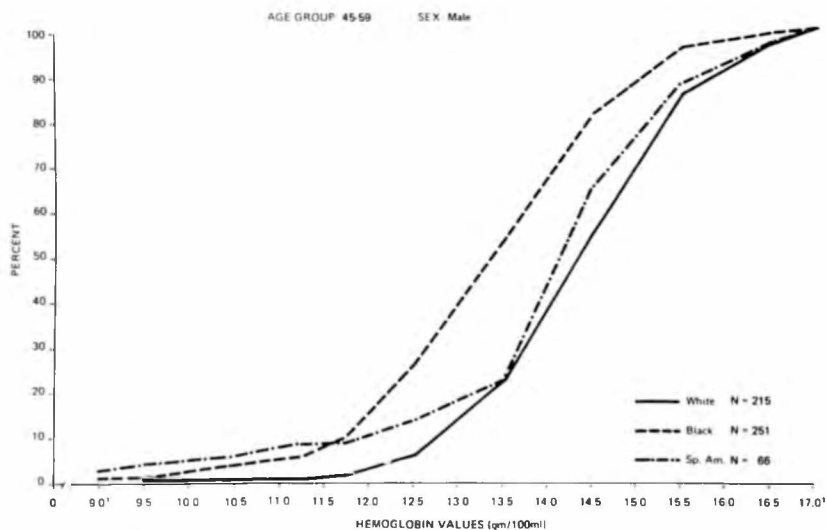
Figure 1e Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference: 1F Appendix.

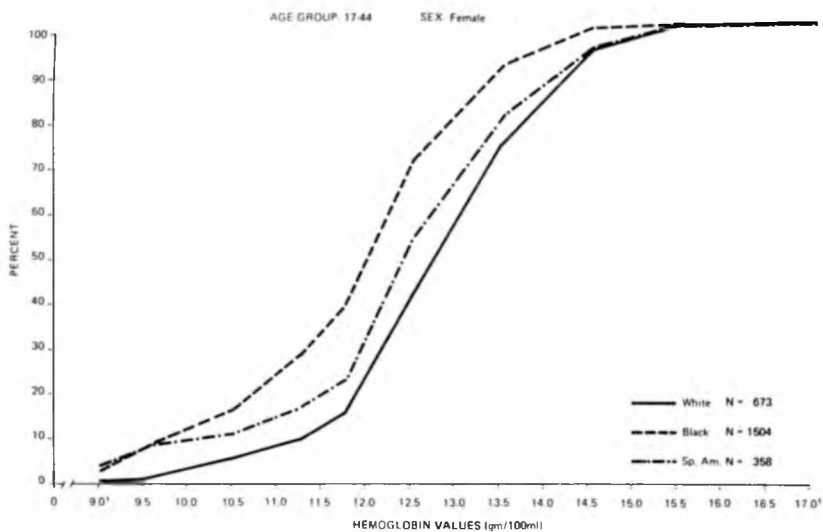
Figure 1g Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference: 1H Appendix

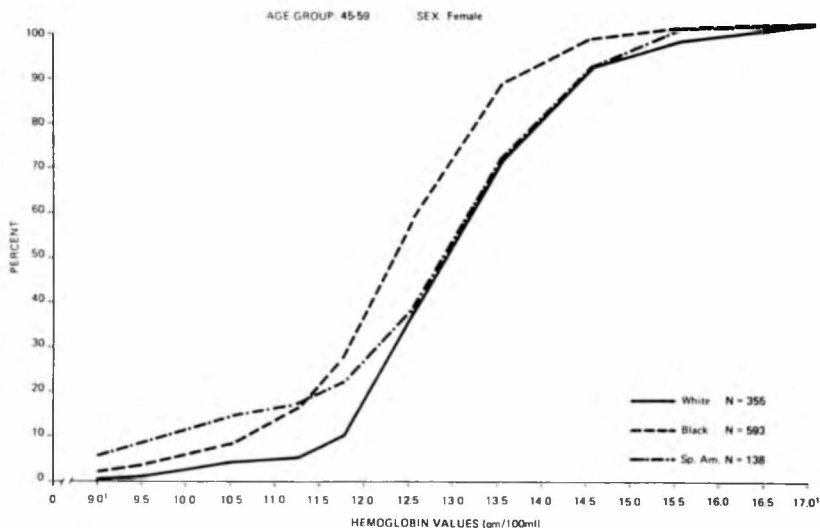
Figure 1f Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <9.0 or >16.9

Table Reference: 1G Appendix.

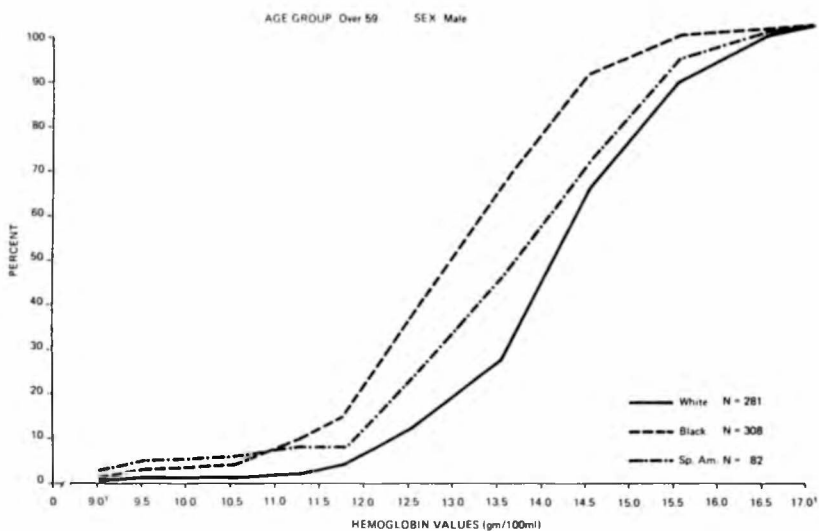
Figure 1h Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <9.0 or >16.9

Table Reference: 1I Appendix.

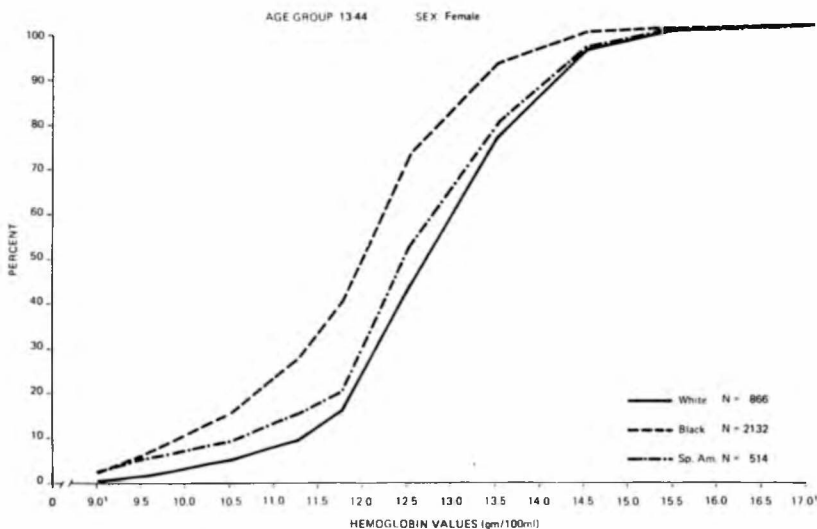
Figure 1I Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference 1J Appendix

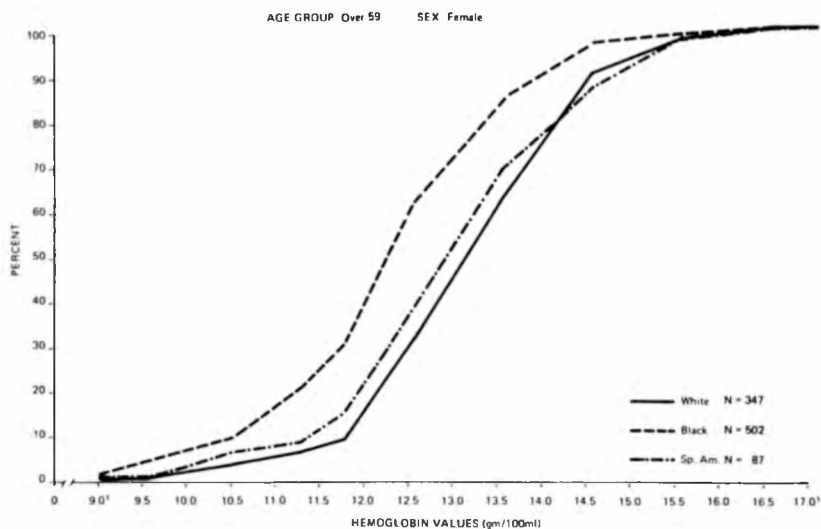
Figure 1K Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference 1L Appendix

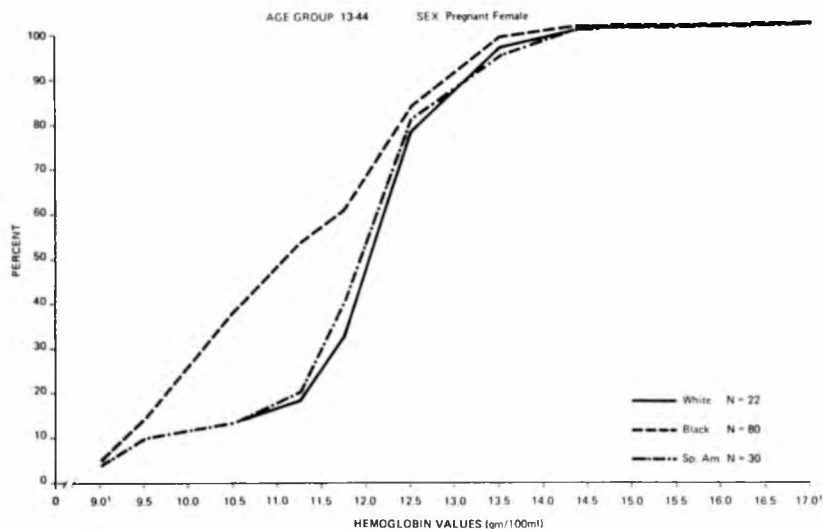
Figure 1j Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference 1K Appendix.

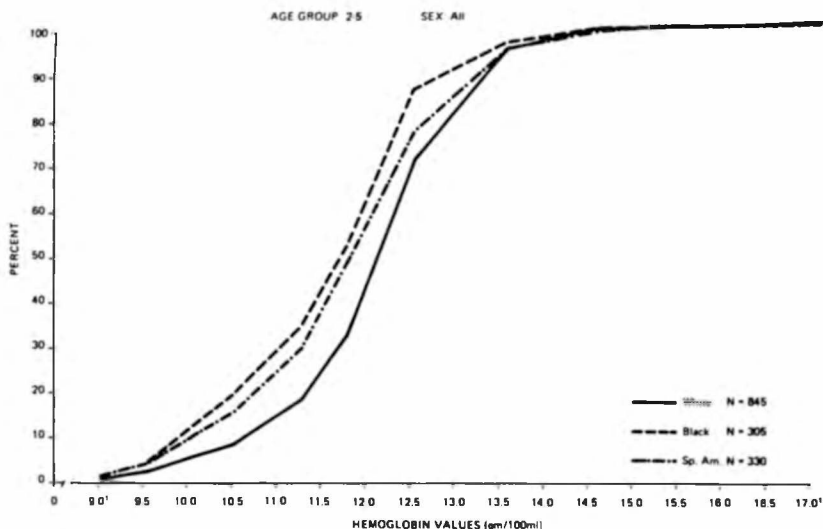
Figure 1l Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference 1M Appendix.

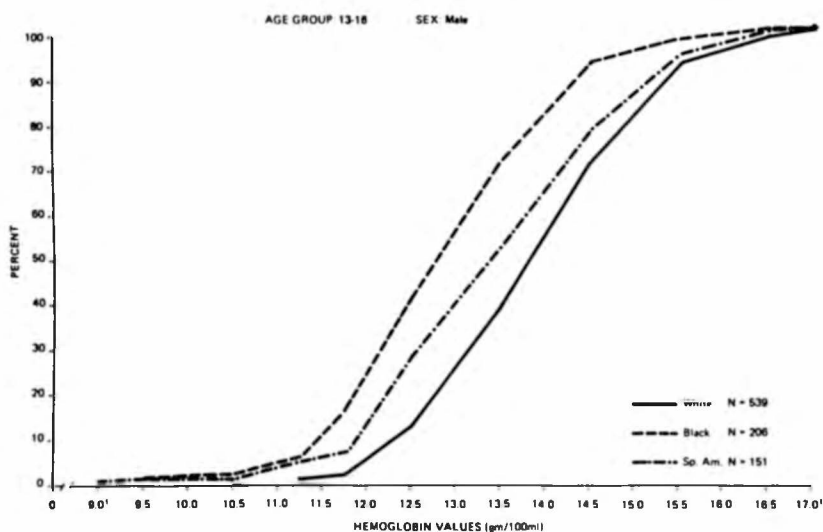
Figure 2a Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference 28 Appendix

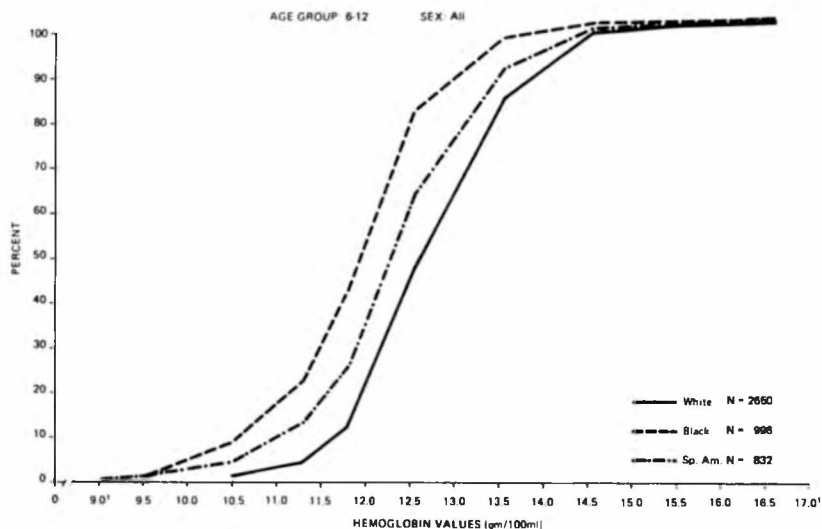
Figure 2c Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference 20 Appendix

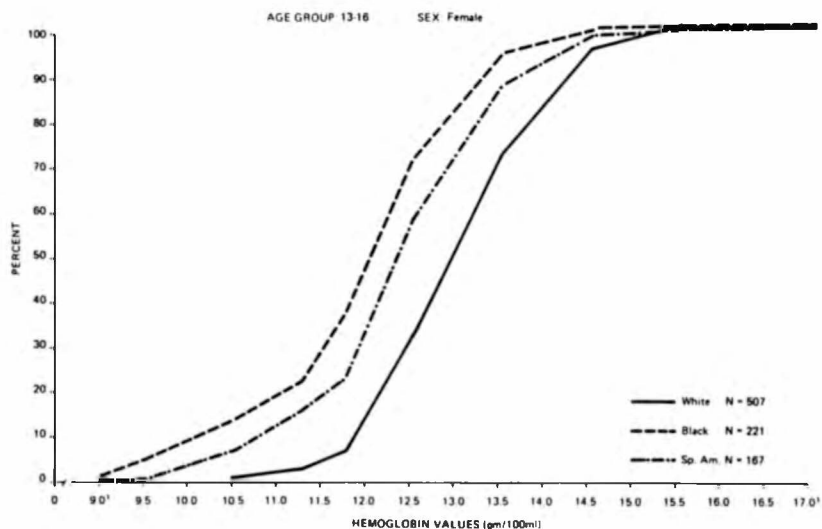
Figure 2b Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 9.0 or > 16.9

Table Reference 2C Appendix

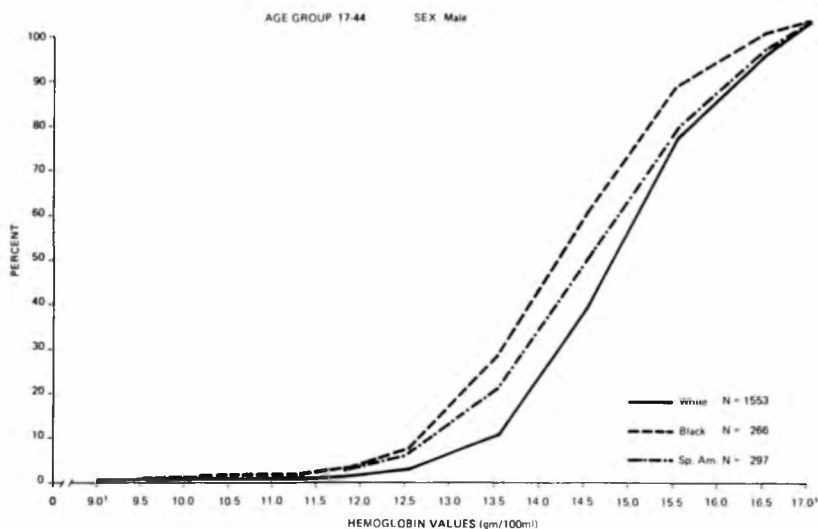
Figure 2d Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 9.0 or > 16.9

Table Reference 2E Appendix

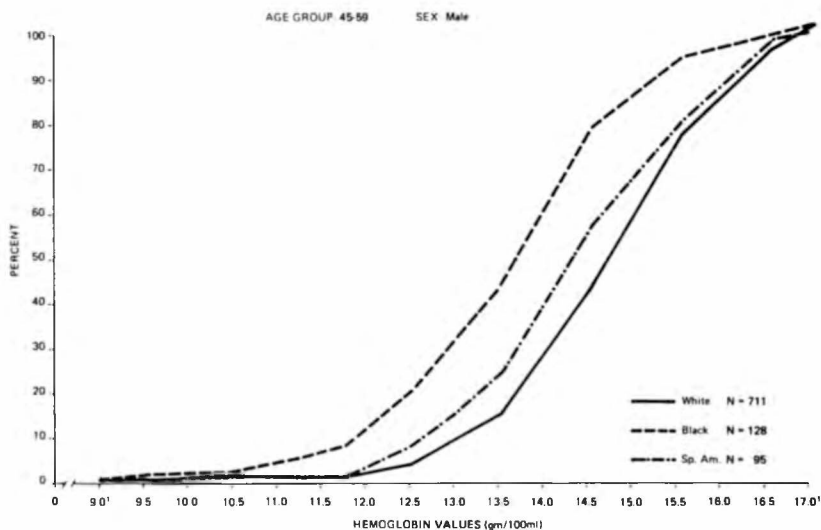
Figure 2e Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 9.0 or > 16.9

Table Reference 2F Appendix.

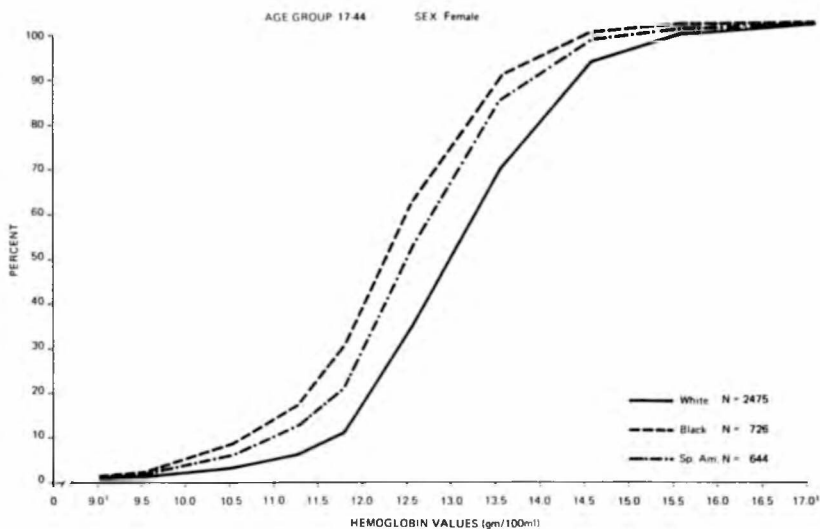
Figure 2g Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 9.0 or > 16.9

Table Reference 2H Appendix.

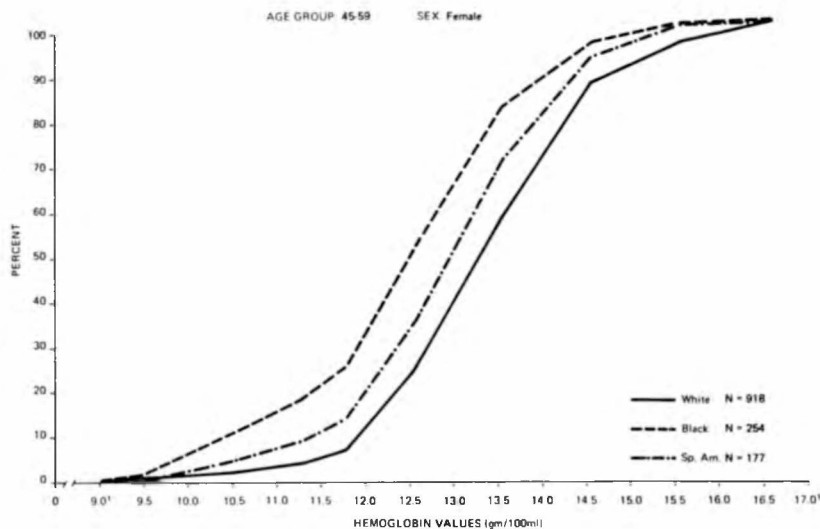
Figure 2f Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 9.0 or > 16.9

Table Reference: 2G Appendix.

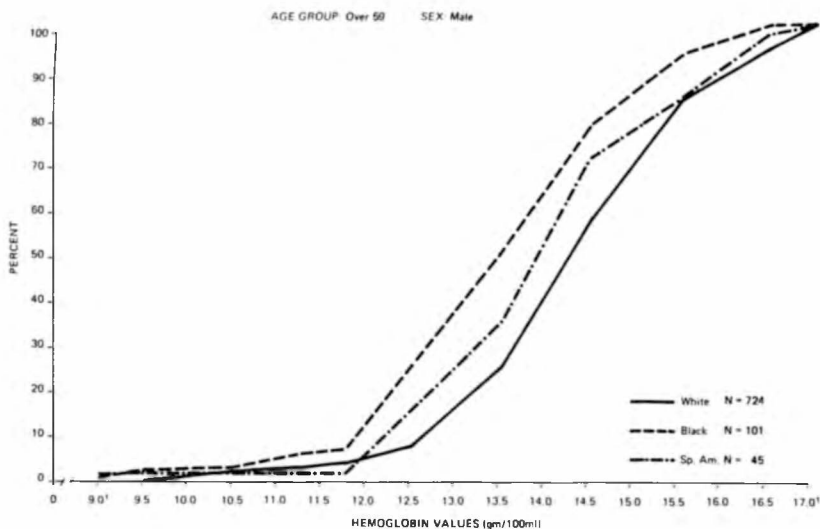
Figure 2h Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 9.0 or > 16.9

Table Reference: 2I Appendix.

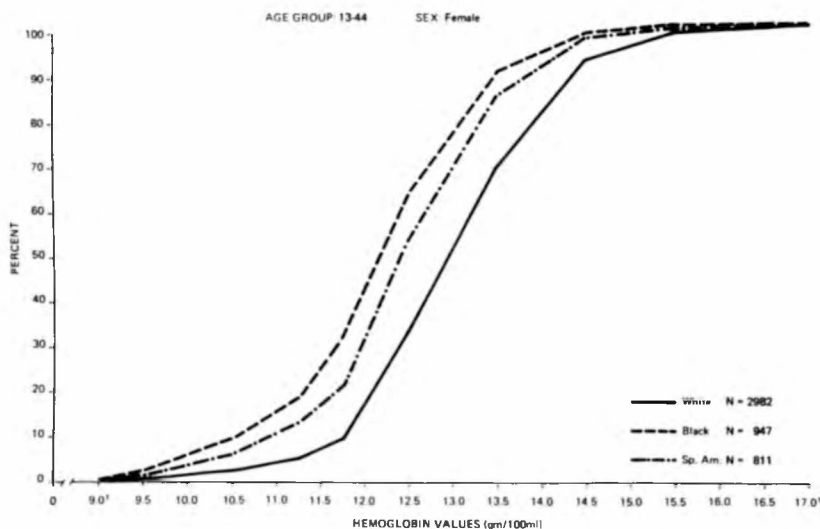
Figure 2j Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 9.0 or > 16.9

Table Reference: 2j Appendix.

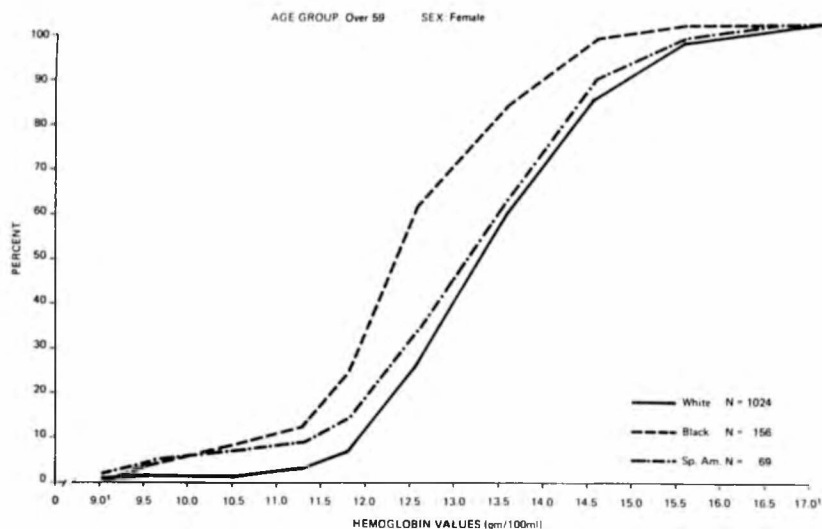
Figure 2k Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 9.0 or > 16.9

Table Reference: 2k Appendix.

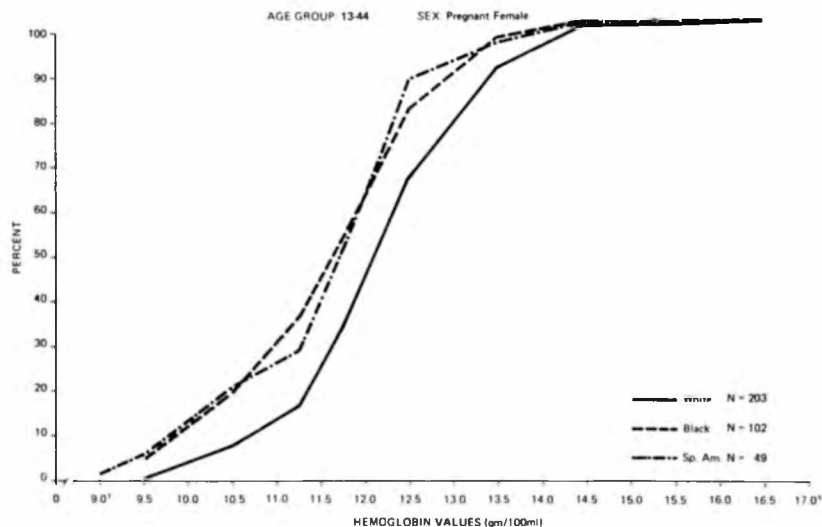
Figure 2J Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference: 2K Appendix

Figure 2I Appendix—Cumulative Percentage Distribution of Hemoglobin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 9.0 or > 16.9

Table Reference: 2M Appendix

Table 3A Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for All Persons Under Two Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	57	100.0	100.0	334	100.0	100.0	16	100.0	100.0
<28.0	2	3.5	3.5	24	7.2	7.2	1	6.2	6.2
28.0-29.9	4	7.0	10.5	25	7.5	14.7	—	—	6.2
30.0-30.9	3	5.3	15.8	18	5.4	20.1	—	—	6.2
31.0-33.9	13	22.8	38.6	101	30.2	50.3	2	12.5	18.7
34.0-35.9	18	31.6	70.2	76	22.8	73.1	2	12.5	31.2
36.0-36.9	2	3.5	73.7	21	6.3	79.4	—	—	31.2
37.0-37.9	6	10.5	84.2	28	8.4	87.8	5	31.3	62.5
38.0-39.9	5	8.8	93.0	27	8.1	95.9	2	12.5	75.0
40.0-43.9	4	7.0	100.0	11	3.3	99.2	2	12.5	87.5
44.0-47.9	—	—	100.0	2	0.6	99.8	1	6.2	93.7
>47.9	—	—	100.0	1	0.3	100.1	1	6.2	99.9
Mean	35.0			34.3			39.0		
Median	34.7			34.0			37.6		

Table 3B Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for All Persons Two through Five Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	328	100.0	100.0	1188	100.0	100.0	157	100.0	100.0
<28.0	1	0.3	0.3	28	2.4	2.4	3	1.9	1.9
28.0-29.9	8	0.9	1.2	22	1.8	4.2	2	1.3	3.2
30.0-30.9	4	1.2	2.4	36	3.0	7.2	2	1.3	4.5
31.0-33.9	31	9.4	11.8	266	22.4	29.6	15	9.6	14.1
34.0-35.9	59	18.0	29.8	343	28.9	58.5	32	20.4	34.5
36.0-36.9	43	13.1	42.9	148	12.4	70.9	14	8.9	43.4
37.0-37.9	60	18.3	61.2	130	10.9	81.8	28	17.8	61.2
38.0-39.9	82	25.0	86.2	155	13.0	94.8	40	25.5	86.7
40.0-43.9	37	11.3	97.5	56	4.7	99.5	19	12.1	98.8
44.0-47.9	4	1.2	98.7	3	0.2	99.7	2	1.3	100.1
>47.9	4	1.2	99.9	1	0.1	99.8	—	—	—
Mean	37.7			35.7			37.4		
Median	37.4			35.4			37.4		

Table 3C Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for All Persons Six through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	869	100.0	100.0	2448	100.0	100.0	566	100.0	100.0
<28.0	3	0.3	0.3	25	1.0	1.0	7	1.2	1.2
28.0-29.9	2	0.2	0.5	26	1.1	2.1	4	0.7	1.9
30.0-30.9	—	—	0.5	24	1.0	3.1	3	0.5	2.4
31.0-33.9	23	2.6	3.1	232	9.5	12.6	13	2.3	4.7
34.0-35.9	79	9.1	12.2	500	20.5	33.1	42	7.4	12.1
36.0-36.9	90	10.4	22.6	328	13.4	46.5	51	9.0	21.1
37.0-37.9	137	15.8	38.4	373	15.3	61.8	64	11.3	32.4
38.0-39.9	275	31.6	70.0	601	24.6	86.4	169	29.8	62.2
40.0-43.9	242	27.8	97.8	315	12.9	99.3	178	31.4	93.6
44.0-47.9	17	1.9	99.7	14	0.6	99.9	29	5.1	98.7
>47.9	1	0.1	99.8	5	0.2	100.1	6	1.1	99.8
Mean	39.1			37.5			39.5		
Median	38.7			37.2			39.2		

Table 3D Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	195	100.0	100.0	539	100.0	100.0	126	100.0	100.0
<28.0	1	0.5	0.5	1	0.2	0.2	—	—	—
28.0-29.9	—	—	0.5	1	0.2	0.4	1	0.8	0.8
30.0-30.9	1	0.5	1.0	—	—	0.4	2	1.6	2.4
31.0-33.9	—	—	1.0	14	2.6	3.0	3	2.4	4.8
34.0-35.9	1	0.5	1.5	31	5.8	8.8	5	4.0	8.8
36.0-36.9	2	1.0	2.5	35	6.5	15.3	3	2.4	11.2
37.0-37.9	4	2.0	4.5	49	9.1	24.4	8	6.3	17.5
38.0-39.9	26	13.3	17.8	121	22.4	46.8	13	10.3	27.8
40.0-43.9	104	53.3	71.1	207	38.4	85.2	61	48.4	76.2
44.0-47.9	51	26.2	97.3	68	12.6	97.8	28	22.2	98.4
>47.9	5	2.6	99.9	12	2.2	100.0	2	1.6	100.0
Mean	42.8			40.8			41.6		
Median	42.4			40.3			41.8		

Table 3E Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	193	100.0	100.0	629	100.0	100.0	156	100.0	100.0
<28.0	—	—	—	2	0.3	0.3	2	1.3	1.3
28.0-29.9	—	—	—	3	0.5	0.8	1	0.6	1.9
30.0-30.9	—	—	—	5	0.8	1.6	—	—	1.9
31.0-33.9	2	1.0	1.0	29	4.6	6.2	2	1.3	3.2
34.0-35.9	12	6.2	7.2	80	12.7	18.9	6	3.8	7.0
36.0-36.9	7	3.6	10.8	66	10.5	29.4	11	7.1	14.1
37.0-37.9	17	8.8	19.6	103	16.4	45.8	14	9.0	23.1
38.0-39.9	57	29.5	49.1	172	27.3	73.1	39	25.0	48.1
40.0-43.9	89	46.1	95.2	153	24.3	97.4	72	46.2	94.3
44.0-47.9	7	3.6	98.8	15	2.4	99.8	9	5.7	100.0
>47.9	2	1.0	99.8	1	0.1	99.9	—	—	100.0
Mean	40.4			38.7			40.2		
Median	40.1			38.3			40.1		

Table 3F Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Males Seventeen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	318	100.0	100.0	494	100.0	100.0	134	100.0	100.0
<28.0	—	—	—	4	0.8	0.8	2	1.5	1.5
28.0-29.9	—	—	—	—	—	0.8	—	—	1.5
30.0-30.9	2	0.6	0.6	1	0.2	1.0	—	—	1.5
31.0-33.9	—	—	0.6	2	0.4	1.4	3	2.2	3.7
34.0-35.9	2	0.6	1.2	10	2.0	3.4	3	2.2	5.9
36.0-36.9	1	0.3	1.5	4	0.8	4.2	—	—	5.9
37.0-37.9	2	0.6	2.1	2	0.4	4.6	4	3.0	8.9
38.0-39.9	7	2.2	4.3	34	6.9	11.5	9	6.7	15.6
40.0-43.9	78	24.5	28.8	180	36.4	47.9	20	14.9	30.5
44.0-47.9	171	53.8	82.6	206	41.7	89.6	71	53.0	83.5
>47.9	55	17.3	99.9	51	10.3	99.9	22	16.4	99.9
Mean	45.7			44.2			44.9		
Median	45.5			44.2			45.4		

Table 3G Appendix. Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Females Seventeen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	674	100.0	100.0	1500	100.0	100.0	350	100.0	100.0
<28.0	2	0.3	0.3	23	1.5	1.5	11	3.1	3.1
28.0-29.9	—	—	0.3	17	1.1	2.6	1	0.3	3.4
30.0-30.9	1	0.1	0.4	19	1.3	3.9	5	1.4	4.8
31.0-33.9	11	1.6	2.0	107	7.1	11.0	13	3.7	8.5
34.0-35.9	28	4.2	6.2	146	9.7	20.7	28	8.0	16.5
36.0-36.9	30	4.4	10.6	123	8.2	28.9	17	4.8	21.3
37.0-37.9	41	6.1	16.7	146	9.7	38.6	28	8.0	29.3
38.0-39.9	153	22.7	39.4	351	23.4	62.0	67	19.1	48.4
40.0-43.9	302	44.8	84.2	483	32.2	94.2	139	39.7	88.1
44.0-47.9	99	14.7	98.9	73	4.9	99.1	38	10.8	98.9
>47.9	7	1.0	99.9	12	0.8	99.9	3	0.8	99.7
Mean	41.4			39.0			39.9		
Median	40.9			39.0			40.1		

Table 3H Appendix. Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Males Forty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	214	100.0	100.0	250	100.0	100.0	64	100.0	100.0
<28.0	1	0.5	0.5	—	—	—	1	1.6	1.6
28.0-29.9	1	0.5	1.0	1	0.4	0.4	—	—	1.6
30.0-30.9	—	—	1.0	1	0.4	0.8	—	—	1.6
31.0-33.9	—	—	1.0	4	1.6	2.4	4	6.2	7.8
34.0-35.9	—	—	1.0	11	4.4	6.8	1	1.6	9.4
36.0-36.9	2	0.9	1.9	6	2.4	9.2	1	1.6	11.0
37.0-37.9	3	1.4	3.3	4	1.6	10.8	—	—	11.0
38.0-39.9	6	2.8	6.1	13	5.2	16.0	3	4.7	15.7
40.0-43.9	59	27.6	33.7	109	43.6	59.6	10	15.6	31.3
44.0-47.9	99	46.3	80.0	74	29.6	89.2	30	46.9	78.2
>47.9	43	20.1	100.1	27	10.8	100.0	14	21.9	100.1
Mean	45.4			43.4			44.6		
Median	45.4			43.1			45.6		

Table 3I Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Females Forty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	354	100.0	100.0	592	100.0	100.0	137	100.0	100.0
<28.0	—	—	—	4	0.7	0.7	7	5.1	5.1
28.0-29.9	1	0.3	0.3	9	1.5	2.2	3	2.2	7.3
30.0-30.9	1	0.3	0.6	3	0.5	2.7	1	0.7	8.0
31.0-32.9	5	1.4	2.0	17	2.9	5.6	4	2.9	10.9
34.0-35.9	8	2.2	4.2	44	7.4	13.0	6	4.4	15.3
36.0-36.9	6	1.7	5.9	34	5.7	18.7	9	6.6	21.9
37.0-37.9	22	6.2	12.1	57	9.6	28.3	6	4.4	26.3
38.0-39.9	62	17.5	29.6	144	24.3	52.6	14	10.2	36.5
40.0-43.9	184	52.0	81.6	222	37.5	90.1	55	40.1	76.6
44.0-47.9	54	15.2	96.8	49	8.3	98.4	27	19.7	96.3
>47.9	11	3.1	99.9	9	1.5	99.9	5	3.6	99.9
Mean	41.9			40.1			40.4		
Median	41.5			39.7			41.3		

Table 3J Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Males Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	276	100.0	100.0	304	100.0	100.0	81	100.0	100.0
<28.0	1	0.4	0.4	1	0.3	0.3	2	2.5	2.5
28.0-29.9	—	—	0.4	2	0.6	0.9	1	1.2	3.7
30.0-30.9	—	—	0.4	1	0.3	1.2	—	—	3.7
31.0-33.9	—	—	0.4	4	1.3	2.5	—	—	3.7
34.0-35.9	3	1.1	1.5	17	5.6	8.1	4	4.9	8.6
36.0-36.9	2	0.7	2.2	7	2.3	10.4	1	1.2	9.8
37.0-37.9	4	1.4	3.6	9	3.0	13.4	3	3.7	13.5
38.0-39.9	14	5.1	8.7	45	14.8	28.2	7	8.6	22.1
40.0-43.9	86	31.2	39.9	138	45.4	73.6	26	32.1	54.2
44.0-47.9	114	41.3	81.2	58	19.1	92.7	28	34.6	88.8
>47.9	52	18.8	100.0	22	7.2	99.9	9	11.1	99.9
Mean	45.1			42.4			43.3		
Median	45.0			41.9			43.4		

Table 3K Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Females Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	344	100.0	100.0	506	100.0	100.0	86	100.0	100.0
<28.0.....	1	0.3	0.3	6	1.2	1.2	—	—	—
28.0-29.9.....	—	—	0.3	5	1.0	2.2	2	2.3	2.3
30.0-30.9.....	2	0.6	0.9	8	1.6	3.8	—	—	2.3
31.0-33.9.....	2	0.6	1.5	15	3.0	6.8	5	5.8	8.1
34.0-35.9.....	14	4.1	5.6	43	8.5	15.3	5	5.8	13.9
36.0-36.9.....	7	2.0	7.6	36	7.1	22.4	3	3.5	17.4
37.0-37.9.....	17	4.9	12.5	47	9.3	31.7	6	7.0	24.4
38.0-39.9.....	46	13.4	25.9	116	22.9	54.6	17	19.8	44.2
40.0-43.9.....	177	51.4	77.3	180	35.6	90.2	28	32.5	76.7
44.0-47.9.....	68	19.7	97.0	42	8.3	98.5	18	20.9	97.6
>47.9.....	10	2.9	99.9	8	1.6	100.1	2	2.3	99.9
Mean.....	42.2			39.8			41.0		
Median.....	41.8			39.6			40.7		

Table 4A Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for All Persons Under Two Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	312	100.0	100.0	121	100.0	100.0	113	100.0	100.0
<28.0.....	3	1.0	1.0	8	6.6	6.6	3	2.7	2.7
28.0-29.9.....	2	0.6	1.6	3	2.5	9.1	3	2.7	5.4
30.0-30.9.....	5	1.6	3.2	8	6.6	15.7	3	2.7	8.1
31.0-33.9.....	52	16.7	19.9	34	28.1	43.8	17	15.0	23.1
34.0-35.9.....	87	27.9	47.8	38	31.4	75.2	35	31.0	54.1
36.0-36.9.....	46	14.7	62.5	17	14.0	89.2	20	17.7	71.8
37.0-37.9.....	25	8.0	70.5	5	4.1	93.3	10	8.8	80.6
38.0-39.9.....	54	17.3	87.8	5	4.1	97.4	14	12.4	93.0
40.0-43.9.....	33	10.6	98.4	2	1.7	99.1	3	2.7	95.7
44.0-47.9.....	4	1.3	99.7	—	—	99.1	3	2.7	98.4
>47.9.....	1	0.3	100.0	1	0.8	99.9	2	1.8	100.2
Mean.....	36.9			34.2			36.0		
Median.....	36.2			34.4			35.7		

Table 4B Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for All Persons Two through Five Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1056	100.0	100.0	382	100.0	100.0	332	100.0	100.0
<28.0.....	5	0.5	0.5	4	1.0	1.0	3	0.9	0.9
28.0-29.9.....	4	0.4	0.9	2	0.5	1.5	—	—	0.9
30.0-30.9.....	8	0.8	1.7	4	1.0	2.5	5	1.5	2.4
31.0-33.9.....	94	8.9	10.6	49	12.8	15.3	29	8.7	11.1
34.0-35.9.....	246	23.3	33.9	91	23.8	39.1	87	26.2	37.3
36.0-36.9.....	176	16.7	50.6	68	17.8	56.9	48	14.5	51.8
37.0-37.9.....	156	14.8	65.4	55	14.4	71.3	28	8.4	60.2
38.0-39.9.....	242	22.9	88.3	65	17.0	88.3	89	26.8	87.0
40.0-43.9.....	111	10.5	98.8	41	10.7	99.0	39	11.7	98.7
44.0-47.9.....	12	1.1	99.9	3	0.8	99.8	3	0.9	99.6
>47.9.....	2	0.2	100.1	—	—	99.8	1	0.3	99.9
Mean.....	37.4			37.0			37.5		
Median.....	37.0			36.6			36.9		

Table 4C Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for All Persons Six through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	2710	100.0	100.0	993	100.0	100.0	829	100.0	100.0
<28.0.....	3	0.1	0.1	4	0.4	0.4	—	—	—
28.0-29.9.....	2	0.1	0.2	3	0.3	0.7	—	—	—
30.0-30.9.....	7	0.3	0.5	4	0.4	1.1	3	0.4	0.4
31.0-33.9.....	49	1.8	2.3	31	3.1	4.2	11	1.3	1.7
34.0-35.9.....	228	8.4	10.7	153	15.4	19.6	63	7.6	9.3
36.0-36.9.....	283	10.4	21.1	157	15.8	35.4	98	11.8	21.1
37.0-37.9.....	349	12.9	34.0	165	16.6	52.0	115	13.9	35.0
38.0-39.9.....	889	32.8	66.8	292	29.4	81.4	281	33.9	68.9
40.0-43.9.....	837	30.9	97.7	172	17.3	98.7	238	28.7	97.6
44.0-47.9.....	60	2.2	99.9	11	1.1	99.8	17	2.1	99.7
>47.9.....	3	0.1	100.0	1	0.1	99.9	3	0.4	100.1
Mean.....	39.3			38.3			39.3		
Median.....	39.0			37.9			38.9		

Table 4D Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	539	100.0	100.0	200	100.0	100.0	149	100.0	100.0
<28.0	—	—	—	—	—	—	—	—	—
28.0-29.9	—	—	—	—	—	—	—	—	—
30.0-30.9	1	0.2	0.2	1	0.5	0.5	—	—	—
31.0-33.9	—	—	0.2	—	—	0.5	1	0.7	0.7
34.0-35.9	2	0.4	0.6	9	4.5	5.0	2	1.3	2.0
36.0-36.9	9	1.7	2.3	10	5.0	10.0	1	0.7	2.7
37.0-37.9	22	4.1	6.4	12	6.0	16.0	8	5.4	8.1
38.0-39.9	73	13.5	19.9	44	22.0	38.0	31	20.8	28.9
40.0-43.9	248	46.0	65.9	87	43.5	81.5	69	46.3	75.2
44.0-47.9	164	30.4	96.3	33	16.5	98.0	29	19.5	94.7
>47.9	20	3.7	100.0	4	2.0	100.0	8	5.4	100.1
Mean	43.0			41.4			42.4		
Median	42.6			41.1			41.8		

Table 4E Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	514	100.0	100.0	216	100.0	100.0	167	100.0	100.0
<28.0	—	—	—	2	0.9	0.9	—	—	—
28.0-29.9	—	—	—	—	—	0.9	—	—	—
30.0-30.9	—	—	—	3	1.4	2.3	1	0.6	0.6
31.0-33.9	5	1.0	1.0	11	5.1	7.4	2	1.2	1.8
34.0-35.9	14	2.7	3.7	22	10.2	17.6	7	4.2	6.0
36.0-36.9	22	4.3	8.0	16	6.9	24.5	9	5.4	11.4
37.0-37.9	22	4.3	12.3	27	12.5	37.0	15	9.0	20.4
38.0-39.9	150	29.2	41.5	68	31.5	68.5	48	28.7	49.1
40.0-43.9	265	51.6	93.1	60	27.8	96.3	79	47.3	96.4
44.0-47.9	36	7.0	100.1	7	3.2	99.5	6	3.6	100.0
>47.9	—	—	100.1	1	0.5	100.0	—	—	100.0
Mean	40.9			39.0			40.2		
Median	40.6			38.8			40.1		

Table 4F Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Males Seventeen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	1551	100.0	100.0	259	100.0	100.0	297	100.0	100.0
<28.0	2	0.1	0.1	—	—	—	—	—	—
28.0-29.9	—	—	0.1	1	0.4	0.4	—	—	—
30.0-30.9	1	0.1	0.2	—	—	0.4	—	—	—
31.0-32.9	1	0.1	0.3	—	—	0.4	—	—	—
34.0-35.9	3	0.2	0.5	3	1.2	1.6	1	0.3	0.3
36.0-36.9	3	0.2	0.7	—	—	1.6	2	0.7	1.0
37.0-37.9	4	0.3	1.0	—	—	1.6	—	—	1.0
38.0-39.9	26	1.7	2.7	8	3.1	4.7	4	1.3	2.3
40.0-43.9	381	24.6	27.3	87	33.6	38.3	62	20.9	23.2
44.0-47.9	813	52.4	79.7	108	41.7	80.0	163	54.9	78.1
>47.9	317	30.4	100.1	52	20.1	100.1	65	21.9	100.0
Mean	46.0			45.5			46.3		
Median	45.7			45.1			46.0		

Table 4G Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Females Seventeen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	2483	100.0	100.0	710	100.0	100.0	643	100.0	100.0
<28.0	4	0.2	0.2	2	0.3	0.3	1	0.2	0.2
28.0-29.9	6	0.2	0.4	3	0.4	0.7	2	0.3	0.5
30.0-30.9	9	0.4	0.8	1	0.1	0.8	2	0.3	0.8
31.0-33.9	35	1.4	2.2	33	4.6	5.4	14	2.2	3.0
34.0-35.9	91	3.7	5.9	59	8.3	13.7	43	6.7	9.7
36.0-36.9	98	3.9	9.8	49	6.9	20.6	45	7.0	16.7
37.0-37.9	126	5.1	14.9	69	9.7	30.3	39	6.1	22.8
38.0-39.9	500	20.1	35.0	167	23.5	53.8	159	24.7	47.5
40.0-43.9	1237	49.8	84.8	276	38.9	92.7	286	44.5	92.0
44.0-47.9	351	14.1	98.9	46	6.5	99.2	46	7.2	99.2
>47.9	26	1.0	99.9	5	0.7	99.9	6	0.9	100.1
Mean	41.3			39.9			40.4		
Median	41.2			39.7			40.2		

Table 4H Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Males Forty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	711	100.0	100.0	122	100.0	100.0	95	100.0	100.0
<28.0.....	1	0.1	0.1	—	—	—	—	—	—
28.0-29.9.....	—	—	0.1	—	—	—	—	—	—
30.0-30.9.....	1	0.1	0.2	—	—	—	—	—	—
31.0-33.9.....	3	0.4	0.6	—	—	—	1	1.1	1.1
34.0-35.9.....	1	0.1	0.7	—	—	—	—	—	1.1
36.0-36.9.....	2	0.3	1.0	1	0.8	0.8	1	1.1	2.2
37.0-37.9.....	4	0.6	1.6	2	1.6	2.4	—	—	2.2
38.0-39.9.....	13	1.8	3.4	14	11.5	13.9	5	5.8	7.5
40.0-43.9.....	188	26.4	29.8	47	38.5	52.4	24	25.3	32.8
44.0-47.9.....	364	51.2	81.0	42	34.4	86.8	42	44.2	77.0
>47.9.....	134	18.8	99.8	16	13.1	99.9	22	23.2	100.2
Mean.....	45.8			44.6			45.9		
Median.....	115.6			41.9			45.6		

Table 4I Appendix. *Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Females Forty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	915	100.0	100.0	249	100.0	100.0	176	100.0	100.0
<28.0.....	1	0.1	0.1	3	1.2	1.2	1	0.6	0.6
28.0-29.9.....	—	—	0.1	1	0.4	1.6	—	—	0.6
30.0-30.9.....	2	0.2	0.3	2	0.8	2.4	—	—	0.6
31.0-33.9.....	6	0.7	1.0	7	2.8	5.2	1	0.6	1.2
34.0-35.9.....	20	2.2	3.2	12	4.8	10.0	5	2.8	4.0
36.0-36.9.....	28	3.1	6.3	11	4.4	14.4	7	4.0	8.0
37.0-37.9.....	32	3.5	9.8	18	7.2	21.6	12	6.8	14.8
38.0-39.9.....	141	15.4	25.2	51	20.5	42.1	28	15.9	30.7
40.0-43.9.....	474	51.8	77.0	112	45.0	87.1	94	53.4	84.1
44.0-47.9.....	185	20.2	98.2	30	12.0	99.1	27	15.3	99.4
>47.9.....	26	2.8	100.0	2	0.8	99.9	1	0.6	100.0
Mean.....	42.2			40.6			41.4		
Median.....	41.9			40.7			41.4		

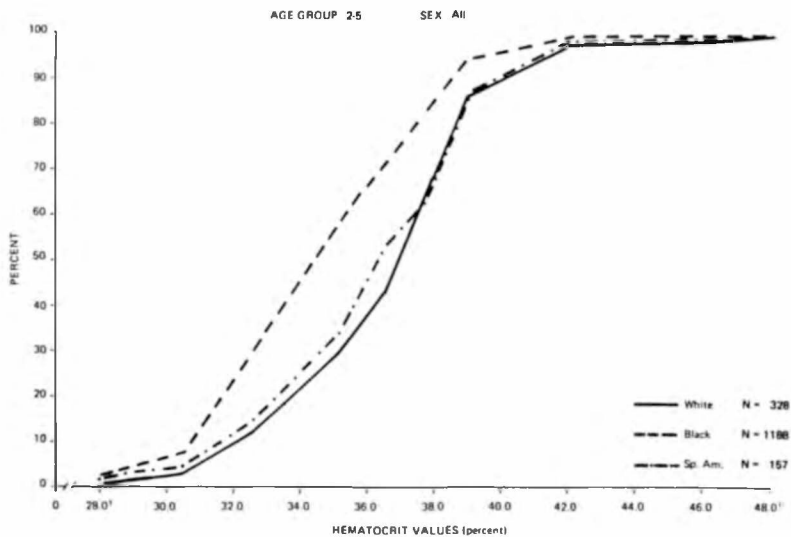
Table 4J Appendix. Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Males Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	720	100.0	100.0	99	100.0	100.0	44	100.0	100.0
<28.0.....	—	—	—	1	1.0	1.0	1	2.3	2.3
28.0-29.9.....	—	—	—	—	—	1.0	—	—	2.3
30.0-30.9.....	1	0.1	0.1	—	—	1.0	—	—	2.3
31.0-33.9.....	3	0.4	0.5	1	1.0	2.0	—	—	2.3
34.0-35.9.....	7	1.0	1.5	2	2.0	4.0	—	—	2.3
36.0-36.9.....	10	1.4	2.9	—	—	4.0	—	—	2.3
37.0-37.9.....	12	1.7	4.6	3	3.0	7.0	1	2.3	4.6
38.0-39.9.....	33	4.6	9.2	9	9.1	16.1	3	6.8	11.4
40.0-43.9.....	225	31.2	40.4	41	41.4	57.5	13	29.5	40.9
44.0-47.9.....	296	41.1	81.5	38	38.4	95.9	20	45.5	86.4
>47.9.....	133	18.5	100.0	4	4.0	99.9	6	13.6	100.0
Mean.....	45.1			43.3			44.4		
Median.....	44.9			43.2			44.8		

Table 4K Appendix. Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Females Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Hematocrit Values Percent	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	1035	100.0	100.0	155	100.0	100.0	71	100.0	100.0
<28.0.....	3	0.3	0.3	2	1.3	1.3	—	—	—
28.0-29.9.....	1	0.1	0.4	—	—	1.3	—	—	—
30.0-30.9.....	—	—	0.4	1	0.6	1.9	—	—	—
31.0-33.9.....	8	0.8	1.2	8	5.2	7.1	4	5.6	5.6
34.0-35.9.....	23	2.2	3.4	6	3.9	11.0	2	2.8	8.4
36.0-36.9.....	25	2.4	5.8	12	7.7	18.7	2	2.8	11.2
37.0-37.9.....	44	4.3	10.1	11	7.1	25.8	2	2.8	14.0
38.0-39.9.....	145	14.0	24.1	34	21.9	47.7	10	14.1	28.1
40.0-43.9.....	515	49.8	73.9	66	42.6	90.3	29	40.8	68.9
44.0-47.9.....	231	22.3	96.2	15	9.7	100.0	20	28.2	97.1
>47.9.....	40	3.9	100.1	—	—	100.0	2	2.8	99.9
Mean.....	42.4			40.0			42.0		
Median.....	42.1			40.2			42.1		

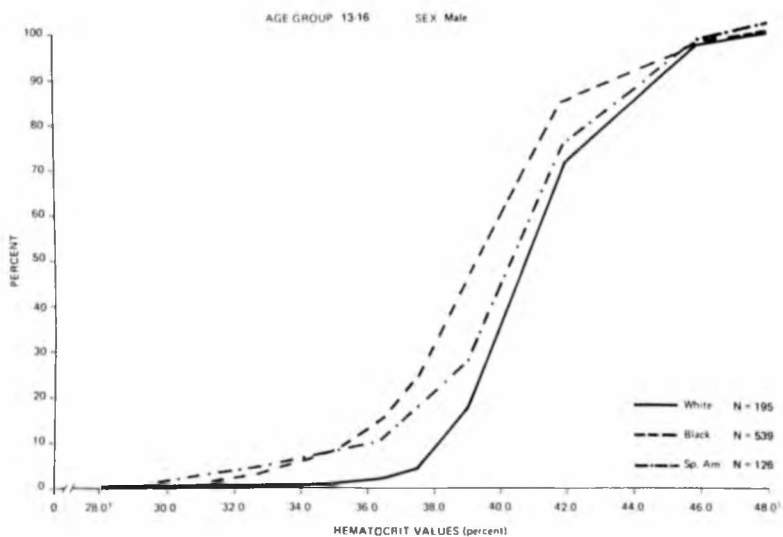
Figure 3a Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference 3B Appendix.

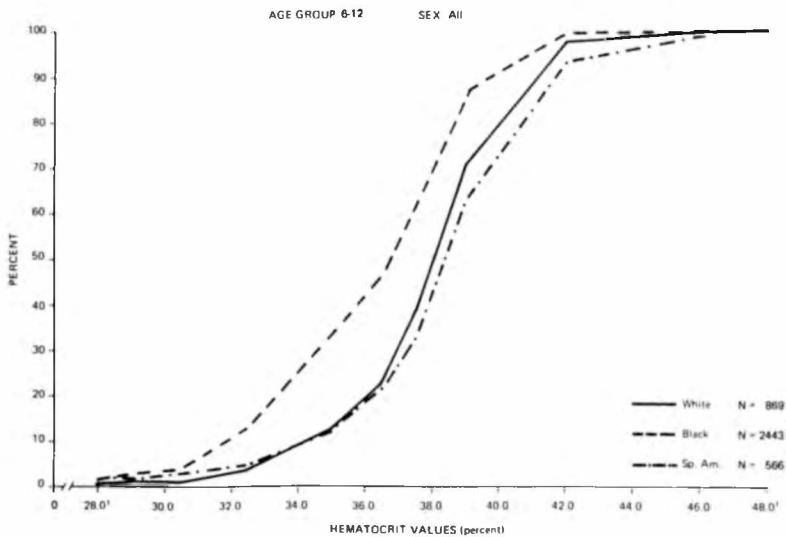
Figure 3c Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference 3D Appendix.

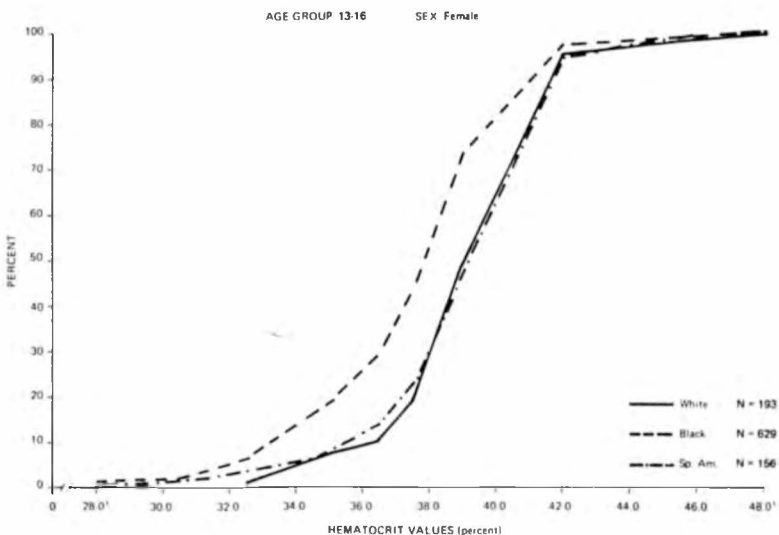
Figure 3b Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference 3C Appendix

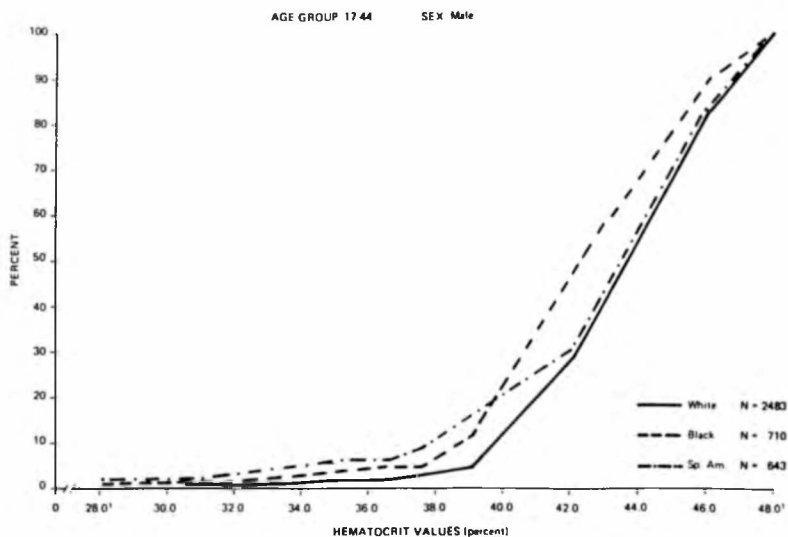
Figure 3d Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference 3E Appendix

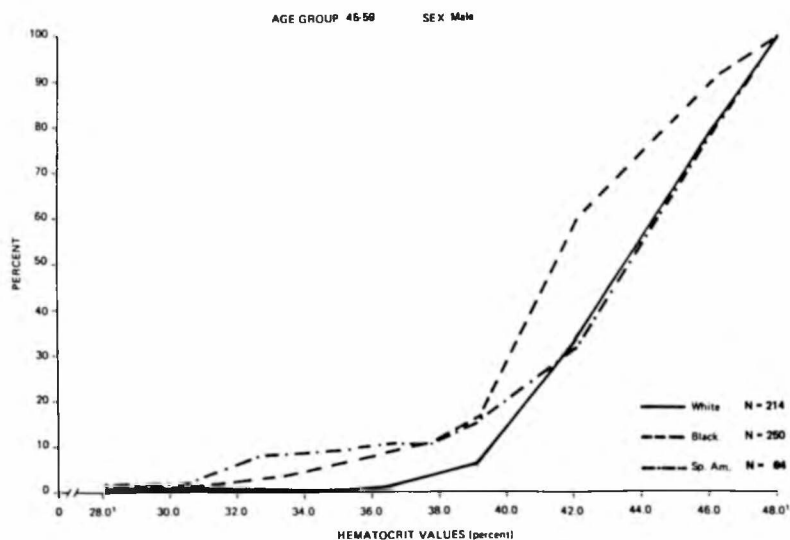
Figure 3e Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference 3F Appendix

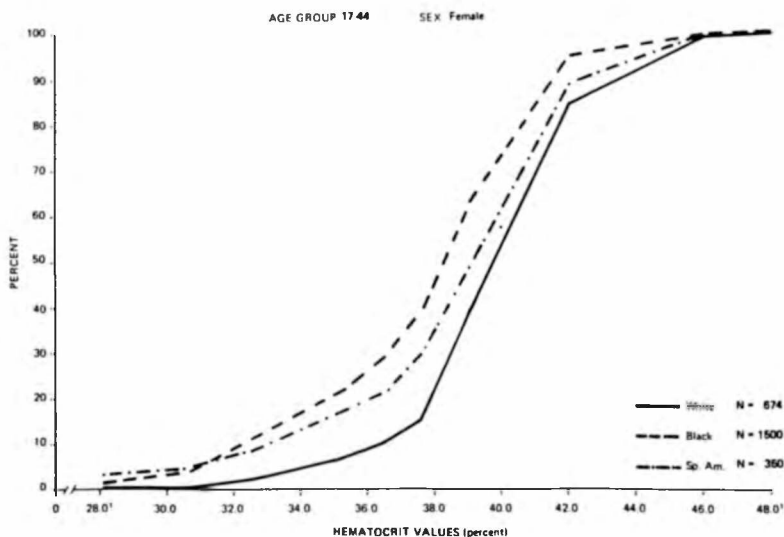
Figure 3g Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference 3H Appendix

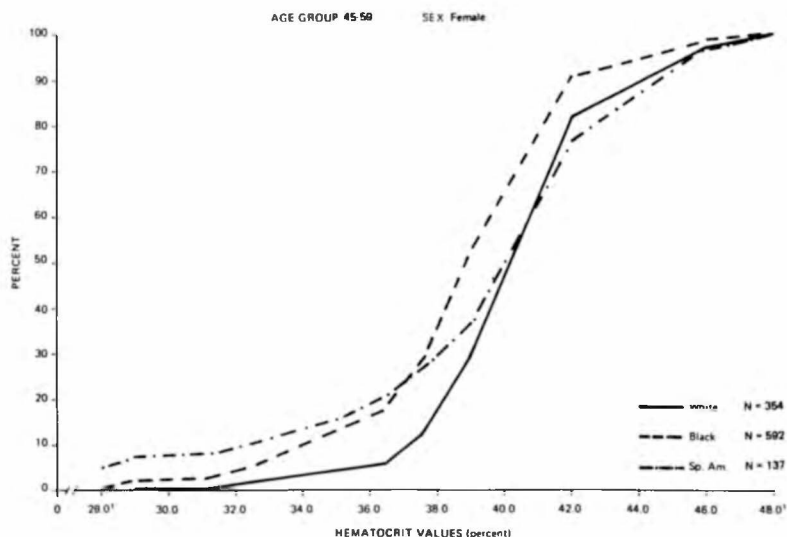
Figure 3f Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 28.0 or > 47.9 Percent

Table Reference: 3G Appendix

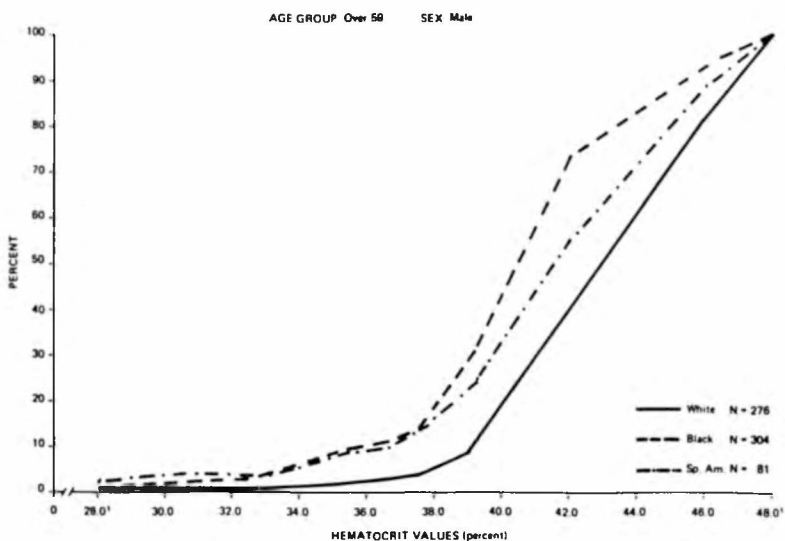
Figure 3h Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 28.0 or > 47.9 Percent

Table Reference: 3I Appendix

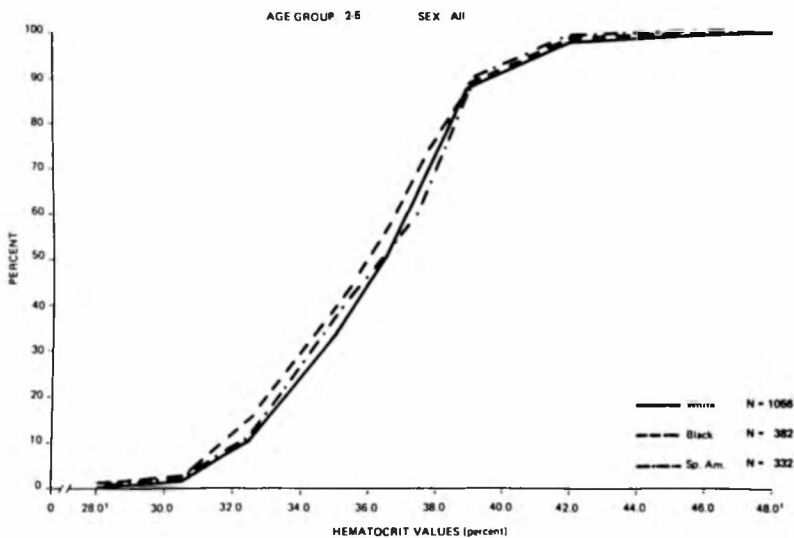
Figure 3I Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference 3I Appendix

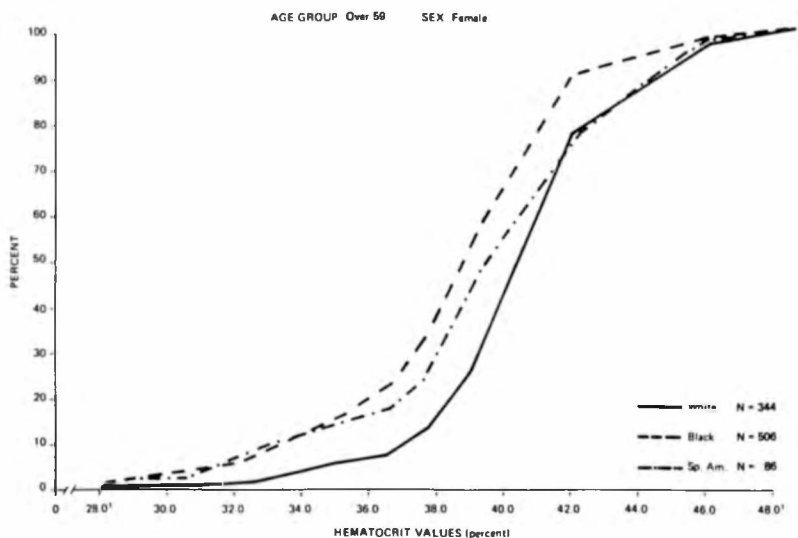
Figure 4a Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference 4a Appendix

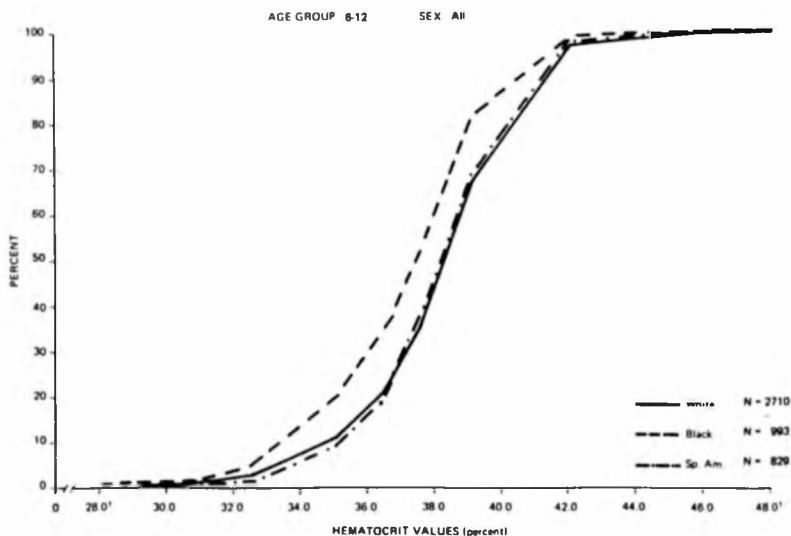
Figure 3j Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <28.0 or >47.9 Percent

Table Reference: 3K Appendix

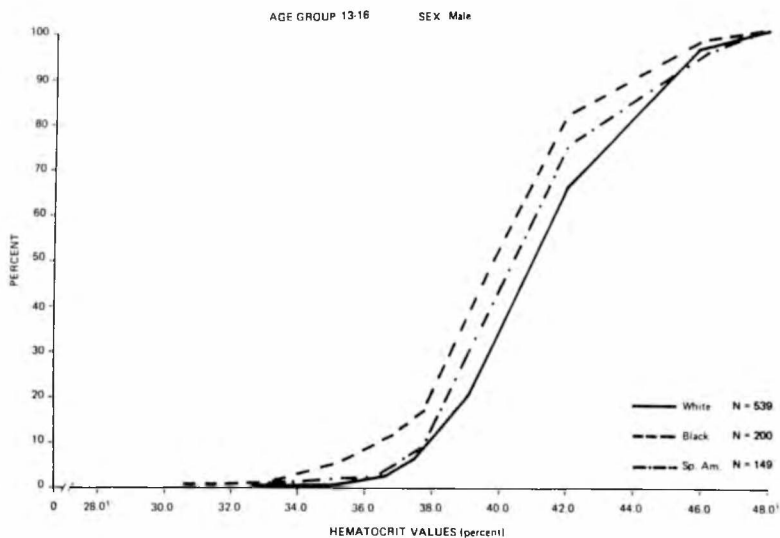
Figure 4b Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <28.0 or >47.9 Percent

Table Reference: 4C Appendix

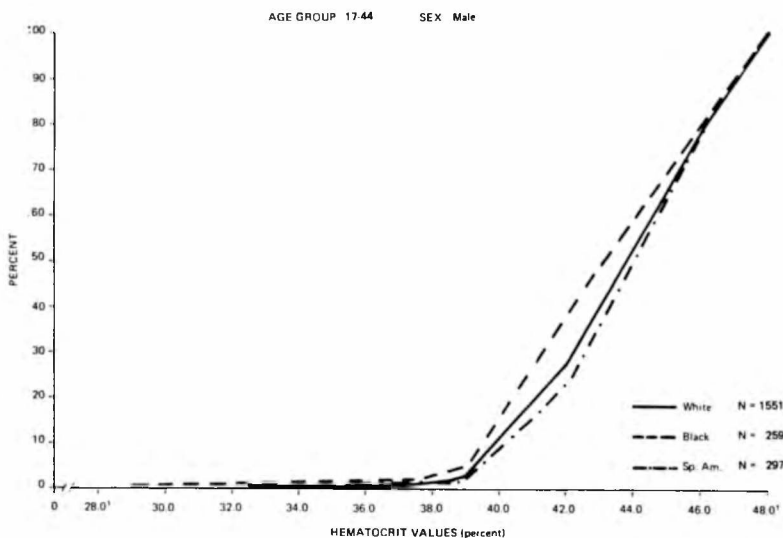
Figure 4e Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference: 4D Appendix.

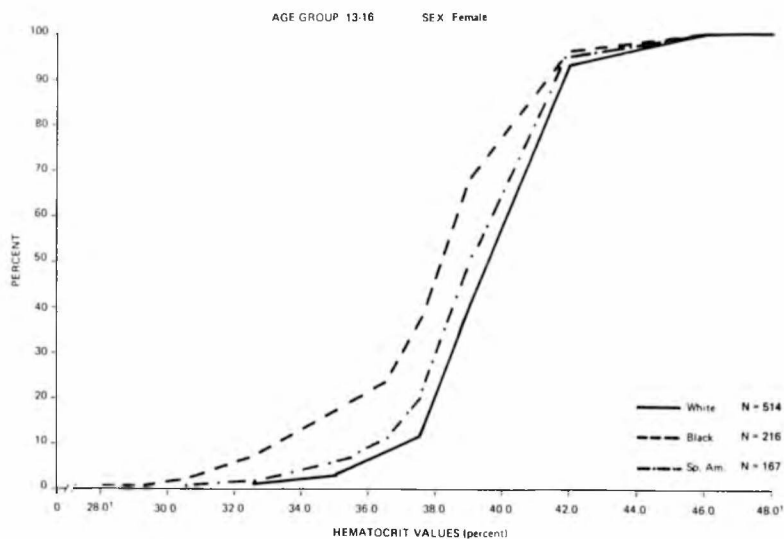
Figure 4e Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference: 4F Appendix.

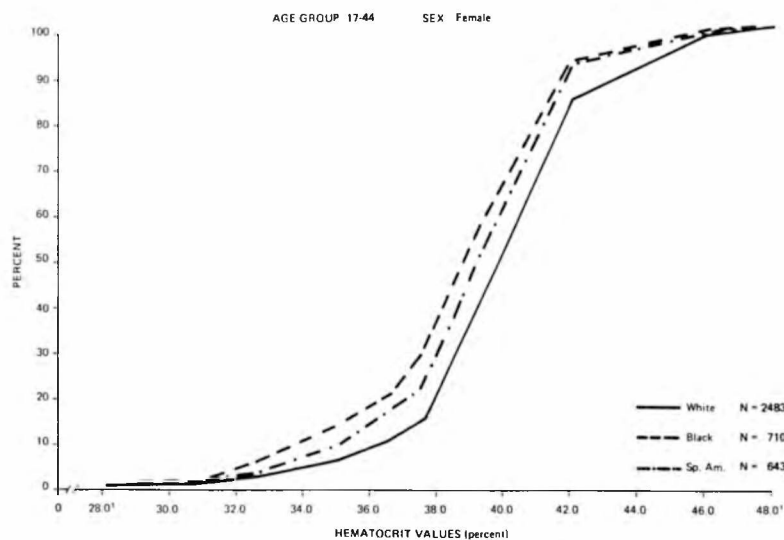
Figure 4d Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference: 4E Appendix.

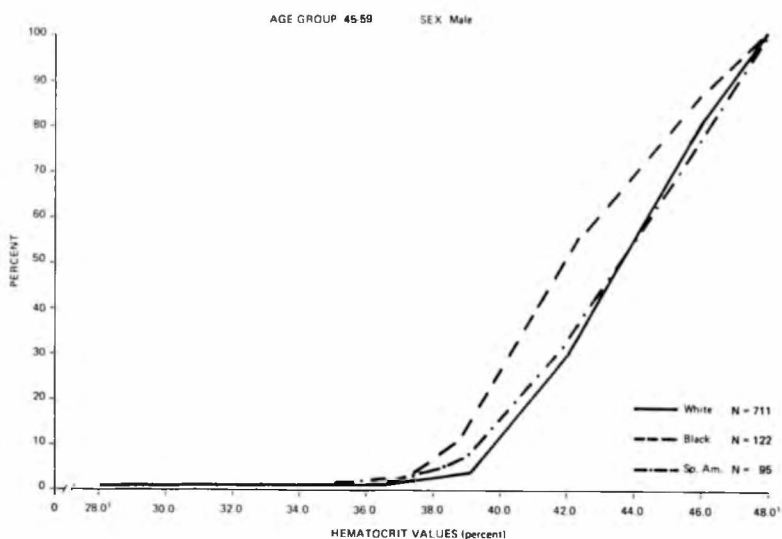
Figure 4f Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 28.0 or > 47.9 Percent

Table Reference: 4G Appendix.

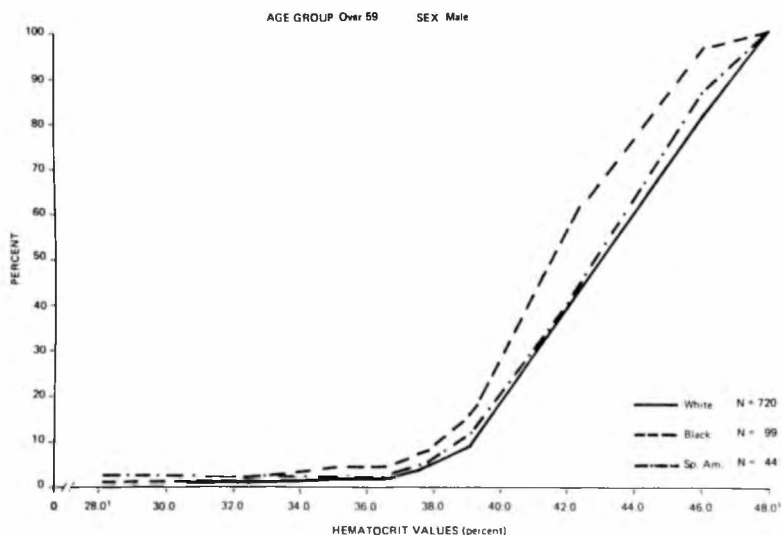
Figure 4g Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 28.0 or > 47.9 Percent

Table Reference: 4H Appendix

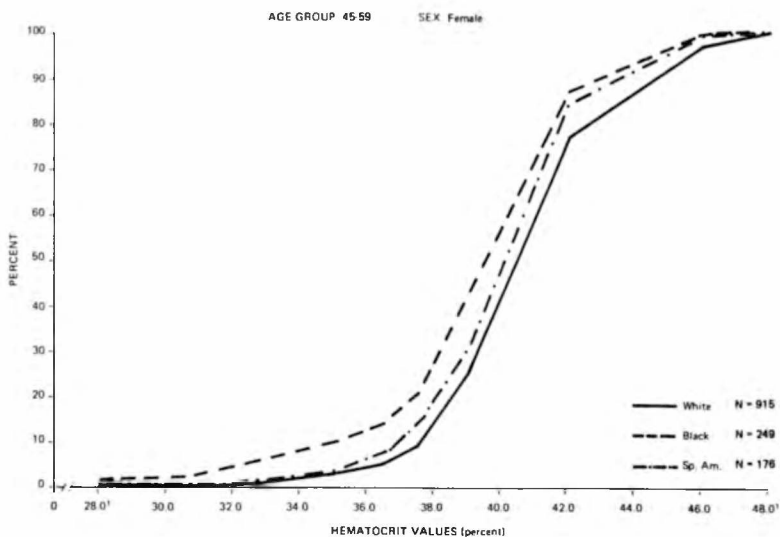
Figure 4I Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 28.0 or > 47.9 Percent

Table Reference: 4J Appendix

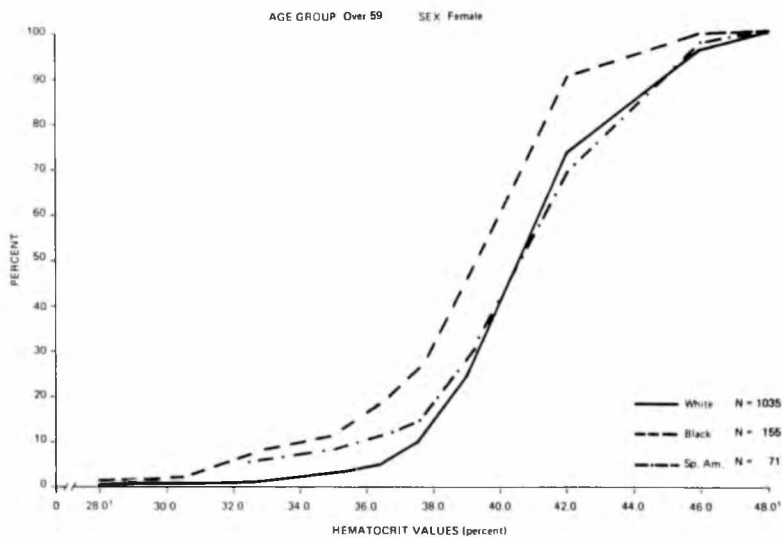
Figure 4h Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 28.0 or > 47.9 Percent

Table Reference: 4I Appendix

Figure 4j Appendix—Cumulative Percentage Distribution of Hematocrit Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 28.0 or > 47.9 Percent

Table Reference: 4K Appendix

Table 5A Appendix. *Percent of Persons Having Deficient Hemoglobin Values by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group					
	White		Black		Spanish American	
	Total ¹ Number	Percent With Deficient Values	Total ¹ Number	Percent With Deficient Values	Total ¹ Number	Percent With Deficient Values
Combined.....	3822	1.8	8590	7.6	1896	5.5
<0.50.....	496	3.2	2206	8.2	497	4.8
0.50-0.99.....	829	1.7	2946	7.4	668	6.0
1.00-1.99.....	978	1.5	1207	5.7	334	6.3
2.00-2.99.....	454	1.1	193	5.2	52	0.0
>2.99.....	293	1.0	97	1.0	36	5.6
Unknown.....	772	2.0	1941	8.8	309	5.5

Table 5B Appendix. *Percent of Persons Having Deficient Hemoglobin Values by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group					
	White		Black		Spanish American	
	Total ¹ Number	Percent With Deficient Values	Total ¹ Number	Percent With Deficient Values	Total ¹ Number	Percent With Deficient Values
Combined.....	12,127	1.0	3446	3.5	2910	2.3
<0.50.....	424	0.9	155	4.5	117	0.0
0.50-0.99.....	1418	1.6	857	4.4	739	2.3
1.00-1.99.....	3742	1.1	1277	3.2	1204	1.9
2.00-2.99.....	2713	0.9	423	2.6	244	1.6
>2.99.....	2651	0.6	242	1.2	110	3.6
Unknown.....	1179	1.1	492	4.3	496	3.6

¹Total excludes persons with unknown age and unknown sex.

Hemoglobin Deficient Value Classifications (gm/100ml)

<2 All.....	<9.0
2-5 All.....	<10.0
6-12 All.....	<10.0
13-16 Male.....	<12.0
13-16 Female.....	<10.0
>16 Male.....	<12.0
>16 Female.....	<10.0

Table 6 Appendix. *Mean Hemoglobin Values by Age, Sex, and Ethnic Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group													
	Total		White				Black				Spanish American			
	Male		Female		Male		Female		Male		Female		Male	
	Num- ber	Mean	Num- ber	Mean	Num- ber	Mean	Num- ber	Mean	Num- ber	Mean	Num- ber	Mean	Num- ber	Mean
2-5.....	1561	11.8	1450	11.8	612	12.2	546	12.2	709	11.4	656	11.4	240	12.1
6-12.....	4261	12.4	4100	12.4	1877	13.0	1649	12.9	1655	12.0	1776	11.9	729	12.7
13-16.....	1762	13.6	1872	12.7	736	14.2	700	13.3	749	13.0	849	12.1	277	13.7
17-44.....	3077	14.9	6380	12.9	1873	15.2	3148	13.3	770	14.2	2230	12.3	434	14.8
45-59.....	1466	14.6	2435	13.2	926	15.0	1273	13.6	379	13.8	847	12.7	161	14.6
>59.....	1541	14.3	2185	13.3	1005	14.6	1371	13.6	409	13.4	658	12.5	127	14.0

Note: Hemoglobin measured in gm/100ml.

Table 7A Appendix. Comparison of All Persons with Deficient Serum Iron Values as Percentages of All Persons with Deficient or Acceptable Hemoglobin Values by Age and Sex for Combined States and for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Age and Sex	Low and High Income Ratio States				Low Income Ratio States				High Income Ratio States			
	Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml	
	Number	Percent With Deficient Serum Iron Values μ g/100ml	Number	Percent With Deficient Serum Iron Values μ g/100ml	Number	Percent With Deficient Serum Iron Values μ g/100ml	Number	Percent With Deficient Serum Iron Values μ g/100ml	Number	Percent With Deficient Serum Iron Values μ g/100ml	Number	Percent With Deficient Serum Iron Values μ g/100ml
2-5 All.....	17	47.2	182	4.4	13	30.4	57	5.2	4	100.0	125	4.0
6-9 All.....	23	13.0	498	12.5	18	5.5	101	9.9	5	40.0	397	13.0
10-12 All.....	13	23.1	545	10.8	12	16.7	106	16.1	1	100.0	439	9.6
13-16 Male.....	118	26.3	277	16.2	63	28.6	51	19.6	55	23.6	226	15.5
13-16 Female.....	17	47.1	281	14.2	11	63.6	60	13.3	6	16.6	221	14.5
17-44 Male.....	29	41.4	522	7.7	15	20.0	35	2.9	14	64.2	487	8.1
17-44 Female.....	64	59.4	841	22.1	42	47.6	115	30.4	22	81.8	726	20.8
45-59 Male.....	21	28.6	169	14.8	13	23.1	28	17.9	8	37.5	141	14.2
45-59 Female.....	17	64.8	248	20.3	7	57.1	42	28.6	10	70.0	206	19.9
>59 Male.....	50	53.0	195	13.3	24	45.8	32	18.8	26	69.2	163	12.3
>59 Female.....	20	60.0	379	15.8	11	45.4	49	28.6	9	77.7	330	13.9

Note: Only values for White, Black, and Spanish American persons are presented.

Hemoglobin and Serum Iron Deficient Value Classifications			
Hemoglobin (gm/100ml)		Serum Iron (μ g/100ml)	
<2 All.....	<9.0	<2 All.....	<30
2-5 All.....	<10.0	2-5 All.....	<40
6-12 All.....	<10.0	6-12 All.....	<50
13-16 Male.....	<12.0	>12 Male.....	<60
13-16 Female.....	<10.0	>12 Female.....	<40
>16 Male.....	<12.0		
>16 Female.....	<10.0		

Table 7B Appendix. *Comparison of White Persons with Deficient Serum Iron Values as Percentages of White Persons with Deficient or Acceptable Hemoglobin Values by Age and Sex for Combined States and for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Low and High Income Ratio States				Low Income Ratio States				High Income Ratio States			
	Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml	
	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$
2-5 All.....	5	80.0	111	2.7	4	75.0	19	5.3	1	100.0	92	2.2
6-9 All.....	6	16.7	330	12.5	5	20.0	28	21.4	1	0.0	302	11.5
10-12 All.....	0	—	332	10.6	0	—	38	23.6	0	—	294	8.8
13-16 Male.....	18	16.7	175	15.4	4	25.0	21	23.8	14	14.3	154	14.3
13-16 Female.....	3	66.7	159	11.3	3	66.7	19	21.0	0	—	140	10.0
17-44 Male.....	10	60.0	424	7.8	2	100.0	19	0.0	8	50.0	405	8.2
17-44 Female.....	13	53.8	632	29.0	4	25.0	48	31.3	9	66.7	584	20.1
45-59 Male.....	6	50.0	132	12.9	2	0.0	19	15.8	4	75.0	113	12.4
45-59 Female.....	6	66.7	193	20.7	1	0.0	21	42.9	5	80.0	172	18.0
>59 Male.....	27	74.1	171	11.7	8	62.5	20	15.0	19	79.0	151	11.2
>59 Female.....	9	66.7	324	13.6	3	33.3	28	32.1	6	83.3	296	11.8

Hemoglobin and Serum Iron Deficient Value Classifications

Hemoglobin (gm/100ml)

<2 All.....	<9.0
2-5 All.....	<10.0
6-12 All.....	<10.0
13-16 Male.....	<12.0
13-16 Female.....	<10.0
>16 Male.....	<12.0
>16 Female.....	<10.0

Serum Iron ($\mu\text{g}/100\text{ml}$)

<2 All.....	<30
2-5 All.....	<40
6-12 All.....	<50
>12 Male.....	<60
>12 Female.....	<40

Table 7C Appendix. *Comparison of Black Persons with Deficient Serum Iron Values as Percentages of Black Persons with Deficient or Acceptable Hemoglobin Values by Age and Sex for Combined States and for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Low and High Income Ratio States				Low Income Ratio States				High Income Ratio States			
	Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml	
	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$
2-5 All.....	8	25.0	40	7.5	7	14.3	23	4.4	1	100.0	17	11.7
6-9 All.....	11	0.0	81	13.5	10	0.0	35	8.6	1	0.0	46	17.2
10-12 All.....	8	25.0	111	17.9	8	25.0	36	19.3	0	—	75	17.3
13-16 Male.....	77	29.9	52	23.1	45	35.6	13	38.4	32	21.9	39	17.9
13-16 Female.....	12	50.0	63	23.8	7	71.4	17	17.7	5	20.0	46	26.1
17-44 Male.....	11	45.4	55	3.6	7	14.3	10	10.0	4	100.0	45	2.2
17-44 Female.....	29	72.4	98	32.7	24	70.8	29	69.0	5	80.0	69	17.4
45-59 Male.....	10	30.0	14	28.6	8	37.5	4	50.0	2	0.0	10	20.0
45-59 Female.....	7	57.1	26	30.8	4	50.0	8	37.5	3	66.7	18	27.7
>59 Male.....	18	50.0	17	35.2	12	50.0	9	33.3	6	50.0	8	37.5
>59 Female.....	7	85.7	36	38.9	5	80.0	16	31.3	2	100.0	20	45.0

Hemoglobin and Serum Iron Deficient Value Classifications

Hemoglobin (gm/100ml)		Serum Iron ($\mu\text{g}/100\text{ml}$)	
<2 All.....	<9.0	<2 All.....	<30
2-5 All.....	<10.0	2-5 All.....	<40
6-12 All.....	<10.0	6-12 All.....	<50
13-16 Male.....	<12.0	>12 Male.....	<60
13-16 Female.....	<10.0	>12 Female.....	<40
>16 Male.....	<12.0		
>16 Female.....	<10.0		

Table 7D Appendix. *Comparison of Spanish American Persons with Deficient Serum Iron Values as Percentages of Spanish American Persons with Deficient or Acceptable Hemoglobin Values by Age and Sex for Combined States and for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey 1968-1970*

Age and Sex	Low and High Income Ratio States				Low Income Ratio States				High Income Ratio States			
	Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml	
	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$	Number	Percent With Deficient Serum Iron Values $\mu\text{g}/100\text{ml}$
2-5 All.....	4	50.0	31	6.4	2	0.0	15	6.6	2	100.0	16	6.2
6-9 All.....	6	33.3	87	11.6	3	0.0	38	2.5	3	66.7	49	18.3
10-12 All.....	5	20.0	102	3.7	4	0.0	32	3.1	1	100.0	70	4.3
13-16 Male.....	23	21.7	50	12.0	14	7.1	17	0.0	9	44.4	33	18.0
13-16 Female.....	2	0.0	59	13.5	1	0.0	24	4.2	1	0.0	35	17.1
17-44 Male.....	8	12.5	43	11.6	6	0.0	6	0.0	2	50.0	37	13.5
17-44 Female.....	22	45.5	111	19.8	14	14.3	38	0.0	8	100.0	73	30.2
45-59 Male.....	5	0.0	23	17.4	3	0.0	5	0.0	2	0.0	18	22.2
45-59 Female.....	4	75.0	29	17.2	2	100.0	13	0.0	2	50.0	16	31.2
>59 Male.....	5	0.0	7	0.0	4	0.0	3	0.0	1	0.0	4	0.0
>59 Female.....	4	0.0	19	10.5	3	0.0	5	0.0	1	0.0	14	14.3

Hemoglobin and Serum Iron Deficient Value Classifications

Hemoglobin (gm/100ml)		Serum Iron ($\mu\text{g}/100\text{ml}$)	
<2 All.....	<9.0	<2 All.....	<30
2-5 All.....	<10.0	2-5 All.....	<40
6-12 All.....	<10.0	6-12 All.....	<50
13-16 Male.....	<12.0	>12 Male.....	<60
13-16 Female.....	<10.0	>12 Female.....	<40
>16 Male.....	<12.0		
>16 Female.....	<10.0		

Table 8A Appendix. *Comparison of All Persons with Deficient Transferrin Saturation Values as Percentages of All Persons with Deficient or Acceptable Hemoglobin Values by Age and Sex for Combined States and for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Low and High Income Ratio States				Low Income Ratio States				High Income Ratio States			
	Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml	
	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent
2-5 All.....	11	63.6	127	33.8	11	63.6	46	21.7	0	—	81	40.8
6-9 All.....	15	40.0	366	35.5	13	38.5	70	22.9	2	50.0	296	38.5
10-12 All.....	8	12.5	390	34.9	8	12.5	53	43.4	0	—	337	33.5
13-16 Male.....	66	36.4	202	28.2	38	31.6	33	33.3	28	57.1	169	27.2
13-16 Female.....	6	16.7	201	13.9	4	25.0	33	12.1	2	0.0	168	14.3
17-44 Male.....	21	47.5	434	14.0	11	27.3	22	4.5	10	70.0	412	14.6
17-44 Female.....	44	40.9	687	18.1	35	37.1	86	19.8	9	55.6	601	17.8
45-59 Male.....	12	16.7	140	26.4	8	0.0	19	36.8	4	50.0	121	24.8
45-59 Female.....	9	66.7	196	11.7	5	60.0	29	13.8	4	75.0	167	11.4
>59 Male.....	34	53.0	161	18.6	19	42.0	23	17.4	15	66.7	138	18.8
>59 Female.....	15	46.7	296	6.8	10	40.0	30	16.7	5	60.0	266	5.6

Note: Only Values for White, Black, and Spanish American persons are presented.

Hemoglobin and Transferrin Saturation Deficient Value Classifications			
Hemoglobin (gm/100ml)		Transferrin Saturation (percent)	
<2 All.....	<9.0	<2 All.....	<15.0
2-5 All.....	<10.0	2-12 All.....	<20.0
6-12 All.....	<10.0	>12 Male.....	<20.0
13-16 Male.....	<12.0	>12 Female.....	<15.0
13-16 Female.....	<10.0		
>16 Male.....	<12.0		
>16 Female.....	<10.0		

Table 8B Appendix. *Comparison of White Persons with Deficient Transferrin Saturation Values as Percentages of White Persons with Deficient or Acceptable Hemoglobin Values by Age and Sex for Combined States and for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Low and High Income Ratio States				Low Income Ratio States				High Income Ratio States			
	Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml	
	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent
2-5 All	4	100.0	77	40.3	4	100.0	15	40.0	0	—	62	40.4
6-9 All	5	40.0	259	35.9	4	25.0	23	34.8	1	100.0	236	36.0
10-12 All	0	—	270	33.3	0	—	29	44.9	0	—	241	31.9
13-16 Male	4	25.0	142	28.8	2	50.0	15	46.7	2	0.0	127	26.8
13-16 Female	1	0.0	127	11.8	1	0.0	15	20.0	0	—	112	10.7
17-44 Male	8	62.5	356	15.4	2	100.0	16	6.2	6	50.0	340	15.9
17-44 Female	10	40.0	544	18.0	4	25.0	47	19.2	6	50.0	497	17.9
45-59 Male	5	40.0	114	26.3	2	0.0	14	42.8	3	66.7	100	24.0
45-59 Female	4	50.0	160	13.1	1	0.0	18	22.2	3	66.7	142	12.0
>59 Male	22	63.7	148	17.6	8	62.5	17	17.6	14	64.3	131	17.5
>59 Female	7	57.1	266	6.0	3	33.3	21	23.8	4	75.0	245	4.5

Hemoglobin and Transferrin Saturation Deficient Value Classifications

Hemoglobin (gm/100ml)		Transferrin Saturation (percent)	
<2 All	<9.0	<2 All	<15.0
2-5 All	<10.0	2-12 All	<20.0
6-12 All	<10.0	>12 Male	<20.0
13-16 Male	<12.0	>12 Female	<15.0
13-16 Female	<10.0		
>16 Male	<12.0		
>16 Female	<10.0		

Table 8C Appendix. *Comparison of Black Persons with Deficient Transferrin Saturation Values as Percentages of Black Persons with Deficient or Acceptable Hemoglobin Values by Age and Sex for Combined States and for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Low and High Income Ratio States				Low Income Ratio States				High Income Ratio States			
	Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml	
	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent
2-5 All.....	5	60.0	31	25.8	5	60.0	19	15.8	0	—	12	41.6
6-9 All.....	7	57.1	51	37.3	6	66.7	21	28.6	1	0.0	30	43.4
10-12 All.....	4	25.0	64	43.3	4	25.0	17	52.8	0	—	47	42.6
13-16 Male.....	46	39.2	32	31.2	24	37.5	9	44.4	22	40.9	23	26.1
13-16 Female.....	4	25.0	42	19.1	2	50.0	9	11.1	2	0.0	33	21.2
17-44 Male.....	6	66.7	45	6.7	3	33.3	6	0.0	3	100.0	39	7.7
17-44 Female.....	20	60.0	77	20.8	17	58.9	21	38.1	3	66.7	56	14.3
45-59 Male.....	3	0.0	11	27.3	3	0.0	3	33.3	0	—	8	25.0
45-59 Female.....	3	66.7	17	11.8	2	50.0	4	0.0	1	100.0	13	15.4
>59 Male.....	8	50.0	8	50.0	7	42.9	3	33.3	1	100.0	5	60.0
>59 Female.....	5	60.0	23	13.0	4	75.0	8	0.0	1	0.0	15	20.0

Hemoglobin and Transferrin Saturation Deficient Value Classifications

Hemoglobin (gm/100ml)		Transferrin Saturation (percent)	
<2 All.....	<9.0	<2 All.....	<15.0
2-5 All.....	<10.0	2-12 All.....	<20.0
6-12 All.....	<10.0	>12 Male.....	<20.0
13-16 Male.....	<12.0	>12 Female.....	<15.0
13-16 Female.....	<10.0		
>16 Male.....	<12.0		
>16 Female.....	<10.0		

Table 8D Appendix. *Comparison of Spanish American Persons with Deficient Transferrin Saturation Values as Percentages of Spanish American Persons with Deficient or Acceptable Hemoglobin Values by Age and Sex for Combined States and for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Low and High Income Ratio States				Low Income Ratio States				High Income Ratio States			
	Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml		Persons with Deficient Hemoglobin Values gm/100ml		Persons with Acceptable Hemoglobin Values gm/100ml	
	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent	Number	Percent With Deficient Transferrin Saturation Values percent
2-5 All.....	2	0.0	19	21.1	2	0.0	12	8.3	0	—	7	42.9
6-9 All.....	3	0.0	56	32.2	3	0.0	26	77.0	0	—	30	53.3
10-12 All.....	4	0.0	56	30.4	4	0.0	7	14.3	0	—	49	32.7
13-16 Male.....	16	31.2	28	21.4	12	16.7	9	0.0	4	75.0	19	31.6
13-16 Female.....	1	0.0	32	15.6	1	0.0	9	0.0	0	—	23	21.7
17-44 Male.....	7	14.3	33	9.1	6	0.0	0	—	1	100.0	33	9.1
17-44 Female.....	14	14.3	66	15.2	14	14.3	18	0.0	0	—	48	20.8
45-59 Male.....	4	0.0	15	26.6	3	0.0	2	0.0	1	0.0	13	30.8
45-59 Female.....	2	100.0	19	0.0	2	100.0	7	0.0	0	—	12	0.0
>59 Male.....	4	0.0	5	0.0	4	0.0	3	0.0	0	—	2	0.0
>59 Female.....	3	0.0	7	14.3	3	0.0	1	0.0	0	—	6	16.7

Hemoglobin and Transferrin Saturation Deficient Value Classifications

Hemoglobin (gm/100ml)		Transferrin Saturation (percent)	
<2 All.....	<9.0	<2 All.....	<15.0
2-5 All.....	<10.0	2-12 All.....	<20.0
6-12 All.....	<10.0	>12 Male.....	<20.0
13-16 Male.....	<12.0	>12 Female.....	<15.0
13-16 Female.....	<10.0		
>16 Male.....	<12.0		
>16 Female.....	<10.0		

Table 9A Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for All Persons Two through Five Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	2086	238	164	344	208
First Quartile.....	<11.0	<11.5	<11.6	<11.5	<11.3
Second Quartile.....	11.0-11.8	11.5-12.2	11.6-12.3	11.5-12.2	11.3-11.9
Third Quartile.....	11.9-12.6	12.3-12.8	12.4-12.9	12.3-12.9	12.0-12.6
Fourth Quartile.....	>12.6	>12.8	>12.9	>12.9	>12.6

Table 9B Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for All Persons Six through Nine Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	4543	690	492	1341	808
First Quartile.....	<11.6	<11.8	<11.9	<11.8	<11.7
Second Quartile.....	11.6-12.3	11.8-12.4	11.9-12.5	11.8-12.5	11.7-12.3
Third Quartile.....	12.4-13.0	12.5-13.2	12.6-13.2	12.6-13.1	12.4-13.0
Fourth Quartile.....	>13.0	>13.2	>13.2	>13.1	>13.0

Table 9C Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for All Persons Ten through Twelve Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	3777	715	487	1810	1378
First Quartile.....	<11.8	<11.8	<12.2	<12.1	<12.1
Second Quartile.....	11.8-12.6	11.8-12.6	12.2-12.8	12.1-12.8	12.1-12.7
Third Quartile.....	12.7-13.3	12.7-13.3	12.9-13.4	12.9-13.4	12.8-13.4
Fourth Quartile.....	>13.3	>13.3	>13.4	>13.4	>13.4

Table 9D Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for Males Thirteen through Sixteen Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	2109	623	404	1313	1016
First Quartile.....	<12.5	<12.2	<12.4	<12.5	<12.5
Second Quartile.....	12.5-13.2	12.2-13.0	12.4-13.2	12.5-13.3	12.5-13.2
Third Quartile.....	13.3-14.1	13.1-13.8	13.3-14.1	13.4-14.2	13.3-14.1
Fourth Quartile.....	>14.1	>13.8	>14.1	>14.2	>14.1

Table 9E Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for Females Thirteen through Sixteen Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	2109	410	277	1208	983
First Quartile.....	<12.0	<11.6	<11.9	<12.1	<12.1
Second Quartile.....	12.0-12.7	11.6-12.7	11.9-12.9	12.1-12.9	12.1-12.8
Third Quartile.....	12.8-13.4	12.8-13.5	13.0-13.6	13.0-13.5	12.9-13.4
Fourth Quartile.....	>13.4	>13.5	>13.6	>13.5	>13.4

Table 9F Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for Males Seventeen through Forty-four Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	3423	749	597	1575	1036
First Quartile.....	<14.0	<14.0	<14.2	<14.2	<14.2
Second Quartile.....	14.0-14.9	14.0-15.0	14.2-15.1	14.2-15.0	14.2-15.0
Third Quartile.....	15.0-15.7	15.1-15.6	15.2-15.7	15.1-15.7	15.1-15.7
Fourth Quartile.....	>15.7	>15.6	>15.7	>15.7	>15.7

Table 9G Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for Females Seventeen through Forty-four Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	6747	1544	1174	3117	2032
First Quartile.....	<12.1	<11.7	<11.9	<12.2	<12.2
Second Quartile.....	12.1-13.0	11.7-12.8	11.9-12.9	12.2-13.0	12.2-13.0
Third Quartile.....	13.1-13.7	12.9-13.7	13.0-13.7	13.1-13.8	13.1-13.8
Fourth Quartile.....	>13.7	>13.7	>13.7	>13.8	>13.8

Table 9H Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for Males Forty-five through Fifty-nine Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	1470	286	220	627	425
First Quartile.....	<13.9	<13.5	<13.6	<14.0	<14.0
Second Quartile.....	13.9-14.8	13.5-14.5	13.6-14.6	14.0-14.8	14.0-14.9
Third Quartile.....	14.9-15.6	14.6-15.3	14.7-15.4	14.9-15.7	15.0-15.7
Fourth Quartile.....	>15.6	>15.3	>15.4	>15.7	>15.7

Table 9I Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for Females Forty-five through Fifty-nine Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	2492	358	267	942	643
First Quartile.....	< 12.4	< 11.8	< 12.4	< 12.6	< 12.5
Second Quartile.....	12.4-13.3	11.8-13.1	12.4-13.3	12.6-13.4	12.5-13.4
Third Quartile.....	13.4-14.0	13.2-13.9	13.4-14.0	13.5-14.2	13.5-14.2
Fourth Quartile.....	> 14.0	> 13.9	> 14.0	> 14.2	> 14.2

Table 9J Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for Males Over Fifty-nine Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	1677	455	326	1008	800
First Quartile.....	< 13.4	< 12.9	< 13.0	< 13.5	< 13.6
Second Quartile.....	13.4-14.3	12.9-13.8	13.0-14.1	13.5-14.4	13.6-14.5
Third Quartile.....	14.4-15.3	13.9-14.9	14.2-15.0	14.5-15.3	14.6-15.4
Fourth Quartile.....	> 15.3	> 14.9	> 15.0	> 15.3	> 15.4

Table 9K Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Selected Biochemicals for Females Over Fifty-nine Years of Age for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Mean Hematocrit (percent)	Mean Serum Iron ($\mu\text{g}/100\text{ ml}$)	Mean Transferrin Saturation (percent)	Mean Serum Folate (ng/ml)	Mean Red Cell Folate (ng/ml)
Number.....	2377	509	379	1360	1098
First Quartile.....	< 12.5	< 12.2	< 12.4	< 12.6	< 12.7
Second Quartile.....	12.5-13.3	12.2-13.2	12.4-13.3	12.6-13.5	12.7-13.5
Third Quartile.....	13.4-14.2	13.3-14.1	13.4-14.1	13.6-14.3	13.6-14.3
Fourth Quartile.....	> 14.2	> 14.1	> 14.1	> 14.3	> 14.3

Table 10 Appendix. *Quartile Intervals of Hemoglobin Values for Corresponding Iron Intakes for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Hemoglobin Quartile	Age Group							Pregnant or Lactating Females	All Persons 60 Years of Age and Over
	0-36 Months	10-11 Years		12-14 Years		15-16 Years			
	All	Male	Female	Male	Female	Male	Female		
Number.....	915	729	1104	1472	1520	521	559	437	1924
First Quartile.....	<10.1	<12.1	<11.8	<12.4	<12.0	<13.0	<11.8	<11.3	<12.8
Second Quartile.....	10.1-11.3	12.1-12.9	11.8-12.5	12.4-13.1	12.0-12.7	13.0-14.0	11.8-12.7	11.3-12.1	12.8-13.8
Third Quartile.....	11.4-12.1	13.0-13.6	12.6-13.2	13.2-14.0	12.8-13.4	14.1-14.8	12.8-13.5	12.2-12.9	13.9-14.7
Fourth Quartile.....	>12.1	>13.6	>13.2	>14.0	>13.4	>14.8	>13.5	>12.9	>14.7

3. SERUM ALBUMIN AND PROTEIN

Abstract: *In general, there was a low prevalence of "deficient" values in most subsegments of the population. The highest percentage of "deficient" and "low" values was seen in black and Spanish-American populations in the low-income-ratio states. Within each group of states, there appeared to be little relationship between the prevalence of "deficient" and "low" values and economic level. However, within any given Poverty-Income-Ratio group, there was a higher prevalence of "deficient" and "low" values in the low-income-ratio states than in the high-income-ratio states. There was a high prevalence of "low" serum albumin values among pregnant or lactating women. Generally, the dietary protein intake was above the standard used for evaluation of dietary intake, and there appeared to be no relationship between protein intake and serum albumin levels. Based on these data, protein nutriture appears to be adequate in most segments of the population. Further studies and continued surveillance is necessary among pregnant women, and among blacks and Spanish-Americans in the low-income-ratio states.*

Concentrations of blood proteins below "normal" ranges may be indicative of inadequate protein nutriture. However, serum albumin and total serum protein concentrations may be altered by factors other than dietary intakes of protein. Blood proteins may be reduced or increased in certain disease states; serum albumin levels normally decrease during pregnancy; and recent investigations indicate that oral contraceptives of the estrogen type may result in reduced serum albumin levels.

In the low-income-ratio states, approximately 10 percent of the females in the age group 17- to 34-years were either pregnant or lactating. The corresponding figure for the high-income-ratio states was about 13 percent. Smaller percentages of pregnant or lactating females were present in the age groups 13- to 16-years and 35- to 44-years (See Tables 9A & 9B, Chapter II). A preliminary examination of serum albumin data for all females showed that a distortion of the data resulted when values for pregnant and lactating women were included. In the evaluations of the serum albumin data, therefore, the values for pregnant and lactating women were considered separately from non-pregnant women.

The use of oral contraceptives by women in the survey population was not identified. Hence, the possible effect on serum albumin values could not be assessed.

The results of the analyses of control samples provided by the Nutrition Program to participating laboratories indicated good reproducibility and standardization of the method used for determining serum protein. The results of the serum albumin assays showed more variation between laboratories, but standardization within most of the laboratories was good.

The serum albumin concentrations employed for the classification of "deficient" and "low" values are shown in the tables included in this section. No standard was available for use in the classification of "deficient" values in persons under 17 years of age. Therefore, this age group was evaluated only in terms of the percentage of individuals with "low" values. The cumulative percentage distribution data included in the Appendix permits the evaluation of the percentage of persons with serum albumin concentrations below the lower limit of the classification for "low" values.

MEAN SERUM ALBUMIN VALUES

The mean serum albumin values for all age, sex, and ethnic groups in both the low- and high-income-ratio states were within a normal range, i.e., they were higher than the upper limit of the "low" classification. The mean values, tabulated by age, sex, and ethnic group, are shown in Tables 1A and 1B. In the low-income-ratio states, white

persons in all age groups had higher mean serum albumin concentrations than did either the black or Spanish-American populations. The mean values for the latter two ethnic groups were similar. In the high-income-ratio states, the Spanish-American population had the highest mean serum albumin values, the black population had the lowest. In both groups of states, mean serum albumin values increased with age in children and then decreased with age in adults.

DEFICIENT AND LOW SERUM ALBUMIN VALUES

Ethnic Group and Age Differences

In the low-income-ratio states, a small percentage of the adult population had "deficient" serum albumin values (Table 2A). "Low" values were found in 3.5 percent of the white population. The percentages of "low" values for the black and Spanish-American populations were approximately three times that of the white population.

"Deficient" and "low" serum albumin values were considerably less prevalent in the high-income-ratio states (Table 3A). This was true for all ethnic groups and for essentially all age groups. In fact, in the high-income-ratio states the three ethnic groups had similar percentages of "deficient" and "low" values. Thus, the albumin status of the black and Spanish-American populations appeared to be significantly better in the high-income-ratio states. The difference between the white populations of the two groups of states was much less striking.

Figures 1a to 1f show the percentages of persons with combined "deficient" and "low" values separated by age, sex, and ethnic group. The higher prevalence of the combined values in the low-income-ratio states is apparent especially among blacks and Spanish-Americans. These figures also show that the percentage of persons with "deficient" and "low" values increased with age. This was true in varying degrees for all ethnic groups in both groups of states.

Sex Differences

Figures 1a to 1f show that in the age groups between 13 and 59 years, the percentage of "deficient" and "low" values generally was higher in women than in men. This finding was most consistent for black women. It was also true for the Spanish-American women with the exception of the 17- to 34-year age group in the low-income-ratio states. Sex differences were less consistent for the white population.

Poverty-Income-Ratio Comparison

Serum albumin values are presented for different Poverty-Income-Ratio (PIR) levels (Tables 2B-D, 3B-D). These data indicated no clear-cut relationship between serum albumin values and PIR level.

Separation of the populations in both groups of states into five subgroups by PIR values also failed to show any relationship between serum albumin values and income. In the low-income-ratio states, for each PIR group, the white population had the lowest percentages of "deficient" and "low" serum albumin values (Figure 2a). There were relatively small numbers of black and Spanish-American persons in the two highest PIR groups. Therefore, the comparatively high percentages of "deficient" and "low" values for Spanish-Americans with PIR values 2.00-2.99 and of blacks with PIR values 3.00 and above probably have little significance.

In the high-income-ratio states, the prevalence of persons with combined "deficient" and "low" serum albumin values was low—in the order of 4 percent or less (Figure 2b). Within this narrow range and for the three lowest PIR groups, there was a trend toward a decreasing percentage of "deficient" and "low" values with an increase in PIR value. However, because of the low percentage figures involved, this trend is difficult to evaluate. In general the data do not show a relationship between serum albumin levels and economic status as measured by PIR.

Pregnant or Lactating Women

The prevalence of serum albumin values below 3.5 gm/100 ml. among pregnant or lactating women ranged from about 45 to 65 percent in the low-income-ratio states (Figure 3a). In the high-income-ratio states the corresponding percentages ranged from approximately 50 to 95 percent (Figure 3b). Serum albumin values below 3.5 gm/100 ml. were far less prevalent among non-pregnant and non-lactating females in the same age groups.

The high prevalence of low values among pregnant women suggest that the standard for serum albumin levels merits reconsideration. Further studies are needed to determine the relationship of these lower serum albumin values to the health status of the mother and her infant.

SERUM ALBUMIN AND DIETARY PROTEIN INTAKE

A comparison of serum albumin values with dietary protein intakes was made by calculating

the mean protein intakes for persons separated into four quartiles by serum albumin values (Table 4). Dietary protein intakes and serum albumin levels were recorded for only 177 infants and young children less than 36 months of age. The relatively small number of children and the significant age differences in diet in this group makes analysis of their data less meaningful. The results of this tabulation incorporating these limitations indicate no consistent relationship between dietary protein and serum albumin, although protein intake is higher in the upper quartiles than in the lowest quartile.

Mean protein intakes for the age groups 10 through 16 years of age and for persons 60 years of age and older showed no consistent relationship to quartile of serum albumin values. All mean values were higher than recommended allowances for each age group.

Pregnant or lactating females did show a consistent increase in mean protein intakes from the first through the fourth quartile. Mean protein intakes within all quartiles were consistently higher than the standard for pregnant women. Yet, the percentages of "deficient" and "low" serum albumin values were quite high (Figures 3a and 3b). Only in the highest quartile were all serum albumin values above the "low" level (3.5 gm/100 ml.). (Appendix Table 5) These data show that despite mean protein intakes above the dietary standard, a large number of pregnant women have serum albumin values less than 3.5 gm/100 ml. and again raises the possibility that these marginally low values may be a normal physiologic consequence of pregnancy which does not represent a deficient state. The possibility also exists that the dietary standards for pregnant or lactating women are too low.

Appendix Table 5 also shows that, with the exception of the pregnant or lactating women, more than 75 percent of the persons included in the various subgroups had serum albumin values above the "low" category. This finding, together with the fact that mean protein intakes were generally above the standard, could account for the low coefficients of correlation shown in Table 4 for each of the subgroups. Significant correlations between appropriate biochemical parameters and dietary intakes are seldom observed when both are within a narrow range.

There was little difference among quartile groups for mean protein intakes expressed as grams of protein per 1000 calories. The somewhat higher values for the aging population and the

pregnant or lactating women indicated that the diet of these adult populations had a higher protein content in relation to calories than the diets of infants and young people.

SERUM PROTEIN

Protein malnutrition causes a greater reduction of serum albumin concentrations than of other blood proteins. Low serum albumin values will usually be reflected in lowered total protein values. In general, the results obtained from analysis for serum total protein supported the findings of the serum albumin analyses.

As for serum albumin, no standards were available for classifying "deficient" serum protein values for age groups under 17 years. Therefore, the following tables include only the percentages of persons with "low" values for these age groups.

The prevalence of "deficient" and "low" serum protein values differed little from the findings for serum albumin (Tables 5A and 6A). This was true for all ethnic groups in both groups of states, with a few exceptions. The black and Spanish-American populations in the low-income-ratio states had lower percentages of "low" serum protein values than of "low" serum albumin values. However, the combined percentages of "deficient" and "low" values for these two parameters were quite similar. The white population in this group of states had a slightly higher percentage of "deficient" and "low" serum protein values. Thus the difference between ethnic groups apparent for serum albumin values in the low-income-ratio states was not observed for serum protein values. In the high-income-ratio states, the percentages of "deficient" and "low" values for both serum protein and serum albumin were too low to permit any meaningful comparisons.

The percentage of "deficient" and "low" serum protein values increased with age following the pattern seen for serum albumin. This increase with age was more apparent in the low-income-ratio states than in the high-income-ratio states. Sex differences for serum protein did not correspond to those for serum albumin in that females did not have consistently higher percentages of "deficient" and "low" values.

The data for serum protein supported findings for serum albumin in terms of the relationship to income level. The separation of the populations into three subgroups with respect to PIR value (PIR less than one, PIR greater than one, and unknown PIR values) showed that serum protein

values were unrelated to PIR (Tables 5B-D and 6B-D). Percentages of "deficient" and "low" serum protein values differed little between persons of the same ethnic group with different income levels. The Spanish-American population in the low-income-ratio states was an exception. Those with a PIR value of less than one had a combined percentage of "deficient" and "low" values of 9.5 percent; the corresponding percentage for persons with a PIR value greater than one was 16.6 percent. Thus, in this instance the protein status appeared to be inversely related to PIR value.

SUMMARY

The black and Spanish-American populations in the low-income-ratio states had the highest percentages of "deficient" and "low" serum albumin values. This was true for both sexes and for all age groups. For these ethnic groups, a sizable number of children under 17 years of age had "low" values (from 5 to 10 percent in the various age groups); adults had combined percentages of "deficient" and "low" values of from 15 to 20 percent. The percentages for females were higher than those for males in all age groups from 13 to 59 years. Thus black and Spanish-American women of child-bearing age had a greater percentage of "deficient" and "low" serum albumin values than any other subgroup of the survey population.

The serum albumin status was generally better in the high-income-ratio states than in the low-income-ratio states. Differences in albumin status between the two groups of states was most striking for blacks and Spanish-Americans.

Serum albumin status was age and sex dependent. In general, percentages of "deficient" and "low" values were higher for females than for males and for older persons than for younger individuals. The data presented here raise the question as to whether this age dependency reflects normal changes with age or a true change in protein nutriture with age.

Within each group of states there was relatively little difference in serum albumin status between persons at different income levels. However, for a given PIR value, there were higher percentages of persons with "deficient" and "low" values

in the low-income-ratio states than in the high-income-ratio states.

There was a very high prevalence of serum albumin values below 3.5 gm/100 ml. among pregnant or lactating women, ranging from 45 to 95 percent in different subsegments of the population. Because of this high prevalence and the fact that most of the "low" values clustered near the cut-off point, a reassessment of the standards for pregnant women should be made.

Serum albumin values for selected age groups, with the exception of values for pregnant or lactating females, showed no consistent relationship to mean protein intakes. The coefficients of correlation between serum albumin values and protein intakes were positive but were very low for all subgroups evaluated.

In general, the prevalence of "deficient" and "low" serum protein values was comparable to findings for serum albumin. In the low-income-ratio states, serum protein values did not differ as much between ethnic groups as did serum albumin values. Serum protein status appeared to be age dependent but not particularly sex dependent. There was little relationship between the percentages of "deficient" or "low" serum protein values and PIR except among the Spanish-American population in the low-income-ratio states where there appeared to be an inverse relationship.

The serum albumin and protein data presented in this section show that there was a low prevalence of "deficient" values in most subgroups of the population, associated with generally high mean albumin and protein values. In addition, the dietary protein intake of most segments of the population was well above the standard and there was little relationship seen between protein intake and serum albumin levels.

These findings suggest that protein nutriture was not of major public health significance in the population studied. The data do suggest, however, that certain subsegments of the population including blacks and Spanish-Americans in the low-income-ratio states and pregnant women should be further studied and monitored to assess the relationship of their protein status to health and morbidity.

Table 1A. *Mean Serum Albumin Values by Age and Ethnic Group for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Low Income Ratio States						
Age	Ethnic Group					
	White		Black		Spanish American	
	Number	Mean	Number	Mean	Number	Mean
<6.....	206	4.40	346	4.11	81	4.16
6-12.....	625	4.51	1198	4.21	463	4.23
13-16.....	324	4.61	797	4.24	260	4.25
17-34.....	340	4.54	595	4.02	250	4.15
35-59.....	535	4.36	659	4.02	359	3.99
>59.....	531	4.33	531	3.94	140	3.90
High Income Ratio States						
Age	Ethnic Group					
	White		Black		Spanish American	
	Number	Mean	Number	Mean	Number	Mean
<6.....	302	4.32	89	4.18	113	4.44
6-12.....	1731	4.37	591	4.32	620	4.57
13-16.....	855	4.42	316	4.34	298	4.61
17-34.....	2189	4.41	390	4.25	470	4.51
35-59.....	2081	4.25	413	4.19	458	4.40
>59.....	1572	4.14	207	4.06	101	4.19

NOTE: Serum Albumin measured in gm/100ml.

Table 1B. *Mean Serum Albumin Values for White, Black, and Spanish American Persons Combined by Age and Sex for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Low Income Ratio States				
Age	Sex			
	Male		Female	
	Number	Mean	Number	Mean
<6.....	342	4.25	291	4.17
6-12.....	1178	4.28	1108	4.31
13-16.....	656	4.34	725	4.32
17-34.....	345	4.36	840	4.13
35-59.....	499	4.21	1054	4.09
>59.....	514	4.12	688	4.10
High Income Ratio States				
Age	Sex			
	Male		Female	
	Number	Mean	Number	Mean
<6.....	265	4.29	239	4.37
6-12.....	1558	4.39	1384	4.42
13-16.....	736	4.48	733	4.40
17-34.....	1141	4.61	1908	4.28
35-59.....	1186	4.35	1766	4.21
>59.....	781	4.15	1099	4.12

NOTE: Serum Albumin measured in gm/100ml.

Table 2A. *Percent of Persons Having Deficient or Low Serum Albumin Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values
TOTAL ¹	2561	0.5 ²	3.5	4126	2.0 ²	11.1	1553	2.3 ²	10.6
<6 Male	119		0.0	186		2.2	37		5.4
<6 Female	87		1.1	160		5.0	44		2.8
6-12 Male	339		1.5	594		10.8	245		9.4
6-12 Female	286		1.7	604		9.1	218		7.3
13-16 Male	164		2.4	377		7.2	115		3.5
13-16 Female	160		0.6	420		10.2	145		14.5
17-34 Male	106	0.0	0.9	161	1.2	5.6	78	1.3	11.5
17-34 Female	234	0.4	3.8	434	2.1	16.1	172	2.9	9.3
35-59 Male	208	0.5	5.8	181	2.2	12.2	110	0.0	9.1
35-59 Female	327	0.6	4.9	478	1.9	13.6	249	2.8	15.3
>59 Male	241	0.4	5.8	206	3.4	18.0	67	1.5	16.4
>59 Female	290	0.7	7.2	325	1.2	17.2	73	2.7	16.4

Table 2B. *Percent of Persons with a Poverty Income Ratio Less Than One Having Deficient or Low Serum Albumin Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values
TOTAL ¹	970	0.6 ²	3.4	2575	2.2 ²	10.4	951	1.2 ²	10.7
<6 Male	47		0.0	122		1.6	27		7.4
<6 Female	36		0.0	94		6.4	29		8.4
6-12 Male	122		1.6	381		8.9	155		10.3
6-12 Female	102		1.0	409		9.8	148		8.1
13-16 Male	71		2.8	237		5.9	75		4.0
13-16 Female	59		0.0	266		5.6	98		12.2
17-34 Male	19	0.0	0.0	86	0.0	4.7	48	0.0	10.4
17-34 Female	73	0.0	2.7	256	2.0	14.5	93	1.1	8.6
35-59 Male	58	0.0	5.2	87	2.3	12.6	58	0.0	8.6
35-59 Female	115	0.9	4.3	269	2.6	14.9	138	2.2	15.9
>59 Male	126	0.8	7.1	132	3.8	18.2	36	0.0	19.4
>59 Female	142	0.7	6.3	236	1.7	17.8	46	2.2	19.6

¹ Total excludes persons with unknown age and unknown sex.

² Based on values for persons over sixteen years of age.

Serum Albumin Deficient and Low Value Classifications (gm/100ml)

	Deficient	Low
<1	Standard not Available	<2.50
1-5	Standard not Available	<3.00
6-16	Standard not Available	<3.50
>16	<2.80	2.80-3.49

Table 2C. *Percent of Persons with a Poverty Income Ratio Greater Than One Having Deficient or Low Serum Albumin Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values
TOTAL ¹	1128	0.6 ²	8.2	766	1.9 ²	10.1	344	2.8 ²	11.0
<6 Male	43		0.0	21		0.0	7		0.0
<6 Female	33		0.0	26		0.0	6		0.0
6-12 Male	141		0.7	88		10.2	43		2.8
6-12 Female	121		0.8	95		7.4	38		7.9
13-16 Male	68		1.5	59		5.1	17		5.9
13-16 Female	63		0.0	65		7.7	20		25.0
17-34 Male	66	0.0	1.5	39	0.0	5.1	22	0.0	18.2
17-34 Female	117	0.9	3.4	95	3.2	14.7	45	2.2	8.8
35-59 Male	125	0.8	6.4	63	3.2	12.7	42	0.0	11.9
35-59 Female	166	0.6	4.8	119	0.8	11.8	66	4.5	18.6
>59 Male	76	0.0	2.6	48	4.2	16.7	21	4.8	14.3
>59 Female	109	0.9	9.2	48	0.0	14.6	17	0.0	17.6

Table 2D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Serum Albumin Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values
TOTAL ¹	463	0.0	4.3	785	1.3 ²	14.5	258	5.1 ²	8.9
<6 Male	29		0.0	43		4.7	3		0.0
<6 Female	18		5.6	40		5.0	9		0.0
6-12 Male	76		2.6	125		16.8	47		12.8
6-12 Female	63		4.8	100		8.0	32		3.1
13-16 Male	25		4.0	81		12.3	23		0.0
13-16 Female	38		2.6	89		25.8	27		14.8
17-34 Male	21	0.0	0.0	36	5.6	8.3	8	12.5	0.0
17-34 Female	44	0.0	6.8	83	1.2	22.9	34	8.8	11.8
35-59 Male	25	0.0	4.0	31	0.0	9.7	10	0.0	0.0
35-59 Female	46	0.0	6.5	90	1.1	12.2	45	2.2	15.6
>59 Male	39	0.0	7.7	26	0.0	19.2	10	0.0	10.0
>59 Female	39	0.0	5.1	41	0.0	17.1	10	10.0	0.0

¹ Total excludes persons with unknown age and unknown sex.

² Based on values for persons over sixteen years of age.

Serum Albumin Deficient and Low Value Classifications (gm/100ml)

	Deficient	Low
<1	Standard not Available	<2.50
1-5	Standard not Available	<3.00
6-16	Standard not Available	<3.50
>16	<2.80	2.80-3.49

Table 3A. *Percent of Persons Having Deficient or Low Serum Albumin Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values
TOTAL ¹	8730	0.2 ²	2.3	2006	0.2 ²	2.8	2060	0.0	1.0
<6 Male	156		1.3	54		1.9	55		1.8
<6 Female	146		1.4	35		0.0	58		0.0
6-12 Male	948		1.6	295		1.4	315		0.8
6-12 Female	783		0.9	296		2.7	305		0.0
13-16 Male	437		0.7	159		0.0	140		0.0
13-16 Female	418		0.5	157		2.5	158		1.3
17-34 Male	856	0.2	0.1	123	0.0	0.0	162	0.0	0.0
17-34 Female	1333	0.1	2.3	267	0.0	5.6	308	6.0	1.9
35-59 Male	896	0.2	2.2	135	0.0	2.2	155	0.0	0.0
35-59 Female	1185	0.0	3.6	278	0.4	4.0	303	0.0	3.0
>59 Male	659	0.5	4.7	82	1.2	6.1	40	0.0	2.5
>59 Female	918	0.1	4.6	125	0.0	4.8	61	0.0	1.6

Table 3B. *Percent of Persons with a Poverty Income Ratio Less Than One Having Deficient or Low Serum Albumin Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values
TOTAL ¹	1346	0.3 ²	3.3	593	0.0	3.7	633	0.0	1.3
<6 Male	30		3.3	19		0.0	22		0.0
<6 Female	29		3.4	13		0.0	28		0.0
6-12 Male	145		2.1	95		2.1	102		0.0
6-12 Female	125		0.0	98		3.1	112		0.0
13-16 Male	51		0.0	46		0.0	46		0.0
13-16 Female	50		2.0	48		4.2	60		1.7
17-34 Male	105	1.0	0.0	27	0.0	0.0	29	0.0	0.0
17-34 Female	208	0.0	1.9	89	0.0	7.9	82	0.0	3.7
35-59 Male	99	1.0	7.1	34	0.0	2.9	32	0.0	0.0
35-59 Female	129	0.0	3.1	64	0.0	3.1	98	0.0	3.1
>59 Male	129	0.0	5.4	22	0.0	9.1	11	0.0	0.0
>59 Female	246	0.4	6.5	38	0.0	7.9	16	0.0	6.2

¹ Total excludes persons with unknown age and unknown sex.

² Based on values for persons over sixteen years of age.

Serum Albumin Deficient and Low Value Classifications (gm/100ml)

	Deficient	Low
<1	Standard not Available	<2.50
1-5	Standard not Available	<3.00
6-16	Standard not Available	<3.50
>16	<2.80	2.80-3.49

Table 3C. *Percent of Persons with a Poverty Income Ratio Greater Than One Having Deficient or Low Serum Albumin Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values
TOTAL ¹	6530	0.1 ²	2.1	1120	0.3 ²	2.6	1082	0.0	0.6
<6 Male	111		0.9	23		4.3	24		0.0
<6 Female	101		1.0	20		0.0	29		0.0
6-12 Male	705		1.7	156		1.3	166		0.6
6-12 Female	584		1.2	160		1.9	143		0.0
13-16 Male	325		0.6	83		0.0	70		0.0
13-16 Female	323		0.3	88		2.3	67		0.0
17-34 Male	652	0.2	0.2	65	0.0	0.0	99	0.0	0.0
17-34 Female	968	0.1	2.5	138	0.0	5.1	165	0.0	1.2
35-59 Male	740	0.1	1.5	82	0.0	1.2	103	0.0	0.0
35-59 Female	972	0.0	3.7	181	0.6	5.0	155	0.0	2.6
>59 Male	469	0.6	4.1	53	1.9	3.8	24	0.0	0.0
>59 Female	580	0.0	3.8	71	0.0	2.8	37	0.0	0.0

Table 3D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Serum Albumin Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

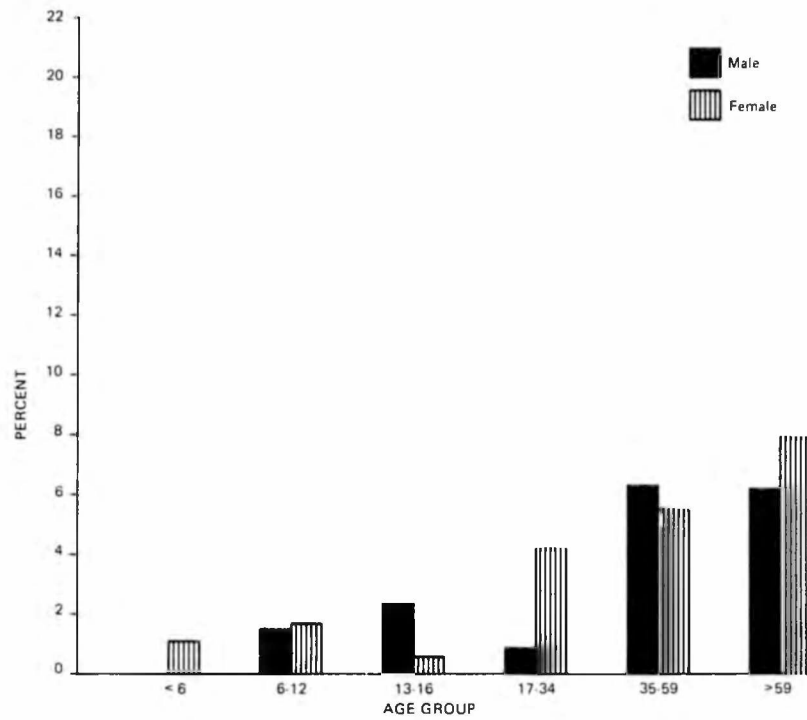
Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values	Total Number	Deficient Values	Low Values
TOTAL ¹	854	0.0	2.0	293	0.0	2.0	345	0.0	1.7
<6 Male	15		0.0	12		0.0	9		11.1
<6 Female	16		0.0	2		0.0	6		0.0
6-12 Male	98		0.0	44		0.0	47		0.0
6-12 Female	74		0.0	38		5.3	50		0.0
13-16 Male	61		1.6	30		0.0	24		0.0
13-16 Female	45		0.0	21		0.0	31		3.2
17-34 Male	99	0.0	0.0	31	0.0	0.0	34	0.0	0.0
17-34 Female	157	0.0	1.3	40	0.0	2.5	61	0.0	1.6
35-59 Male	57	0.0	3.5	19	0.0	5.3	20	0.0	0.0
35-59 Female	84	0.0	3.6	33	0.0	0.0	50	0.0	4.0
>59 Male	61	0.0	8.2	7	0.0	14.3	5	0.0	20.0
>59 Female	87	0.0	4.6	16	0.0	6.3	8	0.0	0.0

¹ Total excludes persons with unknown age and unknown sex.

Serum Albumin Deficient and Low Value Classifications (gm/100ml)

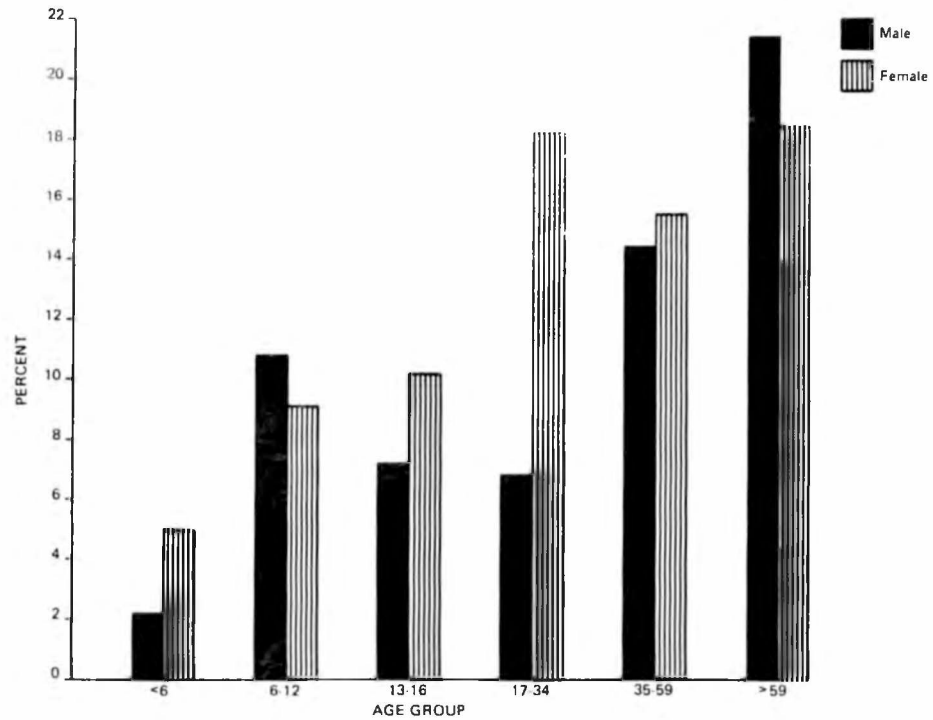
	Deficient	Low
<1	Standard not Available	<2.50
1-5	Standard not Available	<3.00
6-16	Standard not Available	<3.50
>16	<2.80	2.80-3.49

Figure 1a—Percent of White Persons Having Deficient or Low Serum Albumin Values by Age and Sex for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



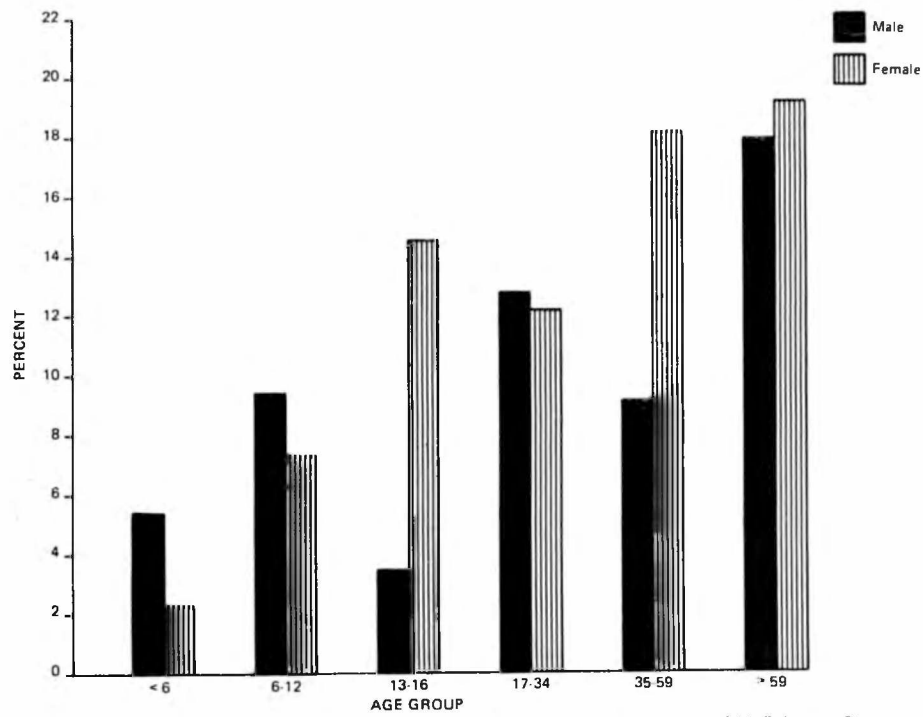
Deficient and Low Value Classifications - Table Reference: 2A.

Figure 1b—Percent of Black Persons Having Deficient or Low Serum Albumin Values by Age and Sex for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



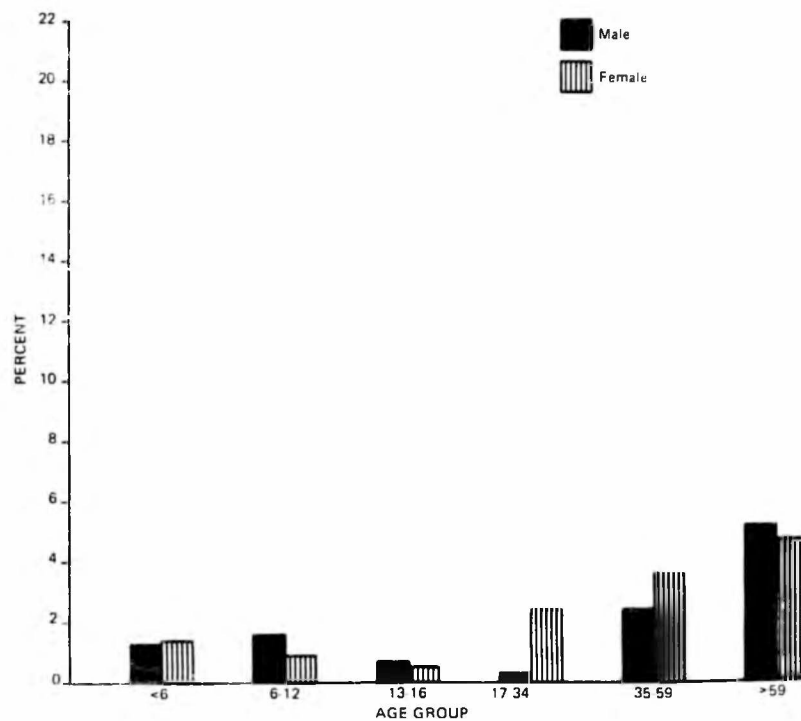
Deficient and Low Value Classifications - Table Reference: 2A.

Figure 1c—Percent of Spanish American Persons Having Deficient or Low Serum Albumin Values by Age and Sex for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classifications — Table Reference: 2A.

Figure 1d—Percent of White Persons Having Deficient or Low Serum Albumin Values by Age and Sex for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classification — Table Reference: 3A.

Figure 1e—Percent of Black Persons Having Deficient or Low Serum Albumin Values by Age and Sex for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

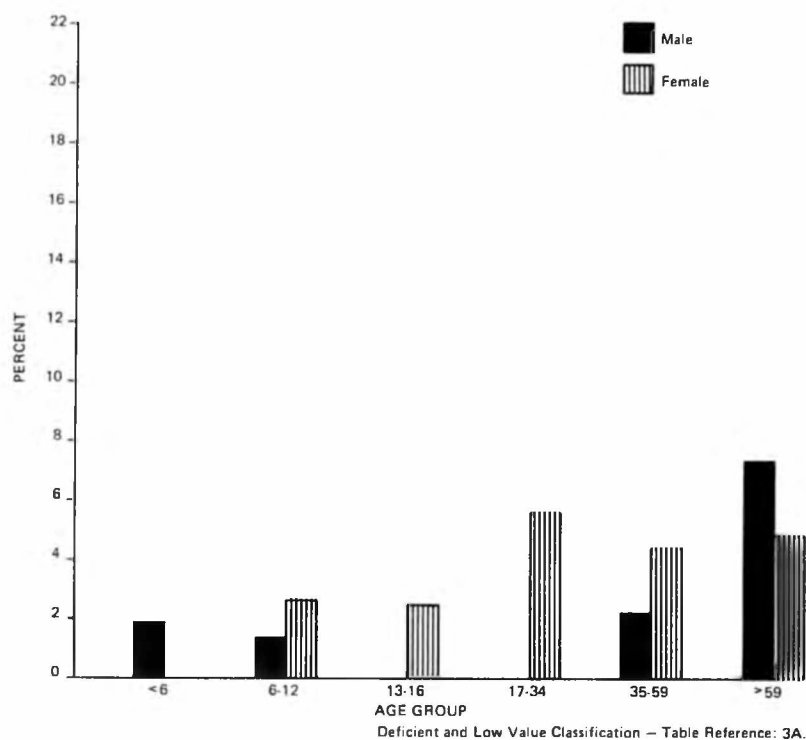


Figure 1f—Percent of Spanish American Persons Having Deficient or Low Serum Albumin Values by Age and Sex for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

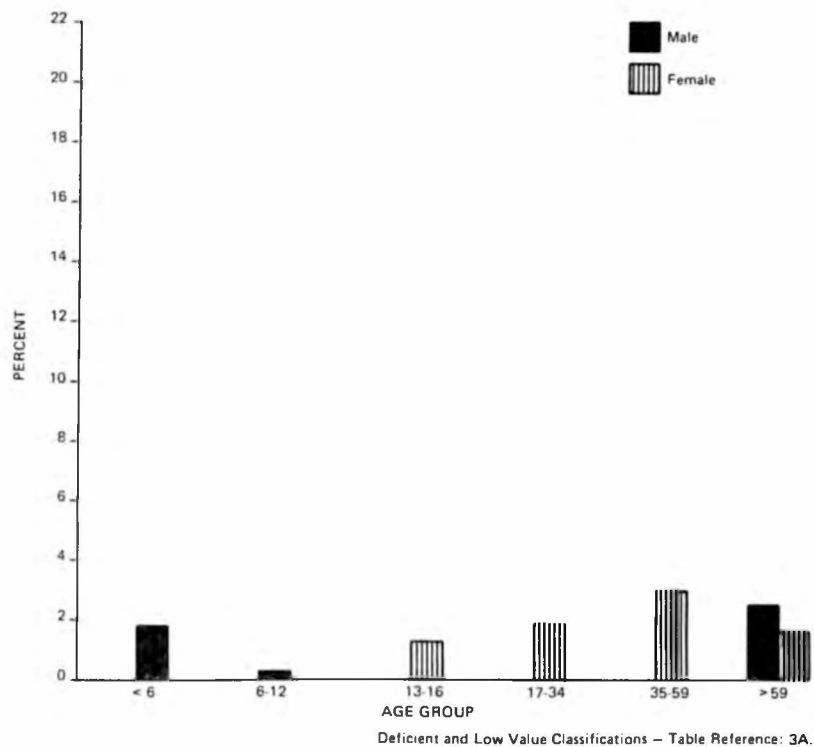
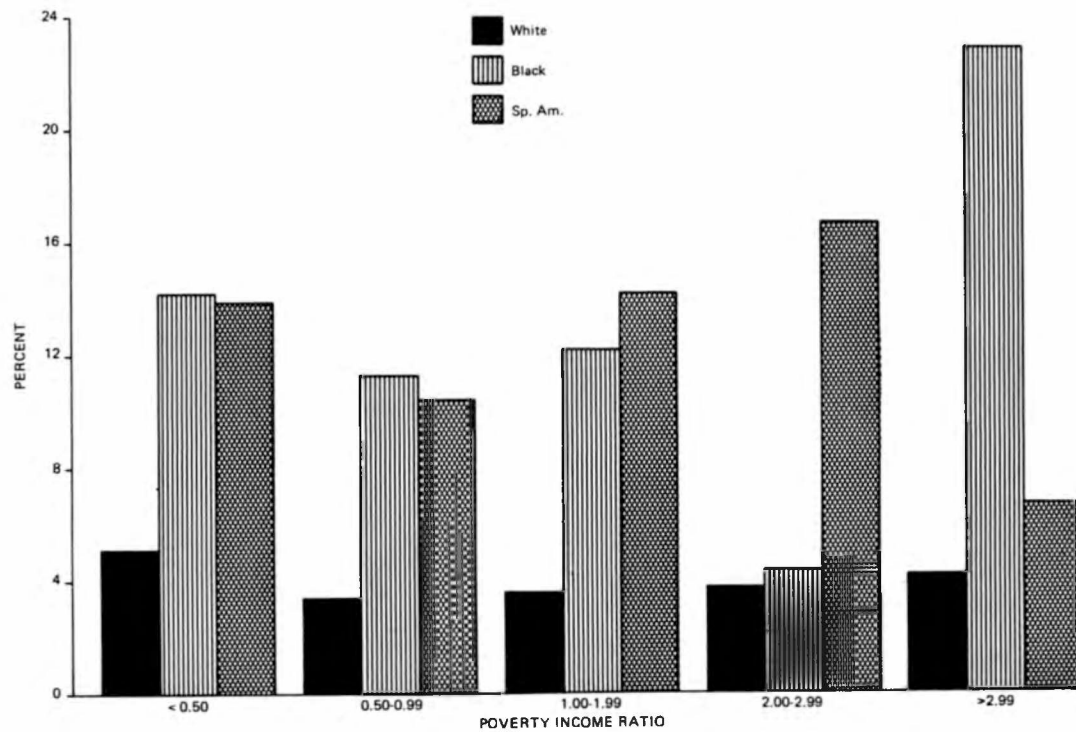
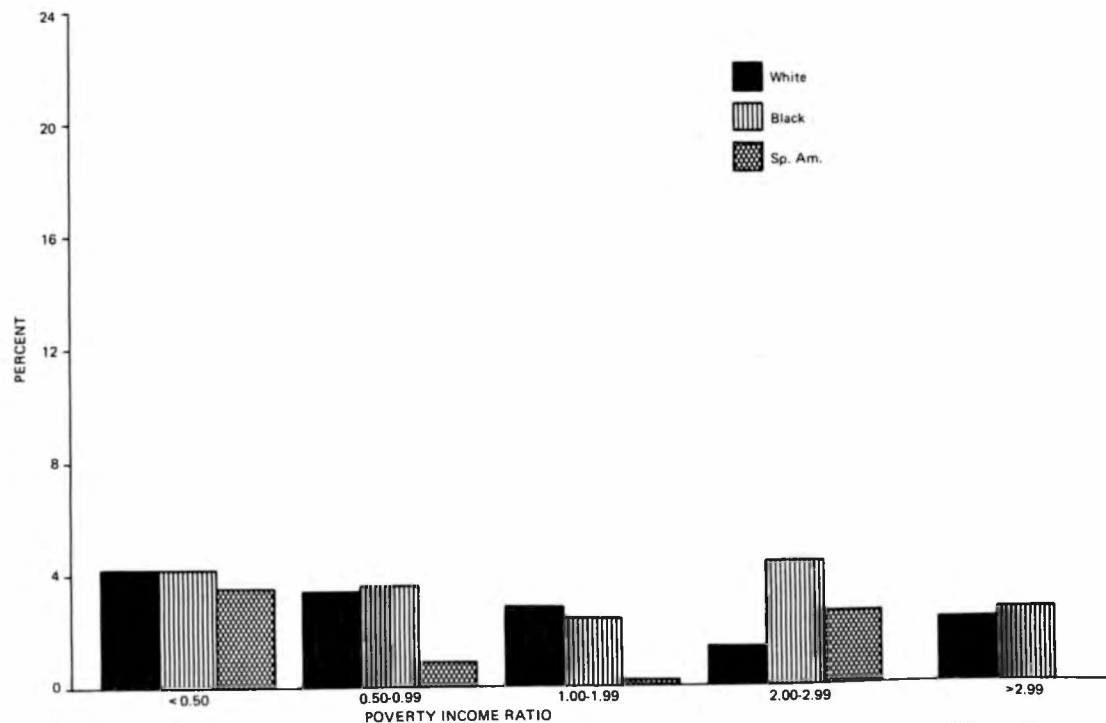


Figure 2a—Percent of Persons Having Deficient or Low Serum Albumin Values by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



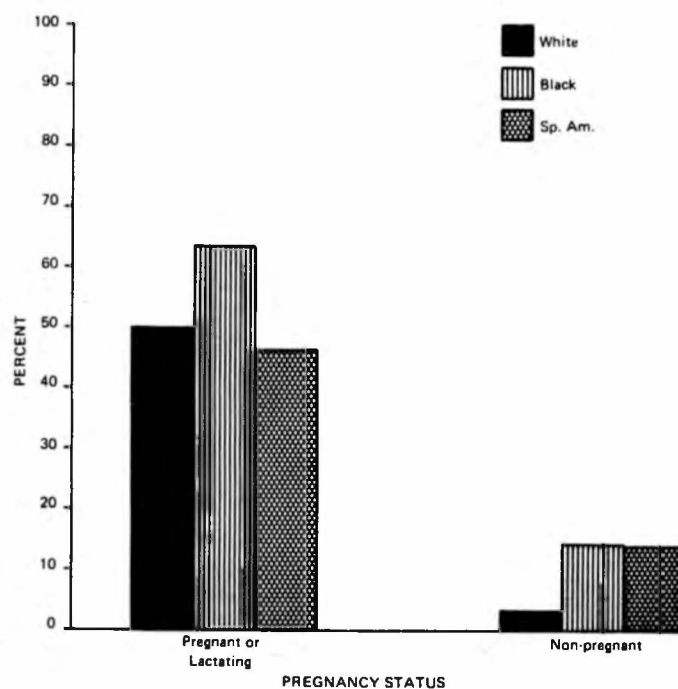
Deficient and Low Value Classifications — Table Reference: 3A Appendix.

Figure 2b—Percent of Persons Having Deficient or Low Serum Albumin Values by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



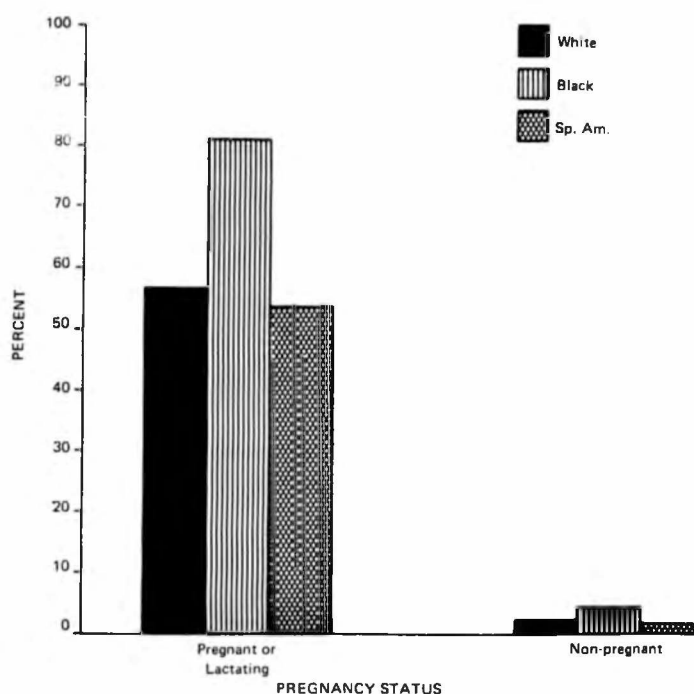
Deficient and Low Value Classification — Table Reference: 3B Appendix.

Figure 3a—Percent of Females Thirteen through Forty-four Years of Age Having Deficient and Low Serum Albumin Values by Pregnancy Status and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classification — Table Reference: 4 Appendix.

Figure 3b—Percent of Females Thirteen through Forty-four Years of Age Having Deficient and Low Serum Albumin Values by Pregnancy Status and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classifications — Table Reference: 4 Appendix.

Table 4. Means of Protein Intake by Quartile of Serum Albumin Values for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Serum Albumin Quartile	Age Group								Pregnant or Lactating Females		All Persons 60 Years of Age and Over	
	0-36 Months		10-11 Years		12-14 Years		15-16 Years		gm	gm/1000 Cal.	gm	gm/1000 Cal.
	gm	gm/1000 Cal.	gm	gm/1000 Cal.	gm	gm/1000 Cal.	gm	gm/1000 Cal.				
Number.....	177	177	1420	1420	2402	2402	823	823	404	404	1621	1621
First Quartile.....	44.68	38.92	80.49	39.77	85.47	37.67	87.94	38.90	78.55	41.26	67.34	42.51
Second Quartile.....	53.83	41.15	83.62	38.99	89.74	38.05	86.50	37.77	82.30	42.66	70.40	41.15
Third Quartile.....	50.81	40.11	80.45	38.83	87.27	38.64	90.25	38.41	84.25	41.84	70.76	42.60
Fourth Quartile.....	54.31	38.61	84.97	38.24	84.97	37.00	98.36	37.63	85.15	43.50	67.42	41.71
Correlation Coefficient.....	0.09		0.02		0.01		0.08		0.04		-0.005	

NOTE: For Serum Albumin quartile values refer to Table 5 Appendix.

Table 5A. Percent of Persons Having Deficient or Low Serum Protein Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	2621	3.0 ²	5.3	4298	3.5 ²	6.0	1580	5.4 ²	5.8
<6 Male.....	121		0.8	195		4.1	37		8.1
<6 Female.....	92		0.0	164		3.1	43		2.3
6-12 Male.....	347		1.7	609		7.9	245		4.1
6-12 Female.....	288		2.1	620		3.7	218		5.0
13-16 Male.....	166		3.0	385		5.6	175		2.6
13-16 Female.....	164		2.4	430		3.5	146		6.2
17-34 Male.....	109	2.8	6.4	165	3.0	4.2	78	5.1	7.7
17-34 Female.....	254	2.0	5.1	500	2.8	7.2	191	5.2	7.9
35-59 Male.....	211	2.8	7.6	183	3.8	9.3	110	3.6	4.5
35-59 Female.....	332	2.7	7.8	495	3.4	7.9	257	7.0	7.8
>59 Male.....	244	2.0	9.8	212	5.2	12.3	67	3.0	9.0
>59 Female.....	293	5.1	5.8	335	3.6	12.2	73	5.5	4.1

¹ Total excludes persons with unknown age and unknown sex.

² Based on values for persons over sixteen years of age.

Serum Protein Deficient and Low Value Classifications (gm/100ml)		
	Deficient	Low
<1.....	Standard not Available	<5.0
1-5.....	Standard not Available	<5.5
6-16.....	Standard not Available	<6.0
>16.....	<6.0	6.0-6.4

Table 5B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Serum Protein Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	982	2.6 ²	4.1	2665	3.6 ²	5.5	972	4.8 ²	5.3
<6 Male.....	46		0.0	125		3.2	27		11.1
<6 Female.....	37		0.0	95		4.2	28		3.6
6-12 Male.....	121		1.7	391		3.1	155		4.5
6-12 Female.....	103		1.9	417		3.6	148		4.1
13-16 Male.....	71		1.4	243		3.7	75		2.7
13-16 Female.....	60		1.7	268		1.9	99		5.1
17-34 Male.....	19	5.3	0.0	86	1.2	3.5	48	2.1	10.4
17-34 Female.....	78	2.6	2.6	295	3.1	5.8	106	4.7	3.8
35-59 Male.....	58	0.0	6.9	87	3.4	8.0	58	3.4	5.2
35-59 Female.....	117	2.6	2.6	281	3.2	8.2	146	6.2	8.2
>59 Male.....	127	1.6	11.8	135	5.9	13.3	36	2.8	8.3
>59 Female.....	145	4.1	6.9	242	4.1	12.0	46	6.5	2.2

Table 5C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Serum Protein Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	1154	3.0 ²	4.1	793	3.3 ²	4.2	348	6.0 ²	9.2
<6 Male.....	45		2.2	22		4.5	7		0.0
<6 Female.....	35		0.0	27		0.0	6		0.0
6-12 Male.....	146		0.7	89		3.4	43		2.3
6-12 Female.....	121		1.7	100		4.0	38		13.2
13-16 Male.....	69		2.9	59		1.7	17		5.9
13-16 Female.....	65		1.5	68		1.5	20		15.0
17-34 Male.....	67	3.0	6.0	42	2.4	0.0	22	9.1	4.5
17-34 Female.....	126	0.8	3.2	105	2.9	7.6	49	4.1	16.3
35-59 Male.....	127	3.9	7.1	64	6.2	9.4	42	4.8	4.8
35-59 Female.....	168	1.8	10.1	120	3.3	5.0	66	9.1	9.1
>59 Male.....	76	2.6	3.9	48	4.2	4.2	21	4.8	14.3
>59 Female.....	109	6.4	2.8	49	0.0	2.0	17	0.0	11.8

¹ Total excludes persons with unknown age and unknown sex.

² Based on values for persons over sixteen years of age.

Serum Protein Deficient and Low Value Classifications (gm/100ml)

	Deficient	Low
<1.....	Standard not Available	<5.0
1-5.....	Standard not Available	<5.5
6-16.....	Standard not Available	<6.0
>16.....	<6.0	6.0-6.4

Table 5D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Serum Protein Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	485	4.0 ²	7.8	840	3.6 ²	9.2	260	6.7 ²	3.1
<6 Male	30		0.0	48		6.2	3		0.0
<6 Female	20		0.0	42		4.8	9		0.0
6-12 Male	80		3.8	129		7.0	47		4.3
6-12 Female	64		3.1	108		3.7	32		0.0
13-16 Male	26		7.7	83		4.8	23		0.0
13-16 Female	39		5.1	94		9.6	27		3.7
17-34 Male	23	0.0	13.0	37	8.1	10.8	8	12.5	0.0
17-34 Female	50	4.0	14.0	100	2.0	11.0	36	8.3	8.3
35-59 Male	26	3.8	11.5	32	0.0	12.5	10	0.0	0.0
35-59 Female	47	6.4	12.8	94	4.3	10.6	45	6.7	4.4
>59 Male	41	2.4	14.6	29	3.4	20.7	10	0.0	0.0
>59 Female	39	5.1	10.3	44	4.5	25.0	10	10.0	0.0

Table 6A. *Percent of Persons Having Deficient or Low Serum Protein Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	8999	0.4 ²	1.9	2158	0.2 ²	0.7	2106	0.2 ²	0.5
<6 Male	184		1.6	69		0.0	55		0.0
<6 Female	167		0.6	55		1.8	58		1.7
6-12 Male	950		1.1	302		0.7	316		0.3
6-12 Female	791		0.1	302		0.3	304		0.0
13-16 Male	438		0.7	160		0.0	140		0.7
13-16 Female	423		0.2	168		0.6	157		0.0
17-34 Male	859	0.5	1.0	123	0.0	0.0	162	0.6	0.0
17-34 Female	1500	0.6	2.6	350	0.6	1.1	348	0.0	1.1
35-59 Male	901	0.6	3.0	136	0.7	0.7	155	0.0	0.0
35-59 Female	1205	0.2	2.1	283	0.4	0.4	310	0.3	1.3
>59 Male	662	0.8	2.6	84	1.2	3.6	40	0.0	0.0
>59 Female	919	1.0	4.0	126	0.0	1.6	61	0.0	0.0

¹ Total excludes persons with unknown age and unknown sex.

² Based on values for persons over sixteen years of age.

Serum Protein Deficient and Low Value Classifications (gm/100ml)		
	Deficient	Low
<1	Standard not Available	<5.0
1-5	Standard not Available	<5.5
6-16	Standard not Available	<6.0
>16	<6.0	6.0-6.4

Table 6B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Serum Protein Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	1395	0.4 ²	1.9	646	0.0	0.9	643	0.2 ²	0.6
<6 Male.....	37		0.0	31		0.0	22		0.0
<6 Female.....	39		0.0	20		0.0	23		4.3
6-12 Male.....	146		2.1	96		2.1	102		1.0
6-12 Female.....	129		0.0	102		1.0	112		0.0
13-16 Male.....	51		0.0	47		0.0	46		2.2
13-16 Female.....	53		0.0	50		0.0	60		0.0
17-34 Male.....	105	0.0	0.0	27	0.0	0.0	29	3.4	0.0
17-34 Female.....	225	0.0	1.8	111	0.0	1.8	90	0.0	0.0
35-59 Male.....	100	0.0	2.0	34	0.0	0.0	32	0.0	0.0
35-59 Female.....	132	0.0	2.3	66	0.0	0.0	100	0.0	1.0
>59 Male.....	129	1.6	3.1	23	0.0	4.4	11	0.0	0.0
>59 Female.....	249	1.6	4.4	39	0.0	0.0	16	0.0	0.0

Table 6C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Serum Protein Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	6716	0.6 ²	1.8	1191	0.3 ²	0.7	1106	0.1 ²	0.4
<6 Male.....	130		2.3	24		0.0	24		0.0
<6 Female.....	111		0.0	28		3.6	29		0.0
6-12 Male.....	706		0.7	161		0.0	167		0.0
6-12 Female.....	588		0.2	162		0.0	142		0.0
13-16 Male.....	325		0.6	83		0.0	70		0.0
13-16 Female.....	324		0.3	93		1.1	66		0.0
17-34 Male.....	654	0.5	1.4	65	0.0	0.0	99	0.0	0.0
17-34 Female.....	1094	0.7	2.5	185	1.1	1.1	186	0.0	1.1
35-59 Male.....	744	0.7	2.8	83	0.0	1.2	103	0.0	0.0
35-59 Female.....	986	0.2	2.1	183	0.5	0.0	159	0.6	1.3
>59 Male.....	471	0.6	2.1	53	0.0	3.8	24	0.0	0.0
>59 Female.....	583	0.9	3.8	71	0.0	1.4	37	0.0	0.0

¹ Total excludes persons with unknown age and unknown sex.

² Based on values for persons over sixteen years of age.

Serum Protein Deficient and Low Value Classifications (gm/100ml)		
	Deficient	Low
<1.....	Standard not Available	<5.0
1-5.....	Standard not Available	<5.5
6-16.....	Standard not Available	<6.0
>16.....	<6.0	6.0-6.4

Table 6D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Serum Protein Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	888	0.8 ²	2.7	321	0.3 ²	0.6	357		0.8
<6 Male	17		0.0	14		0.0	9		0.0
<6 Female	17		5.9	7		0.0	6		0.0
6-12 Male	98		2.0	45		0.0	47		0.0
6-12 Female	74		0.0	38		0.0	50		0.0
13-16 Male	62		1.6	30		0.0	24		0.0
13-16 Female	46		0.0	25		0.0	31		0.0
17-34 Male	100	1.0	0.0	31	0.0	0.0	34	0.0	0.0
17-34 Female	181	0.6	4.4	54	0.0	0.0	72	0.0	2.8
35-59 Male	57	0.0	7.0	19	5.3	0.0	20	0.0	0.0
35-59 Female	87	1.1	1.1	34	0.0	2.9	51	0.0	2.0
>59 Male	62	0.0	4.8	8	0.0	0.0	5	0.0	0.0
>59 Female	87	0.0	4.6	16	0.0	6.3	8	0.0	0.0

¹ Total excludes persons with unknown age and unknown sex.

² Based on values for persons over sixteen years of age.

Serum Protein Deficient and Low Value Classifications (gm/100ml)		
	Deficient	Low
<1	Standard not Available	<5.0
1-5	Standard not Available	<5.5
6-16	Standard not Available	<6.0
>16	<6.0	6.0-6.4

APPENDIX

3. Serum Albumin and Protein

Table 1A Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Under Six Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	119	100.0	100.0	186	100.0	100.0	37	100.0	100.0
<2.50.....	—	—	—	2	1.1	1.1	1	2.7	2.7
2.50-2.79.....	—	—	—	—	—	1.1	1	2.7	5.4
2.80-2.99.....	—	—	—	2	1.1	2.2	—	—	5.4
3.00-3.49.....	3	2.5	2.5	19	10.2	12.4	1	2.7	8.1
3.50-3.99.....	19	16.0	18.5	48	25.8	38.2	6	16.2	24.3
4.00-4.49.....	49	41.2	59.7	70	37.6	75.8	18	48.6	72.9
4.50-4.99.....	36	30.3	90.0	34	18.3	94.1	6	16.2	89.1
5.00-5.49.....	9	7.6	97.6	10	5.4	99.5	4	10.8	99.9
5.50-5.99.....	1	0.8	98.4	—	—	99.5	—	—	99.9
6.00-6.49.....	—	—	98.4	—	—	99.5	—	—	99.9
>6.49.....	2	1.7	100.1	1	0.5	100.0	—	—	99.9
Mean.....	4.42			4.14			4.23		
Median.....	4.42			4.16			4.26		

Table 1B Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Under Six Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	87	100.0	100.0	160	100.0	100.0	44	100.0	100.0
<2.50.....	—	—	—	1	0.6	0.6	1	2.3	2.3
2.50-2.79.....	1	1.1	1.1	3	1.9	2.5	—	—	2.3
2.80-2.99.....	—	—	1.1	4	2.5	5.0	—	—	2.3
3.00-3.49.....	2	2.3	3.4	18	11.3	16.3	6	13.6	15.9
3.50-3.99.....	15	17.2	20.6	40	25.0	41.3	12	27.3	43.2
4.00-4.49.....	34	39.1	59.7	55	34.4	75.7	12	27.3	70.5
4.50-4.99.....	28	32.2	91.9	35	21.9	97.6	12	27.3	97.8
5.00-5.49.....	5	5.7	97.6	4	2.5	100.1	—	—	97.8
5.50-5.99.....	1	1.1	98.7	—	—	100.1	1	2.3	100.1
6.00-6.49.....	—	—	98.7	—	—	100.1	—	—	100.1
>6.49.....	1	1.1	99.8	—	—	100.1	—	—	100.1
Mean.....	4.38			4.07			4.10		
Median.....	4.38			4.13			4.12		

Table 1C Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Six through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	339	100.0	100.0	594	100.0	100.0	245	100.0	100.0
<2.50.....	1	0.3	0.3	5	0.8	0.8	3	1.2	1.2
2.50-2.79.....	—	—	0.3	5	0.8	1.6	1	0.4	1.6
2.80-2.99.....	2	0.6	0.9	3	0.5	2.1	—	—	1.6
3.00-3.49.....	2	0.6	1.5	51	8.6	10.7	19	7.8	9.4
3.50-3.99.....	32	9.4	10.9	141	23.7	34.4	59	24.1	33.5
4.00-4.49.....	127	37.5	48.4	220	37.0	71.4	90	36.7	70.2
4.50-4.99.....	130	38.3	86.7	135	22.7	94.1	66	26.9	97.1
5.00-5.49.....	37	10.9	97.6	31	5.2	99.3	7	2.9	100.0
5.50-5.99.....	7	2.1	99.7	3	0.5	99.8	—	—	100.0
6.00-6.49.....	1	0.3	100.0	—	—	99.8	—	—	100.0
>6.49.....	—	—	100.0	—	—	99.8	—	—	100.0
Mean	4.52			4.18			4.18		
Median	4.52			4.21			4.22		

Table 1D Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Six through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	286	100.0	100.0	604	100.0	100.0	218	100.0	100.0
<2.50.....	1	0.3	0.3	3	0.5	0.5	1	0.5	0.5
2.50-2.79.....	1	0.3	0.6	2	0.3	0.8	—	—	0.5
2.80-2.99.....	—	—	0.6	3	0.5	1.3	1	0.5	1.0
3.00-3.49.....	3	1.0	1.6	47	7.8	9.1	14	6.4	7.4
3.50-3.99.....	36	12.6	14.2	145	24.0	33.1	48	22.0	29.4
4.00-4.49.....	104	36.4	50.6	202	33.4	66.5	69	31.7	61.1
4.50-4.99.....	100	35.0	85.6	159	26.3	92.8	72	33.0	94.1
5.00-5.49.....	32	11.2	96.8	42	7.0	99.8	12	5.5	99.6
5.50-5.99.....	8	2.8	99.6	1	0.2	100.0	1	0.5	100.1
6.00-6.49.....	—	—	99.6	—	—	100.0	—	—	100.1
>6.49.....	1	0.3	99.9	—	—	100.0	—	—	100.1
Mean	4.50			4.23			4.29		
Median	4.49			4.25			4.33		

Table 1E Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	164	100.0	100.0	377	100.0	100.0	115	100.0	100.0
<2.50.....	—	—	—	1	0.3	0.3	—	—	—
2.50-2.79.....	—	—	—	3	0.8	1.1	—	—	—
2.80-2.99.....	1	0.6	0.6	4	1.1	2.2	—	—	—
3.00-3.49.....	3	1.8	2.4	19	5.0	7.2	4	3.5	3.5
3.50-3.99.....	10	6.1	8.5	100	26.5	33.7	34	29.6	33.1
4.00-4.49.....	50	30.5	39.0	180	34.5	68.2	35	30.4	63.5
4.50-4.99.....	65	39.6	78.6	94	24.9	93.1	37	32.2	95.7
5.00-5.49.....	30	18.3	96.9	21	5.6	98.7	4	3.5	99.2
5.50-5.99.....	5	3.0	99.9	4	1.1	99.8	1	0.9	100.1
6.00-6.49.....	—	—	99.9	1	0.3	100.1	—	—	100.1
>6.49.....	—	—	99.9	—	—	100.1	—	—	100.1
Mean.....	4.62			4.24			4.28		
Median.....	4.64			4.24			4.28		

Table 1F Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	160	100.0	100.0	420	100.0	100.0	145	100.0	100.0
<2.50.....	—	—	—	—	—	—	5	3.4	3.4
2.50-2.79.....	—	—	—	2	0.5	0.5	3	2.1	5.5
2.80-2.99.....	—	—	—	4	1.0	1.5	—	—	5.5
3.00-3.49.....	1	0.6	0.6	37	8.8	10.3	13	9.0	14.5
3.50-3.99.....	20	12.5	13.1	105	25.0	35.3	21	14.5	29.0
4.00-4.49.....	47	29.4	42.5	134	31.9	67.2	50	34.5	63.5
4.50-4.99.....	58	36.3	78.8	100	23.8	91.0	42	29.0	92.5
5.00-5.49.....	27	16.9	95.7	30	7.1	98.1	8	5.5	98.0
5.50-5.99.....	7	4.4	100.1	5	1.2	99.3	2	1.4	99.4
6.00-6.49.....	—	—	100.1	3	0.7	100.0	1	0.7	100.1
>6.49.....	—	—	100.1	—	—	100.0	—	—	100.1
Mean.....	4.60			4.24			4.22		
Median.....	4.60			4.23			4.30		

Table 1G Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Seventeen through Thirty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	106	100.0	100.0	161	100.0	100.0	78	100.0	100.0
<2.50.....	—	—	—	2	1.2	1.2	1	1.3	1.3
2.50-2.79.....	—	—	—	—	—	1.2	—	—	1.3
2.80-2.99.....	—	—	—	1	0.6	1.8	2	2.6	3.9
3.00-3.49.....	1	0.9	0.9	8	5.0	6.8	7	9.0	12.9
3.50-3.99.....	10	9.4	10.3	46	28.6	35.4	17	21.8	34.7
4.00-4.49.....	28	26.4	36.7	57	35.4	70.8	24	30.8	65.5
4.50-4.99.....	35	33.0	69.7	35	21.7	92.5	25	32.1	97.6
5.00-5.49.....	25	23.6	93.3	12	7.5	100.0	2	2.6	100.2
5.50-5.99.....	5	4.7	98.0	—	—	100.0	—	—	100.2
6.00-6.49.....	1	0.9	98.9	—	—	100.0	—	—	100.2
>6.49.....	1	.9	99.8	—	—	100.0	—	—	100.2
Mean.....	4.71			4.21			4.18		
Median.....	4.70			4.21			4.25		

Table 1H Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Seventeen through Thirty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	234	100.0	100.0	434	100.0	100.0	172	100.0	100.0
<2.50.....	—	—	—	1	0.2	0.2	4	2.3	2.3
2.50-2.79.....	1	0.4	0.4	8	1.8	2.0	2	1.2	3.5
2.80-2.99.....	1	0.4	0.8	3	0.7	2.7	3	1.7	5.2
3.00-3.49.....	8	3.4	4.2	67	15.4	18.1	12	7.0	12.2
3.50-3.99.....	32	13.7	17.9	134	30.9	49.0	41	23.8	36.0
4.00-4.49.....	76	32.5	50.4	141	32.5	81.5	59	34.3	70.3
4.50-4.99.....	85	36.3	86.7	70	16.1	97.6	46	26.8	97.1
5.00-5.49.....	24	10.3	97.0	9	2.1	99.7	3	1.7	98.8
5.50-5.99.....	7	3.0	100.0	1	0.2	99.9	2	1.2	100.0
6.00-6.49.....	—	—	100.0	—	—	99.9	—	—	100.0
>6.49.....	—	—	100.0	—	—	99.9	—	—	100.0
Mean.....	4.46			3.95			4.14		
Median.....	4.49			4.01			4.20		

Table 1I Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Thirty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	208	100.0	100.0	181	100.0	100.0	110	100.0	100.0
<2.50.....	1	0.5	0.5	1	0.6	0.6	—	—	—
2.50-2.79.....	—	—	0.5	3	1.7	2.3	—	—	—
2.80-2.99.....	1	0.5	1.0	1	0.6	2.9	2	1.8	1.8
3.00-3.49.....	11	5.3	6.3	21	11.6	14.5	8	7.3	9.1
3.50-3.99.....	21	10.1	16.4	54	29.8	44.3	39	35.5	44.6
4.00-4.49.....	83	39.9	56.3	63	34.8	79.1	40	36.4	81.0
4.50-4.99.....	72	34.6	90.9	31	17.1	96.2	18	16.4	97.4
5.00-5.49.....	18	8.7	99.6	7	3.9	100.1	3	2.7	100.1
5.50-5.99.....	1	0.5	100.1	—	—	100.1	—	—	100.1
6.00-6.49.....	—	—	100.1	—	—	100.1	—	—	100.1
>6.49.....	—	—	100.1	—	—	100.1	—	—	100.1
Mean.....	4.40			4.06			4.08		
Median.....	4.42			4.08			4.08		

Table 1J Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Thirty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	327	100.0	100.0	478	100.0	100.0	249	100.0	100.0
<2.50.....	1	0.3	0.3	3	0.6	0.6	5	2.0	2.0
2.50-2.79.....	1	0.3	0.6	6	1.3	1.9	2	0.8	2.8
2.80-2.99.....	2	0.6	1.2	9	1.9	2.8	3	1.2	4.0
3.00-3.49.....	14	4.3	5.5	56	11.7	15.5	35	14.1	18.1
3.50-3.99.....	55	16.8	22.3	166	34.7	50.2	78	31.3	49.4
4.00-4.49.....	129	39.4	61.7	161	33.7	83.9	93	37.3	86.7
4.50-4.99.....	101	30.9	92.6	69	14.4	98.3	31	12.4	99.1
5.00-5.49.....	22	6.7	99.3	3	0.6	98.9	2	0.8	99.9
5.50-5.99.....	1	0.3	99.6	3	0.6	99.5	—	—	99.9
6.00-6.49.....	—	—	99.6	1	0.2	99.7	—	—	99.9
>6.49.....	1	0.3	99.9	1	0.2	99.9	—	—	99.9
Mean.....	4.34			4.00			3.95		
Median.....	4.35			4.00			4.01		

Table 1K Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	241	100.0	100.0	206	100.0	100.0	67	100.0	100.0
<2.50.....	1	0.4	0.4	5	2.4	2.4	1	1.5	1.5
2.50-2.79.....	—	—	0.4	2	1.0	3.4	—	—	1.5
2.80-2.99.....	3	1.2	1.6	2	1.0	4.4	—	—	1.5
3.00-3.49.....	11	4.6	6.2	35	17.0	21.4	11	16.4	17.9
3.50-3.99.....	48	19.9	26.1	65	31.6	53.0	22	32.8	50.7
4.00-4.49.....	82	34.0	60.1	67	32.5	85.5	28	41.8	92.5
4.50-4.99.....	80	33.2	93.3	24	11.7	97.2	4	6.0	98.5
5.00-5.49.....	12	5.0	98.3	3	1.5	98.7	1	1.5	100.0
5.50-5.99.....	2	0.8	99.1	2	1.0	99.7	—	—	100.0
6.00-6.49.....	1	0.4	99.5	—	—	99.7	—	—	100.0
>6.49.....	1	0.4	99.9	1	0.5	100.2	—	—	100.0
Mean.....	4.83			3.94			3.94		
Median.....	4.85			3.95			3.99		

Table 1L Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	290	100.0	100.0	325	100.0	100.0	73	100.0	100.0
<2.50.....	1	0.3	0.3	1	0.3	0.3	2	2.7	2.7
2.50-2.79.....	1	0.3	0.6	3	0.9	1.2	—	—	2.7
2.80-2.99.....	1	0.3	0.9	9	2.8	4.0	4	5.5	8.2
3.00-3.49.....	20	6.9	7.8	47	14.5	18.5	8	11.0	19.2
3.50-3.99.....	52	17.9	25.7	130	40.0	58.5	30	41.1	60.3
4.00-4.49.....	94	32.4	58.1	94	28.9	87.4	20	27.4	87.7
4.50-4.99.....	97	33.4	91.5	30	9.2	96.6	8	11.0	98.7
5.00-5.49.....	21	7.2	98.7	7	2.2	98.8	1	1.4	100.1
5.50-5.99.....	1	0.3	99.0	2	0.6	99.4	—	—	100.1
6.00-6.49.....	1	0.3	99.3	1	0.3	99.7	—	—	100.1
>6.49.....	1	0.3	99.6	1	0.3	100.0	—	—	100.1
Mean.....	4.33			3.94			3.87		
Median.....	4.37			3.89			3.88		

Table 1M Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Thirteen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	20	100.0	100.0	66	100.0	100.0	28	100.0	100.0
<2.50	1	5.0	5.0	8	4.5	4.5	2	7.1	7.1
2.50-2.79	1	5.0	10.0	6	9.1	18.6	1	3.6	10.7
2.80-2.99	—	—	10.0	5	7.6	21.2	3	10.7	21.4
3.00-3.49	8	40.0	50.0	28	42.4	63.6	7	25.0	46.4
3.50-3.99	7	35.0	85.0	16	24.2	87.8	8	28.6	75.0
4.00-4.49	1	5.0	90.0	6	9.1	96.9	6	21.4	96.4
4.50-4.99	2	10.0	100.0	2	3.0	99.9	1	3.6	100.0
5.00-5.49	—	—	100.0	—	—	99.9	—	—	100.0
5.50-5.99	—	—	100.0	—	—	99.9	—	—	100.0
6.00-6.49	—	—	100.0	—	—	99.9	—	—	100.0
>6.49	—	—	100.0	—	—	99.9	—	—	100.0
Mean	3.54			3.38			3.53		
Median	3.50			3.34			3.56		

Table 1N Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	2	100.0	100.0	4	100.0	100.0	1	100.0	100.0
<2.50	1	50.0	50.0	1	25.0	25.0	—	—	—
2.50-2.79	—	—	50.0	—	—	25.0	—	—	—
2.80-2.99	—	—	50.0	—	—	25.0	—	—	—
3.00-3.49	1	50.0	100.0	1	25.0	50.0	—	—	—
3.50-3.99	—	—	100.0	1	25.0	75.0	—	—	—
4.00-4.49	—	—	100.0	1	25.0	100.0	1	100.0	100.0
4.50-4.99	—	—	100.0	—	—	100.0	—	—	100.0
5.00-5.49	—	—	100.0	—	—	100.0	—	—	100.0
5.50-5.99	—	—	100.0	—	—	100.0	—	—	100.0
6.00-6.49	—	—	100.0	—	—	100.0	—	—	100.0
>6.49	—	—	100.0	—	—	100.0	—	—	100.0
Mean	2.75			3.38			4.25		
Median	2.75			3.50			4.25		

Table 10 Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Seventeen through Nineteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	—	—	—	12	100.0	100.0	3	100.0	100.0
<2.50	—	—	—	1	8.3	8.3	—	—	—
2.50-2.79	—	—	—	—	—	8.3	—	—	—
2.80-2.99	—	—	—	—	—	8.3	1	33.3	33.3
3.00-3.49	—	—	—	2	16.7	25.0	1	33.3	66.6
3.50-3.99	—	—	—	6	50.0	75.0	1	33.3	99.9
4.00-4.49	—	—	—	2	16.7	91.7	—	—	99.9
4.50-4.99	—	—	—	1	8.3	100.0	—	—	99.9
5.00-5.49	—	—	—	—	—	100.0	—	—	99.9
5.50-5.99	—	—	—	—	—	100.0	—	—	99.9
6.00-6.49	—	—	—	—	—	100.0	—	—	99.9
>6.49	—	—	—	—	—	100.0	—	—	99.9
Mean	—	—	—	3.71			3.30		
Median	—	—	—	3.75			3.25		

Table 1P Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Twenty through Twenty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	6	100.0	100.0	11	100.0	100.0	8	100.0	100.0
<2.50	—	—	—	—	—	—	—	—	—
2.50-2.79	—	—	—	1	9.1	9.1	1	12.5	12.5
2.80-2.99	—	—	—	1	9.1	18.2	—	—	12.5
3.00-3.49	1	16.7	16.7	6	54.5	72.7	3	37.5	50.0
3.50-3.99	4	66.7	83.4	2	18.2	90.9	4	50.0	100.0
4.00-4.49	1	16.7	100.1	1	9.1	100.0	—	—	100.0
4.50-4.99	—	—	100.1	—	—	100.0	—	—	100.0
5.00-5.49	—	—	100.1	—	—	100.0	—	—	100.0
5.50-5.99	—	—	100.1	—	—	100.0	—	—	100.0
6.00-6.49	—	—	100.1	—	—	100.0	—	—	100.0
>6.49	—	—	100.1	—	—	100.0	—	—	100.0
Mean	3.75			3.35			3.42		
Median	3.75			3.29			3.50		

Table 1Q Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Twenty-five through Thirty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	10	100.0	100.0	33	100.0	100.0	8	100.0	100.0
<2.50	—	—	—	1	3.0	3.0	—	—	—
2.50-2.79	—	—	—	5	15.2	18.2	—	—	—
2.80-2.99	—	—	—	4	12.1	30.3	2	25.0	25.0
3.00-3.49	5	50.0	50.0	14	42.4	72.7	1	12.5	37.5
3.50-3.99	3	30.0	80.0	6	18.2	90.9	2	25.0	62.5
4.00-4.49	—	—	80.0	2	6.1	97.0	2	25.0	87.5
4.50-4.99	2	20.0	100.0	1	3.0	100.0	1	12.5	100.0
5.00-5.49	—	—	100.0	—	—	100.0	—	—	100.0
5.50-5.99	—	—	100.0	—	—	100.0	—	—	100.0
6.00-6.49	—	—	100.0	—	—	100.0	—	—	100.0
>6.49	—	—	100.0	—	—	100.0	—	—	100.0
Mean	3.70			3.28			3.72		
Median	3.50			3.23			3.75		

Table 1R Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Thirty-five through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	2	100.0	100.0	6	100.0	100.0	8	100.0	100.0
<2.50	—	—	—	—	—	—	2	25.0	25.0
2.50-2.79	1	50.0	50.0	—	—	—	—	—	25.0
2.80-2.99	—	—	50.0	—	—	—	—	—	25.0
3.00-3.49	1	50.0	100.0	5	83.3	83.3	2	25.0	50.0
3.50-3.99	—	—	100.0	1	16.7	100.0	1	12.5	62.5
4.00-4.49	—	—	100.0	—	—	100.0	3	37.5	100.0
4.50-4.99	—	—	100.0	—	—	100.0	—	—	100.0
5.00-5.49	—	—	100.0	—	—	100.0	—	—	100.0
5.50-5.99	—	—	100.0	—	—	100.0	—	—	100.0
6.00-6.49	—	—	100.0	—	—	100.0	—	—	100.0
>6.49	—	—	100.0	—	—	100.0	—	—	100.0
Mean	2.95			3.33			3.44		
Median	2.95			3.30			3.50		

Table 2A Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Under Six Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	156	100.0	100.0	54	100.0	100.0	55	100.0	100.0
<2.50	2	1.3	1.3	1	1.9	1.9	1	1.8	1.8
2.50-2.79	—	—	1.3	—	—	1.9	—	—	1.8
2.80-2.99	—	—	1.3	—	—	1.9	—	—	1.8
3.00-3.49	3	1.9	3.2	2	3.7	5.6	—	—	1.8
3.50-3.99	26	16.7	19.9	10	18.5	24.1	6	10.9	12.7
4.00-4.49	84	53.8	73.7	31	57.4	81.5	24	43.6	56.3
4.50-4.99	35	22.4	96.1	10	18.5	100.0	20	36.4	92.7
5.00-5.49	5	3.2	99.3	—	—	100.0	4	7.3	100.0
5.50-5.99	1	0.6	99.9	—	—	100.0	—	—	100.0
6.00-6.49	—	—	99.9	—	—	100.0	—	—	100.0
>6.49	—	—	99.9	—	—	100.0	—	—	100.0
Mean	4.28			4.18			4.41		
Median	4.28			4.23			4.43		

Table 2B Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Under Six Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	146	100.0	100.0	85	100.0	100.0	58	100.0	100.0
<2.50	1	0.7	0.7	—	—	—	—	—	—
2.50-2.79	—	—	0.7	—	—	—	—	—	—
2.80-2.99	1	0.7	1.4	—	—	—	—	—	—
3.00-3.49	2	1.4	2.8	2	5.7	5.7	—	—	—
3.50-3.99	20	18.7	16.5	9	25.7	31.4	1	1.7	1.7
4.00-4.49	69	47.3	63.8	15	42.9	74.3	33	56.9	58.6
4.50-4.99	42	28.8	92.6	9	25.7	100.0	21	36.2	94.8
5.00-5.49	10	6.8	99.4	—	—	100.0	3	5.2	100.0
5.50-5.99	—	—	99.4	—	—	100.0	—	—	100.0
6.00-6.49	1	0.7	100.1	—	—	100.0	—	—	100.0
>6.49	—	—	100.1	—	—	100.0	—	—	100.0
Mean	4.37			4.19			4.47		
Median	4.36			4.22			4.42		

Table 2C Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Six through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	948	100.0	100.0	295	100.0	100.0	315	100.0	100.0
<2.50.....	—	—	—	—	—	—	—	—	—
2.50-2.79.....	—	—	—	—	—	—	—	—	—
2.80-2.99.....	—	—	—	—	—	—	1	0.3	0.3
3.00-3.49.....	15	1.6	1.6	4	1.4	1.4	—	—	0.3
3.50-3.99.....	130	13.7	15.3	53	18.0	19.4	15	4.8	5.1
4.00-4.49.....	507	53.5	68.8	144	48.8	68.2	108	34.3	39.4
4.50-4.99.....	254	26.8	95.6	76	25.8	94.0	170	54.0	93.4
5.00-5.49.....	34	3.6	99.2	16	5.4	99.4	19	6.0	99.4
5.50-5.99.....	8	0.8	100.0	1	0.3	99.7	2	0.6	100.0
6.00-6.49.....	—	—	100.0	1	0.3	100.0	—	—	100.0
>6.49.....	—	—	100.0	—	—	100.0	—	—	100.0
Mean.....	4.35			4.34			4.56		
Median.....	4.32			4.31			4.60		

Table 2D Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Six through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	783	100.0	100.0	295	100.0	100.0	305	100.0	100.0
<2.50.....	—	—	—	—	—	—	—	—	—
2.50-2.79.....	—	—	—	—	—	—	—	—	—
2.80-2.99.....	—	—	—	—	—	—	—	—	—
3.00-3.49.....	7	0.9	0.9	8	2.7	2.7	—	—	—
3.50-3.99.....	102	13.0	13.9	56	18.9	21.6	8	2.6	2.6
4.00-4.49.....	402	51.3	65.2	146	49.3	70.9	111	36.4	39.0
4.50-4.99.....	219	28.0	93.2	71	24.0	94.9	160	52.5	91.5
5.00-5.49.....	45	5.7	98.9	9	3.0	97.9	23	7.5	99.0
5.50-5.99.....	4	0.5	99.4	5	1.7	99.6	3	1.0	100.0
6.00-6.49.....	4	0.5	99.9	1	0.3	99.9	—	—	100.0
>6.49.....	—	—	99.9	—	—	99.9	—	—	100.0
Mean.....	4.39			4.31			4.59		
Median.....	4.35			4.29			4.60		

Table 2E Appendix. Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	437	100.0	100.0	159	100.0	100.0	140	100.0	100.0
<2.50	1	0.2	0.2	—	—	—	—	—	—
2.50-2.79	—	—	0.2	—	—	—	—	—	—
2.80-2.99	—	—	0.2	—	—	—	—	—	—
3.00-3.49	2	0.5	0.7	—	—	—	—	—	—
3.50-3.99	89	8.9	9.6	24	15.1	15.1	4	2.9	2.9
4.00-4.49	220	50.3	59.9	78	49.1	64.2	38	27.1	30.0
4.50-4.99	133	30.4	90.3	49	30.8	95.0	80	57.1	87.1
5.00-5.49	35	8.0	98.3	7	4.4	99.4	17	12.1	99.2
5.50-5.99	3	0.7	99.0	—	—	99.4	1	0.7	99.9
6.00-6.49	3	0.7	99.7	1	0.6	100.0	—	—	99.9
>6.49	1	0.2	99.9	—	—	100.0	—	—	99.9
Mean	4.46			4.39			4.65		
Median	4.40			4.36			4.68		

Table 2F Appendix. Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	418	100.0	100.0	157	100.0	100.0	158	100.0	100.0
<2.50	—	—	—	1	0.6	0.6	—	—	—
2.50-2.79	—	—	—	—	—	0.6	—	—	—
2.80-2.99	1	0.2	0.2	—	—	0.6	—	—	—
3.00-3.49	1	0.2	0.4	8	1.9	2.5	2	1.3	1.3
3.50-3.99	56	13.4	13.8	35	22.3	24.8	6	3.8	5.1
4.00-4.49	223	53.3	67.1	69	43.9	68.7	46	29.1	34.2
4.50-4.99	113	27.0	94.1	45	28.7	97.4	93	58.9	93.1
5.00-5.49	19	4.5	98.6	3	1.9	99.3	11	7.0	100.1
5.50-5.99	5	1.2	99.8	1	0.6	99.9	—	—	100.1
6.00-6.49	—	—	99.8	—	—	99.9	—	—	100.1
>6.49	—	—	99.8	—	—	99.9	—	—	100.1
Mean	4.38			4.28			4.58		
Median	4.34			4.29			4.63		

Table 2G Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Seventeen through Thirty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	856	100.0	100.0	123	100.0	100.0	162	100.0	100.0
<2.50	—	—	—	—	—	—	—	—	—
2.50-2.79	2	0.2	0.2	—	—	—	—	—	—
2.80-2.99	—	—	0.2	—	—	—	—	—	—
3.00-3.49	1	0.1	0.3	—	—	—	—	—	—
3.50-3.99	40	4.7	5.0	10	8.1	8.1	3	1.9	1.9
4.00-4.49	310	36.2	41.2	54	43.9	52.0	32	19.8	21.7
4.50-4.99	372	43.5	84.7	48	39.0	91.0	92	56.8	78.6
5.00-5.49	114	13.3	98.0	7	5.7	96.7	33	20.4	98.9
5.50-5.99	14	1.6	99.6	2	1.6	98.3	2	1.2	100.1
6.00	8	0.4	100.0	1	0.8	99.1	—	—	100.1
>6.49	—	—	100.0	1	0.8	99.9	—	—	100.1
Mean	4.60			4.52			4.75		
Median	4.60			4.48			4.75		

Table 2H Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Seventeen through Thirty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	1333	100.0	100.0	267	100.0	100.0	308	100.0	100.0
<2.50	1	0.1	0.1	—	—	—	—	—	—
2.50-2.79	—	—	0.1	—	—	—	—	—	—
2.80-2.99	—	—	0.1	—	—	—	—	—	—
3.00-3.49	30	2.3	2.4	15	5.6	5.6	6	1.9	1.9
3.50-3.99	307	23.0	25.4	90	33.7	39.3	49	15.9	17.8
4.00-4.49	608	45.6	71.0	113	42.3	81.6	133	43.2	61.0
4.50-4.99	308	23.1	94.1	47	17.6	99.2	102	33.1	94.1
5.00-5.49	68	5.1	99.2	2	0.7	99.9	17	5.5	99.6
5.50-5.99	6	0.5	99.7	—	—	99.9	—	—	99.6
6.00-6.49	4	0.3	100.0	—	—	99.9	—	—	99.6
>6.49	1	0.1	100.1	—	—	99.9	1	0.3	99.9
Mean	4.29			4.12			4.38		
Median	4.27			4.18			4.37		

Table 2I Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Thirty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	896	100.0	100.0	185	100.0	100.0	155	100.0	100.0
<2.50	1	0.1	0.1	—	—	—	—	—	—
2.50-2.79	1	0.1	0.2	—	—	—	—	—	—
2.80-2.99	1	0.1	0.3	—	—	—	—	—	—
3.00-3.49	19	2.1	2.4	8	2.2	2.2	—	—	—
3.50-3.99	187	20.9	23.3	82	23.7	25.9	11	7.1	7.1
4.00-4.49	413	46.1	69.4	68	46.7	72.6	61	39.4	46.5
4.50-4.99	210	23.4	92.8	26	19.3	91.9	71	45.8	92.3
5.00-5.49	51	5.7	98.5	7	5.2	97.1	10	6.5	98.8
5.50-5.99	12	1.3	99.8	3	2.2	99.3	2	1.3	100.1
6.00-6.49	1	0.1	99.9	1	0.7	100.0	—	—	100.1
>6.49	—	—	99.9	—	—	100.0	—	—	100.1
Mean	4.32			4.81			4.53		
Median	4.29			4.26			4.54		

Table 2J Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Thirty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	1185	100.0	100.0	278	100.0	100.0	303	100.0	100.0
<2.50	—	—	—	1	0.4	0.4	—	—	—
2.50-2.79	—	—	—	—	—	0.4	—	—	—
2.80-2.99	1	0.1	0.1	1	0.4	0.8	—	—	—
3.00-3.49	42	3.5	3.6	10	3.6	4.4	9	3.0	3.0
3.50-3.99	359	30.3	33.9	93	33.5	37.9	43	14.2	17.2
4.00-4.49	530	44.7	78.6	127	45.7	83.6	155	51.2	68.4
4.50-4.99	199	16.8	95.4	41	14.7	98.3	88	29.0	97.4
5.00-5.49	46	3.9	99.3	3	1.1	99.4	7	2.3	99.7
5.50-5.99	5	0.4	99.7	1	0.4	99.8	—	—	99.7
6.00-6.49	2	0.2	99.9	1	0.4	100.2	—	—	99.7
>6.49	1	0.1	100.0	—	—	100.2	1	0.3	100.0
Mean	4.20			4.13			4.33		
Median	4.13			4.13			4.32		

Table 2K Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Males Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	659	100.0	100.0	82	100.0	100.0	40	100.0	100.0
<2.50.....	—	—	—	1	1.2	1.2	—	—	—
2.50-2.79.....	3	0.5	0.5	—	—	1.2	—	—	—
2.80-2.99.....	1	0.2	0.7	1	1.2	2.4	—	—	—
3.00-3.49.....	30	4.6	5.3	4	4.9	7.3	1	2.5	2.5
3.50-3.99.....	213	32.3	37.6	31	37.8	45.1	10	25.0	27.5
4.00-4.49.....	297	45.1	82.7	38	46.3	91.4	22	55.0	82.5
4.50-4.99.....	86	13.1	95.8	6	7.3	98.7	6	15.0	97.5
5.00-5.49.....	20	3.0	98.8	1	1.2	99.9	—	—	97.5
5.50-5.99.....	6	0.9	99.7	—	—	99.9	1	2.5	100.0
6.00-6.49.....	2	0.3	100.0	—	—	99.9	—	—	100.0
>6.49.....	1	0.2	100.2	—	—	99.9	—	—	100.0
Mean.....	4.16			4.02			4.21		
Median.....	4.14			4.05			4.20		

Table 2L Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Females Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	913	100.0	100.0	125	100.0	100.0	61	100.0	100.0
<2.50.....	1	0.1	0.1	—	—	—	—	—	—
2.50-2.79.....	—	—	0.1	—	—	—	—	—	—
2.80-2.99.....	3	0.3	0.4	1	0.8	0.8	—	—	—
3.00-3.49.....	39	4.3	4.7	5	4.0	4.8	1	1.6	1.6
3.50-3.99.....	304	33.3	38.0	49	39.2	44.0	19	31.1	32.7
4.00-4.49.....	435	47.6	85.6	52	41.6	85.6	29	47.5	80.2
4.50-4.99.....	109	11.9	97.5	15	12.0	97.6	11	18.0	98.2
5.00-5.49.....	19	2.1	99.6	2	1.6	99.2	1	1.6	99.8
5.50-5.99.....	3	0.3	99.9	1	0.8	100.0	—	—	99.8
6.00-6.49.....	—	—	99.9	—	—	100.0	—	—	99.8
>6.49.....	—	—	99.9	—	—	100.0	—	—	99.8
Mean.....	4.12			4.09			4.18		
Median.....	4.13			4.07			4.18		

Table 2M Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Thirteen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	190	100.0	100.0	95	100.0	100.0	48	100.0	100.0
<2.50.....	2	1.1	1.1	2	2.1	2.1	—	—	—
2.50-2.79.....	12	6.3	7.4	7	7.4	9.5	1	2.1	2.1
2.80-2.99.....	17	8.9	16.3	15	15.8	25.3	3	6.2	8.3
3.00-3.49.....	77	40.5	56.8	53	55.8	81.1	22	45.8	54.1
3.50-3.99.....	52	27.4	84.2	16	16.8	97.9	14	29.2	83.3
4.00-4.49.....	22	11.6	95.8	2	2.1	100.0	5	10.4	93.7
4.50-4.99.....	4	2.1	97.9	—	—	100.0	2	4.2	97.9
5.00-5.49.....	2	1.1	99.0	—	—	100.0	1	2.1	100.0
5.50-5.99.....	1	0.5	99.5	—	—	100.0	—	—	100.0
6.00-6.49.....	1	0.5	100.0	—	—	100.0	—	—	100.0
>6.49.....	—	—	100.0	—	—	100.0	—	—	100.0
Mean.....	3.50			3.23			3.57		
Median.....	3.42			3.22			3.45		

Table 2N Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	6	100.0	100.0	10	100.0	100.0	—	—	—
<2.50.....	—	—	—	1	10.0	10.0	—	—	—
2.50-2.79.....	1	16.7	16.7	1	10.0	20.0	—	—	—
2.80-2.99.....	—	—	16.7	3	30.0	50.0	—	—	—
3.00-3.49.....	2	33.3	50.0	5	50.0	100.0	—	—	—
3.50-3.99.....	3	50.0	100.0	—	—	100.0	—	—	—
4.00-4.49.....	—	—	100.0	—	—	100.0	—	—	—
4.50-4.99.....	—	—	100.0	—	—	100.0	—	—	—
5.00-5.49.....	—	—	100.0	—	—	100.0	—	—	—
5.50-5.99.....	—	—	100.0	—	—	100.0	—	—	—
6.00-6.49.....	—	—	100.0	—	—	100.0	—	—	—
>6.49.....	—	—	100.0	—	—	100.0	—	—	—
Mean.....	3.40			2.98					
Median.....	3.50			3.00					

Table 2O Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Seventeen through Nineteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	22	100.0	100.0	19	100.0	100.0	5	100.0	100.0
<2.50.....	—	—	—	1	5.3	5.3	—	—	—
2.50-2.79.....	2	9.1	9.1	—	—	5.3	—	—	—
2.80-2.99.....	2	9.1	18.2	2	10.5	15.8	—	—	—
3.00-3.49.....	9	40.9	59.1	12	63.2	79.0	—	—	—
3.50-3.99.....	2	9.1	68.2	4	21.1	100.1	2	40.0	40.0
4.00-4.49.....	4	18.2	86.4	—	—	100.1	1	20.0	60.0
4.50-4.99.....	1	4.5	90.9	—	—	100.1	1	20.0	80.0
5.00-5.49.....	1	4.5	95.4	—	—	100.1	1	20.0	100.0
5.50-5.99.....	1	4.5	99.9	—	—	100.1	—	—	100.0
6.00-6.49.....	—	—	99.9	—	—	100.1	—	—	100.0
>6.49.....	—	—	99.9	—	—	100.1	—	—	100.0
Mean.....	3.66			3.27			4.35		
Median.....	3.39			3.27			4.25		

Table 2P Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Twenty through Twenty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	65	100.0	100.0	37	100.0	100.0	18	100.0	100.0
<2.50.....	1	1.5	1.5	—	—	—	—	—	—
2.50-2.79.....	2	3.1	4.6	4	10.8	10.8	—	—	—
2.80-2.99.....	8	12.3	16.9	7	18.9	29.7	2	11.1	11.1
3.00-3.49.....	25	38.5	55.4	17	45.9	75.6	9	50.0	61.1
3.50-3.99.....	21	32.3	87.7	8	21.6	97.2	6	33.3	94.4
4.00-4.49.....	5	7.7	95.4	1	2.7	99.9	1	5.6	100.0
4.50-4.99.....	2	3.1	98.5	—	—	99.9	—	—	100.0
5.00-5.49.....	1	1.5	100.0	—	—	99.9	—	—	100.0
5.50-5.99.....	—	—	100.0	—	—	99.9	—	—	100.0
6.00-6.49.....	—	—	100.0	—	—	99.9	—	—	100.0
>6.49.....	—	—	100.0	—	—	99.9	—	—	100.0
Mean.....	3.49			3.25			3.48		
Median.....	3.43			3.22			3.89		

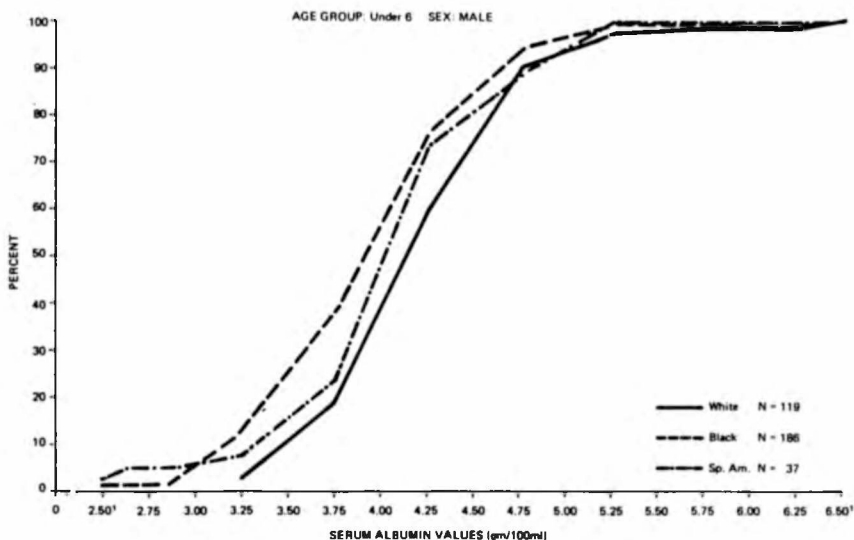
Table 2Q Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Twenty-five through Thirty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	82	100.0	100.0	25	100.0	100.0	20	100.0	100.0
<2.50.....	1	1.2	1.2	—	—	—	—	—	—
2.50-2.79.....	6	7.3	8.5	1	4.0	4.0	1	5.0	5.0
2.80-2.99.....	7	8.5	17.0	2	8.0	12.0	1	5.0	10.0
3.00-3.49.....	35	42.7	59.7	17	68.0	80.0	10	50.0	60.0
3.50-3.99.....	22	26.8	86.5	4	16.0	96.0	5	25.0	85.0
4.00-4.49.....	10	12.2	98.7	1	4.0	100.0	2	10.0	95.0
4.50-4.99.....	—	—	98.7	—	—	100.0	1	5.0	100.0
5.00-5.49.....	—	—	98.7	—	—	100.0	—	—	100.0
5.50-5.99.....	—	—	98.7	—	—	100.0	—	—	100.0
6.00-6.49.....	1	1.2	99.9	—	—	100.0	—	—	100.0
>6.49.....	—	—	99.9	—	—	100.0	—	—	100.0
Mean.....	3.46			3.32			3.50		
Median.....	3.39			3.28			3.40		

Table 2R Appendix. *Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Pregnant Females Thirty-five through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Values (gm/100 ml)	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	15	100.0	100.0	4	100.0	100.0	5	100.0	100.0
<2.50.....	—	—	—	—	—	—	—	—	—
2.50-2.79.....	1	6.7	6.7	1	25.0	25.0	—	—	—
2.80-2.99.....	—	—	6.7	1	25.0	50.0	—	—	—
3.00-3.49.....	6	40.0	46.7	2	50.0	100.0	3	60.0	60.0
3.50-3.99.....	4	26.7	73.4	—	—	100.0	1	20.0	80.0
4.00-4.49.....	3	20.0	93.4	—	—	100.0	1	20.0	100.0
4.50-4.99.....	1	6.7	100.1	—	—	100.0	—	—	100.0
5.00-5.49.....	—	—	100.1	—	—	100.0	—	—	100.0
5.50-5.99.....	—	—	100.1	—	—	100.0	—	—	100.0
6.00-6.49.....	—	—	100.1	—	—	100.0	—	—	100.0
>6.49.....	—	—	100.1	—	—	100.0	—	—	100.0
Mean.....	3.64			3.01			3.55		
Median.....	3.56			3.00			3.42		

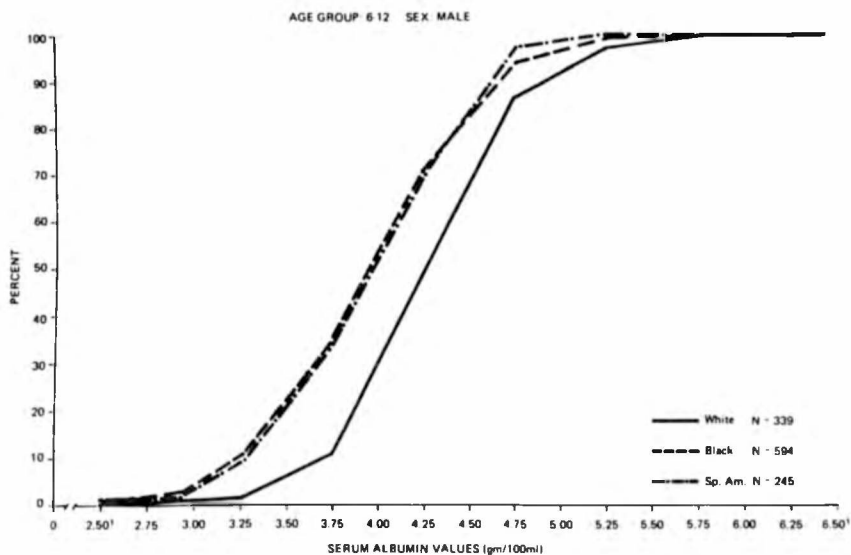
Figure 1a Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 1A Appendix

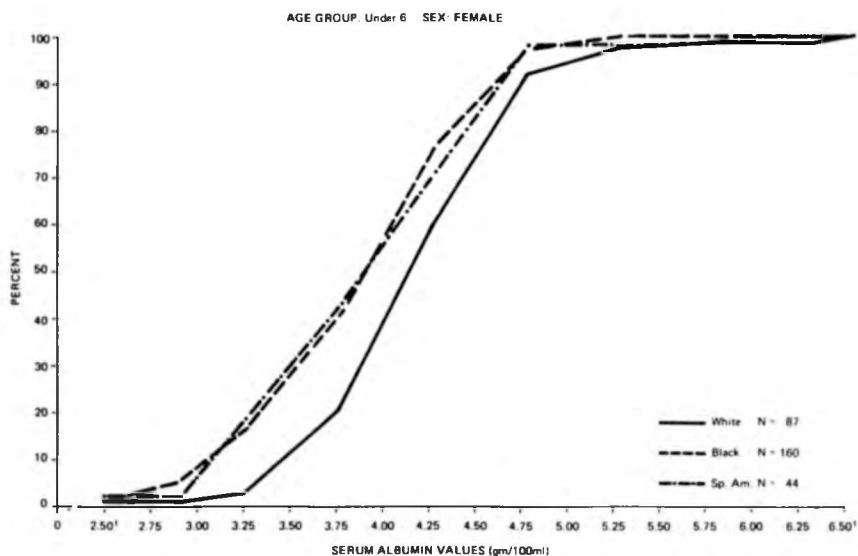
Figure 1c Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 1C Appendix

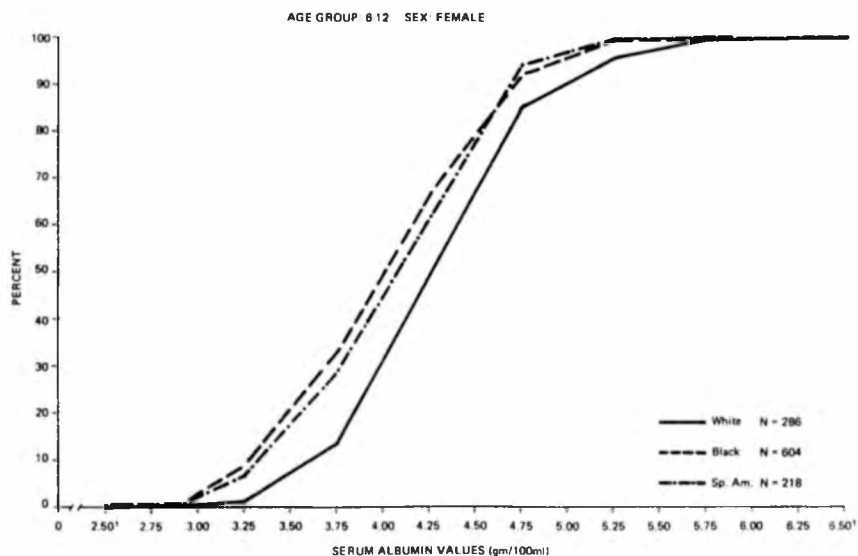
Figure 1b Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 1B Appendix.

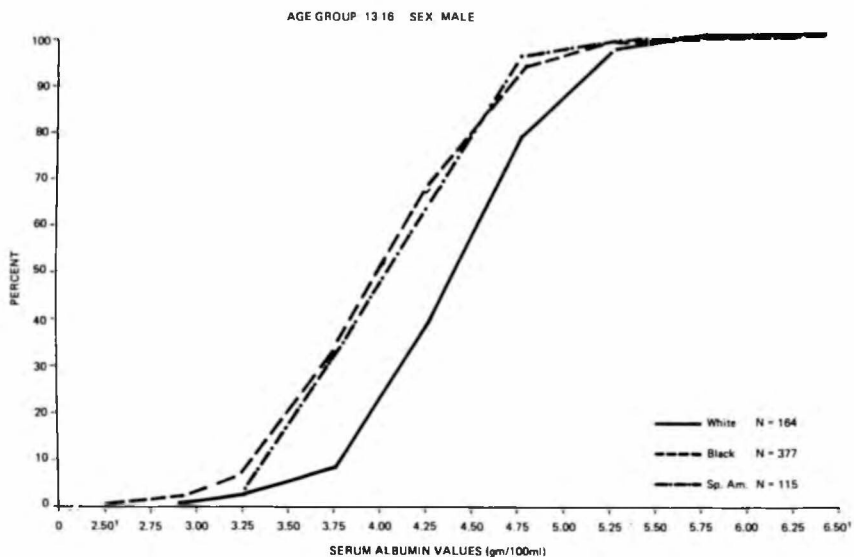
Figure 1d Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 1D Appendix.

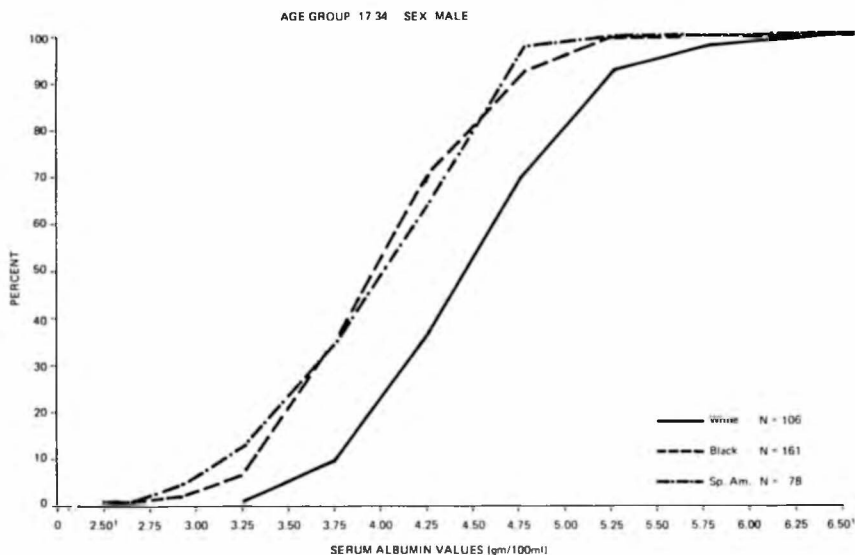
Figure 1e Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 1E Appendix.

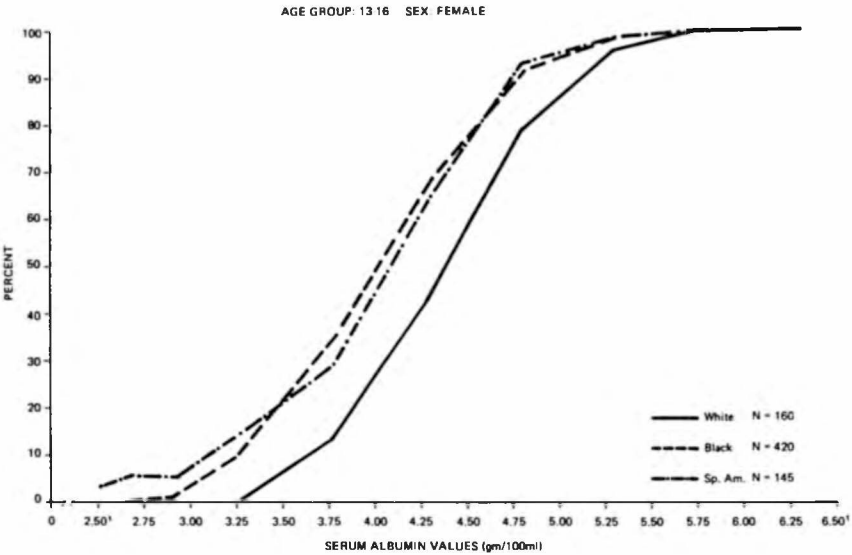
Figure 1g Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 1G Appendix.

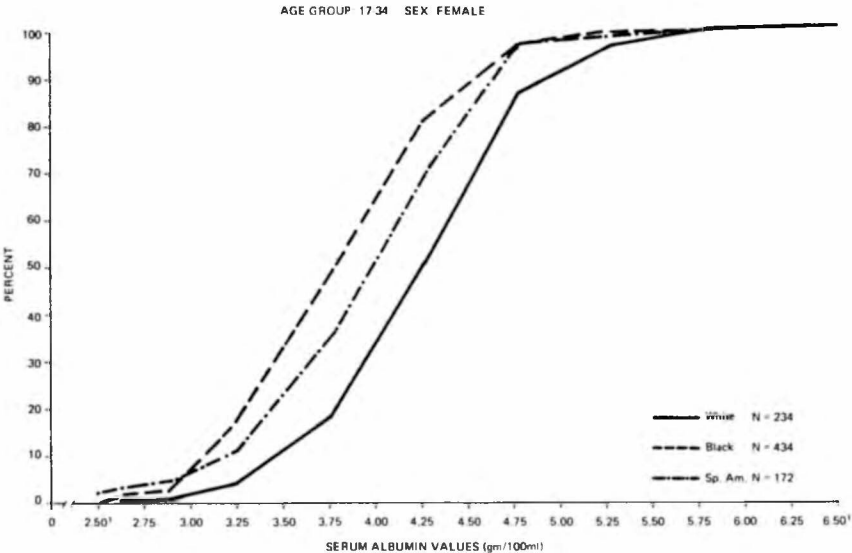
Figure 1f Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 1F Appendix.

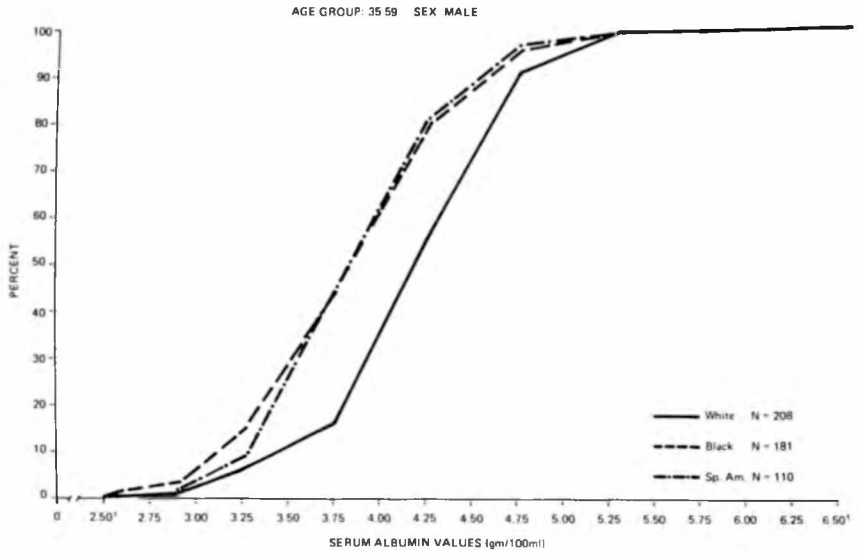
Figure 1h Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 1H Appendix.

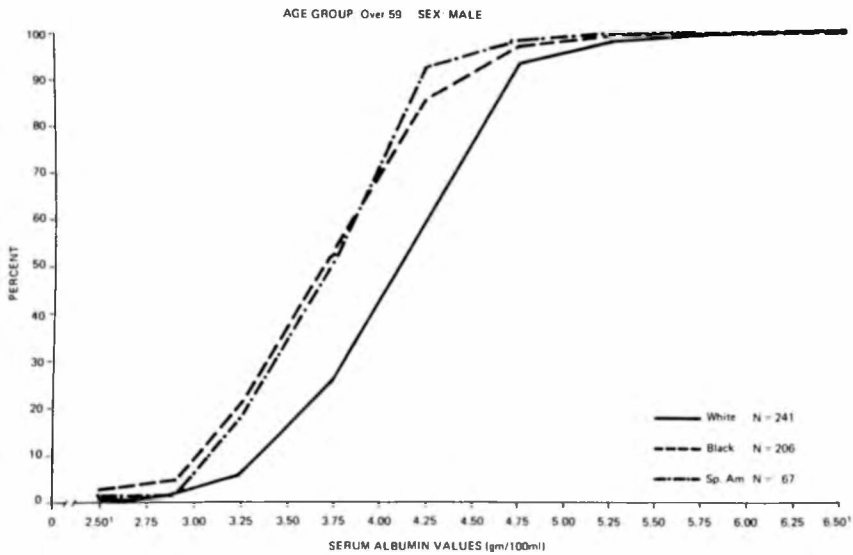
Figure 1i Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 2.50 or > 6.49

Table Reference: 1i Appendix.

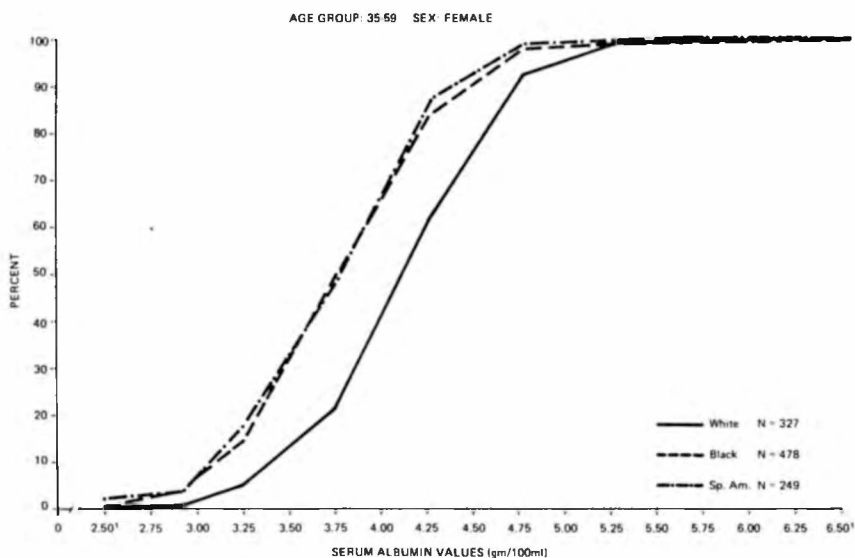
Figure 1k Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 2.50 or > 6.49

Table Reference: 1K Appendix.

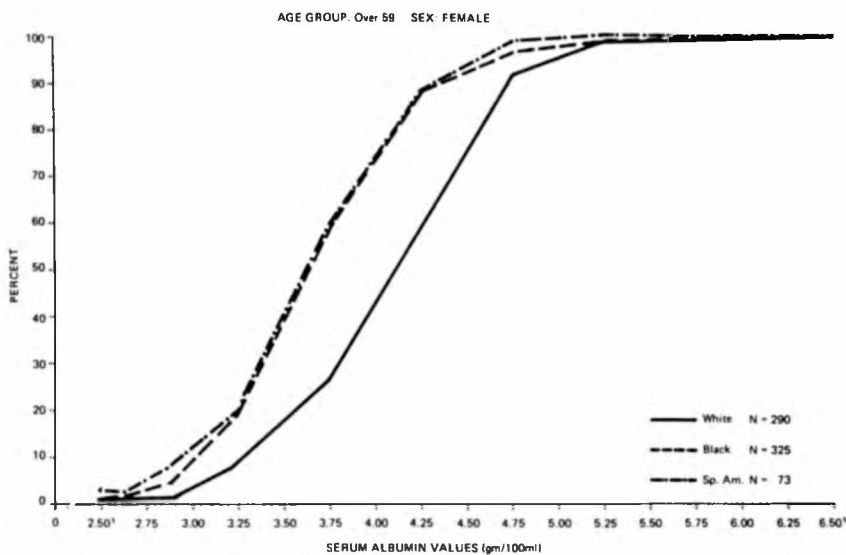
Figure 1J Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 1J Appendix.

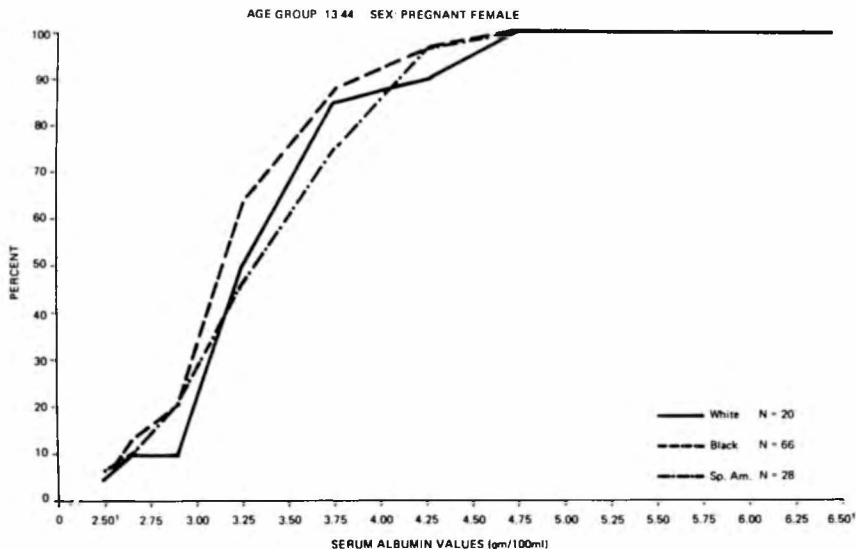
Figure 1I Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 1I Appendix.

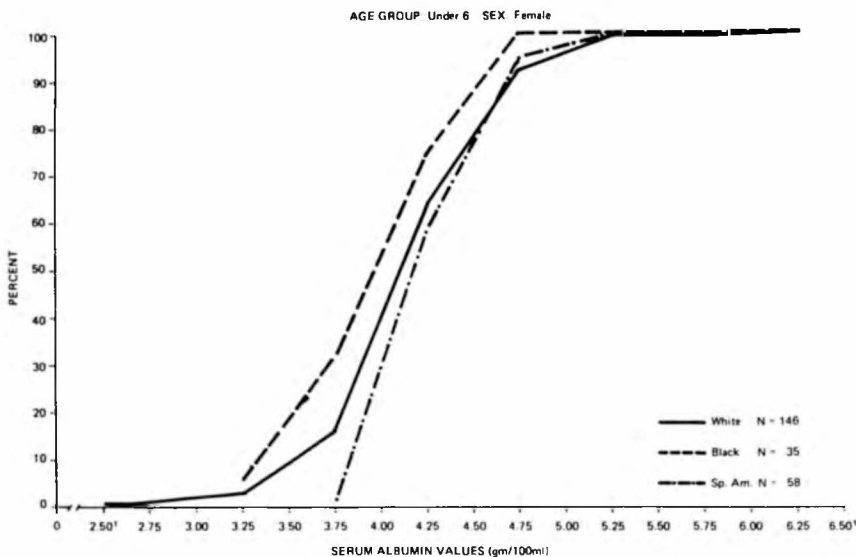
Figure 1m Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 2.50 or > 6.49

Table Reference: 1M Appendix.

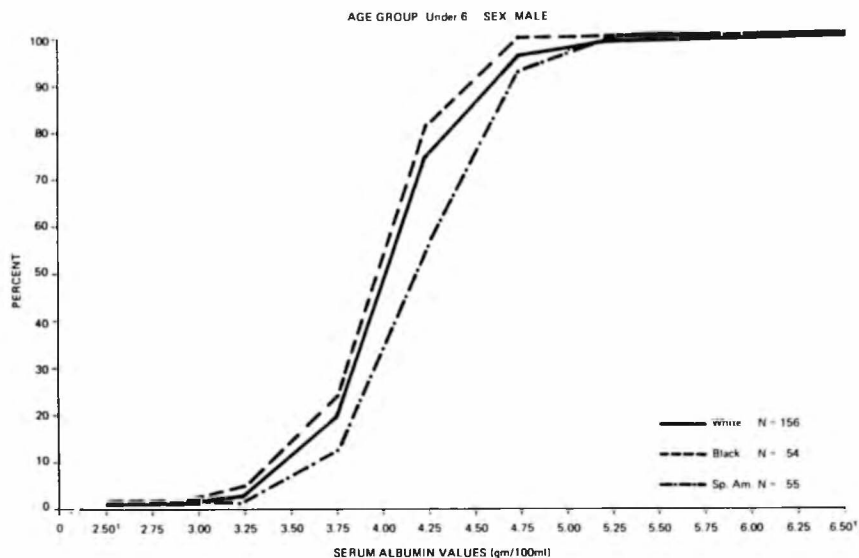
Figure 2b Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 2.50 or > 6.49

Table Reference: 2B Appendix.

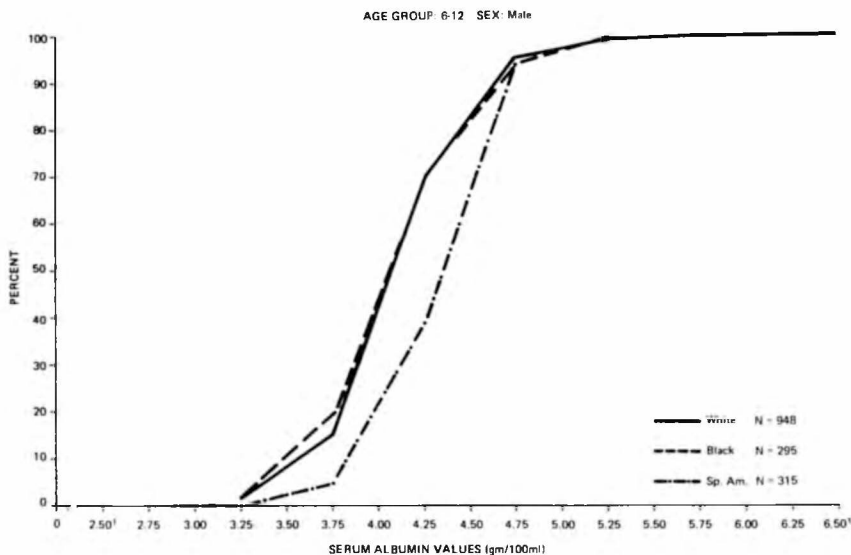
Figure 2a Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 2.50 or > 6.49

Table Reference: 2A Appendix.

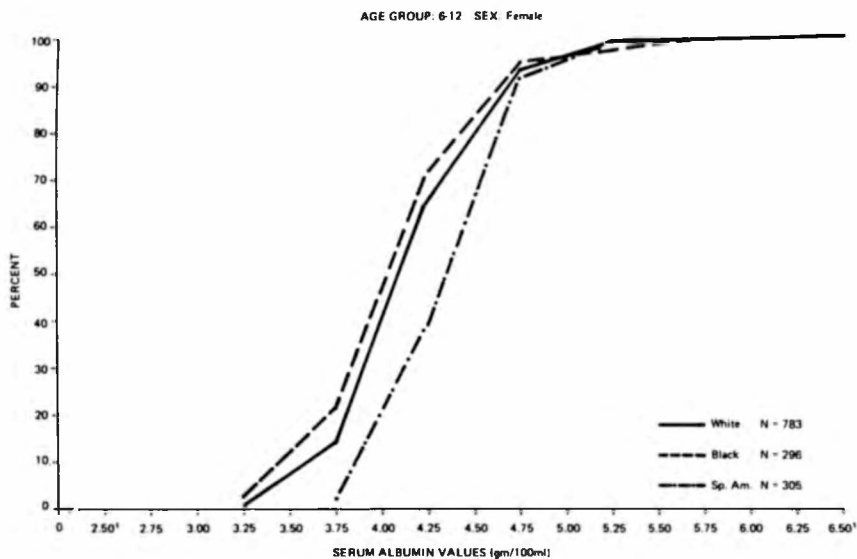
Figure 2c Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 2.50 or > 6.49

Table Reference: 2C Appendix.

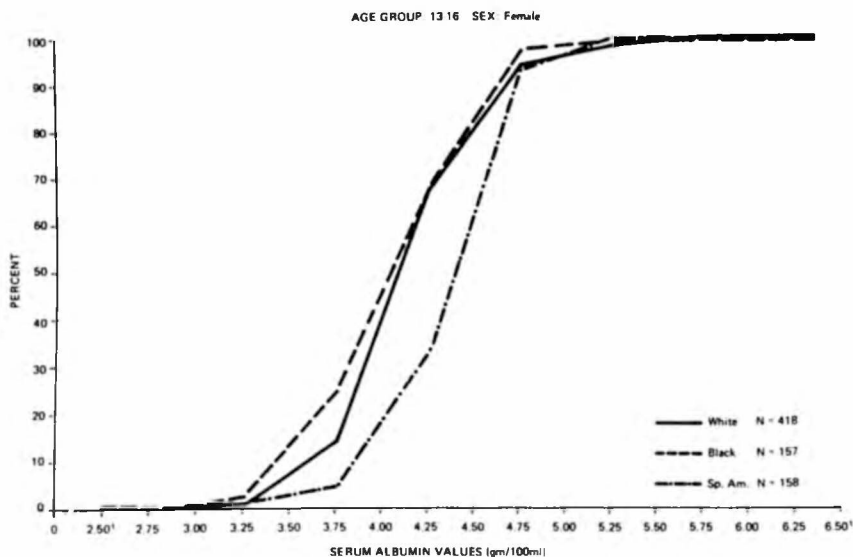
Figure 2d Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 2.50 or > 6.49

Table Reference: 2D Appendix

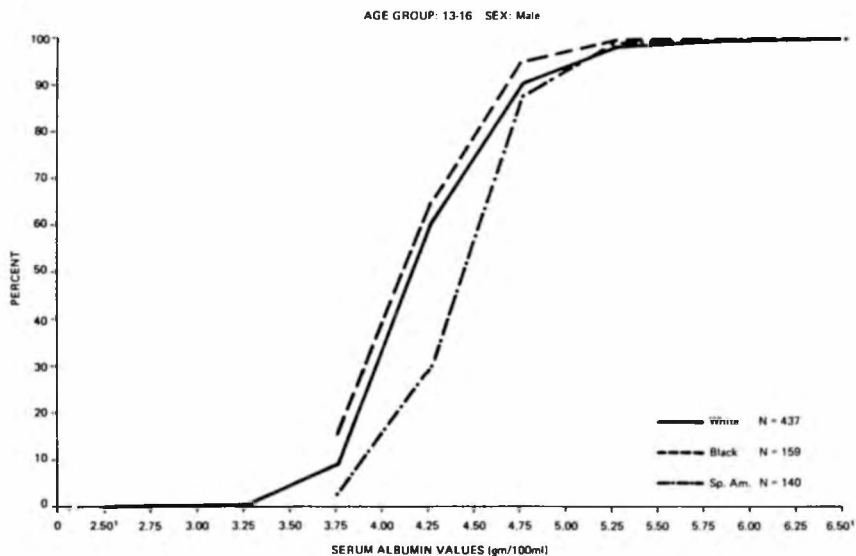
Figure 2f Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 2.50 or > 6.49

Table Reference: 2F Appendix

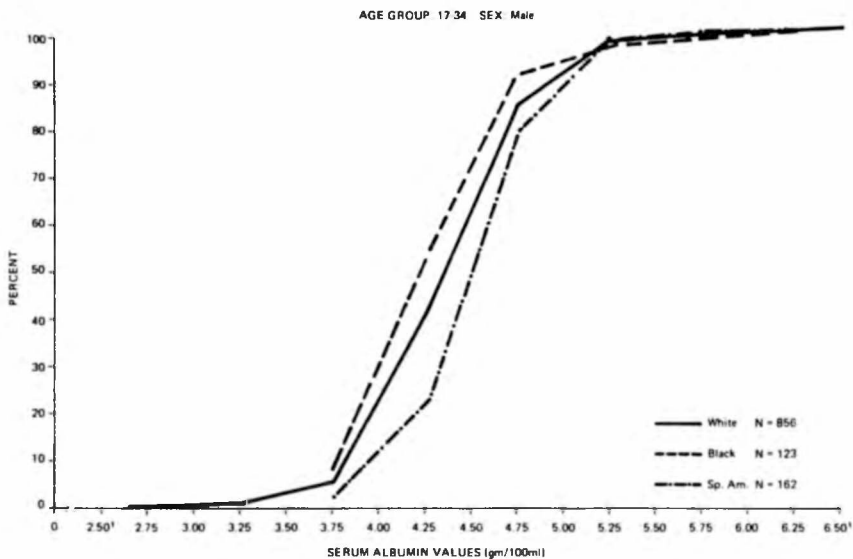
Figure 2e Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 2.50 or > 6.49

Table Reference: 2E Appendix.

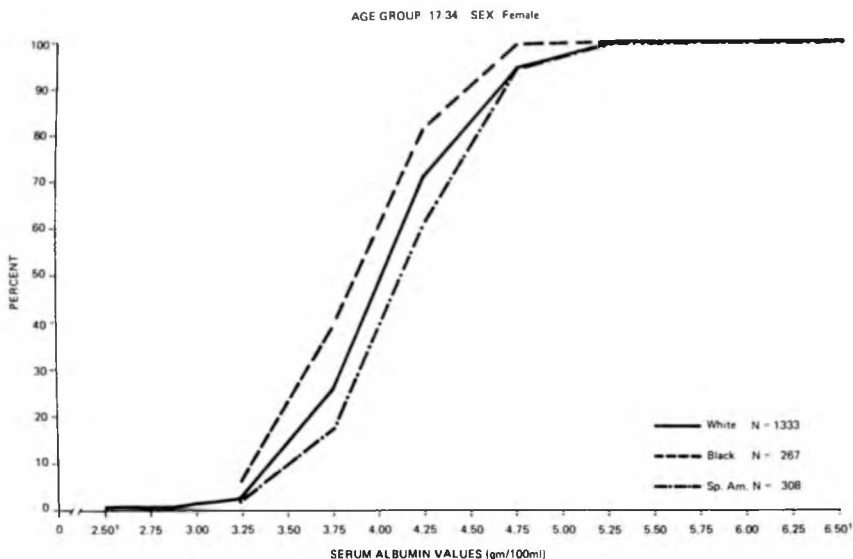
Figure 2g Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 2.50 or > 6.49

Table Reference: 2G Appendix.

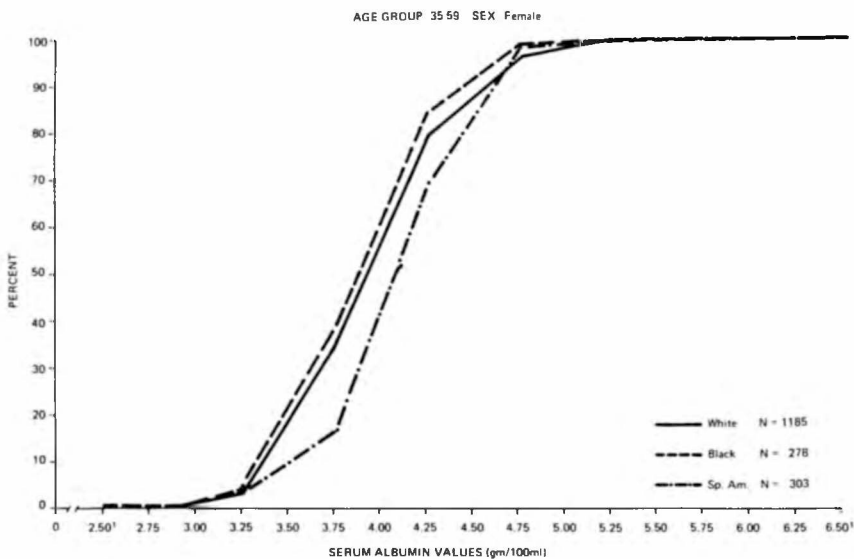
Figure 2h Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 2H Appendix.

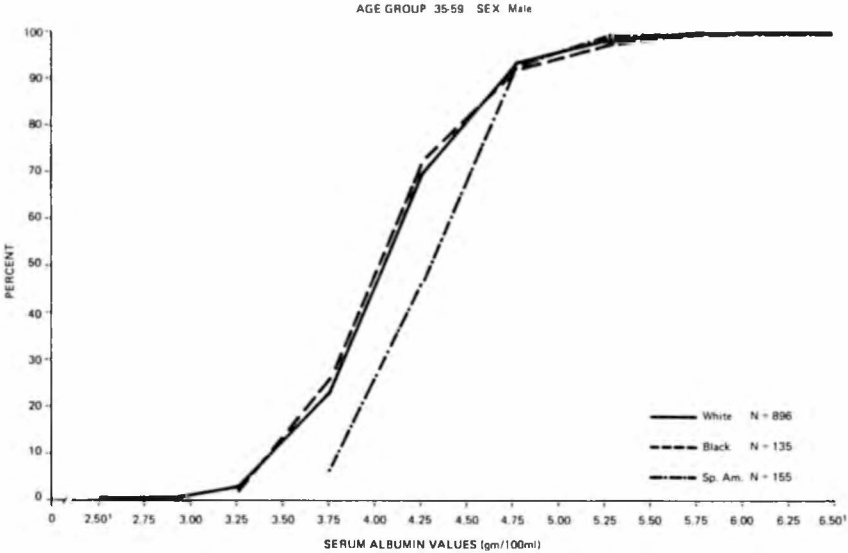
Figure 2j Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values <2.50 or >6.49

Table Reference: 2J Appendix.

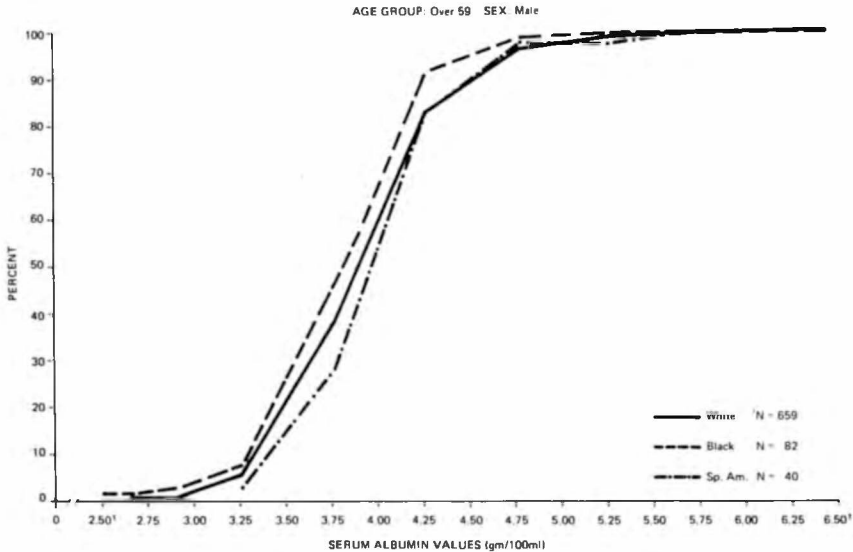
Figure 2l Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 2.50 or > 6.49

Table Reference: 2l Appendix

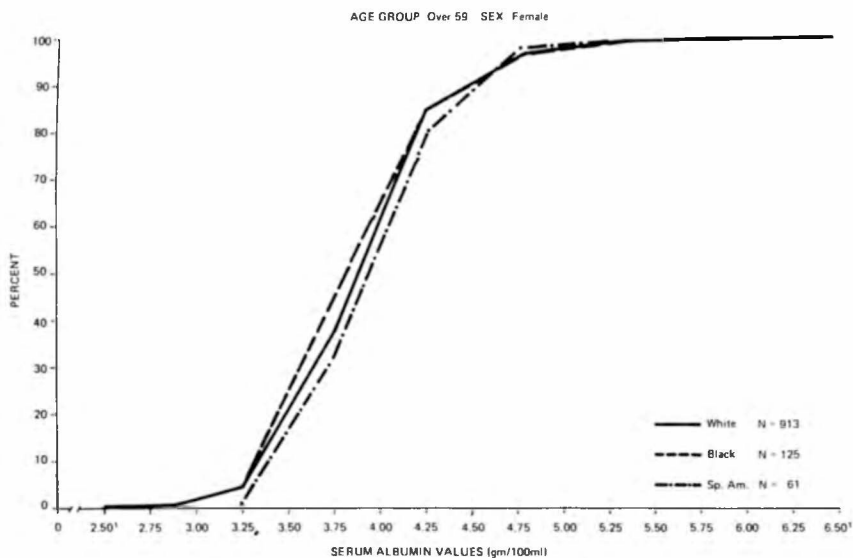
Figure 2k Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 2.50 or > 6.49

Table Reference: 2K Appendix

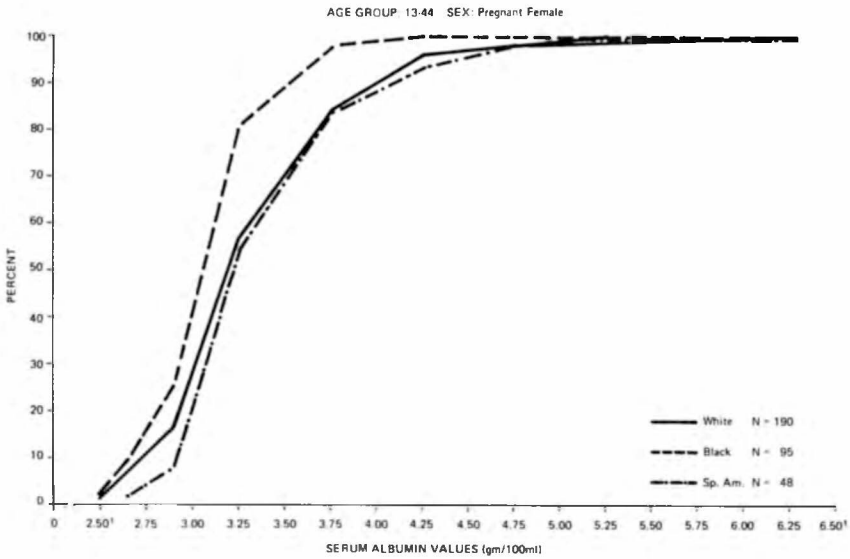
Figure 21 Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 2.50 or > 6.49

Table Reference 2L Appendix

Figure 2m Appendix—Cumulative Percentage Distribution of Serum Albumin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values < 2.50 or > 6.49

Table Reference: 2M Appendix.

Table 3A Appendix. *Percent of Persons Having Deficient or Low Serum Albumin Values by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group								
	White			Black			Spanish American		
	Total ¹ Number	Percent Deficient Values ²	With Low Values	Total ¹ Number	Percent Deficient Values ²	With Low Values	Total ¹ Number	Percent Deficient Values ²	With Low Values
COMBINED.....	2561	0.5	3.5	4126	2.0	11.1	1553	2.3	10.6
<0.50.....	351	1.1	4.0	1089	3.1	11.1	411	1.7	12.2
0.50-0.99.....	619	0.3	3.1	1486	1.3	10.0	540	0.8	9.6
1.00-1.99.....	678	0.7	2.9	640	2.0	10.2	278	3.0	11.2
2.00-2.99.....	285	0.6	3.2	91	0.0	4.4	36	0.0	16.7
>2.99.....	165	0.0	4.2	35	0.0	22.9	30	0.0	6.7
Unknown.....	463	0.0	4.3	785	1.3	14.5	258	5.1	8.9

Table 3B Appendix. *Percent of Persons Having Deficient or Low Serum Albumin Values by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group								
	White			Black			Spanish American		
	Total ¹ Number	Percent Deficient Values ²	With Low Values	Total ¹ Number	Percent Deficient Values ²	With Low Values	Total ¹ Number	Percent Deficient Values ²	With Low Values
COMBINED.....	8730	0.2	2.3	2006	0.2	2.8	2060	0.0	1.0
<0.50.....	320	0.4	3.8	96	0.0	4.2	85	0.0	3.5
0.50-0.99.....	1026	0.3	3.1	497	0.0	3.6	548	0.0	0.9
1.00-1.99.....	2667	0.3	2.5	724	0.2	2.2	810	0.0	0.2
2.00-2.99.....	1888	0.0	1.4	242	0.7	3.7	190	0.0	2.6
>2.99.....	1975	0.1	2.2	154	0.0	2.6	82	0.0	0.0
Unknown.....	854	0.0	2.0	293	0.0	2.0	345	0.0	1.7

¹Excludes persons with unknown age and unknown sex.
²Based on values for persons over sixteen years of age.

Serum Albumin Deficient and Low Value Classifications (gm/100ml)			
	Deficient		Low
<1	Standard	not Available	<2.50
1-5	Standard	not Available	<3.00
6-16	Standard	not Available	<3.50
>16	<2.80		2.80-3.49

Table 4 Appendix. *Mean Serum Albumin Values and Percent of Deficient and Low Serum Albumin Values for Females Thirteen through Forty-four Years of Age by Pregnancy Status and Ethnic Group for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Pregnancy Status	Ethnic Group								
	White			Black			Spanish American		
	Number	Mean	Percent With Deficient and Low Values	Number	Mean	Percent With Deficient and Low Values	Number	Mean	Percent With Deficient and Low Values
Low Income Ratio States.....									
Pregnant.....	20	3.54	50.0	66	3.38	63.6	28	3.53	46.4
Non-Pregnant.....	540	4.42	3.3	1064	4.05	14.3	445	4.10	14.2
High Income Ratio States.....									
Pregnant.....	190	3.50	56.8	95	3.23	81.1	48	3.57	54.2
Non-Pregnant.....	2260	4.28	2.4	553	4.12	4.7	629	4.40	1.9

Serum Albumin Deficient and Low Value Classifications (gm/100ml)	
Deficient and Low	
13-44 Female Pregnant	<3.50 <3.50

Table 5 Appendix. *Quartile of Serum Albumin Values for Corresponding Protein Intakes for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Albumin Quartile	Age Group				Pregnant or Lactating Females	All Persons 60 Years of Age and Over
	0-36 Months	10-11 Years	12-14 Years	15-16 Years		
Number.....	177	1420	2402	823	404	1621
First Quartile.....	< 3.80	< 4.09	< 4.06	< 4.03	< 3.00	< 3.80
Second Quartile.....	3.80-4.20	4.09-4.35	4.06-4.32	4.03-4.37	3.00-3.28	3.80-4.10
Third Quartile.....	4.21-4.40	4.36-4.66	4.33-4.63	4.38-4.70	3.29-3.60	4.11-4.40
Fourth Quartile.....	> 4.40	> 4.66	> 4.63	> 4.70	> 3.60	> 4.40

Table 6A Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Under Six Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	121	100.0	100.0	195	100.0	100.0	37	100.0	100.0
<5.0.....	—	—	—	2	1.0	1.0	1	2.7	2.7
5.0-5.4.....	1	0.8	0.8	6	3.1	4.1	2	5.4	8.1
5.5-5.9.....	3	2.5	3.3	17	8.7	12.8	—	—	8.1
6.0-6.4.....	27	22.3	25.6	25	12.8	25.6	4	10.8	18.9
6.5-6.9.....	39	32.2	57.8	61	31.3	56.9	4	10.8	29.7
7.0-7.4.....	38	31.4	89.2	44	22.6	79.5	11	29.7	69.4
7.5-7.9.....	11	9.1	98.3	27	13.8	93.3	12	32.4	91.8
8.0-8.4.....	2	1.7	100.0	9	4.6	97.9	3	8.1	99.9
8.5-8.9.....	—	—	100.0	3	1.5	99.4	—	—	99.9
9.0-9.4.....	—	—	100.0	—	—	99.4	—	—	99.9
>9.4.....	—	—	100.0	1	0.5	99.9	—	—	99.9
Mean.....	6.8			6.9			7.1		
Median.....	6.9			6.9			7.3		

Table 6B Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Under Six Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	92	100.0	100.0	164	100.0	100.0	43	100.0	100.0
<5.0.....	—	—	—	2	1.2	1.2	1	2.3	2.3
5.0-5.4.....	—	—	—	4	2.4	3.6	—	—	2.3
5.5-5.9.....	6	6.5	6.5	10	6.1	9.7	2	4.7	7.0
6.0-6.4.....	15	16.3	22.8	19	11.6	21.3	3	7.0	14.0
6.5-6.9.....	33	35.9	58.7	37	22.6	43.9	6	14.0	28.0
7.0-7.4.....	27	29.3	88.0	55	33.5	77.4	17	39.5	67.5
7.5-7.9.....	11	12.0	100.0	23	14.0	91.4	12	27.9	95.4
8.0-8.4.....	—	—	100.0	14	8.5	99.9	2	4.7	100.1
8.5-8.9.....	—	—	100.0	—	—	99.9	—	—	100.1
9.0-9.4.....	—	—	100.0	—	—	99.9	—	—	100.1
>9.4.....	—	—	100.0	—	—	99.9	—	—	100.1
Mean.....	6.8			7.0			7.1		
Median.....	6.9			7.1			7.3		

Table 6C Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Six through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	347	100.0	100.0	609	100.0	100.0	245	100.0	100.0
<5.0.....	—	—	—	5	0.8	0.8	4	1.6	1.6
5.0-5.4.....	2	0.6	0.6	4	0.7	1.5	1	0.4	2.0
5.5-5.9.....	4	1.2	1.8	15	2.5	4.0	5	2.0	4.0
6.0-6.4.....	26	7.5	9.3	61	10.0	14.0	27	11.0	15.0
6.5-6.9.....	105	30.3	39.6	137	22.5	36.5	51	20.8	35.8
7.0-7.4.....	127	36.6	76.2	163	26.8	63.3	78	31.8	67.6
7.5-7.9.....	67	19.3	95.5	153	25.1	88.4	60	24.5	92.1
8.0-8.4.....	14	4.0	99.5	59	9.7	98.1	18	7.3	99.4
8.5-8.9.....	—	—	99.5	10	1.6	99.7	1	0.4	99.8
9.0-9.4.....	2	0.6	100.1	1	0.2	99.9	—	—	99.8
>9.4.....	—	—	100.1	1	0.2	100.1	—	—	99.8
Mean.....	7.1			7.2			7.1		
Median.....	7.1			7.2			7.2		

Table 6D Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Six through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	288	100.0	100.0	625	100.0	100.0	218	100.0	100.0
<5.0.....	2	0.7	0.7	5	0.8	0.8	—	—	—
5.0-5.4.....	—	—	0.7	5	0.8	1.6	2	0.9	0.9
5.5-5.9.....	4	1.4	2.1	13	2.1	3.7	9	4.1	5.0
6.0-6.4.....	19	6.6	8.7	42	6.7	10.4	17	7.8	12.8
6.5-6.9.....	78	27.1	35.8	121	19.4	29.8	35	16.1	28.9
7.0-7.4.....	107	37.2	73.0	165	26.4	56.2	54	24.8	53.7
7.5-7.9.....	65	22.6	95.6	177	28.3	84.5	67	30.7	84.4
8.0-8.4.....	10	3.5	99.1	72	11.5	96.0	28	12.8	97.2
8.5-8.9.....	2	0.7	99.8	21	3.4	99.4	5	2.3	99.5
9.0-9.4.....	1	0.3	100.1	4	0.6	100.0	1	0.5	100.0
>9.4.....	—	—	100.1	—	—	100.0	—	—	100.0
Mean.....	7.2			7.3			7.3		
Median.....	7.2			7.4			7.4		

Table 6E Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	166	100.0	100.0	385	100.0	100.0	115	100.0	100.0
<5.0.....	1	0.6	0.6	2	0.5	0.5	—	—	—
5.0-5.4.....	—	—	0.6	3	0.8	1.3	—	—	—
5.5-5.9.....	4	2.4	3.0	9	2.3	3.6	3	2.6	2.6
6.0-6.4.....	6	3.6	6.6	30	7.8	11.4	11	9.6	12.2
6.5-6.9.....	26	15.7	22.3	65	16.9	28.3	20	17.4	29.6
7.0-7.4.....	72	43.4	65.7	117	30.4	58.7	34	29.6	59.2
7.5-7.9.....	44	26.5	92.2	88	22.9	81.6	34	29.6	88.8
8.0-8.4.....	10	6.0	98.2	57	14.8	96.4	12	10.4	99.2
8.5-8.9.....	3	1.8	100.0	13	3.4	99.8	1	0.9	100.1
9.0-9.4.....	—	—	100.0	1	0.3	100.1	—	—	100.1
>9.4.....	—	—	100.0	—	—	100.1	—	—	100.1
Mean.....	7.3			7.3			7.2		
Median.....	7.3			7.4			7.4		

Table 6F Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	164	100.0	100.0	430	100.0	100.0	146	100.0	100.0
<5.0.....	1	0.6	0.6	1	0.2	0.2	6	4.1	4.1
5.0-5.4.....	—	—	0.6	5	1.2	1.4	1	0.7	4.8
5.5-5.9.....	3	1.8	2.4	9	2.1	3.5	2	1.4	6.2
6.0-6.4.....	10	6.1	8.5	33	7.7	11.2	13	8.9	15.1
6.5-6.9.....	29	17.7	26.2	57	13.3	24.5	18	12.3	27.4
7.0-7.4.....	55	33.5	59.7	128	29.8	54.3	31	21.2	48.6
7.5-7.9.....	46	28.0	87.7	121	28.1	82.4	48	32.9	81.5
8.0-8.4.....	16	9.8	97.5	50	11.6	94.0	22	15.1	96.6
8.5-8.9.....	4	2.4	99.9	21	4.9	98.9	4	2.7	99.3
9.0-9.4.....	—	—	99.9	4	0.9	99.8	1	0.7	100.0
>9.4.....	—	—	99.9	1	0.2	100.0	—	—	100.0
Mean.....	7.3			7.4			7.2		
Median.....	7.4			7.4			7.5		

Table 6G Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Seventeen through Thirty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	109	100.0	100.0	165	100.0	100.0	78	100.0	100.0
<5.0.....	—	—	—	2	1.2	1.2	1	1.3	1.3
5.0-5.4.....	—	—	—	1	0.6	1.8	—	—	1.3
5.5-5.9.....	5	4.6	4.6	3	1.8	3.6	3	3.8	5.1
6.0-6.4.....	5	4.6	9.2	10	6.1	9.7	6	7.7	12.8
6.5-6.9.....	20	18.3	27.5	30	18.2	27.9	16	20.5	33.3
7.0-7.4.....	31	28.4	55.9	40	24.2	52.1	18	23.1	56.4
7.5-7.9.....	35	32.1	88.0	47	28.5	80.6	25	32.1	88.5
8.0-8.4.....	10	9.2	97.2	23	13.9	94.5	7	9.0	97.5
8.5-8.9.....	3	2.8	100.0	7	4.2	98.7	2	2.6	100.1
9.0-9.4.....	—	—	100.0	—	—	98.7	—	—	100.1
>9.4.....	—	—	100.0	2	1.2	99.9	—	—	100.1
Mean.....	7.3			7.3			7.4		
Median.....	7.4			7.5					

Table 6H Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Seventeen through Thirty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	254	100.0	100.0	500	100.0	100.0	191	100.0	100.0
<5.0.....	—	—	—	1	0.2	0.2	3	1.6	1.6
5.0-5.4.....	2	0.8	0.8	4	0.8	1.0	2	1.0	2.6
5.5-5.9.....	3	1.2	2.0	17	3.4	4.4	7	3.7	6.3
6.0-6.4.....	17	6.7	8.7	31	6.2	10.6	18	9.4	15.7
6.5-6.9.....	62	24.4	33.1	85	17.0	27.6	28	14.7	30.4
7.0-7.4.....	84	33.1	66.2	133	26.6	54.2	46	24.1	54.5
7.5-7.9.....	68	26.8	93.0	141	28.2	82.4	58	30.4	84.9
8.0-8.4.....	15	5.9	98.9	67	13.4	95.8	23	12.0	96.9
8.5-8.9.....	3	1.2	100.1	17	3.4	99.2	6	3.1	100.0
9.0-9.4.....	—	—	100.1	3	0.6	99.8	—	—	100.0
>9.4.....	—	—	100.1	1	0.2	100.0	—	—	100.0
Mean.....	7.2			7.3			7.2		
Median.....	7.3			7.4			7.4		

Table 6I Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Thirty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	211	100.0	100.0	183	100.0	100.0	110	100.0	100.0
<5.0.....	2	0.9	0.9	—	—	—	—	—	—
5.0-5.4.....	1	0.5	1.4	1	0.5	0.5	2	1.8	1.8
5.5-5.9.....	3	1.4	2.8	6	3.3	3.8	2	1.8	3.6
6.0-6.4.....	16	7.6	10.4	17	9.3	13.1	5	4.5	8.1
6.5-6.9.....	57	27.0	37.4	47	25.7	38.8	22	20.0	28.1
7.0-7.4.....	84	39.8	77.2	45	24.6	63.4	41	37.3	65.4
7.5-7.9.....	38	18.0	95.2	40	21.9	85.3	27	24.5	89.9
8.0-8.4.....	7	3.3	98.5	25	13.7	99.0	10	9.1	99.0
8.5-8.9.....	3	1.4	99.9	2	1.1	100.1	—	—	99.0
9.0-9.4.....	—	—	99.9	—	—	100.1	1	0.9	99.9
>9.4.....	—	—	99.9	—	—	100.1	—	—	99.9
Mean.....	7.1			7.2			7.2		
Median.....	7.3			7.2			7.3		

Table 6J Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Thirty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	332	100.0	100.0	495	100.0	100.0	257	100.0	100.0
<5.0.....	—	—	—	2	0.4	0.4	7	2.7	2.7
5.0-5.4.....	1	0.3	0.3	1	0.2	0.6	2	0.8	3.5
5.5-5.9.....	8	2.4	2.7	14	2.8	3.4	10	3.9	7.4
6.0-6.4.....	28	8.4	11.1	40	8.1	11.5	19	7.4	14.8
6.5-6.9.....	76	22.9	34.0	70	14.1	25.6	42	16.3	31.1
7.0-7.4.....	115	34.6	68.6	124	25.1	50.7	78	30.4	61.5
7.5-7.9.....	79	23.8	92.4	132	26.7	77.4	59	23.0	84.5
8.0-8.4.....	23	6.9	99.3	83	16.8	94.2	36	14.0	98.5
8.5-8.9.....	2	0.6	99.9	19	3.8	98.0	3	1.2	99.7
9.0-9.4.....	—	—	99.9	5	1.0	99.0	1	0.4	100.1
>9.4.....	—	—	99.9	5	1.0	100.0	—	—	100.1
Mean.....	7.2			7.4			7.2		
Median.....	7.2			7.4			7.3		

Table 6K Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	244	100.0	100.0	212	100.0	100.0	67	100.0	100.0
<5.0.....	1	0.4	0.4	1	0.5	0.5	1	1.5	1.5
5.0-5.4.....	—	—	0.4	1	0.5	1.0	—	—	1.5
5.5-5.9.....	4	1.6	2.0	9	4.2	5.2	1	1.5	3.0
6.0-6.4.....	24	9.8	11.8	26	12.3	17.5	6	9.0	12.0
6.5-6.9.....	52	21.3	33.1	54	25.5	43.0	16	23.9	35.9
7.0-7.4.....	91	37.3	70.4	49	23.1	66.1	27	40.3	76.2
7.5-7.9.....	54	22.1	92.5	45	21.2	87.3	9	13.4	89.6
8.0-8.4.....	13	5.3	97.8	20	9.4	96.7	5	7.5	97.1
8.5-8.9.....	5	2.0	99.8	7	3.3	100.0	2	3.0	100.1
9.0-9.4.....	—	—	99.8	—	—	100.0	—	—	100.1
>9.4.....	—	—	99.8	—	—	100.0	—	—	100.1
Mean	7.2			7.1			7.1		
Median	7.2			7.2			7.2		

Table 6L Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	293	100.0	100.0	335	100.0	100.0	73	100.0	100.0
<5.0.....	2	0.7	0.7	1	0.3	0.3	1	1.4	1.4
5.0-5.4.....	2	0.7	1.4	1	0.3	0.6	—	—	1.4
5.5-5.9.....	11	3.8	5.2	10	3.0	3.6	3	4.1	5.6
6.0-6.4.....	17	5.8	11.0	41	12.2	15.8	3	4.1	9.6
6.5-6.9.....	63	21.5	32.5	74	22.1	37.9	14	19.2	28.8
7.0-7.4.....	108	36.9	69.4	79	23.6	61.5	34	46.6	75.4
7.5-7.9.....	71	24.2	93.6	68	20.3	81.8	11	15.1	90.5
8.0-8.4.....	15	5.1	98.7	44	13.1	94.9	6	8.2	98.7
8.5-8.9.....	4	1.4	100.1	11	3.3	98.2	1	1.4	100.1
9.0-9.4.....	—	—	100.1	2	0.6	98.8	—	—	100.1
>9.4.....	—	—	100.1	4	1.2	100.0	—	—	100.1
Mean	7.1			7.2			7.1		
Median	7.2			7.3			7.2		

Table 7A Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Under Six Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	184	100.0	100.0	69	100.0	100.0	55	100.0	100.0
<5.0.....	2	1.1	1.1	—	—	—	—	—	—
5.0-5.4.....	1	0.5	1.6	1	1.4	1.4	—	—	—
5.5-5.9.....	4	2.2	3.8	—	—	1.4	—	—	—
6.0-6.4.....	20	10.9	14.7	7	10.1	11.5	—	—	—
6.5-6.9.....	66	35.9	50.6	18	26.1	37.6	7	12.7	12.7
7.0-7.4.....	66	35.9	86.5	23	33.3	70.9	31	56.4	69.1
7.5-7.9.....	19	10.3	96.8	14	20.3	91.2	12	21.8	90.9
8.0-8.4.....	4	2.2	99.0	5	7.2	98.4	5	9.1	100.0
8.5-8.9.....	1	0.5	99.5	1	1.4	99.8	—	—	100.0
9.0-9.4.....	1	0.5	100.0	—	—	99.8	—	—	100.0
>9.4.....	—	—	100.0	—	—	99.8	—	—	100.0
Mean.....	6.9			7.1			7.3		
Median.....	7.0			7.2			7.3		

Table 7B Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Under Six Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	167	100.0	100.0	55	100.0	100.0	58	100.0	100.0
<5.0.....	1	0.6	0.6	1	1.8	1.8	1	1.7	1.7
5.0-5.4.....	—	—	0.6	—	—	1.8	—	—	1.7
5.5-5.9.....	1	0.6	1.2	1	1.8	3.6	—	—	1.7
6.0-6.4.....	16	9.6	10.8	1	1.8	5.4	—	—	1.7
6.5-6.9.....	49	29.3	40.1	9	16.4	21.8	12	20.7	22.4
7.0-7.4.....	69	41.3	81.4	26	47.3	69.1	23	39.7	62.1
7.5-7.9.....	22	13.2	94.6	14	25.5	94.6	19	32.8	94.9
8.0-8.4.....	7	4.2	98.8	2	3.6	98.2	3	5.2	100.1
8.5-8.9.....	1	0.6	99.4	1	1.8	100.0	—	—	100.1
9.0-9.4.....	—	—	99.4	—	—	100.0	—	—	100.1
>9.4.....	1	0.6	100.0	—	—	100.0	—	—	100.1
Mean.....	7.0			7.2			7.2		
Median.....	7.1			7.3			7.3		

Table 7C Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Six through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	950	100.0	100.0	302	100.0	100.0	316	100.0	100.0
<5.0.....	2	0.2	0.2	1	0.3	0.3	—	—	—
5.0-5.4.....	2	0.2	0.4	1	0.3	0.6	1	0.3	0.3
5.5-5.9.....	6	0.6	1.0	—	—	0.6	—	—	0.3
6.0-6.4.....	34	3.6	4.6	4	1.3	1.9	1	0.3	0.6
6.5-6.9.....	226	23.8	28.4	40	13.2	15.1	20	6.3	6.9
7.0-7.4.....	429	45.2	73.6	114	37.7	52.8	125	39.6	46.5
7.5-7.9.....	203	21.4	95.0	87	28.8	81.6	111	35.1	81.6
8.0-8.4.....	42	4.4	99.4	50	16.6	98.2	49	15.5	97.1
8.5-8.9.....	6	0.6	100.0	4	1.3	99.5	8	2.5	99.6
9.0-9.4.....	—	—	100.0	1	0.3	99.8	1	0.3	99.9
>9.4.....	—	—	100.0	—	—	99.8	—	—	99.9
Mean.....	7.2			7.4			7.5		
Median.....	7.2			7.5			7.6		

Table 7D Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Six through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	791	100.0	100.0	302	100.0	100.0	304	100.0	100.0
<5.0.....	—	—	—	1	0.3	0.3	—	—	—
5.0-5.4.....	1	0.1	0.1	—	—	0.3	—	—	—
5.5-5.9.....	—	—	0.1	—	—	0.3	—	—	—
6.0-6.4.....	24	3.0	3.1	3	1.0	1.3	2	0.7	0.7
6.5-6.9.....	161	20.4	23.5	23	7.6	8.9	11	3.6	4.3
7.0-7.4.....	352	44.5	68.0	109	36.1	45.0	117	38.5	42.8
7.5-7.9.....	183	23.1	91.1	107	35.4	80.4	122	40.1	82.9
8.0-8.4.....	57	7.2	98.3	45	14.9	95.3	45	14.8	97.7
8.5-8.9.....	11	1.4	99.7	8	2.6	97.9	5	1.6	99.3
9.0-9.4.....	—	—	99.7	2	0.7	98.6	1	0.3	99.6
>9.4.....	2	0.3	100.0	4	1.3	99.9	1	0.3	99.9
Mean.....	7.2			7.6			7.5		
Median.....	7.3			7.6			7.6		

Table 7E Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	438	100.0	100.0	160	100.0	100.0	140	100.0	100.0
<5.0.....	—	—	—	—	—	—	—	—	—
5.0-5.4.....	—	—	—	—	—	—	—	—	—
5.5-5.9.....	3	0.7	0.7	—	—	—	1	0.7	0.7
6.0-6.4.....	7	1.6	2.3	2	1.3	1.3	—	—	0.7
6.5-6.9.....	65	14.8	17.1	16	10.0	11.3	5	3.6	4.3
7.0-7.4.....	177	40.4	57.5	44	27.5	38.8	42	30.0	34.3
7.5-7.9.....	136	31.1	88.6	61	38.1	76.9	59	42.1	76.4
8.0-8.4.....	44	10.0	98.6	30	18.8	95.7	29	20.7	97.1
8.5-8.9.....	2	0.5	99.1	5	3.1	98.8	4	2.9	100.0
9.0-9.4.....	2	0.5	99.6	1	0.6	99.4	—	—	100.0
>9.4.....	2	0.5	100.1	1	0.6	100.0	—	—	100.0
Mean.....	7.4			7.6			7.6		
Median.....	7.4			7.6			7.7		

Table 7F Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	423	100.0	100.0	168	100.0	100.0	157	100.0	100.0
<5.0.....	—	—	—	—	—	—	—	—	—
5.0-5.4.....	—	—	—	1	0.6	0.6	—	—	—
5.5-5.9.....	1	0.2	0.2	—	—	0.6	—	—	—
6.0-6.4.....	5	1.2	1.4	2	1.2	1.8	—	—	—
6.5-6.9.....	38	9.0	10.4	14	8.3	10.1	9	5.7	5.7
7.0-7.4.....	169	40.0	50.4	52	31.0	41.1	24	15.3	21.0
7.5-7.9.....	154	36.4	86.8	61	36.3	77.4	75	47.8	68.8
8.0-8.4.....	47	11.1	97.9	25	14.9	92.3	41	26.1	94.9
8.5-8.9.....	8	1.9	99.8	9	5.4	97.7	8	5.1	100.0
9.0-9.4.....	—	—	99.8	3	1.8	99.5	—	—	100.0
>9.4.....	1	0.2	100.0	1	0.6	100.1	—	—	100.0
Mean.....	7.5			7.6			7.8		
Median.....	7.5			7.6			7.8		

Table 7G Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Seventeen through Thirty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	859	100.0	100.0	123	100.0	100.0	162	100.0	100.0
<5.0.....	1	0.1	0.1	—	—	—	1	0.6	0.6
5.0-5.4.....	1	0.1	0.2	—	—	—	—	—	0.6
5.5-5.9.....	2	0.2	0.4	—	—	—	—	—	0.6
6.0-6.4.....	9	1.0	1.4	—	—	—	—	—	0.6
6.5-6.9.....	67	7.8	9.2	6	4.9	4.9	4	2.5	3.1
7.0-7.4.....	301	35.0	44.2	32	26.0	30.9	26	16.0	19.1
7.5-7.9.....	334	38.9	83.1	43	35.0	65.9	83	51.2	70.3
8.0-8.4.....	126	14.7	97.8	33	26.8	92.7	36	22.2	92.5
8.5-8.9.....	14	1.6	99.4	8	6.5	99.2	10	6.2	98.7
9.0-9.4.....	4	0.5	99.9	1	0.8	100.0	2	1.2	99.9
>9.4.....	—	—	99.9	—	—	100.0	—	—	99.9
Mean.....	7.5			7.7			7.7		
Median.....	7.6			7.8			7.8		

Table 7H Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Seventeen through Thirty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1500	100.0	100.0	350	100.0	100.0	348	100.0	100.0
<5.0.....	4	0.3	0.3	2	0.6	0.6	—	—	—
5.0-5.4.....	1	0.1	0.4	—	—	0.6	—	—	—
5.5-5.9.....	13	0.9	1.3	—	—	0.6	2	0.6	0.6
6.0-6.4.....	69	4.6	5.9	9	2.6	3.2	3	0.9	1.5
6.5-6.9.....	226	15.1	21.0	49	14.0	17.2	29	8.3	9.8
7.0-7.4.....	523	34.9	55.9	105	30.0	47.2	90	25.9	35.7
7.5-7.9.....	470	31.3	87.2	106	30.3	77.5	124	35.6	71.3
8.0-8.4.....	152	10.1	97.3	48	13.7	91.2	84	24.1	95.4
8.5-8.9.....	33	2.2	99.5	24	6.9	98.1	14	4.0	99.4
9.0-9.4.....	7	0.5	100.0	7	2.0	100.1	2	0.6	100.0
>9.4.....	2	0.1	100.1	—	—	100.1	—	—	100.0
Mean.....	7.4			7.5			7.6		
Median.....	7.4			7.5			7.7		

Table 7I Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Thirty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	901	100.0	100.0	136	100.0	100.0	155	100.0	100.0
<5.0.....	—	—	—	—	—	—	—	—	—
5.0-5.4.....	1	0.1	0.1	—	—	—	—	—	—
5.5-5.9.....	4	0.4	0.5	1	0.7	0.7	—	—	—
6.0-6.4.....	27	3.0	3.5	1	0.7	1.4	—	—	—
6.5-6.9.....	183	20.3	23.8	9	6.6	8.0	14	9.0	9.0
7.0-7.4.....	357	39.6	63.4	42	30.9	38.9	52	33.5	42.5
7.5-7.9.....	234	26.0	89.4	44	32.4	71.3	57	36.8	79.3
8.0-8.4.....	79	8.8	98.2	28	20.6	91.9	23	14.8	94.1
8.5-8.9.....	15	1.7	99.9	8	5.9	97.8	9	5.8	99.9
9.0-9.4.....	1	0.1	100.0	2	1.5	99.3	—	—	99.9
>9.4.....	—	—	100.0	1	0.7	100.0	—	—	99.9
Mean.....	7.3			7.6			7.6		
Median.....	7.3			7.7			7.6		

Table 7J Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Thirty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1205	100.0	100.0	283	100.0	100.0	310	100.0	100.0
<5.0.....	3	0.2	0.2	1	0.4	0.4	—	—	—
5.0-5.4.....	—	—	0.2	—	—	0.4	—	—	—
5.5-5.9.....	—	—	0.2	—	—	0.4	1	0.3	0.3
6.0-6.4.....	28	2.3	2.5	1	0.4	0.8	4	1.3	1.6
6.5-6.9.....	195	16.2	18.7	15	5.3	6.1	22	7.1	8.7
7.0-7.4.....	484	40.2	58.9	70	24.7	30.8	77	24.8	33.5
7.5-7.9.....	366	30.4	89.3	95	33.6	64.4	126	40.6	74.1
8.0-8.4.....	104	8.6	97.9	70	24.7	89.1	61	19.7	93.8
8.5-8.9.....	18	1.5	99.4	25	8.8	97.9	13	4.2	98.0
9.0-9.4.....	3	0.2	99.6	5	1.8	99.7	4	1.3	99.3
>9.4.....	4	0.3	99.9	1	0.4	100.1	2	0.6	99.9
Mean.....	7.4			7.6			7.6		
Median.....	7.4			7.8			7.7		

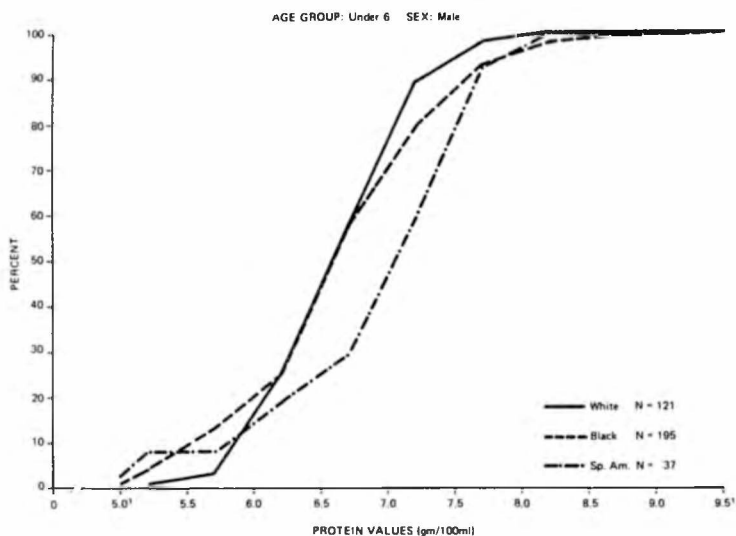
Table 7K Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Males Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	662	100.0	100.0	84	100.0	100.0	40	100.0	100.0
<5.0.....	—	—	—	—	—	—	—	—	—
5.0-5.4.....	2	0.3	0.3	1	1.2	1.2	—	—	—
5.5-5.9.....	3	0.5	0.8	—	—	1.2	—	—	—
6.0-6.4.....	17	2.6	3.4	3	3.6	4.8	—	—	—
6.5-6.9.....	124	18.7	22.1	6	7.1	11.9	6	15.0	15.0
7.0-7.4.....	277	41.8	63.9	24	28.6	40.5	16	40.0	55.0
7.5-7.9.....	169	25.5	89.4	38	45.2	85.7	12	30.0	85.0
8.0-8.4.....	57	8.6	98.0	10	11.9	97.6	4	10.0	95.0
8.5-8.9.....	12	1.8	99.8	1	1.2	98.8	2	5.0	100.0
9.0-9.4.....	—	—	99.8	—	—	98.8	—	—	100.0
>9.4.....	1	0.2	100.0	1	1.2	100.0	—	—	100.0
Mean.....	7.3			7.5			7.5		
Median.....	7.5			7.6			7.4		

Table 7L Appendix. *Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Females Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Protein Values gm/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	919	100.0	100.0	126	100.0	100.0	61	100.0	100.0
<5.0.....	—	—	—	—	—	—	—	—	—
5.0-5.4.....	2	0.2	0.2	—	—	—	—	—	—
5.5-5.9.....	7	0.8	1.0	—	—	—	—	—	—
6.0-6.4.....	37	4.0	5.0	2	1.6	1.6	—	—	—
6.5-6.9.....	206	22.4	27.4	4	3.2	4.8	6	9.8	9.8
7.0-7.4.....	385	41.9	69.3	35	27.8	32.6	18	29.5	39.3
7.5-7.9.....	208	22.6	91.9	46	36.5	69.1	24	39.3	78.6
8.0-8.4.....	56	6.1	98.0	30	23.8	92.9	10	16.4	95.0
8.5-8.9.....	14	1.5	99.5	5	4.0	96.9	3	4.9	99.9
9.0-9.4.....	4	0.4	99.9	4	3.2	100.1	—	—	99.9
>9.4.....	—	—	99.9	—	—	100.1	—	—	99.9
Mean.....	7.2			7.7			7.6		
Median.....	7.3			7.7			7.6		

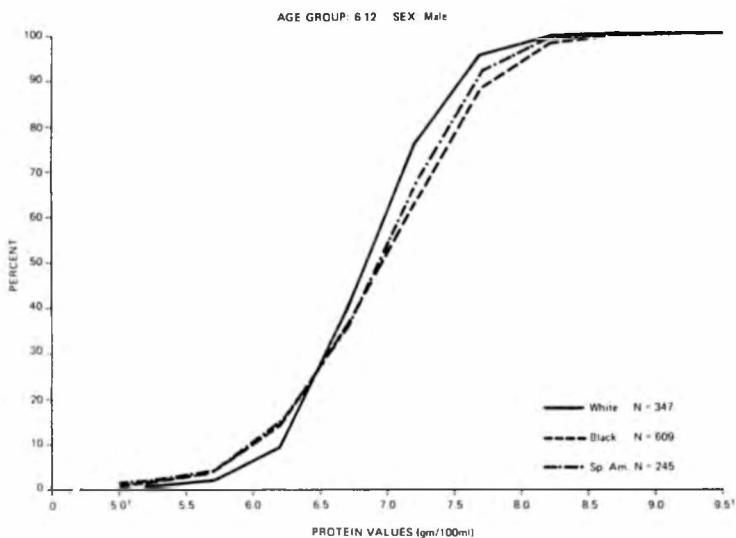
Figure 3a Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 6A Appendix.

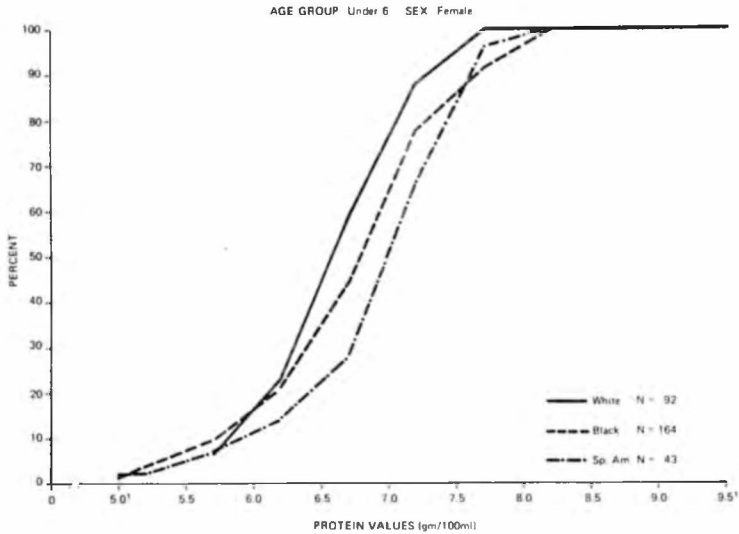
Figure 3c Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 6C Appendix.

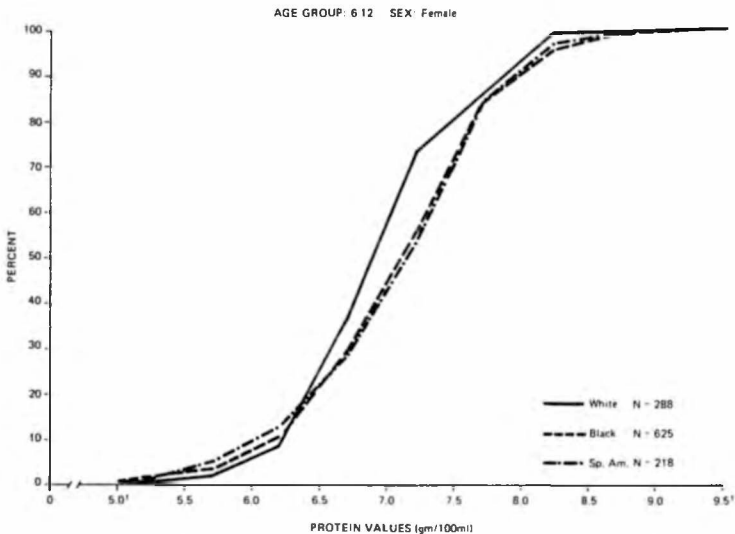
Figure 3b Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference 6B Appendix

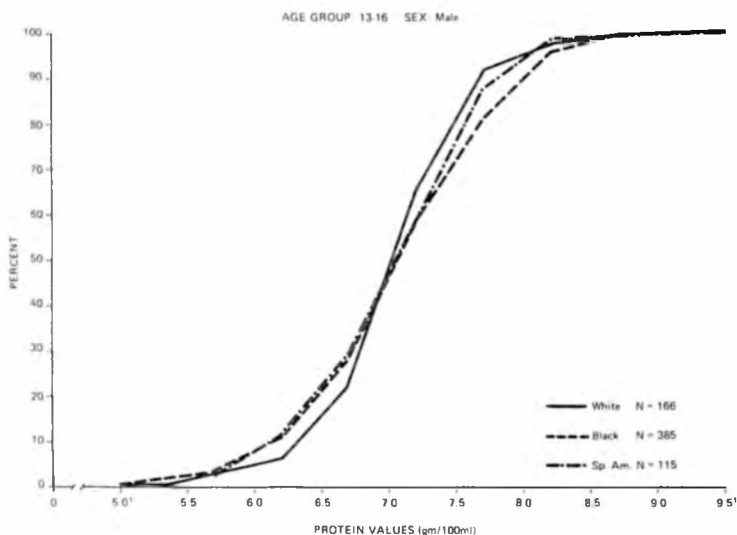
Figure 3d Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference 6D Appendix

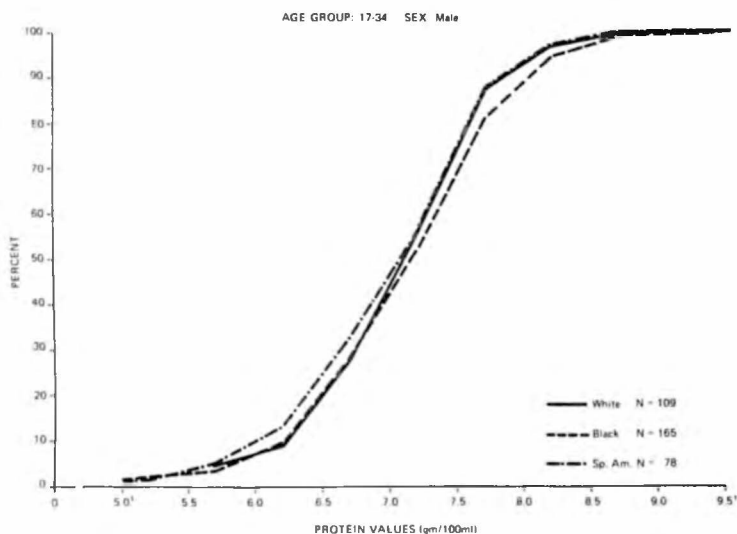
Figure 3e Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



*All Values <5.0 and >9.4

Table Reference: 6E Appendix.

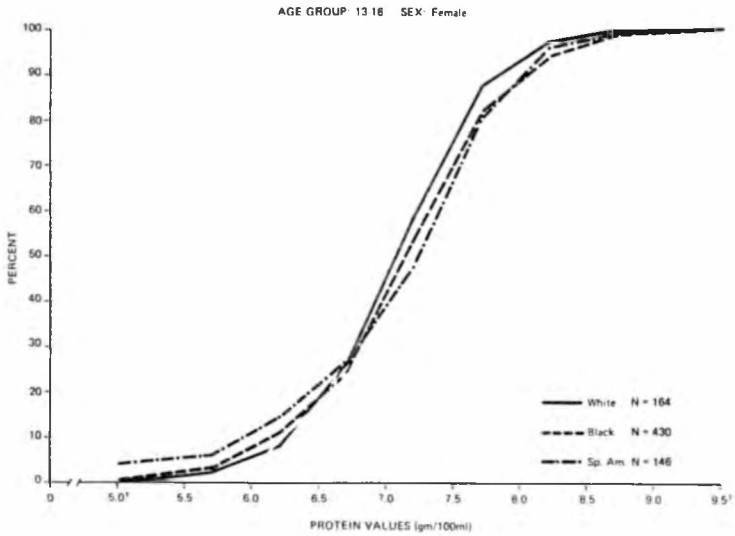
Figure 3g Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



*All Values <5.0 and >9.4

Table Reference: 6G Appendix.

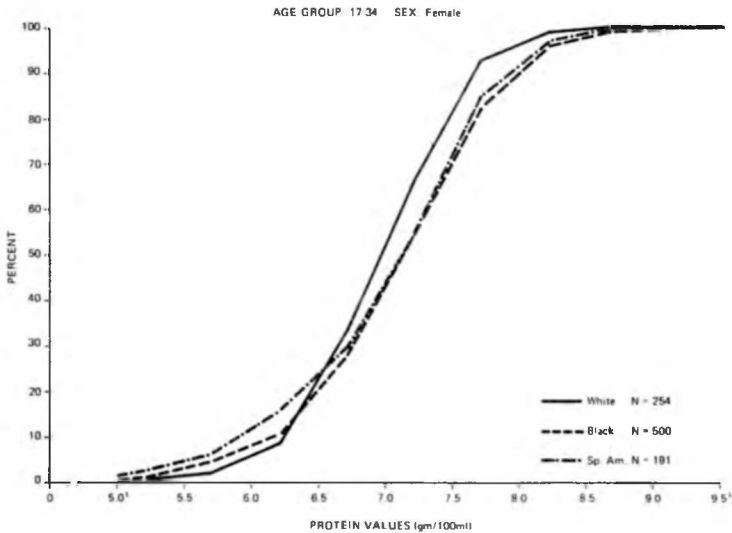
Figure 3f Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 6F Appendix.

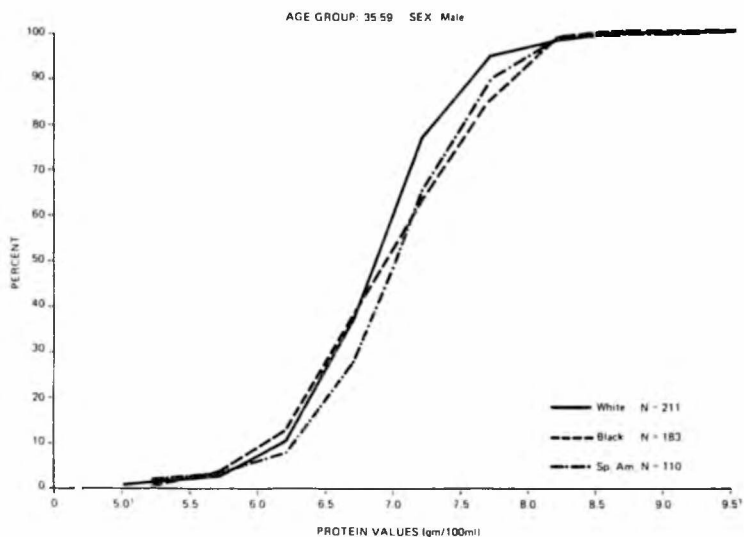
Figure 3h Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 6H Appendix.

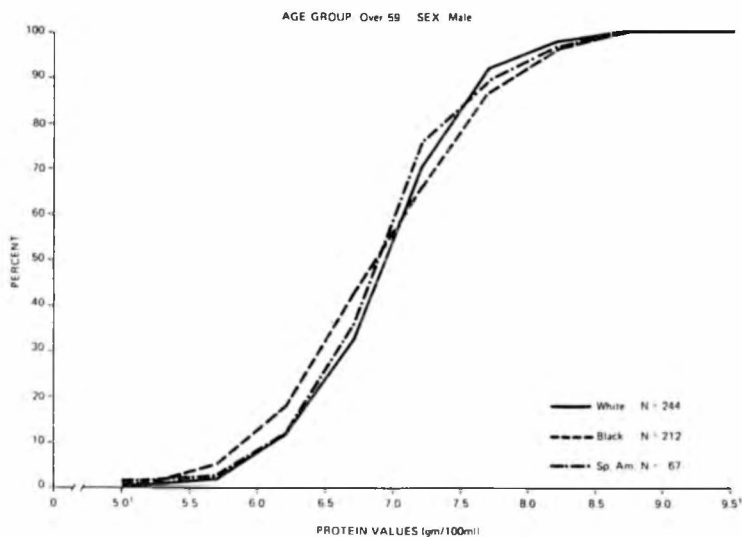
Figure 3i Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 5.0 and > 9.4

Table Reference: 6i Appendix

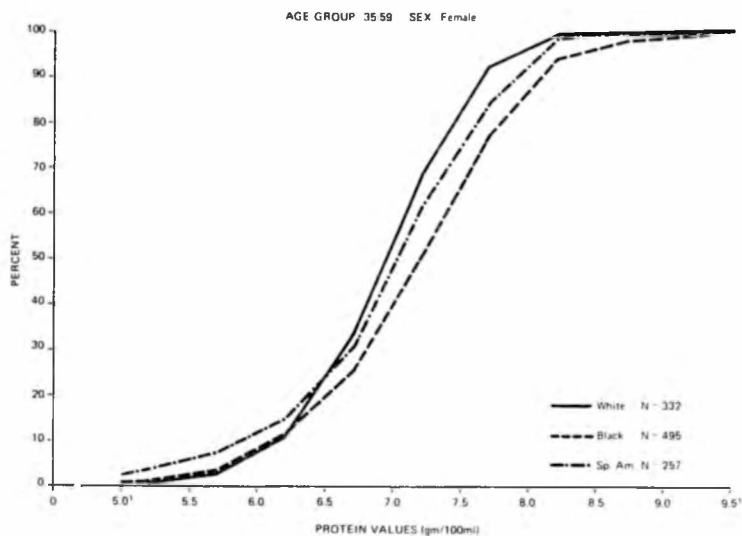
Figure 3k Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values < 5.0 and > 9.4

Table Reference: 6k Appendix

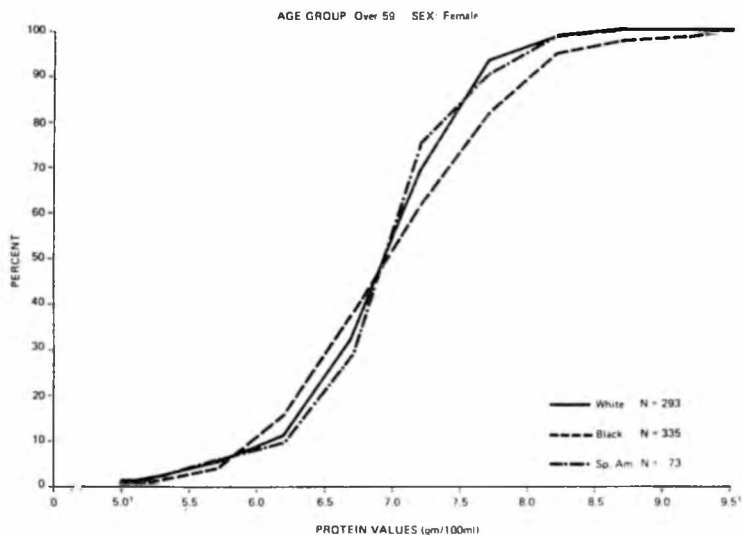
Figure 3J Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 6J Appendix

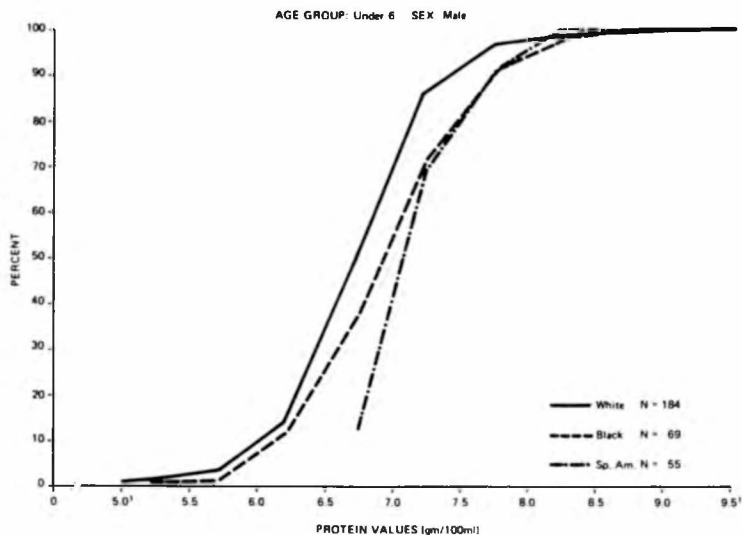
Figure 3I Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 6I Appendix

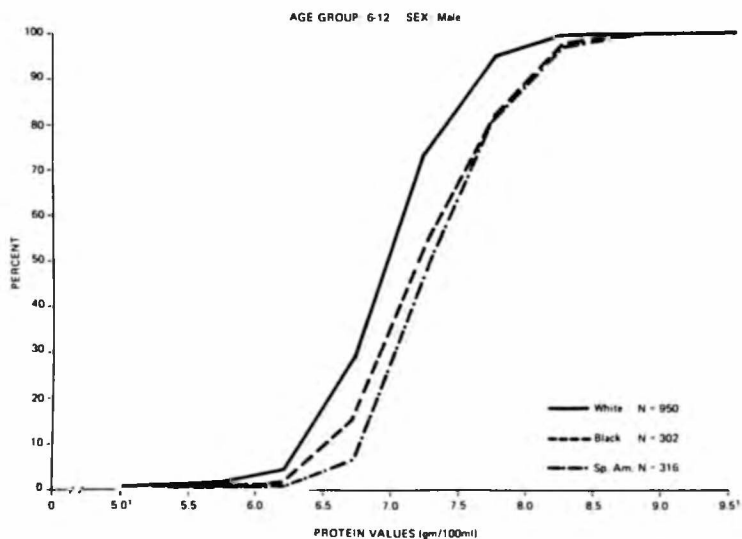
Figure 1a Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 7A Appendix

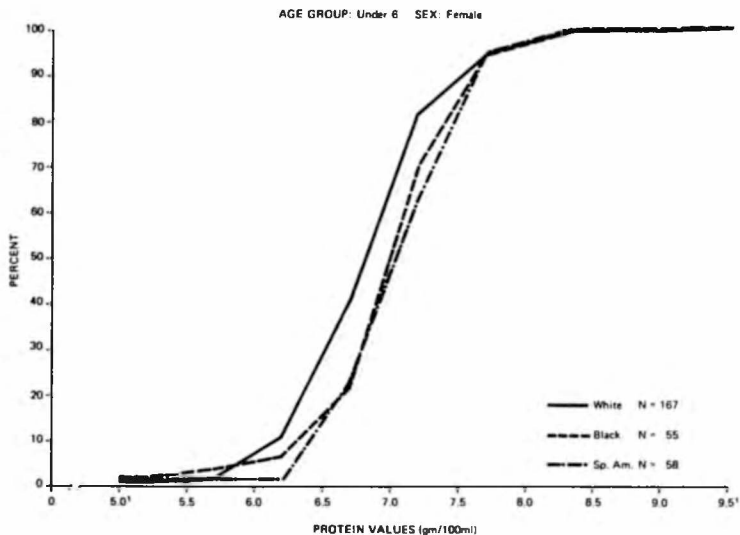
Figure 1c Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 7C Appendix

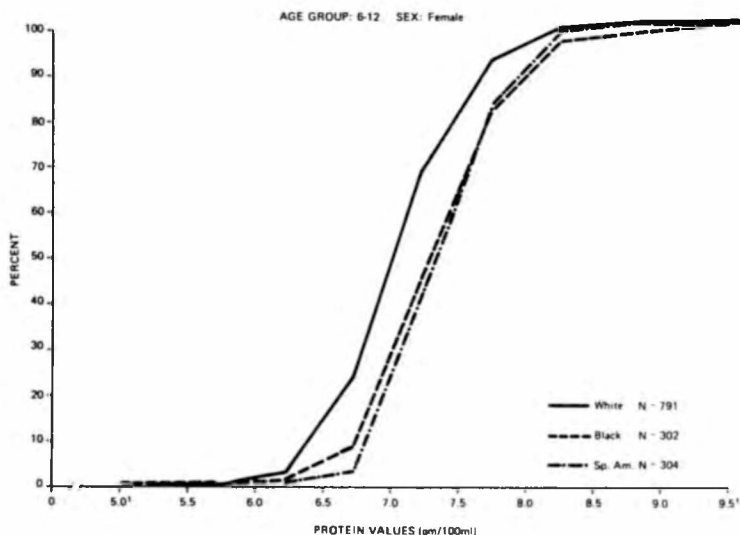
Figure 4b Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 7B Appendix

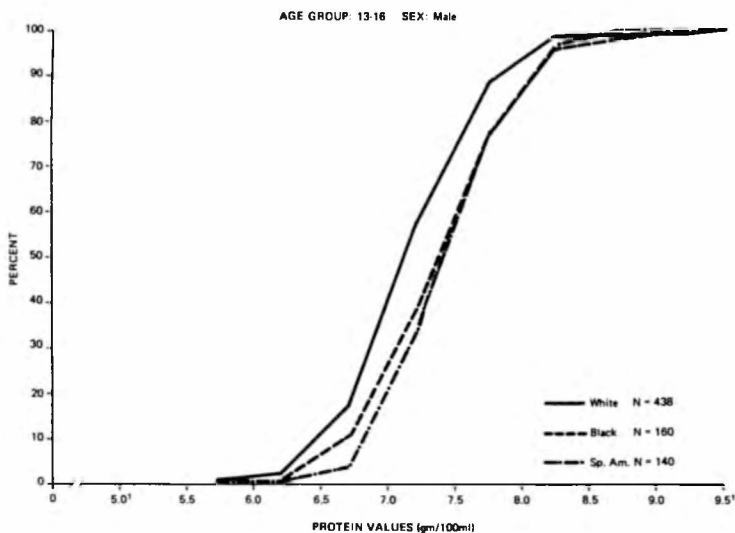
Figure 4d Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 7D Appendix

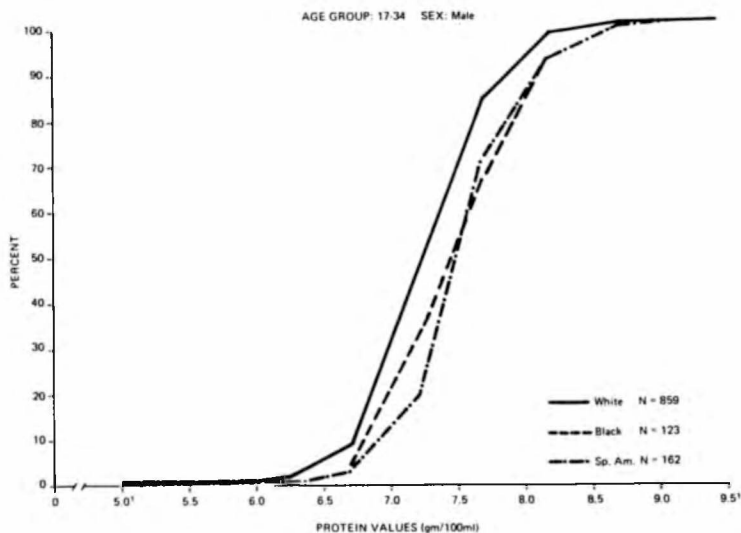
Figure 4e Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 7E Appendix.

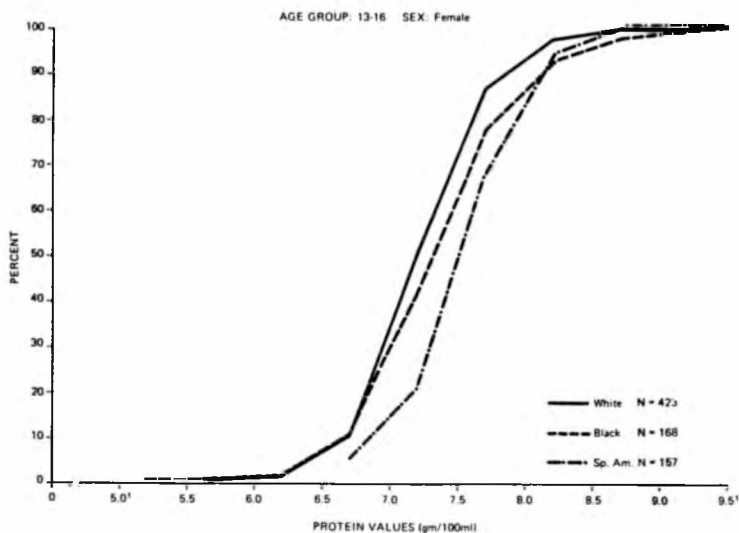
Figure 4g Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 7G Appendix.

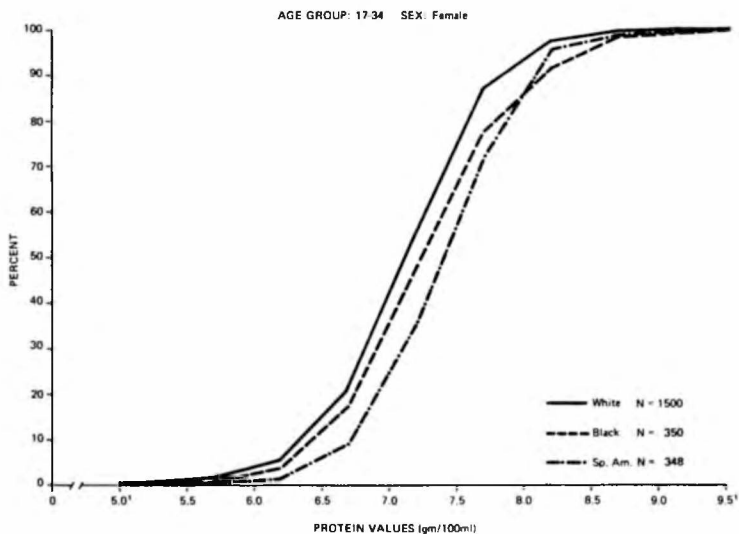
Figure 4f Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 7F Appendix.

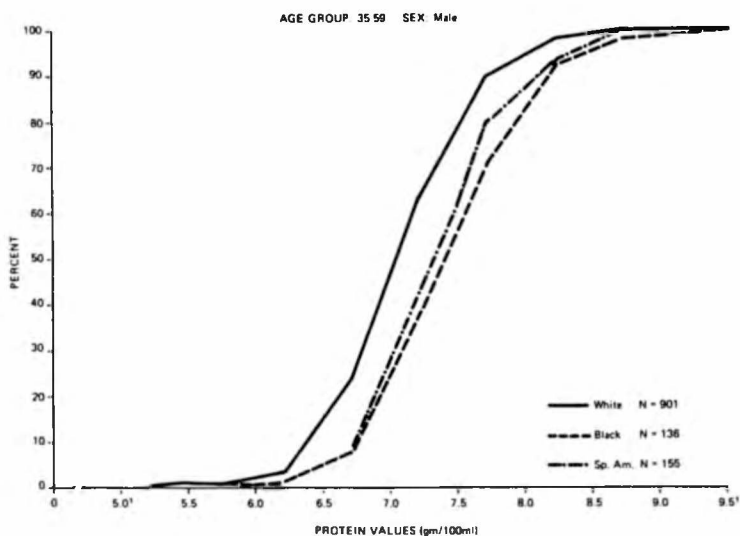
Figure 4h Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference: 7H Appendix.

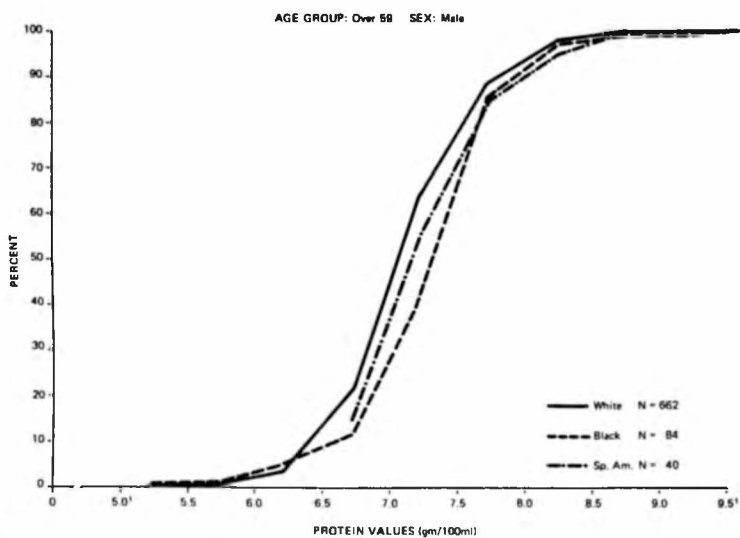
Figure 4i Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 5.0 and > 9.4

Table Reference: 7I Appendix.

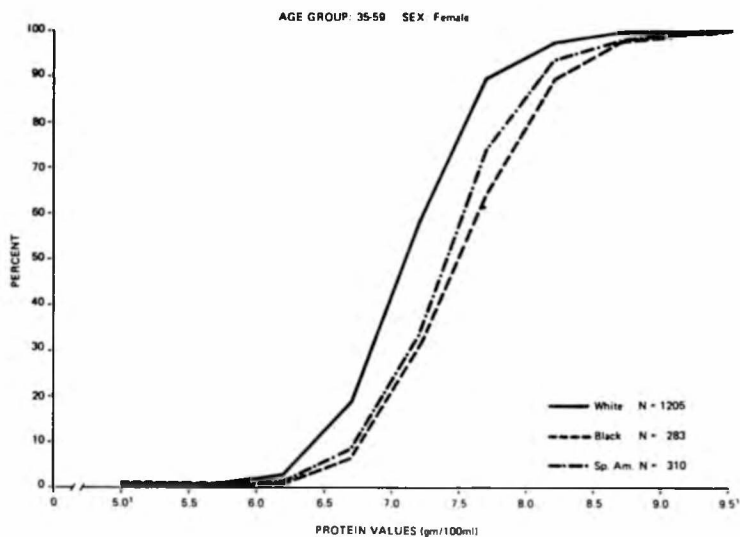
Figure 4k Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values < 5.0 and > 9.4

Table Reference: 7K Appendix.

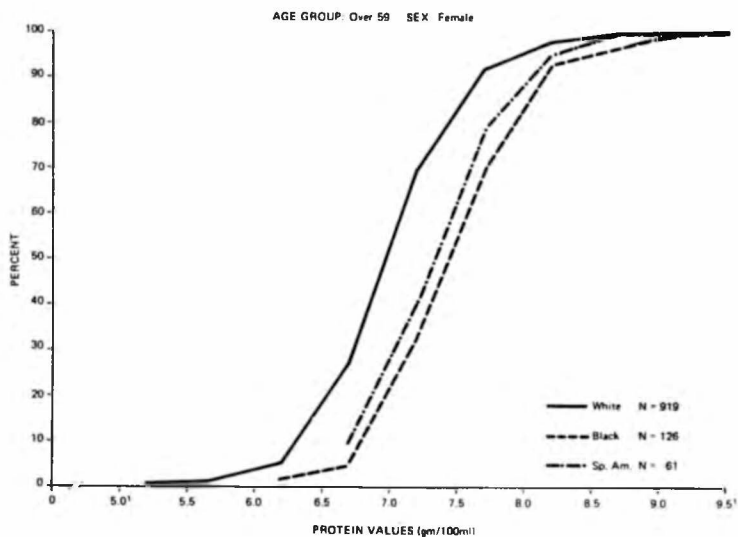
Figure 4j Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference 7J Appendix

Figure 4l Appendix—Cumulative Percentage Distribution of Serum Protein Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values <5.0 and >9.4

Table Reference 7L Appendix

4. VITAMIN A AND CAROTENE

Abstract: *The data presented in this section indicate that vitamin A nutritional status is a major public health concern among Spanish-Americans in the low-income-ratio states. Young people of all ethnic groups had a relatively high prevalence of "deficient" and "low" vitamin A values. There was generally a higher prevalence of "deficient" and "low" values in the low-income-ratio states. Income level was related to the prevalence of "deficient" and "low" values only among Spanish-Americans in the low-income-ratio states. The level of schooling attained by the homemaker was related to the prevalence of "deficient" and "low" values only among persons under 17 years of age. There was a positive relationship between the level of plasma vitamin A and the amount of vitamin A consumed in the diet by young persons 10 to 16 years old and by pregnant or lactating women.*

Vitamin A, a fat-soluble vitamin, is not readily excreted, but accumulates and is stored in the body, mainly in the liver. There does not appear to be a direct correlation between liver stores and plasma concentrations of the vitamin. However, it is generally assumed that plasma levels are a reflection of long-term dietary intake of the vitamin, rather than of immediate past dietary history.

Carotenes are yellow-orange pigments manufactured by plants; they have no vitamin activity. However, certain dietary carotenoid pigments are converted in the body to active vitamin A. Plasma carotene concentrations are thought to reflect immediate past dietary intakes of these pigments. Carotenes are not discussed separately in this section, but complete data are presented in the Appendix.

Measurement of plasma vitamin A is technically more complex than that for many of the other nutrients. Variations in the analyses of the control samples provided by the Nutrition Program occurred both within and between laboratories. Small differences in analytical results would have proportionately more significance at low levels of plasma vitamin A than they would at high levels. Therefore, caution must be used when interpreting "deficient" values and "low" values for vitamin A.

MEAN VITAMIN A LEVELS

In both low- and high-income-ratio states, mean vitamin A levels increased with age. This trend was seen for both sexes and for all ethnic groups. (Figures 1a and 1b) Women 17-59 years

old had consistently lower mean levels than men of comparable age. No consistent sex difference was seen for other age groups.

Findings for specific ethnic groups were different in low- and high-income-ratio states. In the low-income-ratio states, white persons had higher mean levels than blacks of similar age. Spanish-Americans consistently had the lowest mean levels of vitamin A.

In the high-income-ratio states, the differences between ethnic groups were less striking and less consistent, but the trend was the reverse of that described above. In these states, white persons generally had the lowest mean levels, black persons were often intermediate, and Spanish-Americans, in this case Puerto Ricans, tended to have the highest mean levels. These findings indicate that vitamin A nutriture had no simple or constant relationship to ethnic group except for Spanish-Americans in the low-income-ratio states, who consistently had lower mean levels.

DEFICIENT AND LOW VITAMIN A VALUES

Low-Income-Ratio States

Guidelines for the "deficient" and "low" value classifications were the same for all age groups. Therefore, since mean vitamin A levels increased with age up to 59 years (Figures 1a and 1b), it was not unexpected that the percentages of "deficient" and "low" values decreased with increasing age. This trend with age was most apparent in the Spanish-American population (Figure 2a).

The data show an age trend that has not been clearly identified before. The guidelines for the

"deficient" and "low" value classifications were the same for all age groups. Whether the standards should reflect the age trend in mean values is unknown, but since uniform standards, based upon the best available evidence, were used it is not unexpected that the percentages of "deficient" and "low" values decrease with increasing age. This trend with age is most apparent in the Spanish-American population (Figure 2a).

In the low-income-ratio states less than 1 percent of either the white or black population had "deficient" values for plasma vitamin A, while 4 percent of the Spanish-American population were so classified (Table 1A).

The difference between ethnic groups was probably not attributable to regional variations in vitamin A analysis, since samples from other ethnic groups were analyzed in the same laboratories and did not show correspondingly low vitamin A values.

The percentage of deficient or low vitamin A values in various subgroups of the total population generally showed little relationship to income level. In the white and black populations, Poverty Income Ratio (PIR) was not related to Vitamin A values (Tables 1B-D). However, Spanish-American persons with PIR values less than one had a much higher percentage of "deficient" and "low" vitamin A values than did persons of this ethnic group with a PIR greater than one. The decrease in the percentage of "deficient" and "low" vitamin A values with increasing PIR level for the Spanish-American population is illustrated in Figure 3a, showing a breakdown of values by five PIR groups.

High-Income-Ratio States

The predominantly Puerto-Rican Spanish-American population in this group of states, in marked contrast to that in the low-income-ratio states, had the lowest percentage of "deficient" and "low" vitamin A values. White persons in the high-income-ratio states had a slightly higher percentage of "deficient" and "low" values than did the black or Spanish-American population (Table 2A).

The percentage of "deficient" and "low" values decreased with age in the high-income-ratio states (Figure 2b). However, the decrease was less apparent than in the low-income-ratio states, since there were generally smaller percentages of

persons in lower age groups with "deficient" and "low" values. For the white population, there were slightly higher percentages of young persons with "deficient" and "low" values in the high-income-ratio states than in the low-income-ratio states.

A comparison of persons with a PIR less than one and greater than one revealed no marked differences. The small number of persons in certain age groups made it difficult to make meaningful comparisons by age (Tables 2B, 2C and 2D). Persons with unknown PIR levels were similar to the total population with respect to percentage of "deficient" and "low" values. Figure 3b, showing the breakdown by five PIR groups, revealed no marked relationship between income level and the percentage of "deficient" and "low" values.

PLASMA VITAMIN A VALUES AND YEARS OF SCHOOL COMPLETED

The vitamin A status of persons under 17 years of age in the low-income-ratio states appeared to be related to the number of years of school completed by the wife of the head of family or the female head of family. The mean plasma vitamin A values increased progressively from 25 μ gs/100 ml for "no years of school completed" to 39 μ gs/100 ml for "post-high-school" (Table 3A). There was a corresponding progressive decrease in the percentages of "deficient" and "low" plasma vitamin A values with an increasing number of years of school completed. There were some discrepancies for the "post-high-school" and "college" groups respectively, but these groups were represented by small numbers of persons.

A similar evaluation of persons under 17 years old in the high-income-ratio states showed no consistent relationship between vitamin A status and the years of school completed by the female head of the family (Table 3B).

For adults, vitamin A status was not positively related to the number of years of school completed. This was true in both groups of states (Tables 3C and 3D). In fact, in the high-income-ratio states, slightly higher percentages of "deficient" plasma vitamin A values were observed in the groups with the most years of school completed.

It appears that the number of years of school completed by the female head of the household did not positively influence vitamin A nutriture except in individuals under age 17 in the low-income-ratio states.

PLASMA VITAMIN A VALUES AND DIETARY VITAMIN A INTAKE

The plasma vitamin A values for selected population groups were separated by quartiles, with the lowest 25 percent of the values for each population subgroup in the first quartile, the second lowest 25 percent in the second quartile, etc. The plasma vitamin A values represented by each quartile are shown in Appendix Table 6.

Plasma vitamin A values of infants showed no consistent relationship to mean vitamin A intakes. Infants in the lowest quartile had the highest mean intake (Table 4). The mean vitamin A intakes for the three groups of adolescents and for the pregnant or lactating females increased from the first through the fourth quartile with two exceptions (third quartile, 12-14 years old and second quartile, 15-16 years old). The mean vitamin A intakes of the first three quartiles for persons 60 years of age and over were not much different; that of the fourth quartile was much higher. Four of the six selected subgroups shown in Table 4 appeared to demonstrate a direct relationship between plasma vitamin A values and dietary vitamin A intake. However, due to the wide variation in individual values of both dietary intake and plasma levels of vitamin A, the coefficients of correlation between the two variables were quite low.

Mean vitamin A intakes per 1000 calories were not consistently related to plasma vitamin A values except for pregnant or lactating females (Table 4). This group demonstrated a progressive increase in the mean intake of vitamin A per 1000 calories from the first through the fourth quartile. Thus the intake of vitamin A by this group was not as dependent on caloric intake as in the other subgroups. The high mean vitamin A intake per 1000 calories for the fourth quartile of persons 60 years and over also was independent of caloric intake. The lack of any consistent pattern in the intake of vitamin A per 1000 calories for subgroups under 17 years old suggested that dietary vitamin A in these groups was more closely related to caloric intake.

SUMMARY

Plasma vitamin A concentrations were age-dependent, as evidenced by the increase in mean vitamin A values and the decrease in the percentage of "deficient" and "low" values with increasing age.

The Spanish-American population in the low-income-ratio states was identified as being at highest risk with respect to vitamin A status. From one-third to one-half of the Spanish-American persons under 17 years of age in this group of states had "deficient" and "low" vitamin A values.

The white and black populations demonstrated little difference in vitamin A status between the two groups of states or between different PIR groups within each group of states. In contrast, the Spanish-Americans of predominantly Mexican descent (low-income-ratio states) had a much higher percentage of "deficient" and "low" values than those of predominantly Puerto Rican background (high-income-ratio states). In the low-income-ratio states the vitamin A status of Spanish-American persons improved with an increase in PIR value. No such relationship between vitamin A levels and income was observed among Spanish-Americans in the high-income-ratio states.

The vitamin A status of young persons in the low-income-ratio states appeared to improve with an increase in the number of years of school completed by the wife of the head of family or the female head of family. This was not true in the high-income-ratio states. There was no consistent relationship among adults between vitamin A status and the number of years of schooling of the wife or female head of family.

For 10 to 16 years olds and for pregnant or lactating females, there appeared to be a relationship between plasma vitamin A values and the intake of dietary vitamin A. In general, mean vitamin A intakes increased from the first through the fourth quartile of plasma vitamin A values. There was no such consistent relationship for infants or for persons 60 years of age and over.

The relationship between mean vitamin A intakes per 1000 calories and plasma vitamin A values was not consistent, except for pregnant or lactating females. The data in this group suggested that vitamin A intakes were related both to food selection and to total food consumption.

The data indicate that vitamin A nutriture is a major public health concern among Spanish-Americans in the low-income-ratio states. The relatively high prevalence of low vitamin A values among young persons of all races suggests that these age groups should undergo continuous surveillance of vitamin A status.

Figure 1a—Mean Plasma Vitamin A Values by Age, Sex and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

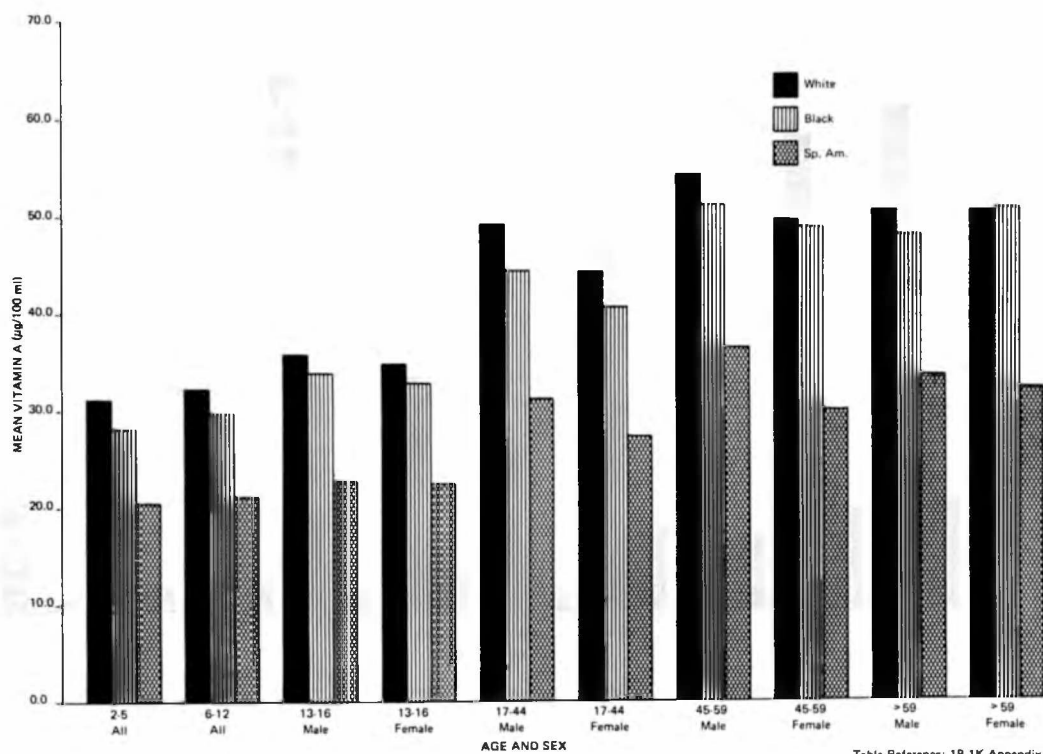


Figure 1b—Mean Plasma Vitamin A Values by Age, Sex and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

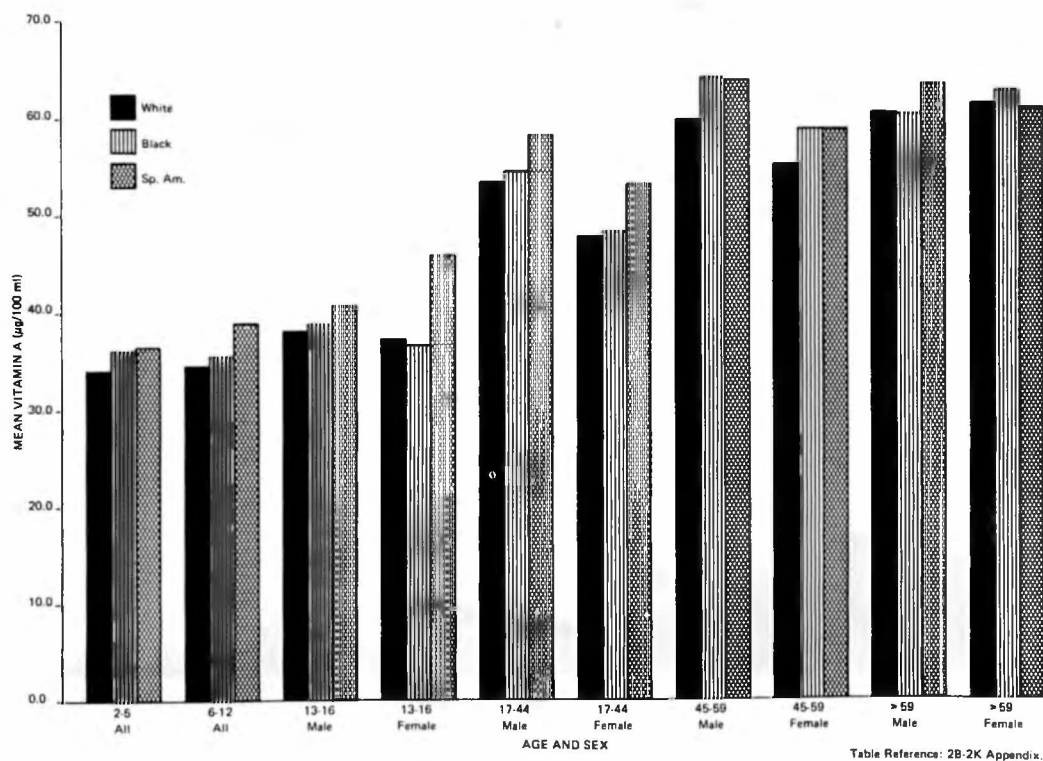


Figure 2a—Percent of Persons Having Deficient or Low Plasma Vitamin A Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1969)

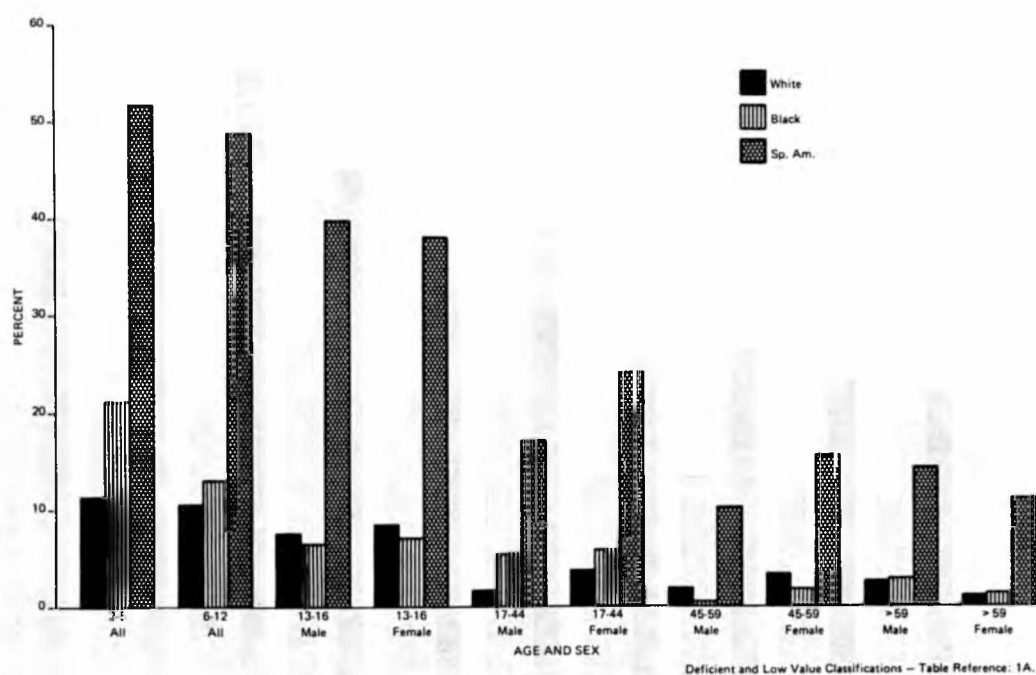


Figure 2b—Percent of Persons Having Deficient or Low Plasma Vitamin A Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

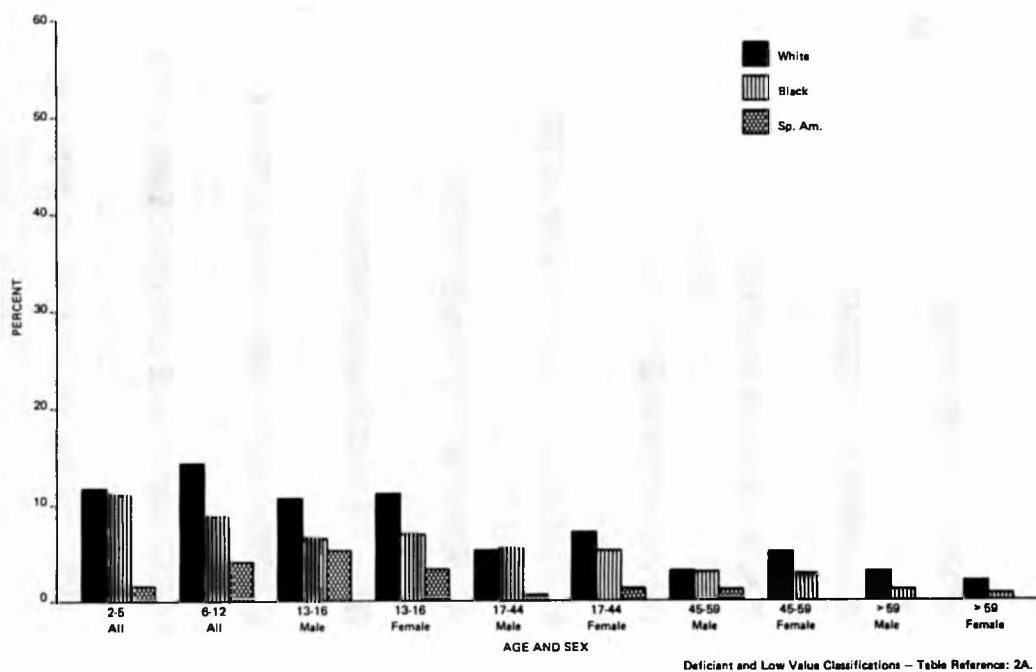


Table 1A. *Percent of Persons Having Deficient or Low Plasma Vitamin A Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	2952	0.6	5.1	6225	0.8	8.2	1712	4.0	29.1
<2 All	18	0.0	7.7	77	2.6	16.9	10	20.0	20.0
2-5 All	185	1.6	9.7	575	1.6	19.6	116	4.8	47.4
6-12 All	689	0.9	9.7	1806	0.6	12.6	515	3.8	45.4
18-16 Male	184	1.1	6.5	474	0.6	5.9	116	6.9	32.8
18-16 Female	175	0.0	8.6	524	0.4	6.7	150	5.3	32.7
17-44 Male	228	0.4	1.8	326	0.9	4.6	122	4.1	18.1
17-44 Female	478	0.6	3.1	1085	0.6	5.3	386	3.3	20.8
45-59 Male	160	0.0	1.9	183	0.0	0.5	58	0.0	10.8
45-59 Female	285	0.0	8.4	437	0.0	1.8	128	5.5	10.1
>59 Male	270	0.0	2.6	277	0.4	2.5	77	3.9	10.4
>59 Female	381	0.6	0.6	442	0.0	1.4	81	1.2	9.9

Table 1B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Plasma Vitamin A Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	1015	1.0	5.7	3562	0.9	9.5	1050	5.4	30.2
<2 All	8	0.0	0.0	45	0.0	20.0	8	25.0	25.0
2-5 All	61	0.0	11.4	327	2.8	22.6	78	5.1	44.8
6-12 All	213	1.9	8.9	1100	0.7	18.8	340	4.1	47.0
18-16 Male	76	2.6	7.9	283	1.1	7.4	78	10.9	31.5
18-16 Female	55	0.0	10.9	815	0.6	6.7	102	5.8	34.3
17-44 Male	40	0.0	2.5	149	2.0	4.7	70	5.7	10.6
17-44 Female	126	1.6	4.0	578	1.0	5.5	191	4.7	18.8
45-59 Male	42	0.0	2.4	74	0.0	1.4	27	0.0	11.1
45-59 Female	87	0.0	6.9	205	0.0	2.9	64	10.9	7.8
>59 Male	140	0.0	4.3	171	0.6	4.1	44	2.2	11.3
>59 Female	168	1.2	0.6	300	0.0	2.0	51	2.0	9.8

¹ Total includes persons with unknown age and unknown sex.

Plasma Vitamin A Deficient and Low Value Classifications ($\mu\text{g}/100\text{ml}$)		
	Deficient	Low
All Ages	<10	10-19

Table 1C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Plasma Vitamin A Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	1271	0.5	5.4	1080	0.5	6.8	385	2.0	20.2
<2 All.....	4	0.0	0.0	9	22.2	11.1	2	0.0	0.0
2-5 All.....	78	2.7	9.6	60	0.0	23.3	24	4.2	37.5
6-12 All.....	286	0.7	11.5	265	1.1	12.1	89	1.1	34.8
13-16 Male.....	74	0.0	8.1	75	0.0	4.0	18	0.0	38.9
13-16 Female.....	73	0.0	11.0	84	0.0	7.1	20	10.0	20.0
17-44 Male.....	137	0.7	1.5	80	0.0	7.5	41	2.4	14.6
17-44 Female.....	247	0.4	3.6	212	0.0	4.7	81	1.2	17.3
45-59 Male.....	86	0.0	2.3	61	0.0	0.0	24	0.0	8.3
45-59 Female.....	94	0.0	2.1	113	0.0	1.8	43	0.0	9.3
>59 Male.....	84	0.0	0.0	59	0.0	0.0	23	8.7	4.3
>59 Female.....	113	0.0	0.0	58	0.0	0.0	19	0.0	0.0

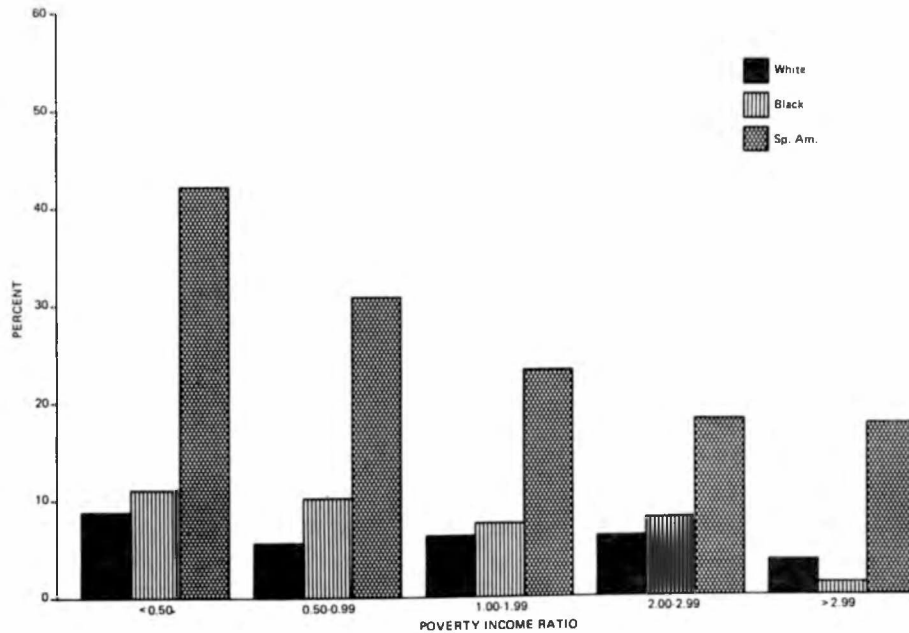
Table 1D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Plasma Vitamin A Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	666	0.2	3.6	1588	0.1	6.3	277	1.1	37.5
<2 All.....	6	0.0	16.7	23	0.0	13.0	0	0.0	0.0
2-5 All.....	51	2.0	7.8	188	0.0	13.3	14	0.0	78.6
6-12 All.....	190	0.0	7.9	441	0.0	9.8	86	2.3	50.0
13-16 Male.....	34	0.0	0.0	116	0.0	3.4	25	0.0	32.0
13-16 Female.....	47	0.0	2.1	125	0.0	6.4	28	6.0	35.7
17-44 Male.....	51	0.0	0.0	97	0.0	2.1	11	0.0	18.2
17-44 Female.....	105	0.0	1.0	295	0.3	5.1	64	1.6	31.3
45-59 Male.....	32	0.0	0.0	48	0.0	0.0	7	0.0	14.3
45-59 Female.....	54	0.0	0.0	119	0.0	0.0	21	0.0	19.0
>59 Male.....	46	0.0	2.2	47	0.0	0.0	10	0.0	20.0
>59 Female.....	50	0.0	2.0	34	0.0	0.0	11	0.0	27.3

¹Total includes persons with unknown age and unknown sex.

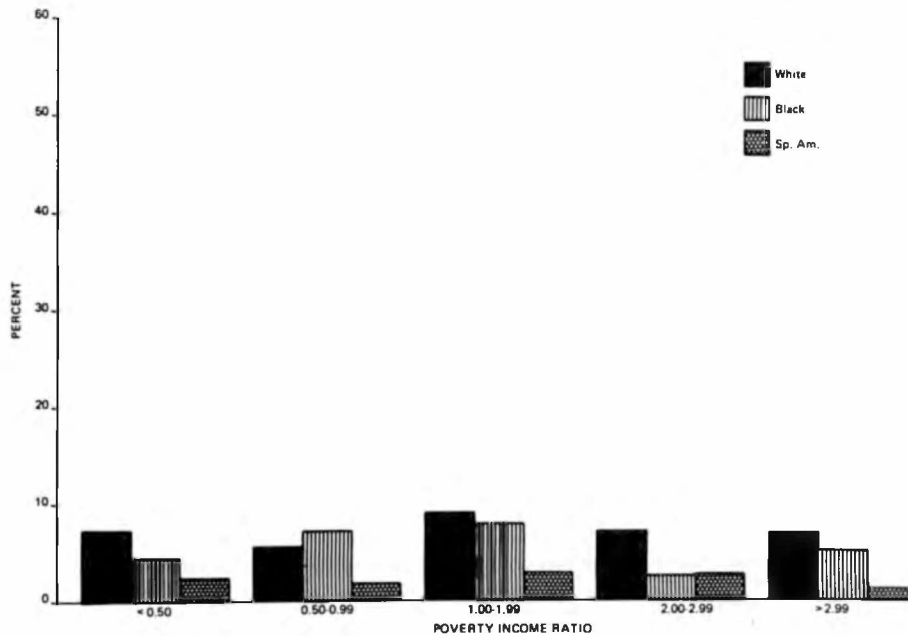
Plasma Vitamin A Deficient and Low Value Classifications ($\mu\text{g}/100\text{ml}$)		
	Deficient	Low
All Ages.....	<10	10-19

Figure 3a—Percent of Persons Having Deficient or Low Plasma Vitamin A Values by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classifications - Table Reference: 5A Appendix

Figure 3b—Percent of Persons Having Deficient or Low Plasma Vitamin A Values by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classifications - Table Reference: 5B Appendix

Table 2A. *Percent of Persons Having Deficient or Low Plasma Vitamin A Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	7224	1.1	6.4	1970	0.6	5.5	2051	0.2	2.1
<2 All.....	11	0.0	9.1	3	0.0	0.0	5	0.0	0.0
2-5 All.....	193	3.6	8.3	81	0.0	11.1	124	0.0	1.6
6-12 All.....	1352	2.4	12.0	559	0.7	8.0	576	0.3	3.9
13-16 Male.....	351	1.4	9.4	151	0.0	6.6	132	1.5	3.8
13-16 Female.....	330	2.4	8.8	160	1.2	5.6	147	0.0	3.4
17-44 Male.....	988	0.6	4.8	165	0.6	4.8	240	0.0	0.8
17-44 Female.....	1596	0.7	6.6	452	0.9	4.4	504	0.2	1.2
45-59 Male.....	434	0.5	2.8	64	0.0	3.1	79	0.0	1.3
45-59 Female.....	554	0.5	4.5	138	0.0	2.9	139	0.0	0.0
>59 Male.....	580	0.3	2.8	78	0.0	1.3	39	0.0	0.0
>59 Female.....	833	0.4	1.7	118	0.0	0.8	57	0.0	0.0

Table 2B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Plasma Vitamin A Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	1071	0.8	5.2	578	1.4	5.5	612	0.0	1.9
<2 All.....	3	0.0	33.3	1	0.0	0.0	0	0.0	0.0
2-5 All.....	30	0.0	0.0	32	0.0	18.8	48	0.0	0.0
6-12 All.....	219	1.4	10.5	183	1.6	3.8	193	0.0	2.6
13-16 Male.....	41	2.4	2.4	43	0.0	4.6	43	0.0	4.6
13-16 Female.....	43	0.0	4.6	47	4.2	4.2	54	0.0	5.6
17-44 Male.....	110	0.0	9.1	34	2.9	8.8	39	0.0	0.0
17-44 Female.....	221	1.8	5.0	134	1.5	6.0	143	0.0	1.4
45-59 Male.....	41	0.0	4.9	17	0.0	11.8	22	0.0	0.0
45-59 Female.....	46	0.0	0.0	31	0.0	3.2	40	0.0	0.0
>59 Male.....	100	0.0	4.0	21	0.0	4.8	9	0.0	0.0
>59 Female.....	217	0.5	0.9	35	0.0	0.0	16	0.0	0.0

¹Total includes persons with unknown age and unknown sex.

Plasma Vitamin A Deficient and Low Value Classifications ($\mu\text{g}/100\text{ml}$)		
	Deficient	Low
All Ages.....	<10	10-19

Table 2C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Plasma Vitamin A Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values
TOTAL ¹	5459	1.1	6.7	1101	0.3	6.1	1095	0.4	2.3
<2 All.....	7	0.0	0.0	1	0.0	0.0	2	0.0	0.0
2-5 All.....	142	4.2	9.9	34	0.0	5.9	59	0.0	3.4
6-12 All.....	1002	2.6	11.9	306	0.3	10.8	296	0.7	4.4
13-16 Male.....	265	1.5	11.8	80	0.0	8.8	67	0.0	3.0
13-16 Female.....	254	2.4	10.2	91	0.0	7.7	65	0.0	1.5
17-44 Male.....	784	0.6	4.8	90	0.0	4.4	160	0.0	1.3
17-44 Female.....	1209	0.5	7.4	249	0.8	4.0	272	0.0	1.5
45-59 Male.....	362	0.6	2.2	43	0.0	0.0	45	0.0	2.2
45-59 Female.....	469	0.6	4.9	89	0.0	3.4	72	0.0	0.0
>59 Male.....	430	0.2	2.6	50	0.0	0.0	24	0.0	0.0
>59 Female.....	538	0.4	1.9	68	0.0	1.5	33	0.0	0.0

Table 2D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Plasma Vitamin A Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values	Total Number	Percent With Deficient Values	Low Values
TOTAL ¹	694	1.4	5.8	291	0.0	3.4	344	0.0	1.7
<2 All.....	1	0.0	0.0	1	0.0	0.0	3	0.0	0.0
2-5 All.....	21	4.8	9.5	15	0.0	6.7	17	0.0	0.0
6-12 All.....	131	3.0	15.3	70	0.0	7.1	87	0.0	4.6
13-16 Male.....	45	0.0	4.4	28	0.0	3.6	22	0.0	4.5
13-16 Female.....	38	6.1	3.0	22	0.0	0.0	28	0.0	3.6
17-44 Male.....	94	1.0	3.2	41	0.0	2.4	41	0.0	0.0
17-44 Female.....	166	0.6	3.0	69	0.0	2.9	89	0.0	0.0
45-59 Male.....	31	0.0	6.4	4	0.0	0.0	12	0.0	0.0
45-59 Female.....	39	0.0	5.1	18	0.0	0.0	27	0.0	0.0
>59 Male.....	50	2.0	2.0	7	0.0	0.0	6	0.0	0.0
>59 Female.....	83	0.0	2.4	15	0.0	0.0	8	0.0	0.0

¹Total includes persons with unknown age and unknown sex.

Plasma Vitamin A Deficient and Low Value Classifications (µg/100ml)		
	Deficient	Low
All Ages.....	<10	10-19

Table 3A. Mean Plasma Vitamin A Values and Percent of Deficient and Low Plasma Vitamin A Values for Persons under Seventeen Years of Age in Low Income Ratio States by the Number of Years of School Completed by the Wife of the Head of Family or Female Head of Family—Ten-State Nutrition Survey (1968-1970)

Years of School Completed	Number of Persons	Percent With		Mean Plasma Vitamin A
		Deficient Values	Low Values	
TOTAL.....	5841	1.4	16.1	30
None.....	250	3.6	32.0	25
1-4.....	753	2.7	25.9	27
5-8.....	1957	1.2	15.3	30
9-12.....	2149	1.0	12.8	31
Post High School.....	143	0.7	21.1	39
College.....	84	1.2	13.1	29
Other.....	5	0.0	0.0	34

Table 3B. Mean Plasma Vitamin A Values and Percent of Deficient and Low Plasma Vitamin A Values for Persons under Seventeen Years of Age in High Income Ratio States by the Number of Years of School Completed by the Wife of the Head of Family or Female Head of Family—Ten-State Nutrition Survey (1968-1970)

Years of School Completed	Number of Persons	Percent With		Mean Plasma Vitamin A
		Deficient Values	Low Values	
TOTAL.....	4204	1.5	8.6	36
None.....	106	0.0	8.5	36
1-4.....	311	0.8	6.8	37
5-8.....	848	1.8	6.8	37
9-12.....	2435	1.4	9.5	36
Post High School.....	118	2.5	7.6	37
College.....	383	2.9	9.1	36
Other.....	3	0.0	0.0	39

Table 3C. Mean Plasma Vitamin A Values and Percent of Deficient and Low Plasma Vitamin A Values for Persons Twenty-one Years of Age and Over in Low Income Ratio States by the Number of Years of School Completed—Ten-State Nutrition Survey (1968-1970)

Years of School Completed	Number of Persons	Percent With		Mean Plasma Vitamin A
		Deficient Values	Low Values	
TOTAL.....	4613	0.4	4.2	45
None.....	325	1.2	6.5	42
1-4.....	850	0.7	4.2	45
5-8.....	1680	1.1	3.5	46
9-12.....	1455	0.5	4.8	44
Post High School.....	145	0.0	1.4	55
College.....	155	0.6	4.5	48
Other.....	3	0.0	0.0	56

Table 3D. Mean Plasma Vitamin A Values and Percent of Deficient and Low Plasma Vitamin A Values for Persons Twenty-one Years of Age and Over in High Income Ratio States by the Number of Years of School Completed—Ten-State Nutrition Survey (1968-1970)

Years of School Completed	Number of Persons	Percent With		Mean Plasma Vitamin A
		Deficient Values	Low Values	
TOTAL.....	6563	0.5	3.7	55
None.....	181	0.0	1.1	54
1-4.....	473	0.0	1.7	57
5-8.....	1496	0.4	3.1	58
9-12.....	2921	0.5	3.8	54
Post High School.....	247	1.2	3.2	54
College.....	1234	0.4	5.4	54
Other.....	11	0.0	0.0	53

Plasma Vitamin A Deficient and Low Value Classifications ($\mu\text{g}/100\text{ml}$)

	Deficient	Low
All Ages.....	<10	10-19

Table 4. *Means of Vitamin A Intake by Quartile of Plasma Vitamin A Values for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Vitamin A Quartile	Age Group								Pregnant or Lactating Females		All Persons 60 Years of Age and Over	
	0-36 Months		10-11 Years		12-14 Years		15-16 Years		IU	IU/1000 Cal.	IU	IU/1000 Cal.
	IU	IU/1000 Cal.	IU	IU/1000 Cal.	IU	IU/1000 Cal.	IU	IU/1000 Cal.				
Number.....	221	221	1899	1399	2359	2359	846	846	389	389	1654	1654
First Quartile.....	5021	4568	3839	2108	3756	1894	4276	2306	4620	2695	4834	3299
Second Quartile.....	2845	2419	4238	2279	4401	2242	3586	1710	5381	2708	4667	3494
Third Quartile.....	3877	3679	4426	2173	4937	2460	4753	2307	5543	3046	4801	3372
Fourth Quartile.....	3653	2910	5150	2690	4663	2015	5382	2291	6417	3207	5923	4476
Correlation Coefficient.....	-0.05		0.02		0.03		0.09		0.07		0.07	

NOTE: For Plasma Vitamin A quartile values refer to Table 6 Appendix.

APPENDIX

4. Vitamin A and Carotene

Table 1A Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for All Persons Under Two Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	18	100.0	100.0	77	100.0	100.0	10	100.0	100.0
<010.....	—	—	—	2	2.6	2.6	2	20.0	20.0
010-019.....	1	7.7	7.7	18	16.9	19.5	2	20.0	40.0
020-021.....	1	7.7	15.4	8	10.4	29.9	2	20.0	60.0
022-024.....	—	—	15.4	5	6.5	36.4	2	20.0	80.0
025-029.....	2	15.4	30.8	13	16.9	53.3	1	10.0	90.0
030-039.....	5	38.5	69.3	20	26.0	79.3	1	10.0	100.0
040-049.....	1	7.7	77.0	9	11.7	91.0	—	—	100.0
050-059.....	—	—	77.0	5	6.5	97.5	—	—	100.0
060-079.....	2	15.4	92.4	1	1.3	98.8	—	—	100.0
080-099.....	—	—	92.4	1	1.3	100.1	—	—	100.0
100-149.....	1	7.7	100.1	—	—	100.1	—	—	100.0
150-199.....	—	—	100.1	—	—	100.1	—	—	100.0
200-249.....	—	—	100.1	—	—	100.1	—	—	100.0
>249.....	—	—	100.1	—	—	100.1	—	—	100.0
Mean.....	48.2			30.4			19.7		
Median.....	35.0			29.0			21.0		

Table 1B Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for All Persons Two through Five Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	185	100.0	100.0	575	100.0	100.0	116	100.0	100.0
<010.....	3	1.6	1.6	9	1.6	1.6	5	4.3	4.3
010-019.....	18	9.7	11.3	118	19.7	21.3	55	47.4	51.7
020-021.....	11	5.9	17.2	37	6.4	27.7	11	9.5	61.2
022-024.....	19	10.3	27.5	75	13.0	40.7	16	13.8	75.0
025-029.....	42	22.7	50.2	124	21.6	62.3	17	14.7	89.7
030-039.....	61	38.0	88.2	148	25.7	88.0	9	7.8	97.5
040-049.....	18	9.7	92.9	46	8.0	96.0	2	1.7	99.2
050-059.....	6	3.2	96.1	12	2.1	98.1	1	0.9	100.1
060-079.....	7	3.8	99.9	9	1.6	99.7	—	—	100.1
080-099.....	—	—	99.9	2	0.3	100.0	—	—	100.1
100-149.....	—	—	99.9	—	—	100.0	—	—	100.1
150-199.....	—	—	99.9	—	—	100.0	—	—	100.1
200-249.....	—	—	99.9	—	—	100.0	—	—	100.1
>249.....	—	—	99.9	—	—	100.0	—	—	100.1
Mean.....	31.2			28.1			20.5		
Median.....	29.9			27.2			19.6		

Table 1C Appendix. Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for All Persons Six through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Vitamin A Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	689	100.0	100.0	1806	100.0	100.0	515	100.0	100.0
<010.....	6	0.9	0.9	11	0.6	0.6	17	3.3	3.3
010-019.....	67	9.7	10.6	227	12.6	13.2	234	45.4	48.7
020-021.....	35	5.1	15.7	138	7.6	20.8	49	9.5	58.2
022-024.....	74	10.7	26.4	189	10.5	31.3	66	12.8	71.0
025-029.....	139	20.2	46.6	376	20.8	52.1	78	15.1	86.1
030-039.....	209	30.3	76.9	617	34.2	86.3	52	10.1	96.2
040-049.....	118	17.1	94.0	192	10.6	96.9	15	2.9	99.1
050-059.....	26	3.8	97.8	39	2.2	99.1	—	—	99.1
060-079.....	14	2.0	99.8	9	0.5	99.6	3	0.6	99.7
080-099.....	—	—	99.8	3	0.2	99.8	—	—	99.7
100-149.....	—	—	99.8	4	0.2	100.0	1	0.2	99.9
150-199.....	—	—	99.8	1	0.1	100.1	—	—	99.9
200-249.....	—	—	99.8	—	—	100.1	—	—	99.9
>249.....	1	0.1	99.9	—	—	100.1	—	—	99.9
Mean	32.3			29.8			21.2		
Median	31.1			29.5			20.3		

Table 1D Appendix. Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Vitamin A Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	184	100.0	100.0	474	100.0	100.0	116	100.0	100.0
<010.....	2	1.1	1.1	3	0.6	0.6	8	6.9	6.9
010-019.....	12	6.5	7.6	28	5.9	6.5	38	32.8	39.7
020-021.....	5	2.7	10.3	13	2.7	9.2	12	10.3	50.0
022-024.....	15	8.2	18.5	38	8.0	17.2	13	11.2	61.2
025-029.....	26	14.1	32.6	85	17.9	35.1	17	14.7	75.9
030-039.....	60	32.6	65.2	186	39.2	74.3	23	19.8	95.7
040-049.....	38	20.7	85.9	86	18.1	92.4	4	3.4	99.1
050-059.....	17	9.2	95.1	26	5.5	97.9	—	—	99.1
060-079.....	8	4.3	99.4	8	1.7	99.6	1	0.9	100.0
080-099.....	1	0.5	99.9	—	—	99.6	—	—	100.0
100-149.....	—	—	99.9	1	0.2	99.8	—	—	100.0
150-199.....	—	—	99.9	—	—	99.8	—	—	100.0
200-249.....	—	—	99.9	—	—	99.8	—	—	100.0
>249.....	—	—	99.9	—	—	99.8	—	—	100.0
Mean	35.9			33.9			22.8		
Median	35.3			33.8			22.0		

Table 1E Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	175	100.0	100.0	524	100.0	100.0	150	100.0	100.0
<010	—	—	—	2	0.4	0.4	8	5.3	5.3
010-019	15	8.6	8.6	35	6.7	7.1	49	32.7	38.0
020-021	8	4.6	13.2	23	4.4	11.5	17	11.3	49.3
022-024	6	3.4	16.6	50	9.5	21.0	19	12.7	62.0
025-029	32	18.3	34.9	98	18.7	39.7	30	20.0	82.0
030-039	62	35.4	70.3	200	38.2	77.9	21	14.0	96.0
040-049	32	18.3	88.6	82	15.6	93.5	5	3.3	99.3
050-059	17	9.7	98.3	26	5.0	98.5	1	0.7	100.0
060-079	2	1.1	99.4	6	1.1	99.6	—	—	100.0
080-099	1	0.6	100.0	2	0.4	100.0	—	—	100.0
100-149	—	—	100.0	—	—	100.0	—	—	100.0
150-199	—	—	100.0	—	—	100.0	—	—	100.0
200-249	—	—	100.0	—	—	100.0	—	—	100.0
>249	—	—	100.0	—	—	100.0	—	—	100.0
Mean	34.9			32.9			22.5		
Median	34.3			32.7			22.2		

Table 1F Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Males Seventeen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	228	100.0	100.0	326	100.0	100.0	122	100.0	100.0
<010	1	0.4	0.4	3	0.9	0.9	5	4.1	4.1
010-019	3	1.3	1.7	15	4.6	5.5	16	13.1	17.2
020-021	4	1.8	3.5	2	0.6	6.1	9	7.4	24.6
022-024	3	1.3	4.8	12	3.7	9.8	11	9.0	33.6
025-029	10	4.4	9.2	27	8.3	18.1	20	16.4	50.0
030-039	41	18.0	27.2	75	23.0	41.1	34	27.9	77.9
040-049	58	25.4	52.6	83	25.5	66.6	17	13.9	91.8
050-059	53	23.2	75.8	51	15.6	82.2	5	4.1	95.9
060-079	49	21.5	97.3	46	14.1	96.3	3	2.5	98.4
080-099	6	2.6	99.9	11	3.4	99.7	2	1.6	100.0
100-149	—	—	99.9	1	0.3	100.0	—	—	100.0
150-199	—	—	99.9	—	—	100.0	—	—	100.0
200-249	—	—	99.9	—	—	100.0	—	—	100.0
>249	—	—	99.9	—	—	100.0	—	—	100.0
Mean	49.1			44.4			31.3		
Median	49.4			43.4			30.0		

Table 1G Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Females Seventeen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	478	100.0	100.0	1085	100.0	100.0	386	100.0	100.0
<010.....	8	0.6	0.6	7	0.6	0.6	11	3.3	3.3
010-019.....	15	3.1	3.7	57	5.3	5.9	70	20.8	24.1
020-021.....	6	1.3	5.0	21	1.9	7.8	25	7.4	31.5
022-024.....	21	4.4	9.4	68	6.3	14.1	33	9.8	41.3
025-029.....	40	8.4	17.8	127	11.7	25.8	71	21.1	62.4
030-039.....	113	28.6	41.4	322	29.7	55.5	79	23.5	85.9
040-049.....	118	24.7	66.1	214	19.7	75.2	34	10.1	96.0
050-059.....	82	17.2	83.8	147	18.5	88.7	9	2.7	98.7
060-079.....	62	18.0	96.8	91	8.4	97.1	4	1.2	99.9
080-099.....	15	3.1	99.4	24	2.2	99.3	—	—	99.9
100-149.....	3	0.6	100.0	5	0.5	99.8	—	—	99.9
150-199.....	—	—	100.0	—	—	99.8	—	—	99.9
200-249.....	—	—	100.0	1	0.1	99.9	—	—	99.9
>249.....	—	—	100.0	1	0.1	100.0	—	—	99.9
Mean.....	44.3			40.6			27.4		
Median.....	48.5			38.2			27.0		

Table 1H Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Males Forty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	160	100.0	100.0	183	100.0	100.0	58	100.0	100.0
<010.....	—	—	—	—	—	—	—	—	—
010-019.....	3	1.9	1.9	1	0.5	0.5	6	10.3	10.3
020-021.....	—	—	1.9	1	0.5	1.0	1	1.7	12.0
022-024.....	3	1.9	3.8	2	1.1	2.1	6	10.3	22.3
025-029.....	6	3.8	7.6	10	5.5	7.6	7	12.1	34.4
030-039.....	21	13.1	20.7	29	15.8	23.4	17	29.3	63.7
040-049.....	35	21.9	42.6	53	29.0	52.4	15	25.9	89.6
050-059.....	38	23.8	66.4	36	19.7	72.1	1	1.7	91.3
060-079.....	37	23.1	89.5	44	24.0	96.1	4	6.9	98.2
080-099.....	15	9.4	98.9	6	3.3	99.4	1	1.7	99.9
100-149.....	2	1.3	100.2	1	0.5	99.9	—	—	99.9
150-199.....	—	—	100.2	—	—	99.9	—	—	99.9
200-249.....	—	—	100.2	—	—	99.9	—	—	99.9
>249.....	—	—	100.2	—	—	99.9	—	—	99.9
Mean.....	54.3			51.0			36.4		
Median.....	53.1			49.1			35.2		

Table 1I Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Females Forty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	235	100.0	100.0	437	100.0	100.0	128	100.0	100.0
< 010.....	—	—	—	—	—	—	7	5.5	5.5
010-019.....	8	3.4	3.4	8	1.8	1.8	13	10.2	15.7
020-021.....	—	—	3.4	—	—	1.8	10	7.8	23.5
022-024.....	2	0.9	4.3	12	2.7	4.5	5	3.9	27.4
025-029.....	11	4.7	9.0	25	5.7	10.2	31	24.2	51.6
030-039.....	61	26.0	35.0	92	21.1	31.3	37	28.9	80.5
040-049.....	48	20.4	55.4	107	24.5	55.8	17	13.3	93.8
050-059.....	42	17.9	73.3	91	20.8	76.6	6	4.7	98.5
060-079.....	50	21.3	94.6	75	17.2	93.8	1	0.8	99.3
080-099.....	8	3.4	98.0	20	4.6	98.4	—	—	99.3
100-149.....	5	2.1	100.1	7	1.6	100.0	1	0.8	100.1
150-199.....	—	—	100.1	—	—	100.0	—	—	100.1
200-249.....	—	—	100.1	—	—	100.0	—	—	100.1
> 249.....	—	—	100.1	—	—	100.0	—	—	100.1
Mean.....	49.5			48.8			30.0		
Median.....	47.4			47.6			29.7		

Table 1J Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Males Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	270	100.0	100.0	277	100.0	100.0	77	100.0	100.0
< 010.....	—	—	—	1	0.4	0.4	3	3.9	3.9
010-019.....	7	2.6	2.6	7	2.5	2.9	8	10.4	14.3
020-021.....	2	0.7	3.3	3	1.1	4.0	3	3.9	18.2
022-024.....	1	0.4	3.7	8	2.9	6.9	2	2.6	20.8
025-029.....	14	5.2	8.9	19	6.9	13.8	12	15.6	36.4
030-039.....	53	19.6	28.5	66	23.8	37.6	29	37.7	74.1
040-049.....	73	27.0	55.5	61	22.0	59.6	10	13.0	87.1
050-059.....	52	19.3	74.8	46	16.6	76.2	4	5.2	92.3
060-079.....	46	17.0	91.8	51	18.4	94.6	6	7.8	100.1
080-099.....	17	6.3	98.1	12	4.3	98.9	—	—	100.1
100-149.....	5	1.9	100.0	2	0.7	99.6	—	—	100.1
150-199.....	—	—	100.0	—	—	99.6	—	—	100.1
200-249.....	—	—	100.0	1	0.4	100.0	—	—	100.1
> 249.....	—	—	100.0	—	—	100.0	—	—	100.1
Mean.....	50.5			47.9			33.7		
Median.....	47.9			45.7			33.6		

Table 1K Appendix. Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Females Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	331	100.0	100.0	442	100.0	100.0	81	100.0	100.0
<010.....	2	0.6	0.6	—	—	—	1	1.2	1.2
010-019.....	2	0.6	1.2	6	1.4	1.4	8	9.9	11.1
020-021.....	4	1.2	2.4	7	1.6	3.0	5	6.2	17.3
022-024.....	8	2.4	4.8	11	2.5	5.5	9	11.1	28.4
025-029.....	13	3.9	8.7	25	5.7	11.2	10	12.3	40.7
030-039.....	61	18.4	27.1	88	19.9	31.1	31	38.3	79.0
040-049.....	91	27.5	54.6	96	21.7	52.8	13	16.0	95.0
050-059.....	65	19.6	74.2	91	20.6	73.4	2	2.5	97.5
060-079.....	66	19.9	94.1	82	18.6	92.0	2	2.5	100.0
080-099.....	11	3.3	97.4	22	5.0	97.0	—	—	100.0
100-149.....	7	2.1	99.5	13	2.9	99.9	—	—	100.0
150-199.....	1	0.3	99.8	1	0.2	100.1	—	—	100.0
200-249.....	—	—	99.8	—	—	100.1	—	—	100.0
>249.....	—	—	99.8	—	—	100.1	—	—	100.0
Mean	50.4			50.7			32.4		
Median	48.2			48.7			32.4		

Table 2A Appendix. Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for All Persons Under Two Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	11	100.0	100.0	3	100.0	100.0	5	100.0	100.0
<010.....	—	—	—	—	—	—	—	—	—
010-019.....	1	9.1	9.1	—	—	—	—	—	—
020-021.....	—	—	9.1	1	33.3	33.3	—	—	—
022-024.....	2	18.2	27.3	—	—	33.3	1	20.0	20.0
025-029.....	—	—	27.3	—	—	33.3	—	—	20.0
030-039.....	3	27.3	54.6	2	66.7	100.0	1	20.0	40.0
040-049.....	4	36.4	91.0	—	—	100.0	3	60.0	100.0
050-059.....	1	9.1	100.1	—	—	100.0	—	—	100.0
060-079.....	—	—	100.1	—	—	100.0	—	—	100.0
080-099.....	—	—	100.1	—	—	100.0	—	—	100.0
100-149.....	—	—	100.1	—	—	100.0	—	—	100.0
150-199.....	—	—	100.1	—	—	100.0	—	—	100.0
200-249.....	—	—	100.1	—	—	100.0	—	—	100.0
>249.....	—	—	100.1	—	—	100.0	—	—	100.0
Mean	35.9			28.0			38.0		
Median	38.3			32.5			41.6		

Table 2B Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for All Persons Two through Five Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	193	100.0	100.0	81	100.0	100.0	124	100.0	100.0
<010.....	7	3.6	3.6	—	—	—	—	—	—
010-019.....	16	8.3	11.9	9	11.1	11.1	2	1.6	1.6
020-021.....	16	8.3	20.2	8	8.7	14.8	6	4.8	6.4
022-024.....	14	7.3	27.5	6	7.4	22.2	8	6.5	12.9
025-029.....	32	16.6	44.1	10	12.3	34.5	17	13.7	26.6
030-039.....	60	31.1	75.2	28	34.6	69.1	50	40.3	66.9
040-049.....	25	13.0	88.2	13	16.0	85.1	27	21.8	88.7
050-059.....	10	5.2	93.4	8	9.9	95.0	11	8.9	97.6
060-079.....	8	4.1	97.5	2	2.5	97.5	2	1.6	99.2
080-099.....	3	1.6	99.1	1	1.2	98.7	1	0.8	100.0
100-149.....	2	1.0	100.1	1	1.2	99.9	—	—	100.0
150-199.....	—	—	100.1	—	—	99.9	—	—	100.0
200-249.....	—	—	100.1	—	—	99.9	—	—	100.0
>249.....	—	—	100.1	—	—	99.9	—	—	100.0
Mean.....	34.0			36.1			36.5		
Median.....	31.9			34.5			35.8		

Table 2C Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for All Persons Six through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1352	100.0	100.0	559	100.0	100.0	576	100.0	100.0
<010.....	33	2.4	2.4	4	0.7	0.7	2	0.3	0.3
010-019.....	162	12.0	14.4	45	8.1	8.8	22	3.8	4.1
020-021.....	48	3.6	18.0	18	3.2	12.0	9	1.6	5.7
022-024.....	104	7.7	25.7	35	6.3	18.3	26	4.5	10.2
025-029.....	222	16.4	42.1	94	16.8	35.1	70	12.2	22.4
030-039.....	380	28.1	70.2	194	34.7	69.8	228	39.6	62.0
040-049.....	273	20.2	90.4	106	19.0	88.8	147	25.5	87.5
050-059.....	78	5.8	96.2	40	7.2	96.0	47	8.2	95.7
060-079.....	39	2.9	99.1	19	3.4	99.4	17	3.0	98.7
080-099.....	6	0.4	99.5	1	0.2	99.6	4	0.7	99.4
100-149.....	2	0.1	99.6	2	0.4	100.0	2	0.3	99.7
150-199.....	—	—	99.6	—	—	100.0	—	—	99.7
200-249.....	1	0.1	99.7	—	—	100.0	—	—	99.7
>249.....	4	0.3	100.0	1	0.2	100.2	2	0.3	100.0
Mean.....	34.6			35.6			39.0		
Median.....	32.8			34.3			37.0		

Table 2D Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	351	100.0	100.0	151	100.0	100.0	132	100.0	100.0
<010.....	5	1.4	1.4	—	—	—	2	1.5	1.5
010-019.....	33	9.4	10.8	10	6.6	6.6	5	3.8	5.3
020-021.....	7	2.0	12.8	3	2.0	8.6	4	3.0	8.3
022-024.....	15	4.3	17.1	4	2.6	11.2	4	3.0	11.3
025-029.....	35	10.0	27.1	16	10.6	21.8	15	11.4	22.7
030-039.....	101	28.8	55.9	48	31.8	53.6	33	25.0	47.7
040-049.....	88	25.1	81.0	44	29.1	82.7	28	21.2	68.9
050-059.....	44	12.5	93.5	22	14.6	97.3	29	22.0	90.9
060-079.....	20	5.7	99.2	2	1.3	98.6	11	8.3	99.2
080-099.....	2	0.6	99.8	2	1.3	99.9	1	0.8	100.0
100-149.....	1	0.3	100.1	—	—	99.9	—	—	100.0
150-199.....	—	—	100.1	—	—	99.9	—	—	100.0
200-249.....	—	—	100.1	—	—	99.9	—	—	100.0
>249.....	—	—	100.1	—	—	99.9	—	—	100.0
Mean.....	38.1			39.0			40.9		
Median.....	38.0			38.9			41.1		

Table 2E Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	330	100.0	100.0	160	100.0	100.0	147	100.0	100.0
<010.....	8	2.4	2.4	2	1.3	1.3	—	—	—
010-019.....	29	8.8	11.2	9	5.6	6.9	5	3.4	3.4
020-021.....	7	2.1	13.3	6	3.8	10.7	2	1.4	4.8
022-024.....	16	4.8	18.1	7	4.4	15.1	3	2.0	6.8
025-029.....	29	8.8	26.9	19	11.9	27.0	8	5.4	12.2
030-039.....	95	28.8	55.7	56	35.0	62.0	47	32.0	44.2
040-049.....	90	27.3	83.0	43	26.9	88.9	52	35.4	79.6
050-059.....	40	12.1	95.1	12	7.5	96.4	14	9.5	89.1
060-079.....	11	3.3	98.4	6	3.8	100.2	12	8.2	97.3
080-099.....	5	1.5	99.9	—	—	100.2	3	2.0	99.3
100-149.....	—	—	99.9	—	—	100.2	—	—	99.3
150-199.....	—	—	99.9	—	—	100.2	—	—	99.3
200-249.....	—	—	99.9	—	—	100.2	—	—	99.3
>249.....	—	—	99.9	—	—	100.2	1	0.7	100.0
Mean.....	37.4			36.6			45.9		
Median.....	38.0			36.6			41.6		

Table 2F Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Males Seventeen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	988	100.0	100.0	165	100.0	100.0	240	100.0	100.0
<010.....	6	0.6	0.6	1	0.6	0.6	—	—	—
010-019.....	47	4.8	5.4	8	4.8	5.4	2	0.8	0.8
020-021.....	12	1.2	6.6	1	0.6	6.0	1	0.4	1.2
022-024.....	24	2.4	9.0	2	1.2	7.2	2	0.8	2.0
025-029.....	44	4.5	13.5	8	4.8	12.0	6	2.5	4.5
030-039.....	134	13.6	27.1	28	17.0	29.0	19	7.9	12.4
040-049.....	176	17.8	44.9	27	16.4	45.4	52	21.7	34.1
050-059.....	173	17.5	62.4	29	17.6	63.0	52	21.7	55.8
060-079.....	264	26.7	89.1	40	24.2	87.2	79	32.9	88.7
080-099.....	86	8.7	97.8	15	9.1	96.3	22	9.2	97.9
100-149.....	18	1.8	99.6	6	3.6	99.9	5	2.1	100.0
150-199.....	3	0.3	99.9	—	—	99.9	—	—	100.0
200-249.....	1	0.1	100.0	—	—	99.9	—	—	100.0
>249.....	—	—	100.0	—	—	99.9	—	—	100.0
Mean.....	53.4			54.4			53.3		
Median.....	52.9			52.6			57.3		

Table 2G Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Females Seventeen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1596	100.0	100.0	452	100.0	100.0	504	100.0	100.0
<010.....	11	0.7	0.7	4	0.9	0.9	1	0.2	0.2
010-019.....	106	6.6	7.3	20	4.4	5.3	6	1.2	1.4
020-021.....	38	2.4	9.7	5	1.1	6.4	5	1.0	2.4
022-024.....	53	3.3	13.0	7	1.5	7.9	8	1.6	4.0
025-029.....	94	5.9	18.9	26	5.8	13.7	16	3.2	7.2
030-039.....	321	20.1	39.0	104	23.0	36.7	99	19.6	26.8
040-049.....	354	22.2	61.2	109	24.1	60.8	128	25.4	52.2
050-059.....	236	14.8	76.0	69	15.3	76.1	106	21.0	73.2
060-079.....	249	15.6	91.6	79	17.5	93.6	92	18.3	91.5
080-099.....	97	6.1	97.7	20	4.4	98.0	28	5.6	97.1
100-149.....	32	2.0	99.7	8	1.8	99.8	14	2.8	99.9
150-199.....	3	0.2	99.9	—	—	99.8	—	—	99.9
200-249.....	—	—	99.9	1	0.2	100.0	—	—	99.9
>249.....	2	0.1	100.0	—	—	100.0	1	0.2	100.1
Mean.....	47.6			48.1			53.0		
Median.....	44.9			45.5			49.1		

Table 2H Appendix. Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Males Forty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	434	100.0	100.0	64	100.0	100.0	79	100.0	100.0
<010	2	0.5	0.5	—	—	—	—	—	—
010-019	12	2.8	3.3	2	3.1	3.1	1	1.3	1.3
020-021	6	1.4	4.7	—	—	3.1	—	—	1.3
022-024	7	1.6	6.3	3	4.7	7.8	1	1.3	2.6
025-029	15	3.5	9.8	1	1.6	9.4	—	—	2.6
030-039	43	9.9	19.7	5	7.8	17.2	3	3.8	6.4
040-049	66	15.2	34.9	16	25.0	42.2	17	21.5	27.9
050-059	85	19.6	54.5	7	10.9	53.1	19	24.1	52.0
060-079	134	30.9	85.4	17	26.6	79.7	21	26.6	78.6
080-099	41	9.4	94.8	5	7.8	87.5	12	15.2	93.8
100-149	18	4.1	98.9	6	9.4	96.9	5	6.3	100.1
150-199	3	0.7	99.6	1	1.6	98.5	—	—	100.1
200-249	2	0.5	100.1	1	1.6	100.1	—	—	100.1
>249	—	—	100.1	—	—	100.1	—	—	100.1
Mean	59.7			63.9			63.6		
Median	57.8			57.1			59.2		

Table 2I Appendix. Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Females Forty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Vitamin A Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	554	100.0	100.0	138	100.0	100.0	139	100.0	100.0
<010	3	0.5	0.5	—	—	—	—	—	—
010-019	25	4.5	5.0	4	2.9	2.9	—	—	—
020-021	7	1.3	6.3	1	0.7	3.6	1	0.7	0.7
022-024	15	2.7	9.0	1	0.7	4.3	1	0.7	1.4
025-029	22	4.0	13.0	4	2.9	7.2	4	2.9	4.3
030-039	78	14.1	27.1	16	11.6	18.8	24	17.3	21.6
040-049	98	17.7	44.8	26	18.8	37.6	27	19.4	41.0
050-059	109	19.7	64.5	28	20.3	57.9	31	22.3	63.3
060-079	135	24.4	88.9	36	26.1	84.0	35	25.2	88.5
080-099	44	7.9	96.8	15	10.9	94.9	13	9.4	97.9
100-149	13	2.3	99.1	7	5.1	100.0	1	0.7	98.6
150-199	3	0.5	99.6	—	—	100.0	1	0.7	99.3
200-249	1	0.2	99.8	—	—	100.0	—	—	99.3
>249	1	0.2	100.0	—	—	100.0	1	0.7	100.0
Mean	54.9			58.6			58.6		
Median	52.7			56.1			54.0		

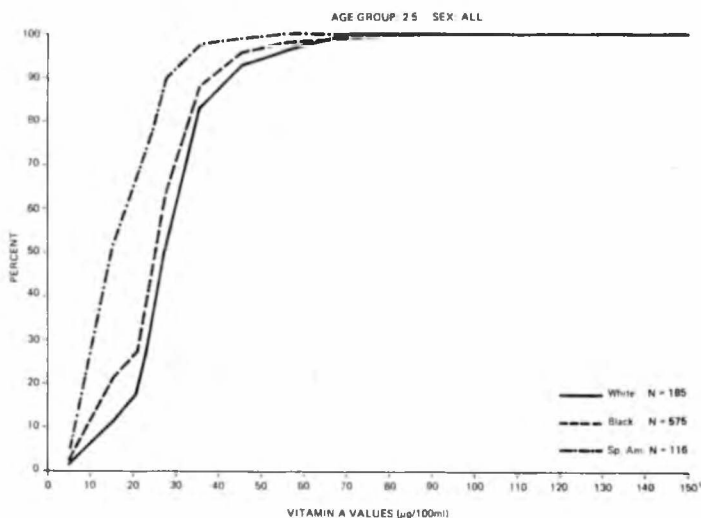
Table 2J Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Males Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	580	100.0	100.0	78	100.0	100.0	39	100.0	100.0
<010.....	2	0.3	0.3	—	—	—	—	—	—
010-019.....	16	2.8	8.1	1	1.3	1.3	—	—	—
020-021.....	12	2.1	5.2	—	—	1.3	—	—	—
022-024.....	9	1.6	6.8	—	—	1.3	—	—	—
025-029.....	17	2.9	9.7	1	1.3	2.6	—	—	—
030-039.....	56	9.7	19.4	16	20.5	23.1	1	2.6	2.6
040-049.....	97	16.7	36.1	11	14.1	37.2	9	23.1	25.7
050-059.....	99	17.1	53.2	13	16.7	53.9	10	25.6	51.3
060-079.....	161	27.8	81.0	24	30.8	84.7	13	33.8	84.6
080-099.....	78	12.6	93.6	8	10.3	95.0	4	10.3	94.9
100-149.....	34	5.9	99.5	3	3.8	98.8	2	5.1	100.0
150-199.....	3	0.5	100.0	1	1.3	100.1	—	—	100.0
200-249.....	1	0.2	100.2	—	—	100.1	—	—	100.0
>249.....	—	—	100.2	—	—	100.1	—	—	100.0
Mean.....	60.4			60.2			63.3		
Median.....	58.2			57.7			59.5		

Table 2K Appendix. *Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Females Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin A Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	833	100.0	100.0	118	100.0	100.0	57	100.0	100.0
<010.....	3	0.4	0.4	—	—	—	—	—	—
010-019.....	14	1.7	2.1	1	0.8	0.8	—	—	—
020-021.....	10	1.2	3.8	—	—	0.8	—	—	—
022-024.....	15	1.8	5.1	—	—	0.8	2	3.5	3.5
025-029.....	24	2.9	8.0	1	0.8	1.6	1	1.8	5.3
030-039.....	99	11.9	19.9	12	10.2	11.8	9	15.8	21.1
040-049.....	151	18.1	38.0	28	23.7	35.5	9	15.8	36.9
050-059.....	150	18.0	56.0	23	19.5	55.0	10	17.5	54.4
060-079.....	223	26.8	82.8	30	25.4	80.4	15	26.3	80.7
080-099.....	93	11.2	94.0	13	11.0	91.4	8	14.0	94.7
100-149.....	37	4.4	98.4	3	6.8	98.2	2	3.5	98.2
150-199.....	9	1.1	99.5	2	1.7	99.9	1	1.8	100.0
200-249.....	1	0.1	99.6	—	—	99.9	—	—	100.0
>249.....	4	0.5	100.1	—	—	99.9	—	—	100.0
Mean.....	61.3			62.6			60.9		
Median.....	56.7			57.4			57.5		

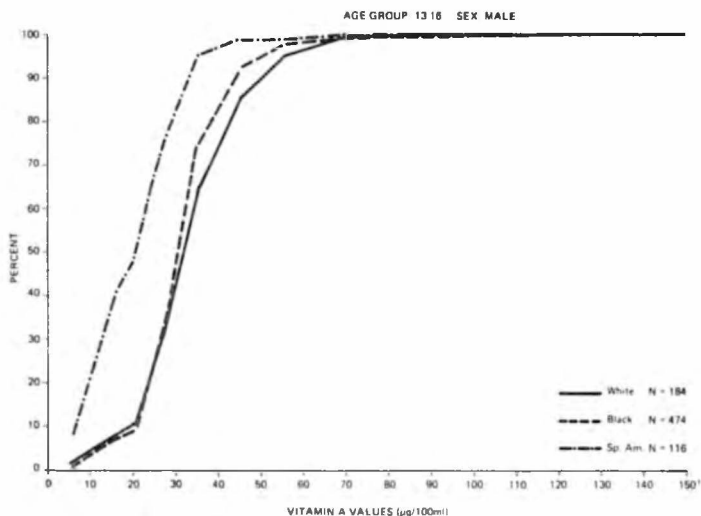
Figure 1a Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values > 149

Table Reference 1B Appendix

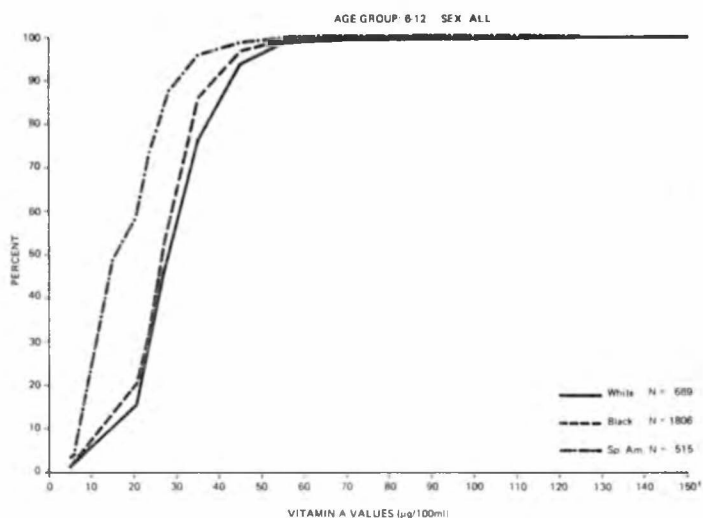
Figure 1c Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



* All Values > 149

Table Reference 1D Appendix

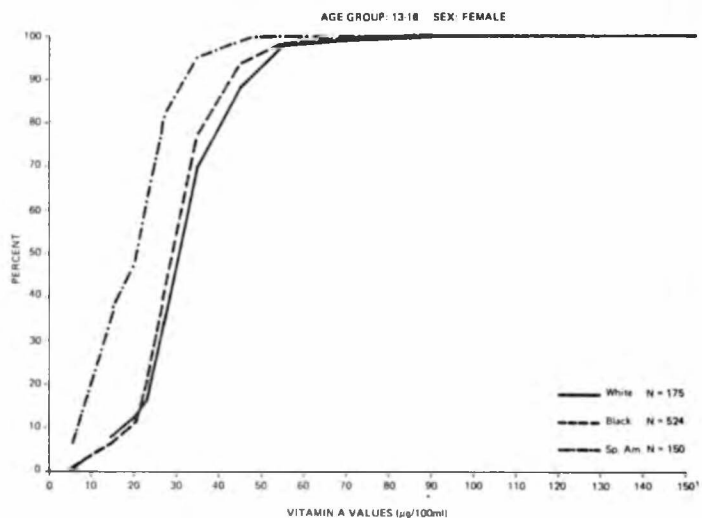
Figure 1b Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference 1C Appendix

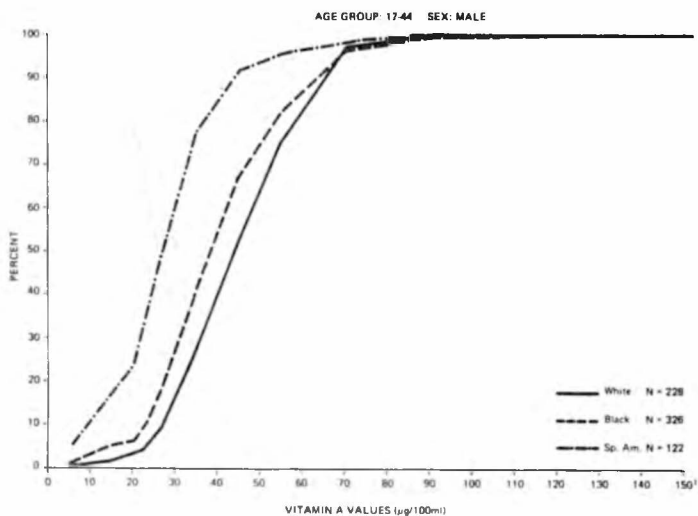
Figure 1d Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference 1E Appendix

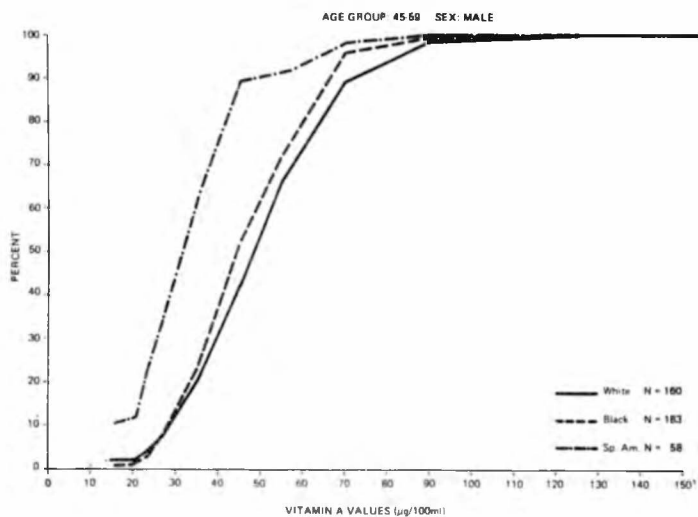
Figure 1e Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference 1F Appendix

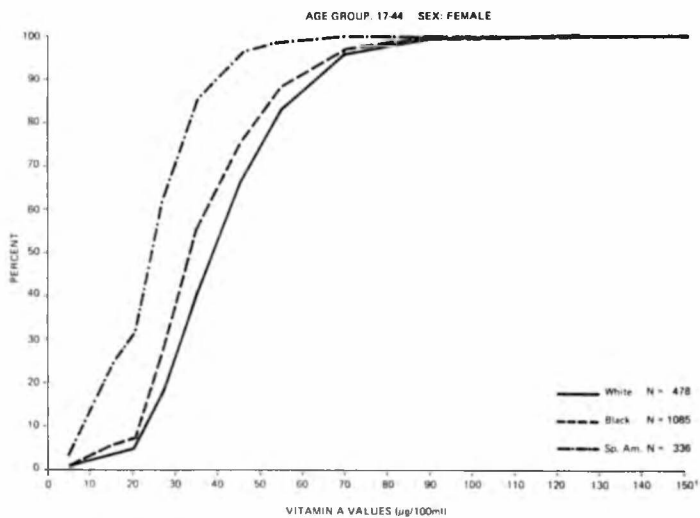
Figure 1g Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference 1W Appendix

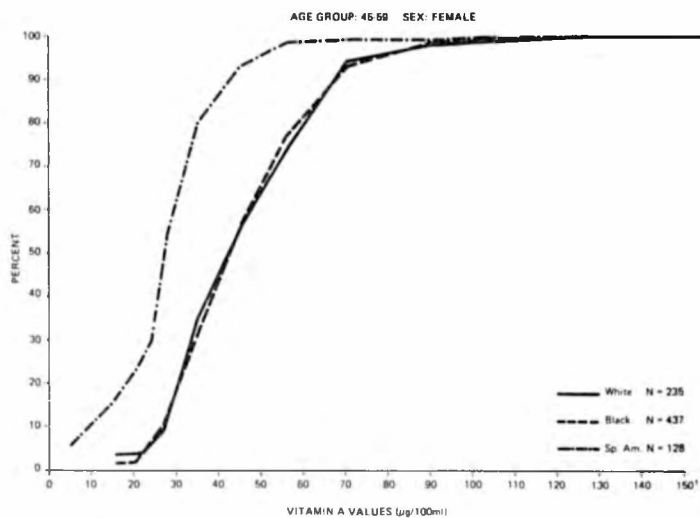
Figure 1f Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference: 1G Appendix

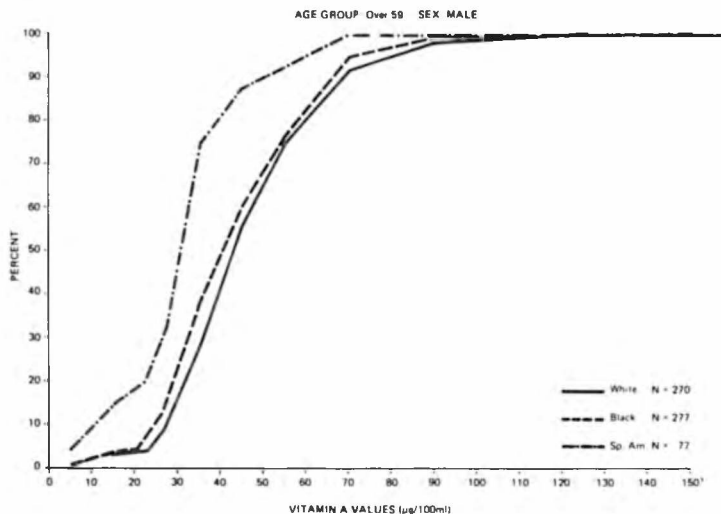
Figure 1h Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference: 1I Appendix

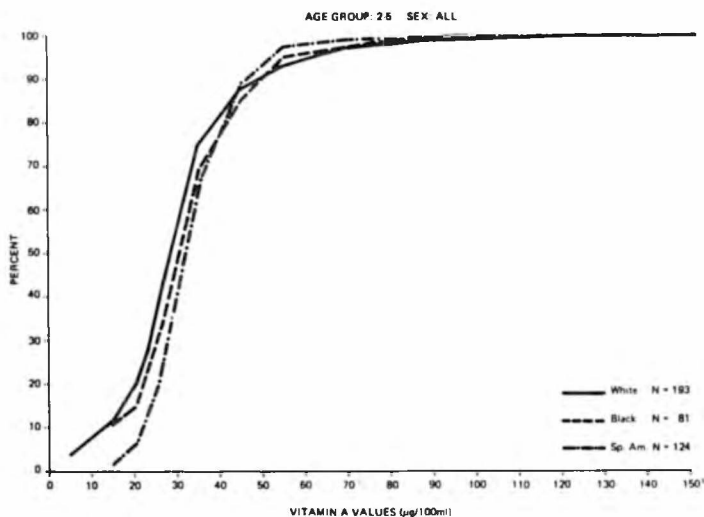
Figure 11 Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values > 149

Table Reference 11 Appendix

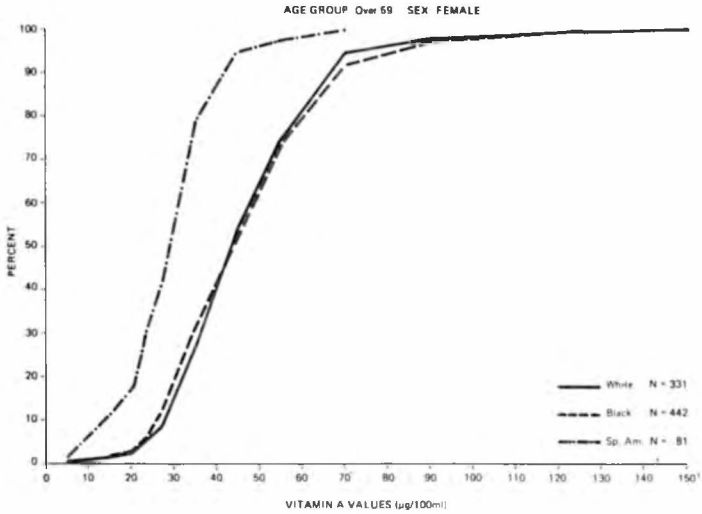
Figure 2a Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values > 149

Table Reference 2a Appendix

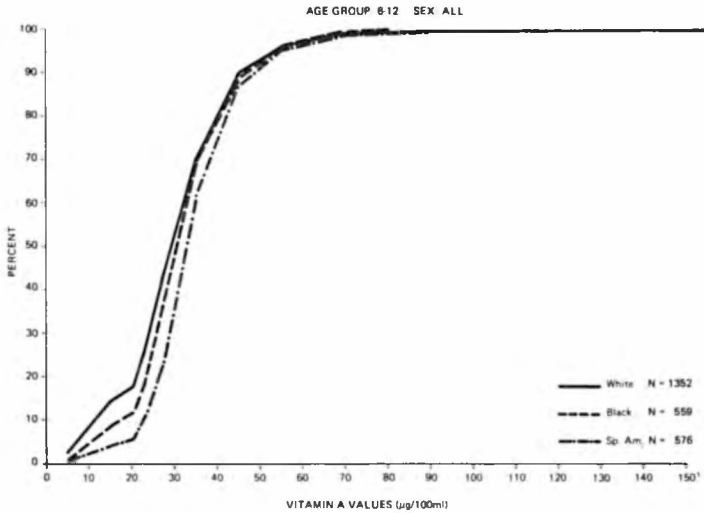
Figure 1J Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values > 149

Table Reference 1K Appendix

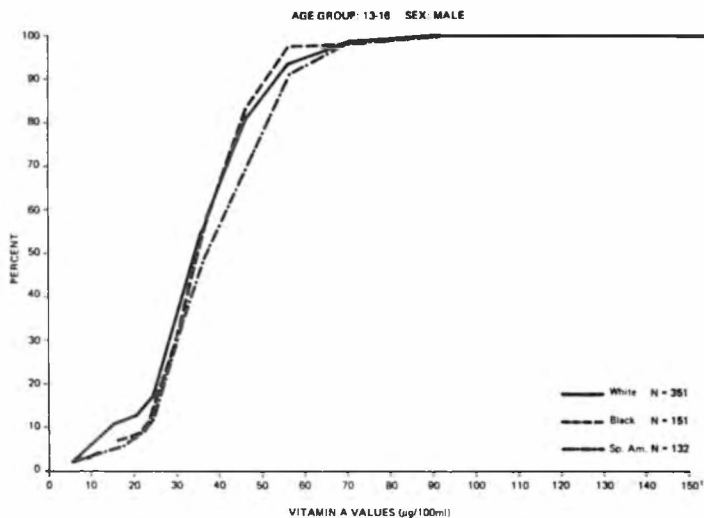
Figure 2b Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values > 149

Table Reference 2C Appendix

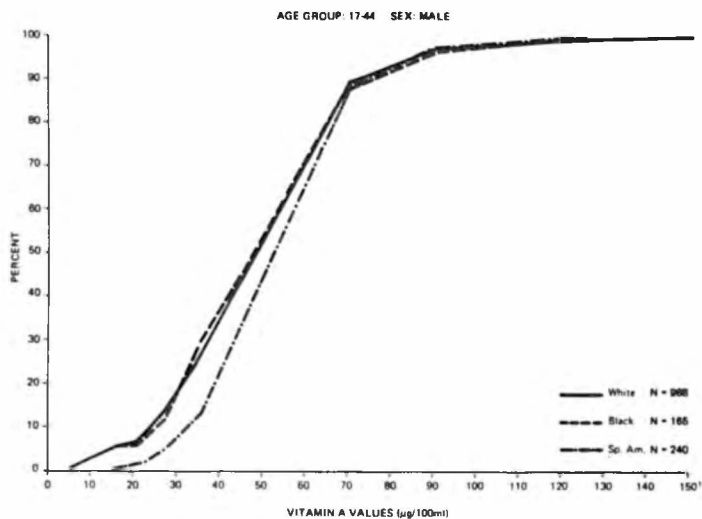
Figure 2c Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for High Income Rate States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference 2D Appendix

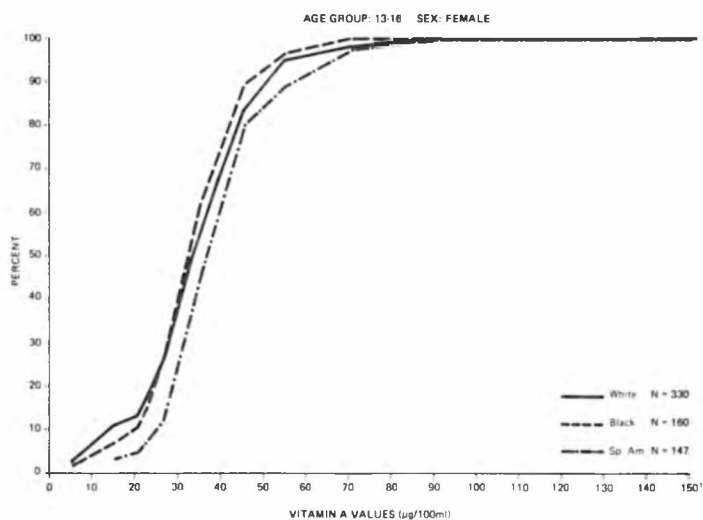
Figure 2e Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for High Income Rate States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference 2F Appendix

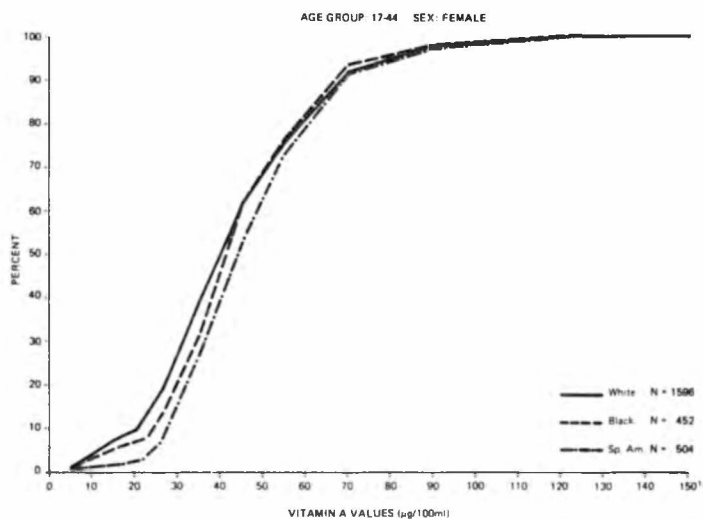
Figure 2d Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference 2E Appendix

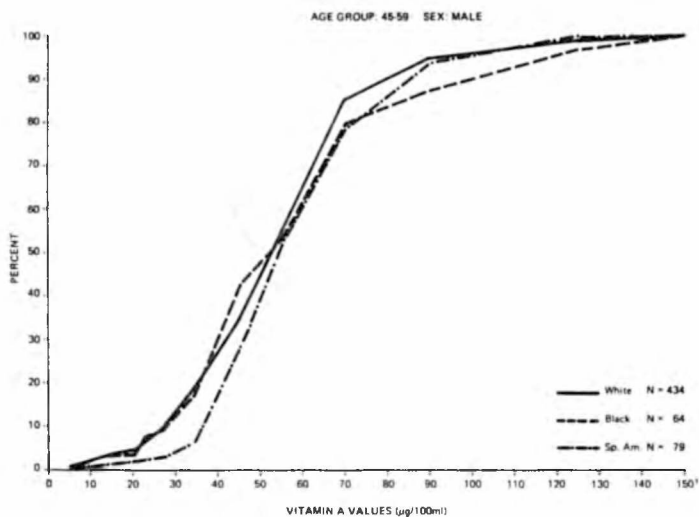
Figure 2f Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference 2G Appendix

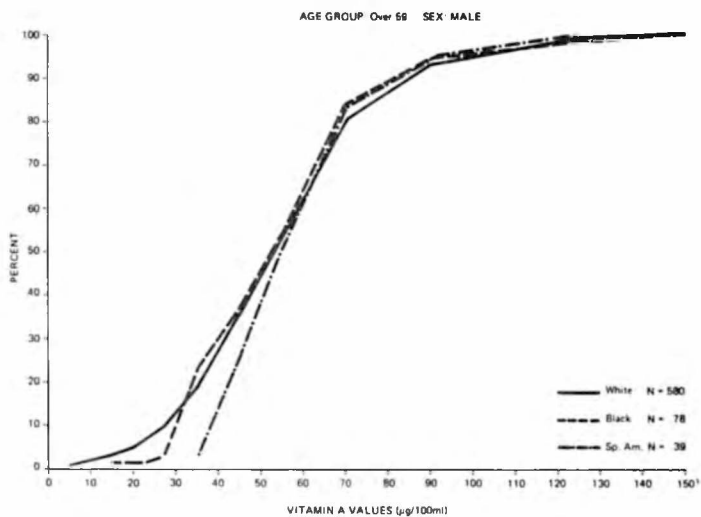
Figure 2g Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 148

Table Reference: 2H Appendix

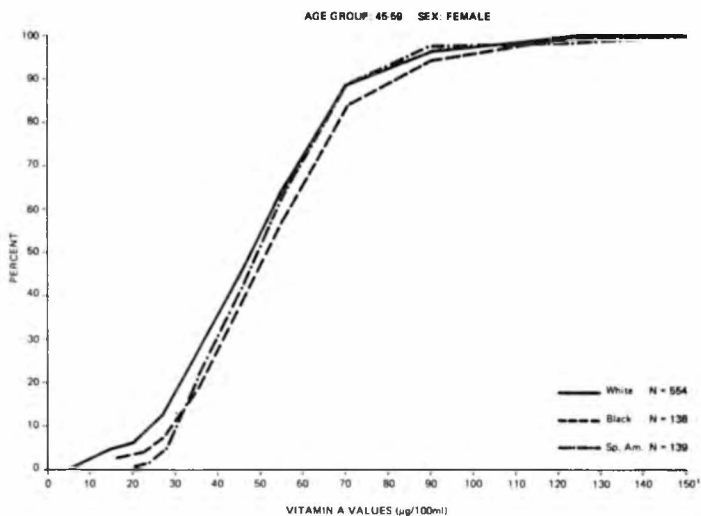
Figure 2i Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference: 2J Appendix

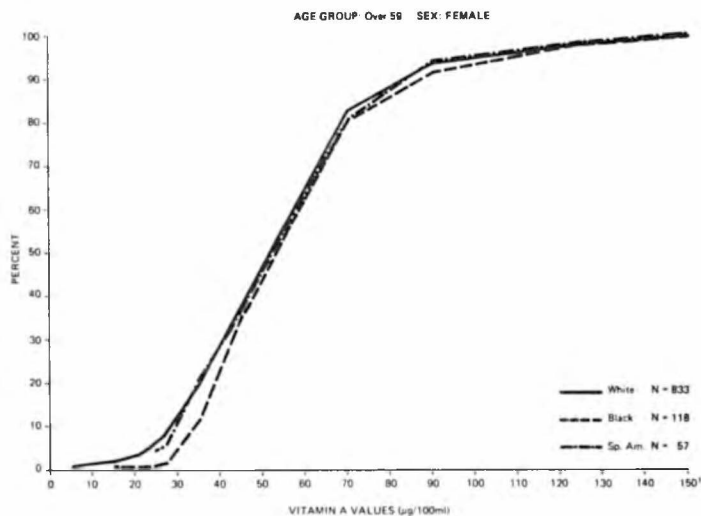
Figure 2h Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference: 2f Appendix.

Figure 2j Appendix—Cumulative Percentage Distribution of Plasma Vitamin A Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 149

Table Reference: 2K Appendix.

Table 3A Appendix. *Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for All Persons Under Two Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	13	100.0	100.0	78	100.0	100.0	10	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	—	—	—	3	3.8	3.8	—	—	—
020-029.....	—	—	—	3	3.8	7.6	—	—	—
030-039.....	—	—	—	3	3.8	11.4	—	—	—
040-059.....	1	7.7	7.7	15	19.2	30.6	—	—	—
060-079.....	1	7.7	15.4	16	20.5	51.1	1	10.0	10.0
080-099.....	2	15.4	30.8	20	25.6	76.7	5	50.0	60.0
100-149.....	4	30.8	61.6	10	12.8	89.5	4	40.0	100.0
150-199.....	3	23.1	84.7	3	3.8	93.3	—	—	100.0
200-299.....	2	15.4	100.1	4	5.1	98.4	—	—	100.0
300-399.....	—	—	100.1	1	1.3	99.7	—	—	100.0
>399.....	—	—	100.1	—	—	99.7	—	—	100.0
Mean.....	130.9			86.7			95.0		
Median.....	130.3			78.8			140.0		

Table 3B Appendix. *Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for All Persons Two through Five Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	184	100.0	100.0	581	100.0	100.0	117	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	—	—	—	3	0.5	0.5	—	—	—
020-029.....	1	0.5	0.5	8	1.4	1.9	—	—	—
030-039.....	2	1.1	1.6	10	1.7	3.6	2	1.7	1.7
040-059.....	22	12.0	13.6	44	7.6	11.2	12	10.3	12.0
060-079.....	37	20.1	33.7	74	12.7	23.9	25	21.4	33.4
080-099.....	34	18.5	52.2	116	20.0	43.9	17	14.5	47.9
100-149.....	61	33.2	85.4	233	40.1	84.0	47	40.2	88.1
150-199.....	21	11.4	96.8	62	10.7	94.7	12	10.3	98.4
200-299.....	5	2.7	99.5	29	5.0	99.7	2	1.7	100.1
300-399.....	1	0.5	100.0	1	0.2	99.9	—	—	100.1
>399.....	—	—	100.0	1	0.2	100.1	—	—	100.1
Mean.....	105.2			111.4			103.5		
Median.....	97.6			107.6			102.7		

Table 3C Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for All Persons Six through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	687	100.0	100.0	1837	100.0	100.0	516	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	—	—	—	1	0.1	0.1	2	0.4	0.4
020-029.....	2	0.3	0.3	10	0.5	0.6	1	0.2	0.6
030-039.....	6	0.9	1.2	8	0.4	1.0	10	1.9	2.5
040-059.....	55	8.0	9.2	80	4.4	5.4	48	9.3	11.8
060-079.....	126	18.3	27.5	216	11.8	17.2	93	18.0	29.8
080-099.....	151	22.0	49.5	294	16.0	33.2	96	18.6	48.4
100-149.....	256	37.3	86.8	753	41.0	74.2	192	37.2	85.6
150-199.....	68	9.9	96.7	358	19.5	93.7	55	10.7	96.3
200-299.....	21	3.1	99.8	106	5.8	99.5	16	3.1	99.4
300-399.....	2	0.3	100.1	9	0.5	100.0	3	0.6	100.0
>399.....	—	—	100.1	2	0.1	100.1	—	—	100.0
Mean.....	106.2			123.3			105.2		
Median.....	100.7			120.6			102.1		

Table 3D Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	183	100.0	100.0	477	100.0	100.0	116	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	—	—	—	—	—	—	1	0.9	0.9
020-029.....	3	1.6	1.6	2	0.4	0.4	2	1.7	2.6
030-039.....	12	6.6	8.2	1	0.2	0.6	—	—	2.6
040-059.....	25	13.7	21.9	31	6.5	7.1	16	13.8	16.4
060-079.....	33	18.0	39.9	78	16.4	23.5	28	24.1	40.5
080-099.....	44	24.0	63.9	88	18.4	41.9	31	26.7	67.2
100-149.....	43	23.5	87.4	187	39.2	81.1	27	23.3	90.5
150-199.....	16	8.7	96.1	62	13.0	94.1	9	7.8	98.3
200-299.....	7	3.8	99.9	25	5.2	99.3	2	1.7	100.0
300-399.....	—	—	99.9	2	0.4	99.7	—	—	100.0
>399.....	—	—	99.9	1	0.2	99.9	—	—	100.0
Mean.....	94.7			114.9			92.8		
Median.....	88.4			110.3			87.1		

Table 3E Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	175	100.0	100.0	536	100.0	100.0	151	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	—	—	—	—	—	—	1	0.7	0.7
020-029.....	1	0.6	0.6	2	0.4	0.4	—	—	0.7
030-039.....	2	1.1	1.7	5	0.9	1.8	3	2.0	2.7
040-059.....	17	9.7	11.4	44	8.2	9.5	16	10.6	18.8
060-079.....	32	18.3	29.7	92	17.2	26.7	32	21.2	34.5
080-099.....	48	24.6	54.3	111	20.7	47.4	36	23.8	58.3
100-149.....	60	34.3	88.6	208	38.8	86.2	53	35.1	93.4
150-199.....	18	10.3	98.9	51	9.5	95.7	10	6.6	100.0
200-299.....	2	1.1	100.0	20	3.7	99.4	—	—	100.0
300-399.....	—	—	100.0	2	0.4	99.8	—	—	100.0
> 399.....	—	—	100.0	1	0.2	100.0	—	—	100.0
Mean.....	101.6			118.4			93.6		
Median.....	96.5			103.4			93.1		

Table 3F Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Males Seventeen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	230	100.0	100.0	334	100.0	100.0	122	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	—	—	—	1	0.3	0.3	1	0.8	0.8
020-029.....	2	0.9	0.9	3	0.9	1.2	—	—	0.8
030-039.....	3	1.3	2.2	11	3.3	4.5	—	—	0.8
040-059.....	25	10.9	13.1	32	9.6	14.1	9	7.4	8.2
060-079.....	30	13.0	26.1	53	15.9	30.0	23	18.9	27.1
080-099.....	42	18.3	44.4	64	19.2	49.2	23	18.9	46.0
100-149.....	89	38.7	83.1	109	32.6	81.8	56	45.9	91.9
150-199.....	30	13.0	96.1	40	12.0	93.8	8	6.6	98.5
200-299.....	9	3.9	100.0	17	5.1	98.9	2	1.6	100.1
300-399.....	—	—	100.0	4	1.2	100.1	—	—	100.1
> 399.....	—	—	100.0	—	—	100.1	—	—	100.1
Mean.....	109.5			109.0			102.8		
Median.....	107.8			101.4			103.6		

Table 3G Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Females Seventeen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	479	100.0	100.0	1104	100.0	100.0	336	100.0	100.0
<10.....	—	—	—	1	0.1	0.1	—	—	—
010-019.....	2	0.4	0.4	5	0.5	0.6	1	0.3	0.3
020-029.....	1	0.2	0.6	6	0.5	1.1	2	0.6	0.9
030-039.....	8	1.7	2.3	24	2.2	3.3	4	1.2	2.1
040-059.....	38	7.9	10.2	84	7.6	10.9	19	5.7	7.8
060-079.....	70	14.6	24.8	189	17.1	28.0	63	15.8	23.6
080-099.....	83	17.3	42.1	189	17.1	45.1	71	21.1	44.7
100-149.....	189	39.5	81.6	397	36.0	81.1	143	42.6	87.3
150-199.....	60	12.5	94.1	149	13.5	94.6	37	11.0	98.3
200-299.....	26	5.4	99.5	54	4.9	99.5	6	1.8	100.1
300-399.....	1	0.2	99.7	6	0.5	100.0	—	—	100.1
>399.....	1	0.2	99.9	—	—	100.0	—	—	100.1
Mean.....	113.5			110.5			107.3		
Median.....	109.9			106.9			106.3		

Table 3H Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Males Forty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	160	100.0	100.0	187	100.0	100.0	59	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	—	—	—	—	—	—	—	—	—
020-029.....	2	1.3	1.3	1	0.5	0.5	1	1.7	1.7
030-039.....	4	2.5	3.8	1	0.5	1.0	1	1.7	3.4
040-059.....	12	7.5	11.3	17	9.1	10.1	1	1.7	5.1
060-079.....	17	10.6	21.9	25	13.4	23.5	13	22.0	27.1
080-099.....	35	21.9	43.8	31	16.6	40.1	14	23.7	50.8
100-149.....	43	26.9	70.7	60	32.1	72.2	23	39.0	89.8
150-199.....	30	18.8	89.5	33	17.6	89.8	5	8.5	98.3
200-299.....	12	7.5	97.0	16	8.6	98.4	1	1.7	100.0
300-399.....	5	3.1	100.1	2	1.1	99.5	—	—	100.0
>399.....	—	—	100.1	1	0.5	100.0	—	—	100.0
Mean.....	127.5			123.9			103.4		
Median.....	111.6			115.4			99.3		

Table 3I Appendix. *Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Females Forty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	231	100.0	100.0	441	100.0	100.0	128	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	—	—	—	—	—	—	—	—	—
020-029.....	—	—	—	1	0.2	0.2	1	0.8	0.8
030-039.....	2	0.9	0.9	4	0.9	1.1	1	0.8	1.6
040-059.....	10	4.3	5.2	19	4.3	5.4	2	1.6	3.2
060-079.....	27	11.7	16.9	48	10.9	16.3	12	9.4	12.6
080-099.....	35	15.2	32.1	63	14.3	30.6	21	16.4	29.0
100-149.....	72	31.2	63.3	143	32.4	63.0	61	47.7	76.7
150-199.....	57	24.7	88.0	92	20.9	83.9	16	12.5	89.2
200-299.....	24	10.4	98.4	63	14.3	98.2	12	9.4	98.6
300-399.....	3	1.3	99.7	4	0.9	99.1	1	0.8	99.4
>399.....	1	0.4	100.1	4	0.9	100.0	1	0.8	100.2
Mean.....	136.0			138.6			128.3		
Median.....	128.8			129.9			122.1		

Table 3J Appendix. *Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Males Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	271	100.0	100.0	281	100.0	100.0	77	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	1	0.4	0.4	—	—	—	1	1.3	1.3
020-029.....	1	0.4	0.8	5	1.8	1.8	1	1.3	2.6
030-039.....	4	1.5	2.3	4	1.4	3.2	—	—	2.6
040-059.....	16	5.9	8.2	17	6.0	9.2	2	2.6	5.2
060-079.....	29	10.7	18.9	34	12.1	21.3	5	6.5	11.7
080-099.....	44	16.2	35.1	35	12.5	33.8	11	14.3	26.0
100-149.....	85	31.4	66.5	97	34.5	68.3	37	48.1	74.1
150-199.....	58	21.4	87.9	49	17.4	85.7	15	19.5	93.6
200-299.....	30	11.1	99.0	32	11.4	97.1	5	6.5	100.1
300-399.....	3	1.1	100.1	7	2.5	99.6	—	—	100.1
>399.....	—	—	100.1	1	0.4	100.0	—	—	100.1
Mean.....	129.7			132.9			123.7		
Median.....	128.8			123.5			125.0		

Table 3K Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Females Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	881	100.0	100.0	445	100.0	100.0	81	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	—	—	—	—	—	—	—	—	—
020-029.....	2	0.6	0.6	1	0.2	0.2	—	—	—
030-039.....	—	—	0.6	5	1.1	1.3	—	—	—
040-059.....	15	4.5	5.1	22	4.9	6.2	3	3.7	8.7
060-079.....	29	8.8	13.9	38	8.5	14.7	9	11.1	14.8
080-099.....	44	13.3	27.2	43	9.7	24.4	12	14.8	29.6
100-149.....	128	37.2	64.4	160	36.0	60.4	33	40.7	70.3
150-199.....	69	20.8	85.2	86	19.3	79.7	14	17.3	87.6
200-299.....	42	12.7	97.9	72	16.2	95.9	9	11.1	98.7
300-399.....	6	1.8	99.7	17	3.8	99.7	1	1.2	99.9
>399.....	1	0.3	100.0	1	0.2	99.9	—	—	99.9
Mean.....	138.8			147.1			129.5		
Median.....	131.5			135.5			125.0		

Table 4A Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for All Persons Under Two Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	13	100.0	100.0	5	100.0	100.0	10	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	1	7.7	7.7	—	—	—	1	10.0	10.0
020-029.....	—	—	7.7	—	—	—	—	—	10.0
030-039.....	—	—	7.7	—	—	—	1	10.0	20.0
040-059.....	—	—	7.7	1	20.0	20.0	1	10.0	30.0
060-079.....	2	15.4	23.1	—	—	20.0	1	10.0	40.0
080-099.....	1	7.7	30.8	2	40.0	60.0	2	20.0	60.0
100-149.....	5	38.5	69.3	2	40.0	100.0	3	30.0	90.0
150-199.....	2	15.4	84.7	—	—	100.0	—	—	90.0
200-299.....	1	7.7	92.4	—	—	100.0	1	10.0	100.0
300-399.....	1	7.7	100.1	—	—	100.0	—	—	100.0
>399.....	—	—	100.1	—	—	100.0	—	—	100.0
Mean.....	133.7			93.0			101.1		
Median.....	125.0			95.0			90.0		

Table 4B Appendix. *Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for All Persons Two through Five Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	207	100.0	100.0	86	100.0	100.0	189	100.0	100.0
<10.....	5	2.4	2.4	2	2.3	2.3	4	2.9	2.9
010-019.....	7	3.4	5.8	—	—	2.8	5	3.6	6.5
020-029.....	5	2.4	8.2	2	2.3	4.6	1	0.7	7.2
030-039.....	5	2.4	10.6	1	1.2	5.8	1	0.7	7.9
040-059.....	16	7.7	18.3	5	5.8	11.6	16	11.5	19.4
060-079.....	26	12.6	30.9	10	11.6	23.2	16	11.5	30.9
080-099.....	38	18.4	49.3	10	11.6	34.8	33	23.7	54.6
100-149.....	56	27.1	76.4	31	36.0	70.8	38	27.3	81.9
150-199.....	32	15.5	91.9	19	22.1	92.9	20	14.4	96.3
200-299.....	14	6.8	98.7	5	5.8	98.7	4	2.9	99.2
300-399.....	3	1.4	100.1	—	—	98.7	1	0.7	99.9
> 399.....	—	—	100.1	1	1.2	99.9	—	—	99.9
Mean.....	111.3			124.6			103.5		
Median.....	105.5			120.5			96.0		

Table 4C Appendix. *Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for All Persons Six through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1405	100.0	100.0	577	100.0	100.0	636	100.0	100.0
<10.....	6	0.4	0.4	—	—	—	3	0.5	0.5
010-019.....	8	0.6	1.0	2	0.3	0.3	9	1.4	1.9
020-029.....	8	0.6	1.6	—	—	0.3	2	0.3	2.2
030-039.....	13	0.9	2.5	3	0.5	0.8	12	1.9	4.1
040-059.....	91	6.5	9.0	17	2.9	3.7	50	7.9	12.0
060-079.....	171	12.2	21.2	57	9.9	13.6	118	18.6	30.6
080-099.....	214	15.2	36.4	96	16.6	30.2	111	17.5	48.1
100-149.....	537	38.2	74.6	224	38.8	69.0	217	34.1	82.2
150-199.....	261	18.6	93.2	129	22.4	91.4	88	13.8	96.0
200-299.....	86	6.1	99.3	45	7.8	99.2	24	3.8	99.8
300-399.....	9	0.6	99.9	4	0.7	99.9	1	0.2	100.0
> 399.....	1	0.1	100.0	—	—	99.9	1	0.2	100.2
Mean.....	120.7			129.4			108.3		
Median.....	117.5			125.0			102.5		

Table 4D Appendix. *Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	361	100.0	100.0	155	100.0	100.0	140	100.0	100.0
<10	1	0.3	0.3	—	—	—	—	—	—
010-019	—	—	0.3	—	—	—	—	—	—
020-029	2	0.6	0.9	1	0.6	0.6	—	—	—
030-039	6	1.7	2.6	—	—	0.6	4	2.9	2.9
040-059	35	9.7	12.3	8	5.2	5.8	12	8.6	11.5
060-079	51	14.1	26.4	22	14.2	20.0	27	19.3	30.8
080-099	63	17.5	43.9	23	14.8	34.8	29	20.7	51.5
100-149	127	35.2	79.1	56	36.1	70.9	50	35.7	87.2
150-199	55	15.2	94.3	37	23.9	94.8	13	9.3	96.5
200-299	20	5.5	99.8	7	4.5	99.3	4	2.9	99.4
300-399	1	0.3	100.1	—	—	99.3	—	—	99.4
>399	—	—	100.1	1	0.6	99.9	1	0.7	100.1
Mean	111.8			121.4			108.7		
Median	108.5			120.5			98.6		

Table 4E Appendix. *Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	345	100.0	100.0	166	100.0	100.0	154	100.0	100.0
<10	—	—	—	—	—	—	—	—	—
010-019	2	0.6	0.6	—	—	—	—	—	—
020-029	1	0.3	0.9	—	—	—	—	—	—
030-039	4	1.2	2.1	2	1.2	1.2	1	0.6	0.6
040-059	25	7.2	9.3	8	4.8	6.0	8	5.2	5.8
060-079	39	11.3	20.6	11	6.6	12.6	28	18.2	24.0
080-099	55	15.9	36.5	38	22.9	35.5	41	26.6	50.6
100-149	148	42.9	79.4	67	40.4	75.9	52	33.8	84.4
150-199	53	15.4	94.8	34	20.5	96.4	17	11.0	95.4
200-299	16	4.6	99.4	6	3.6	100.0	7	4.5	99.9
300-399	2	0.6	100.0	—	—	100.0	—	—	99.9
>399	—	—	100.0	—	—	100.0	—	—	99.9
Mean	116.6			120.7			110.5		
Median	115.5			117.5			99.4		

Table 4F Appendix. *Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Males Seventeen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	998	100.0	100.0	168	100.0	100.0	241	100.0	100.0
<10.....	1	0.1	0.1	—	—	—	—	—	—
010-019.....	4	0.4	0.5	—	—	—	—	—	—
020-029.....	6	0.6	1.1	1	0.6	0.6	1	0.4	0.4
030-039.....	14	1.4	2.5	1	0.6	1.2	1	0.4	0.8
040-059.....	58	5.8	8.3	12	7.1	8.3	18	7.5	8.8
060-079.....	106	10.6	18.9	14	8.3	16.6	35	14.5	22.8
080-099.....	156	15.6	34.5	20	11.9	28.5	40	16.6	39.4
100-149.....	368	36.9	71.4	69	41.1	69.6	90	37.3	76.7
150-199.....	183	18.3	89.7	37	22.0	91.6	36	14.9	91.6
200-299.....	94	9.4	99.1	14	8.3	99.9	18	7.5	99.1
300-399.....	8	0.8	99.9	—	—	99.9	2	0.8	99.9
> 399.....	—	—	99.9	—	—	99.9	—	—	99.9
Mean.....	126.2			128.0			119.9		
Median.....	120.5			126.0			114.0		

Table 4G Appendix. *Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Females Seventeen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1611	100.0	100.0	459	100.0	100.0	507	100.0	100.0
<10.....	1	0.1	0.1	—	—	—	—	—	—
010-019.....	2	0.1	0.2	1	0.2	0.2	—	—	—
020-029.....	8	0.5	0.7	1	0.2	0.4	2	0.4	0.4
030-039.....	18	1.1	1.8	2	0.4	0.8	5	1.0	1.4
040-059.....	100	6.2	8.0	29	6.3	7.1	40	7.9	9.3
060-079.....	163	10.1	18.1	40	8.7	15.8	71	14.0	23.3
080-099.....	228	14.2	32.3	64	13.9	29.7	92	18.1	41.4
100-149.....	577	35.8	68.1	165	35.9	65.6	180	35.5	76.9
150-199.....	342	21.2	89.3	108	23.5	89.1	95	18.7	95.6
200-299.....	153	9.5	98.8	44	9.6	98.7	20	3.9	99.5
300-399.....	17	1.1	99.9	5	1.1	99.8	2	0.4	99.9
> 399.....	2	0.1	100.0	—	—	99.8	—	—	99.9
Mean.....	129.7			132.1			116.7		
Median.....	124.5			128.0			112.0		

Table 4H Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Males Forty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	441	100.0	100.0	66	100.0	100.0	80	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	1	0.2	0.2	—	—	—	—	—	—
020-029.....	5	1.1	1.3	1	1.5	1.5	—	—	—
030-039.....	7	1.6	2.9	2	3.0	4.5	—	—	—
040-059.....	31	7.0	9.9	1	1.5	6.0	4	5.0	5.0
060-079.....	43	9.8	19.7	6	9.1	15.1	13	16.3	21.3
080-099.....	54	12.2	31.9	7	10.6	25.7	13	16.3	37.6
100-149.....	164	37.2	69.1	24	36.4	62.1	26	32.5	70.1
150-199.....	83	18.8	87.9	14	21.2	83.3	16	20.0	90.1
200-299.....	48	10.9	98.8	9	13.6	96.9	7	8.8	98.9
300-399.....	2	0.5	99.3	2	3.0	99.9	1	1.3	100.2
>399.....	3	0.7	100.0	—	—	99.9	—	—	100.2
Mean	130.4			141.1			127.2		
Median	124.0			133.0			119.0		

Table 4I Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Females Forty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values µg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	564	100.0	100.0	139	100.0	100.0	140	100.0	100.0
<10.....	1	0.2	0.2	—	—	—	—	—	—
010-019.....	1	0.2	0.4	—	—	—	—	—	—
020-029.....	4	0.7	1.1	1	0.7	0.7	2	1.4	1.4
030-039.....	9	1.6	2.7	—	—	0.7	1	0.7	2.1
040-059.....	28	5.0	7.7	7	5.0	5.7	6	4.3	6.4
060-079.....	61	10.8	18.5	11	7.9	13.6	12	8.6	15.0
080-099.....	59	10.5	29.0	17	12.2	25.8	26	18.6	33.6
100-149.....	183	32.4	61.4	55	39.6	65.4	50	35.7	69.3
150-199.....	123	21.8	83.2	32	23.0	88.4	24	17.1	86.4
200-299.....	80	14.2	97.4	12	8.6	97.0	17	12.1	98.5
300-399.....	11	2.0	99.4	4	2.9	99.9	2	1.4	99.9
>399.....	4	0.7	100.1	—	—	99.9	—	—	99.9
Mean	141.5			138.5			131.9		
Median	132.5			130.0			123.0		

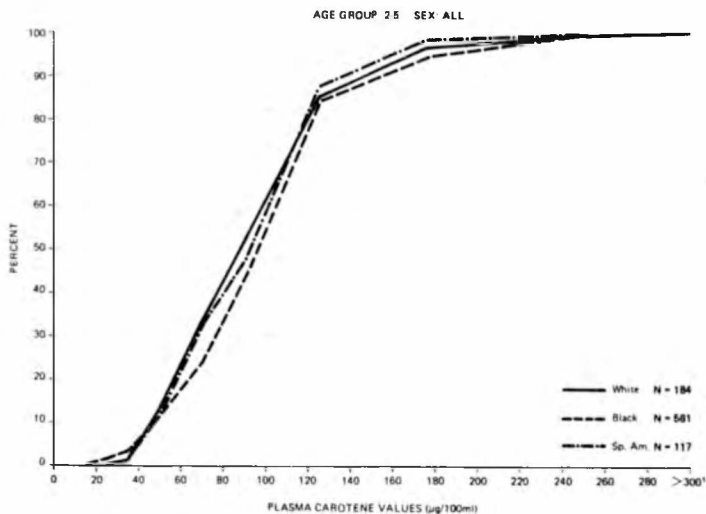
Table 4J Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Males Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	583	100.0	100.0	81	100.0	100.0	42	100.0	100.0
<10.....	1	0.2	0.2	—	—	—	—	—	—
010-019.....	1	0.2	0.4	1	1.2	1.2	—	—	—
020-029.....	12	2.1	2.5	—	—	1.2	—	—	—
030-039.....	10	1.7	4.2	2	2.5	3.7	—	—	—
040-049.....	52	8.9	13.1	4	4.9	8.6	5	11.9	11.9
050-059.....	81	13.9	27.0	9	11.1	19.7	8	19.0	30.9
060-069.....	88	15.2	42.2	12	14.8	34.5	6	14.3	45.2
070-079.....	185	31.7	73.9	31	38.3	72.8	9	21.4	66.6
080-089.....	85	14.6	88.5	13	16.0	88.8	9	21.4	88.0
090-099.....	62	10.6	99.1	7	8.6	97.4	4	9.5	97.5
100-109.....	10	1.7	100.0	2	2.5	100.0	1	2.4	100.0
>109.....	1	0.2	100.0	—	—	100.0	—	—	100.0
Mean	123.8			126.2			125.4		
Median	113.5			120.0			111.0		

Table 4K Appendix. Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Females Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Plasma Carotene Values μg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	843	100.0	100.0	126	100.0	100.0	63	100.0	100.0
<10.....	—	—	—	—	—	—	—	—	—
010-019.....	—	—	—	—	—	—	—	—	—
020-029.....	4	0.5	0.5	—	—	—	—	—	—
030-039.....	11	1.3	1.8	2	1.6	1.6	—	—	—
040-049.....	48	5.7	7.5	2	1.6	3.2	5	7.9	7.9
050-059.....	88	10.4	17.9	8	6.3	9.5	5	7.9	15.8
060-069.....	88	10.4	28.3	10	7.9	17.4	6	9.5	25.3
070-079.....	274	32.5	60.8	30	23.8	41.2	27	42.9	68.2
080-089.....	187	22.2	83.0	38	30.2	71.4	13	20.6	88.8
090-099.....	116	13.8	96.8	28	22.2	93.6	7	11.1	99.9
100-109.....	22	2.6	100.0	7	5.6	100.0	—	—	100.0
>109.....	5	0.6	100.0	1	0.8	100.0	—	—	100.0
Mean	142.7			172.5			129.4		
Median	133.0			164.0			128.5		

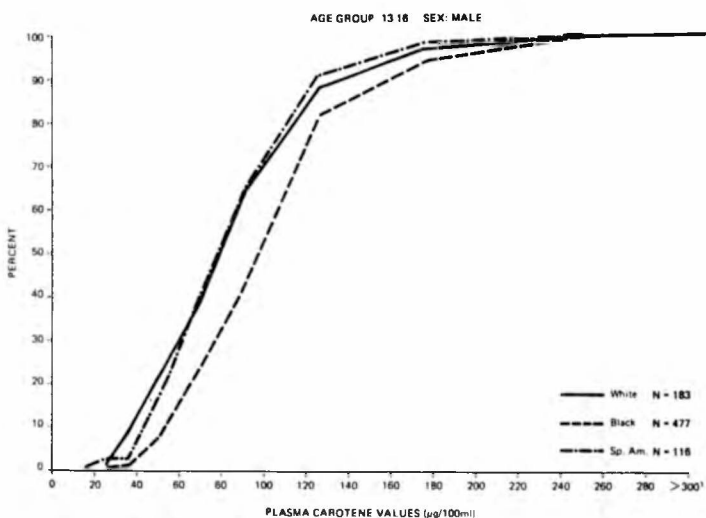
Figure 3a Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1976)



¹ All Values > 299

Table Reference 38 Appendix

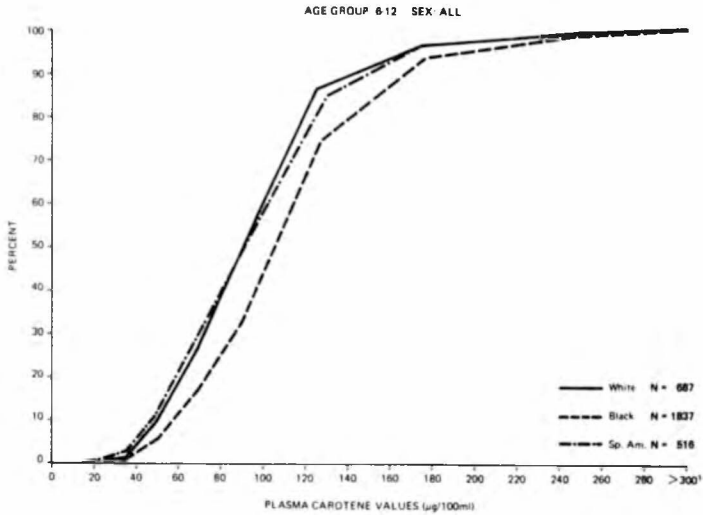
Figure 3c Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1976)



¹ All Values > 299

Table Reference 30 Appendix

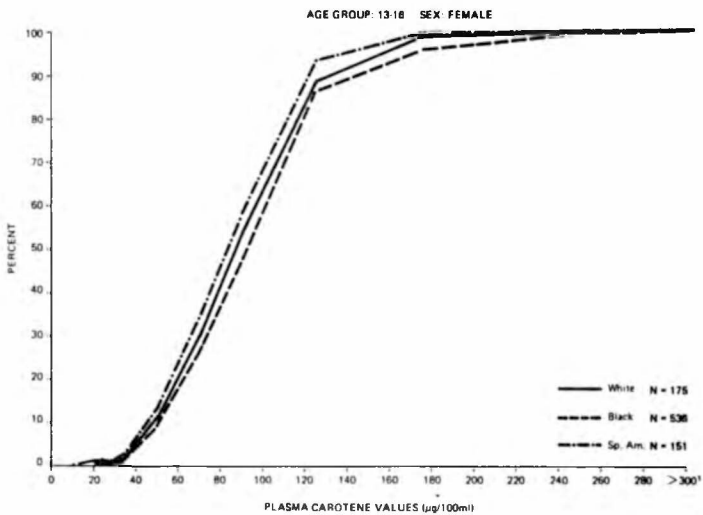
Figure 3b Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values > 299

Table Reference: 3C Appendix

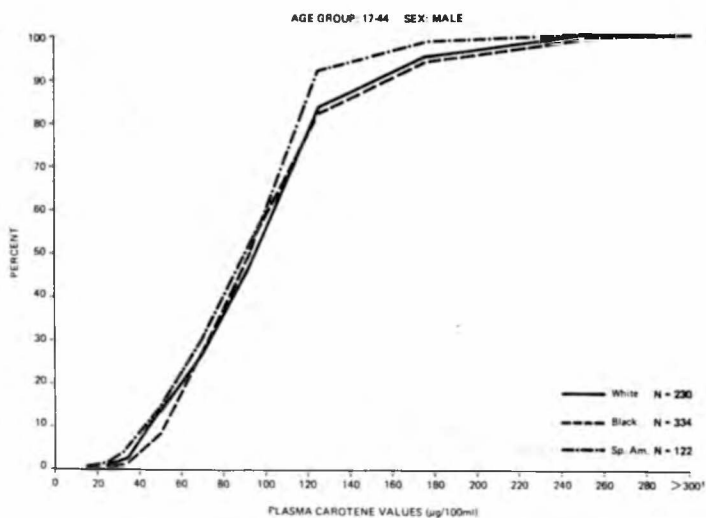
Figure 3d Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values > 299

Table Reference: 3E Appendix

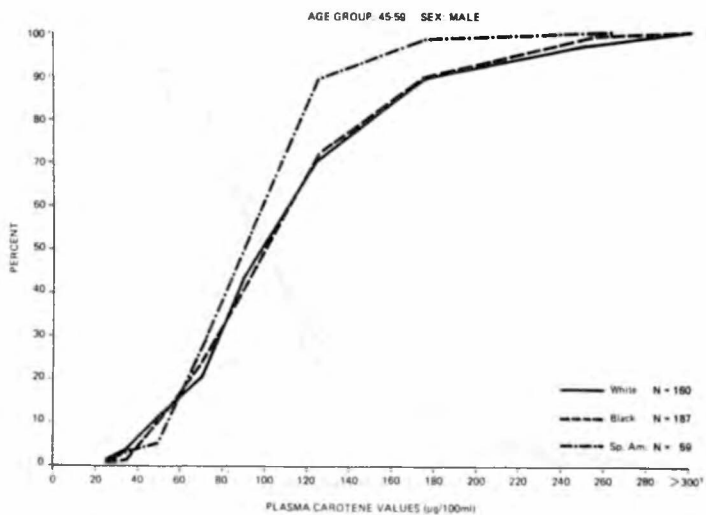
Figure 3e Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Low Income Ratio States—Tus-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference: 3F Appendix

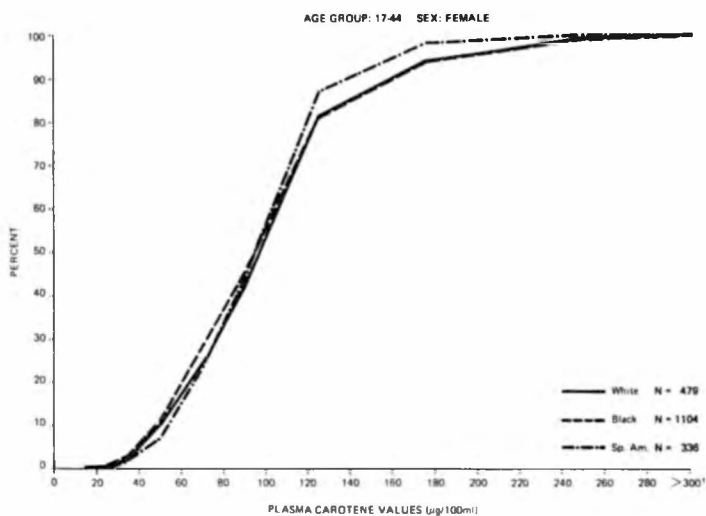
Figure 3g Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Low Income Ratio States—Tus-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference: 3H Appendix

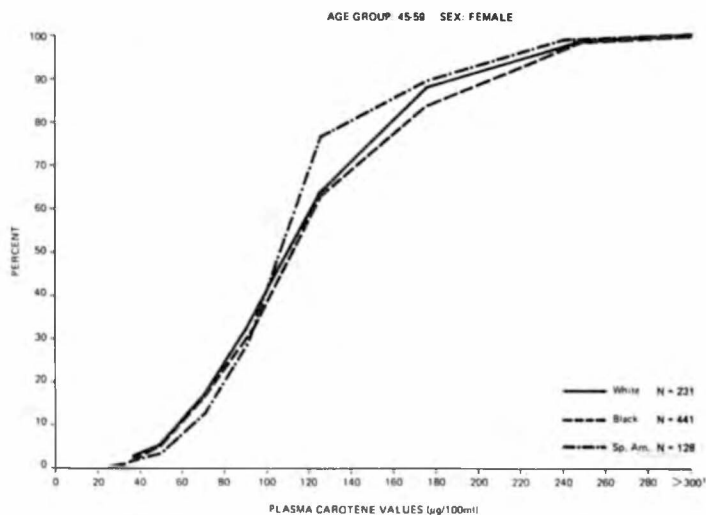
Figure 3f Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference: 3G Appendix.

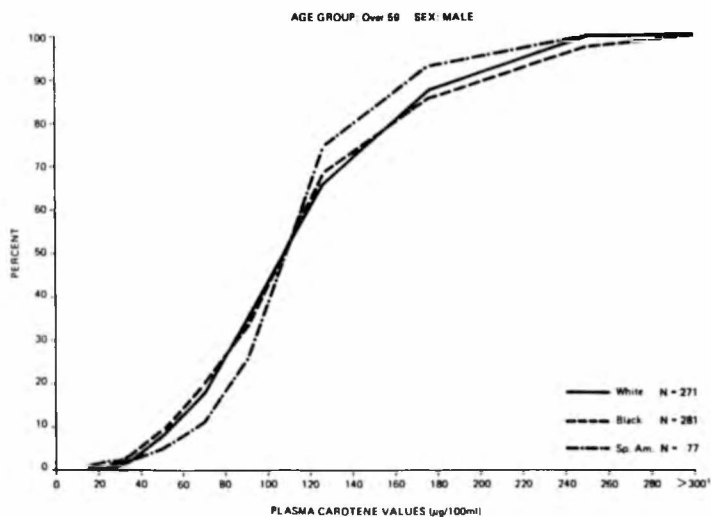
Figure 3h Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference: 3I Appendix.

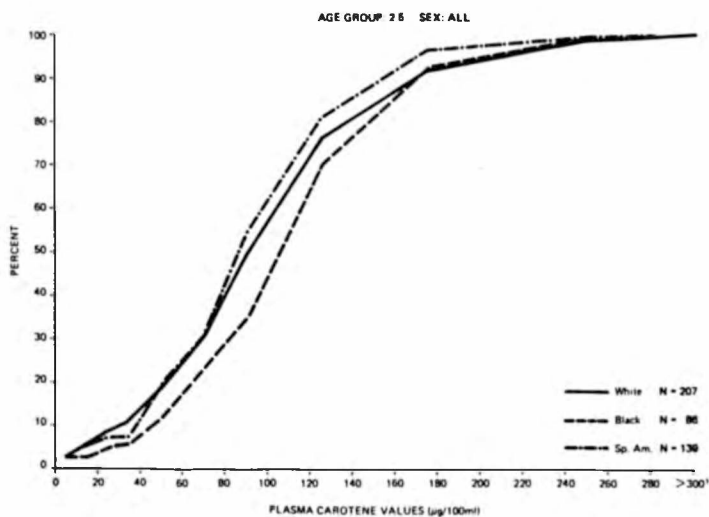
Figure 3i Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference 3i Appendix.

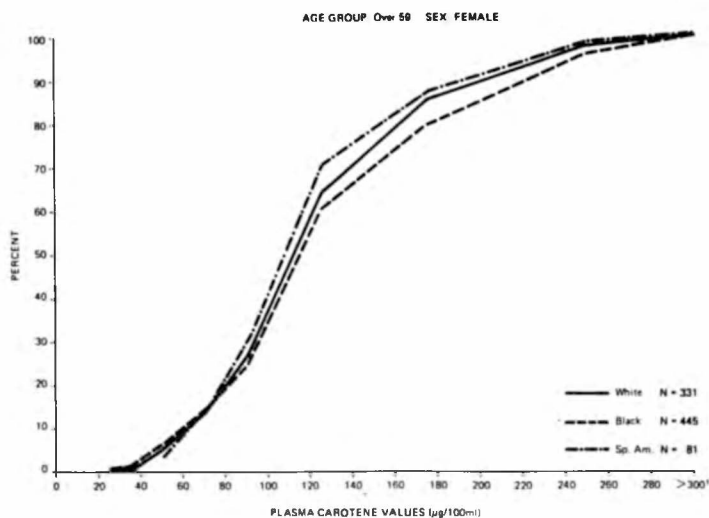
Figure 4a Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference 4a Appendix.

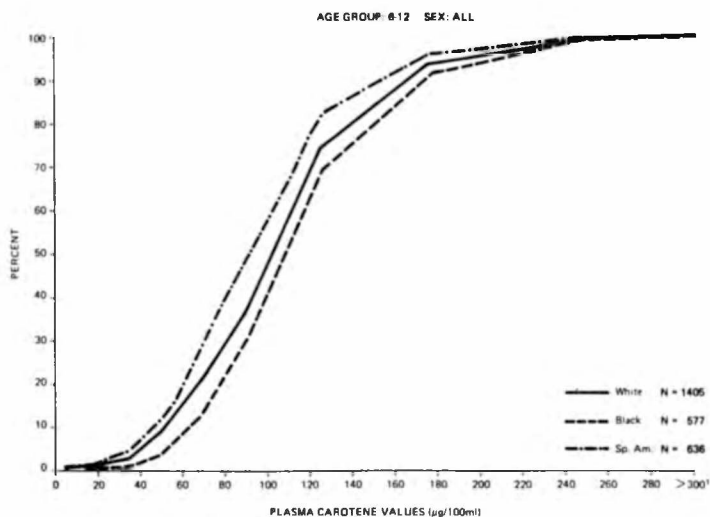
Figure 3j Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference: 3K Appendix

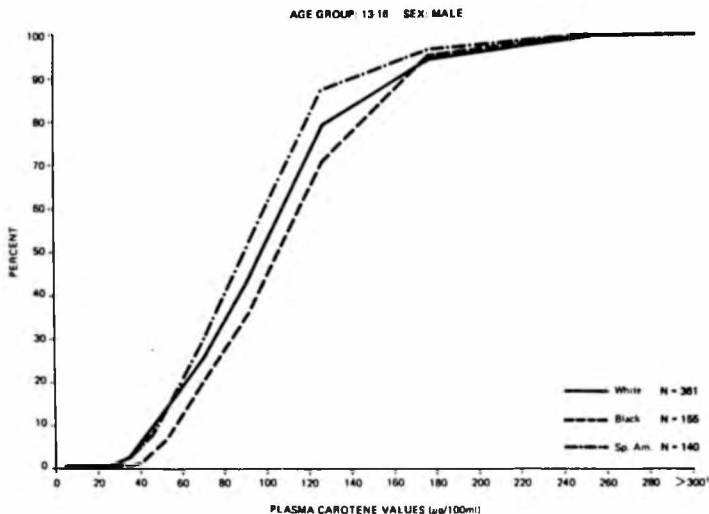
Figure 4b Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference: 4C Appendix

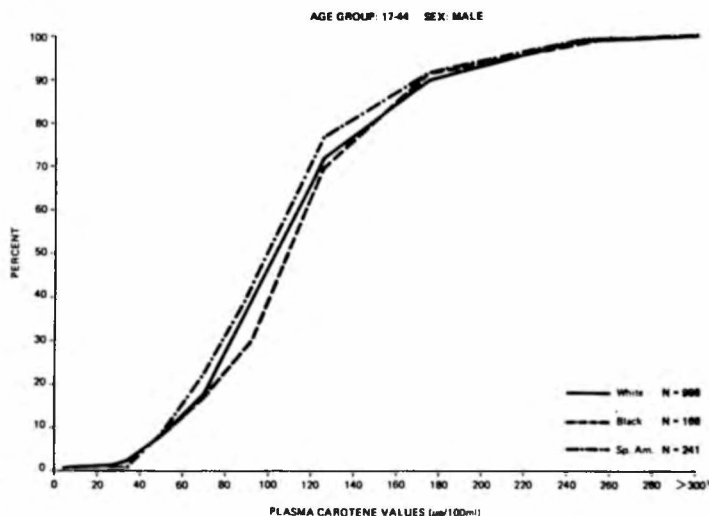
Figure 4c Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for High Income Rate States—Ten State Nutrition Survey (1968-1976)



¹ All Values > 299

Table Reference: 4D Appendix

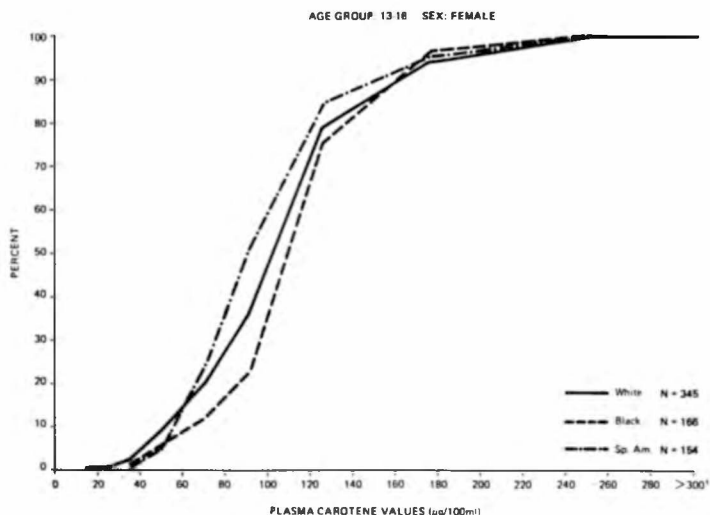
Figure 4e Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for High Income Rate States—Ten State Nutrition Survey (1968-1976)



¹ All Values > 299

Table Reference: 4E Appendix

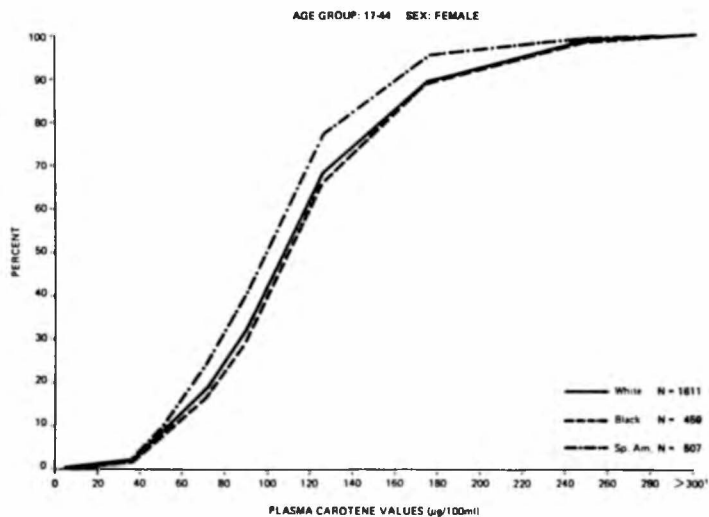
Figure 4d Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference: 4E Appendix

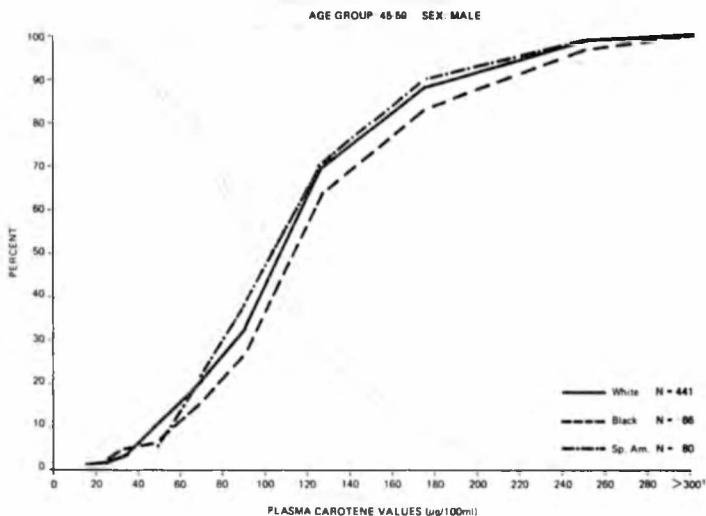
Figure 4f Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference: 4G Appendix

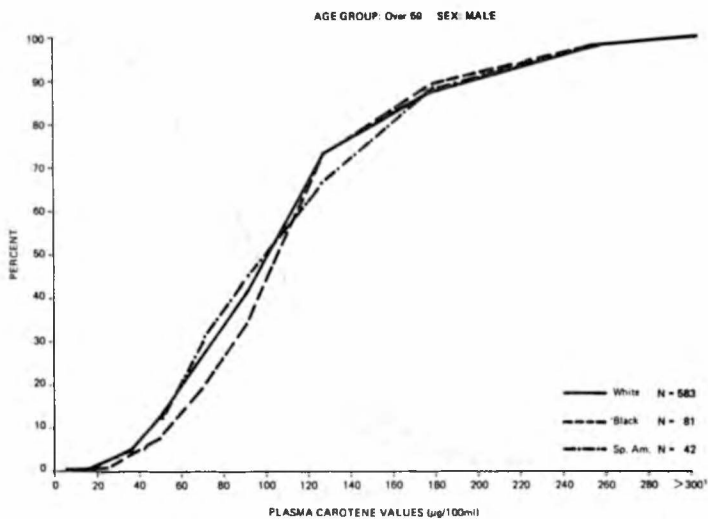
Figure 4g Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference: 4H Appendix.

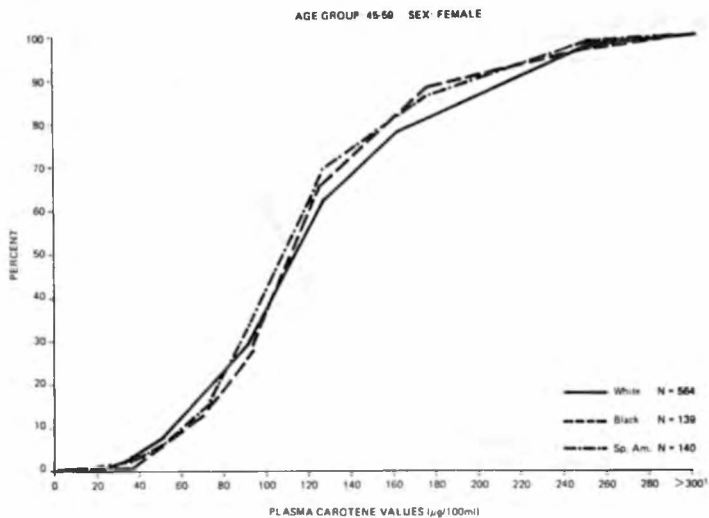
Figure 4I Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All Values > 299

Table Reference: 4J Appendix.

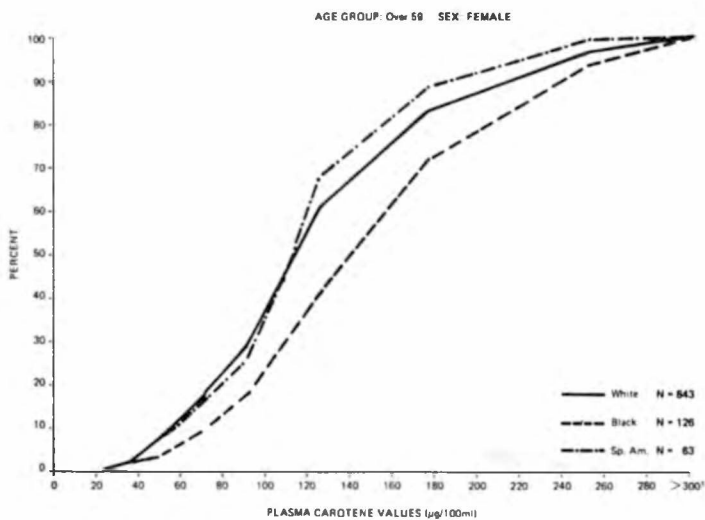
Figure 4b Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



*All Values > 299

Table Reference: 4b Appendix

Figure 4j Appendix—Cumulative Percentage Distribution of Plasma Carotene Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



*All Values > 299

Table Reference: 4j Appendix

Table 5A Appendix. *Percent of Persons Having Deficient or Low Plasma Vitamin A Values by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
Combined	2952	0.6	5.1	6225	0.8	8.2	1712	4.0	29.1
<0.50	357	1.1	7.8	1483	0.7	10.4	444	5.8	36.3
0.50-0.99	658	0.9	4.9	2079	1.5	8.8	606	5.1	25.7
1.00-1.99	711	0.6	5.8	854	0.2	7.5	307	2.6	20.8
2.00-2.99	318	0.0	6.3	148	2.0	6.1	44	0.0	18.2
>2.99	242	0.8	2.9	78	0.0	1.3	34	0.0	17.6
Unknown	666	0.2	3.6	1583	0.1	6.3	277	1.1	37.5

Table 5B Appendix. *Percent of Persons Having Deficient or Low Plasma Vitamin A Values by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
Combined.....	7224	1.1	6.4	1970	0.6	5.5	2051	0.2	2.1
<0.50.....	229	1.3	6.1	89	0.0	4.5	86	0.0	2.3
0.50-0.99.....	842	0.7	5.0	489	1.6	5.7	526	0.0	1.9
1.00-1.99.....	2237	1.4	7.6	702	0.4	7.5	829	0.5	2.4
2.00-2.99.....	1532	1.0	6.1	243	0.0	2.5	186	0.0	2.7
>2.99.....	1690	0.9	6.0	156	0.0	5.1	80	1.3	0.0
Unknown.....	694	1.4	5.8	291	0.0	3.4	344	0.0	1.7

Plasma Vitamin A Deficient and Low Value Classifications ($\mu\text{g}/100\text{ml}$)		
	Deficient	Low
All Ages.....	<10	10-19

Table 6 Appendix. *Quartile Intervals of Plasma Vitamin A Values for Corresponding Vitamin A Intakes for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Plasma Vitamin A Quartile	Age Group				Pregnant or Lactating Females	All Persons 60 Years of Age and Over
	0-36 Months	10-11 Years	12-14 Years	15-16 Years		
Number.....	221	1399	2359	846	389	1654
First Quartile.....	<22	<22	<26	<27	<30	<38
Second Quartile.....	22-29	22-30	26-33	27-36	30-38	38-50
Third Quartile.....	30-38	31-39	34-40	37-45	39-47	51-65
Fourth Quartile.....	>38	>39	>40	>45	>47	>65

Figure 5a Appendix—Mean Plasma Carotene Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

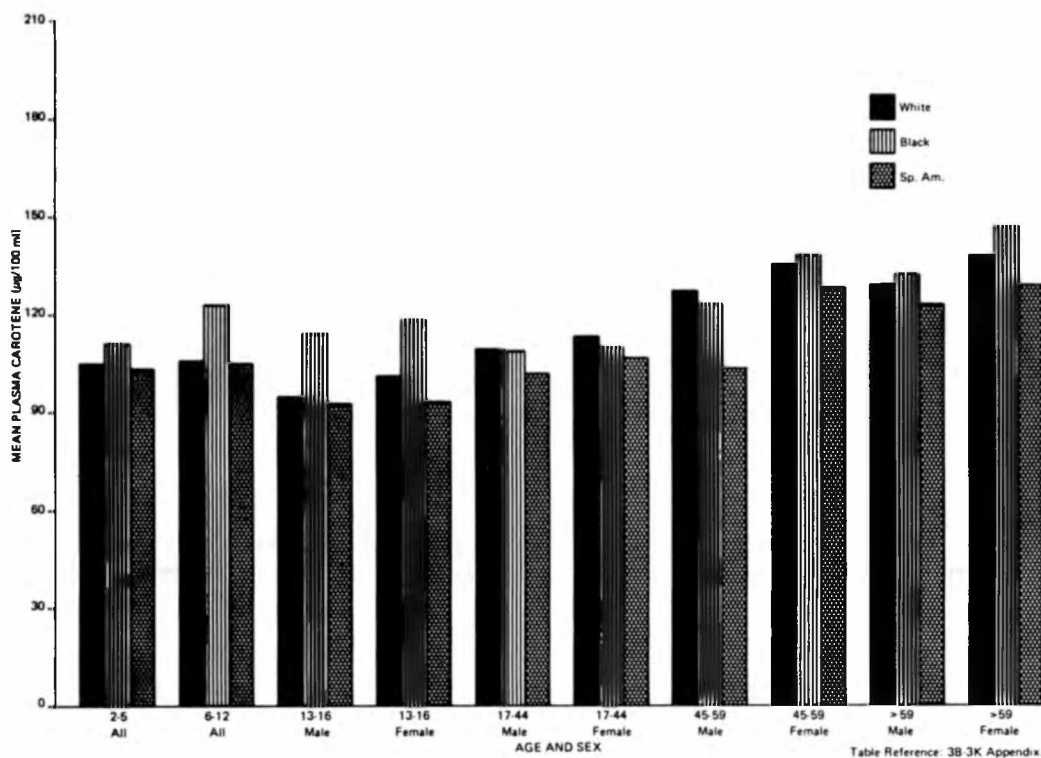


Figure 5b Appendix—Mean Plasma Carotene Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

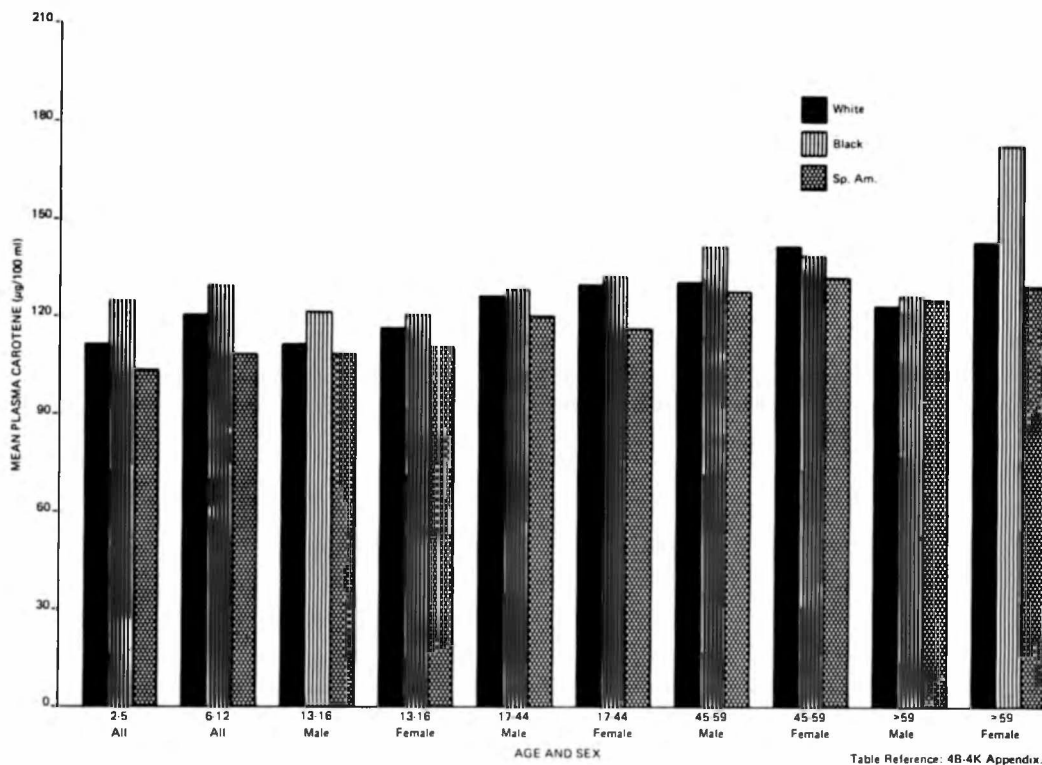


Figure 6a Appendix—Percent of Persons Having Deficient or Low Plasma Carotene Values
by Age, Sex, and Ethnic Group for Low Income Ratio States—
Ten-State Nutrition Survey (1968-1970)

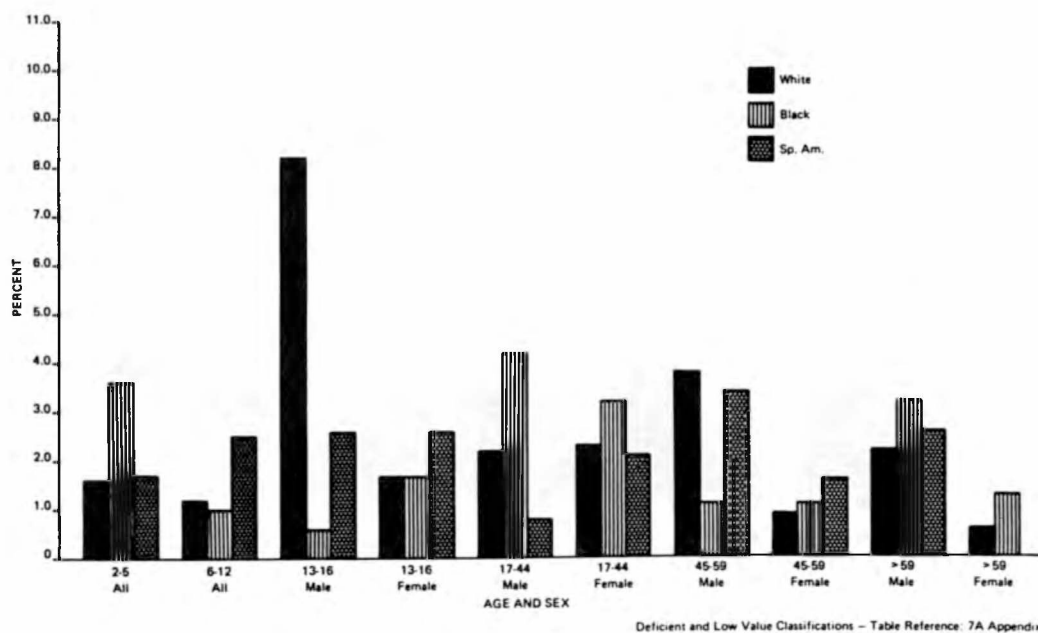


Figure 6b Appendix—Percent of Persons Having Deficient or Low Plasma Carotene Values
by Age, Sex, and Ethnic Group for High Income Ratio States—
Ten-State Nutrition Survey (1968-1970)

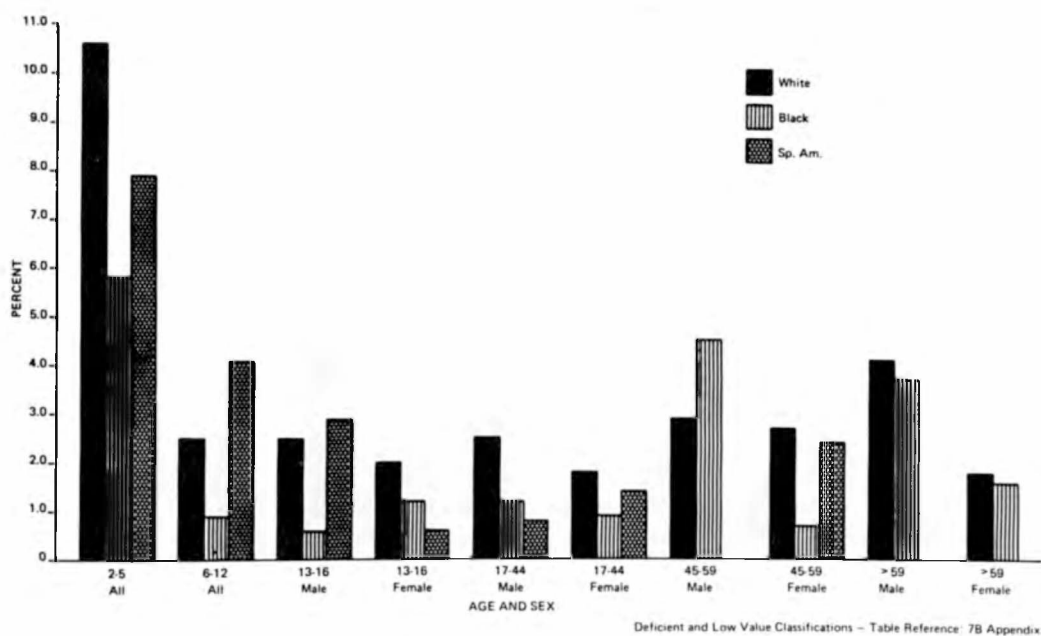


Table 7A Appendix. *Percent of Persons Having Deficient or Low Plasma Carotene Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	2948	0.2 ²	2.0	6818	0.2 ²	2.0	1716	0.4 ²	1.9
<2 All	13		0.0	78		11.5	10		0.0
2-5 All	184		1.6	581		3.6	117		1.7
6-12 All	687		1.2	1837		1.0	516		2.5
13-16 Male	183		8.2	477		0.6	116		2.6
13-16 Female	175		1.7	536		1.7	151		2.6
17-44 Male	230	0.0	2.2	334	0.3	4.2	122	0.8	0.0
17-44 Female	479	0.4	1.9	1104	0.5	2.7	336	0.3	1.8
45-59 Male	160	0.0	3.8	187	0.0	1.1	59	0.0	3.4
45-59 Female	231	0.0	0.9	441	0.0	1.1	128	0.0	1.6
>59 Male	271	0.4	1.8	281	0.0	3.2	77	1.3	1.3
>59 Female	331	0.0	0.6	445	0.0	1.3	81	0.0	0.0

Table 7B Appendix. *Percent of Persons Having Deficient or Low Plasma Carotene Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

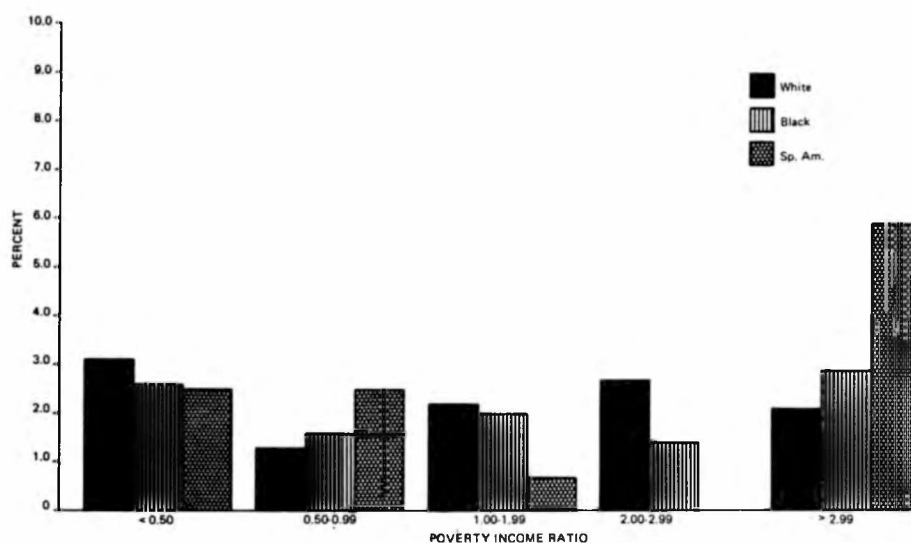
Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	7373	0.3 ²	2.5	2029	0.2 ²	1.3	2162	0.0	2.6
<2 All	13		7.7	5		0.0	10		20.0
2-5 All	207		10.6	86		5.8	139		7.9
6-12 All	1405		2.5	577		0.9	636		4.1
13-16 Male	361		2.5	155		0.6	140		2.9
13-16 Female	345		2.0	166		1.2	154		0.6
17-44 Male	998	0.5	2.0	168	0.0	1.2	241	0.0	0.8
17-44 Female	1611	0.2	1.6	459	0.2	0.7	507	0.0	1.4
45-59 Male	441	0.2	2.7	66	0.0	4.5	80	0.0	0.0
45-59 Female	564	0.4	2.3	139	0.0	0.7	140	0.0	2.4
>59 Male	583	0.3	3.8	81	1.2	2.5	42	0.0	0.0
>59 Female	843	0.0	1.8	126	0.0	1.6	63	0.0	0.0

¹ Total includes persons with unknown age and unknown sex.

² Based on values for persons over sixteen years of age.

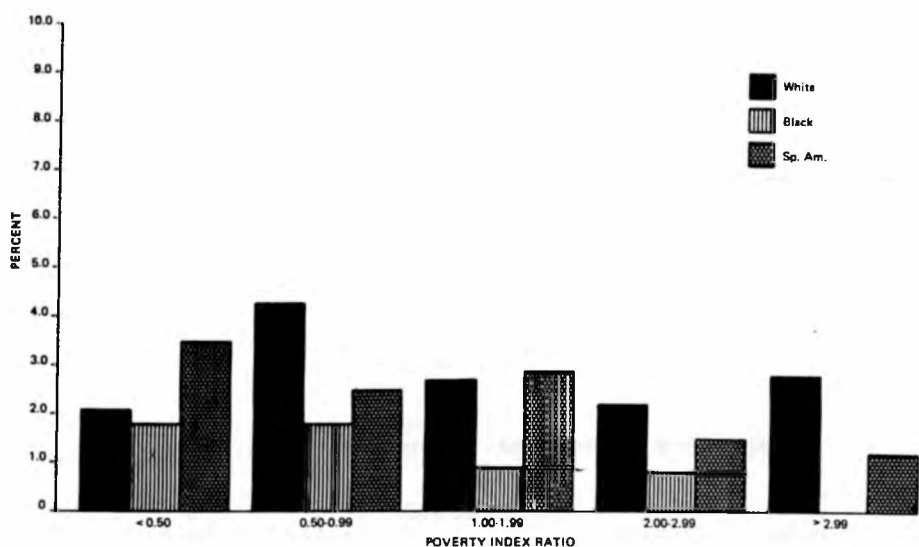
Plasma Carotene Deficient and Low Value Classifications ($\mu\text{g}/100\text{ml}$)		
	Deficient	Low
≤ 16	Standard not Available <20	<40
≥ 17		20-39

Figure 7a Appendix—Percent of Persons Having Deficient or Low Plasma Carotene Values by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States
—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classifications - Table Reference: BA Appendix.

Figure 7b Appendix—Percent of Persons Having Deficient or Low Plasma Carotene Values by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States
—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classifications - Table Reference: BB Appendix.

Table 8A Appendix. *Percent of Persons Having Deficient or Low Plasma Carotene Values by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values ¹	Low Values		Deficient Values ¹	Low Values		Deficient Values ¹	Low Values
Combined.....	2948	0.2	2.0	6318	0.2	2.0	1716	0.4	1.9
<0.50.....	358	0.0	3.1	1496	0.6	2.0	444	0.0	2.5
0.50-0.99.....	654	0.2	1.1	2110	0.0	1.6	607	0.4	2.1
1.00-1.99.....	712	0.0	2.2	861	0.0	2.0	307	0.0	0.7
2.00-2.99.....	317	0.5	2.2	148	0.0	1.4	45	0.0	0.0
>2.99.....	241	0.0	2.1	80	1.7	1.2	34	0.0	5.9
Unknown.....	666	0.0	2.1	1623	0.3	2.5	279	1.6	1.8

Table 8B Appendix. *Percent of Persons Having Deficient or Low Plasma Carotene Values by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values ¹	Low Values		Deficient Values ¹	Low Values		Deficient Values ¹	Low Values
Combined.....	7373	0.3	2.5	2029	0.2	1.3	2162	0.0	2.6
<0.50.....	234	0.0	2.1	97	1.8	0.0	86	0.0	3.5
0.50-0.99.....	855	0.5	3.8	504	0.0	1.8	560	0.0	2.5
1.00-1.99.....	2281	0.3	2.4	724	0.3	0.6	872	0.0	2.9
2.00-2.99.....	1572	0.3	1.9	249	0.0	0.8	195	0.0	1.5
>2.99.....	1732	0.2	2.6	161	0.0	0.0	84	0.0	1.2
Unknown.....	699	0.2	2.1	294	0.0	3.7	365	0.0	3.0

¹ Based on values for persons over sixteen years of age.

Plasma Carotene Deficient and Low Value Classifications ($\mu\text{g}/100\text{ml}$)		
	Deficient	Low
≤ 16	Standard not Available <20	<40
≥ 17		20-39

5. VITAMIN C

Abstract: *The data presented in this section do not show cause for serious concern with the vitamin C nutriture of the populations surveyed. In all the subgroups of the population there was generally a low prevalence of "deficient" and "low" vitamin C values. A detailed analysis of these population subgroups did reveal a somewhat higher prevalence of "deficient" and "low" values among blacks in the low-income-ratio states and among males as compared to females. The data also indicated a clear relationship between vitamin C intake and serum vitamin C levels that was due more to quality differences than to quantity of food intake.*

Vitamin C is a water-soluble vitamin. Therefore, any excess intake over the amount needed to maintain tissue saturation is rapidly excreted from the body. Serum concentrations of the vitamin reflect immediate past dietary intakes. This is particularly true for nonfasting samples such as those obtained during the Ten-State Nutrition Survey. However, it is generally considered that low concentrations of serum vitamin C reflect unsatisfactory vitamin C status.

The analysis of control samples showed some variation among participating laboratories. The control samples contained very low concentrations of vitamin C so that some increase in the variability of results was inevitable. There was less variation at higher levels of serum vitamin C. Classification of persons as having "deficient" and "low" values would be subject to the variation inherent in the analysis of samples with low concentration of vitamin C.

MEAN SERUM VITAMIN C VALUES

Mean serum vitamin C values by age, sex, and ethnic group are shown in Figures 1a and 1b for the low- and high-income-ratio states. Mean values were often as much as three times higher than the upper limit of the range of values used for the classification of "low" values.

Mean vitamin C values were generally higher in the high-income-ratio states. In this group of states, ethnic group differences were not striking, although blacks tended to have somewhat lower mean levels. In the low-income-ratio states, Spanish-Americans, predominantly Mexican-Americans in Texas, had consistently higher mean vitamin C levels than whites or blacks.

In the high-income-ratio states, for all age and ethnic groups, the mean vitamin C values were higher for females than for males. This was also true in the low-income-ratio states with the exception of the white and black populations 13- to 16-years of age and the Spanish-American populations 17- to 44-years of age. There was a trend towards decreasing mean serum vitamin C values with age up to age 45 years, although there were some differences between ethnic groups in this respect.

DEFICIENT AND LOW VITAMIN C VALUES

Ethnic Differences

The prevalence of persons having "deficient" and "low" vitamin C values was higher in the low-income-ratio states than in the high-income-ratio states. This was true for all ethnic groups (Tables 1A and 2A).

In the low-income-ratio states, the prevalence of "deficient" values was essentially the same for all ethnic groups. The prevalence of "low" values was generally highest for black persons and lowest for the Spanish-American population, although there was some variation among age and sex subgroups (Table 1A). In the high-income-ratio states, there was little difference among ethnic groups in the percentage of persons with either "deficient" or "low" values (Table 2A).

Age and Sex Differences

In both groups of states there was a trend towards higher percentages of "deficient" and "low" values with increasing age. This is apparent

in Figures 2a and 2b, which show graphically the combined percentages of "deficient" and "low" values by age, sex, and ethnic group.

The percentage of combined "deficient" and "low" values was generally higher for males than for females. This was true for all groups with the exception of white persons age 13- to 16-years and Spanish-American persons age 17- to 44-years in the low-income-ratio states (Figure 2a).

Poverty-Income-Ratio Comparison

Separation of the population in the low-income-ratio states into subgroups with Poverty Income Ratio (PIR) values less than one, greater than one, and unknown showed that serum vitamin C levels were little influenced by income (Tables 1B, 1C and 1D). A similar separation by PIR in the high-income-ratio states revealed only slight differences in the percentage of "deficient" and "low" values among the different PIR groups (Tables 2B-D). For corresponding PIR groups, there were more persons with "deficient" and "low" values in the low-income-ratio states than in the high-income-ratio states.

The prevalence of "deficient" and "low" values for persons in each of five PIR groups gave support to the conclusion that serum vitamin C levels were not related to income (Figures 3a and 3b).

It should be noted that the differences between various subgroups (by age, sex, ethnic group, PIR values) were often relatively small and in many instances were within the degree of variation seen for the analytical method at low levels of serum vitamin C.

SERUM VITAMIN C AND DIETARY VITAMIN C INTAKE

The relationship between serum vitamin C values and vitamin C intakes was evaluated by dividing the populations for which dietary data were available into quartiles based on serum vitamin C levels. For all population groups, the mean vitamin C intake increased from the first through the fourth quartile (Table 3). For the youngest group, aged 0-36 months, and for 15- and 16-year-old persons, the mean intake of individuals in the fourth quartile was more than double that of persons in the first quartile. For the other groups, the mean vitamin C intakes for persons in the fourth quartile were from about 70 to 90 percent higher than the means for individuals in the first quartile.

In general, the correlation between serum and dietary vitamin C (0.17 to 0.26) was higher than that observed between other biochemical parameters and the appropriate dietary constituent (Table 3).

Mean vitamin C intakes were generally higher than the dietary standard of 30 mg./individual. The first quartile of the 15- to 16-year-old adolescents and the first two quartiles of persons 60-years-old and over had mean intakes somewhat lower than the standard.

The mean values for the intake of vitamin C per 1000 calories increased from the first through the fourth quartile for all population groups, with few exceptions (Table 3). Thus, vitamin C intakes did not appear to be dependent upon overall caloric intake. This was not an unexpected finding, since the foods considered to be good or rich sources of this vitamin have a relatively low caloric value. The data suggest that vitamin C levels are related to food choice. It appears that persons in the lower quartiles of serum vitamin C levels are consuming foods of lower quality with respect to vitamin C content. For all of the selected population groups, serum vitamin C values for each of the four quartiles are shown in Appendix Table 3.

SUMMARY

Vitamin C status was less satisfactory in the low-income-ratio states than in the high-income-ratio states. In the low-income-ratio states, the black population had the poorest vitamin C status. There was little difference between the white and the Spanish-American populations. In the high-income-ratio states, there was no apparent difference in vitamin C status between ethnic groups.

Vitamin C status was better for children than for adults and was poorer in males than in females of all age groups. This was true in both groups of states and for all ethnic groups.

There did not appear to be any significant relationship between vitamin C status and income level within either group of states. However, for a given PIR value, the status of persons in the low-income-ratio states was poorer than that of individuals in the same PIR group in the high-income-ratio states.

Serum vitamin C values were related to vitamin C intakes. For the age groups evaluated, mean dietary vitamin C increased from the first through the fourth quartile of serum vitamin C values. The data suggest that selection of foods

with higher vitamin C content, rather than an increase in the quantity of foods eaten, leads to higher levels of serum vitamin C.

The data presented in this section seem to indicate that there is not a major problem with vitamin C nutriture in the populations studied. Any surveillance system designed to monitor the nutritional status of population groups should take into consideration the findings of this survey, i.e., the higher prevalence of "deficient" and "low"

values in the low-income-ratio states, in general among blacks in the low-income-ratio states, and among males as compared to females.

The clear-cut relationship between dietary intake and serum vitamin C levels together with the lack of a relationship of vitamin C intake to caloric intake, provides a rationale for planning intervention programs designed to increase vitamin C intakes where a need is identified.

Figure 1a—Mean Serum Vitamin C Values by Age, Sex and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

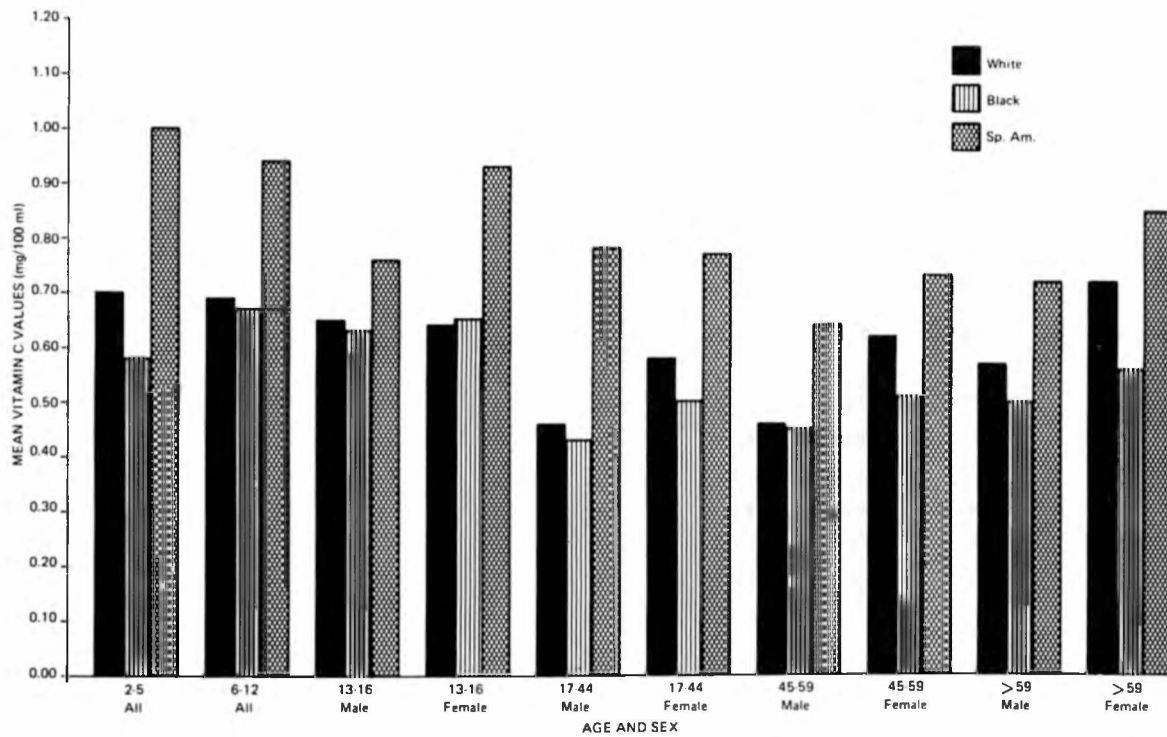


Table Reference: 1B-1K Appendix.

Figure 1b—Mean Serum Vitamin C Values by Age, Sex and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

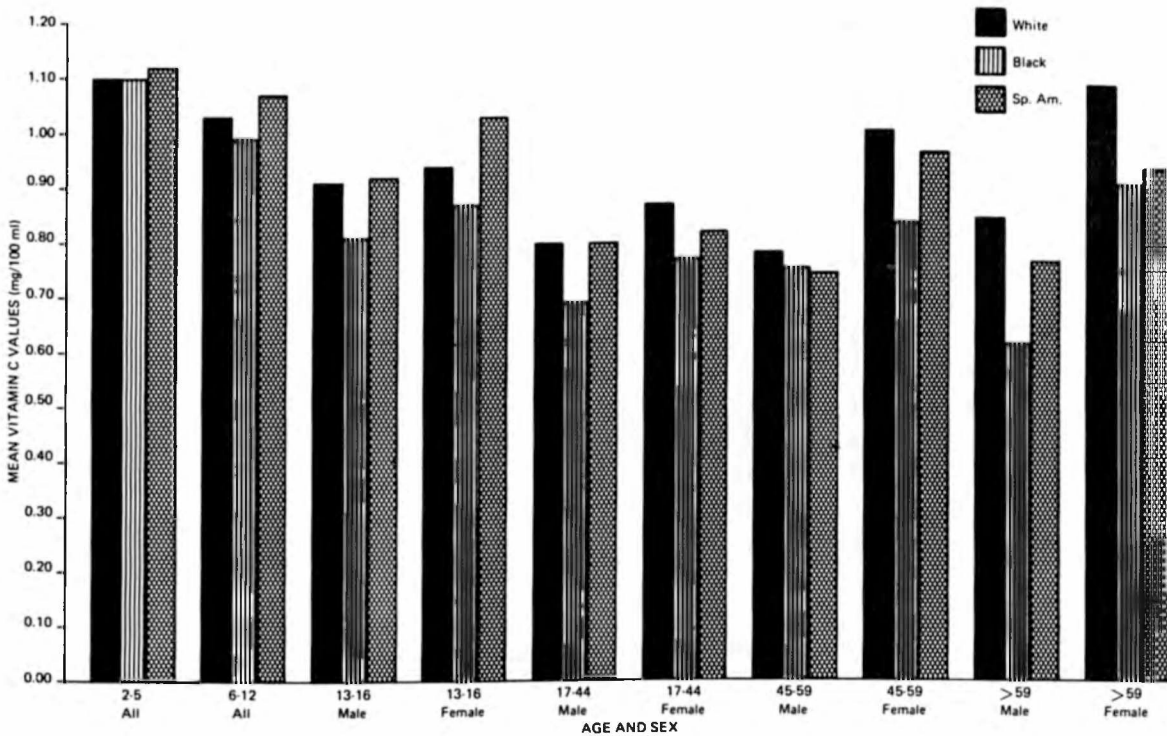


Table Reference: 2B-2K Appendix.

Table 1A. *Percent of Persons Having Deficient or Low Serum Vitamin C Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	3025	2.3	6.5	5909	2.5	8.5	1526	2.9	4.9
<2 All.....	28	0.0	0.0	75	4.0	9.3	4	0.0	25.0
2-5 All.....	215	0.0	5.6	523	3.3	6.5	68	1.5	1.5
6-12 All.....	704	1.0	4.5	1649	1.9	5.5	427	3.5	3.5
13-16 Male.....	181	0.0	8.8	442	1.4	7.9	115	5.2	3.5
13-16 Female.....	186	6.5	4.3	498	2.0	6.8	146	1.4	6.2
17-44 Male.....	225	2.2	12.9	330	3.9	14.2	121	2.5	5.8
17-44 Female.....	470	3.4	5.3	1075	3.0	11.1	312	3.2	5.8
45-59 Male.....	160	3.1	11.9	182	4.4	12.6	61	1.6	8.2
45-59 Female.....	250	2.8	6.0	418	3.1	9.8	121	0.0	7.4
>59 Male.....	272	5.1	8.5	272	4.0	14.3	71	7.0	8.5
>59 Female.....	326	1.2	5.8	485	1.4	7.8	77	2.6	0.0

Table 1B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Serum Vitamin C Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	1080	3.0	6.7	3307	2.4	6.9	913	2.8	5.0
<2 All.....	9	0.0	0.0	43	0.0	11.6	2	0.0	50.0
2-5 All.....	81	0.0	4.9	280	2.9	5.7	42	2.4	0.0
6-12 All.....	235	1.7	4.3	979	2.1	4.1	274	2.6	3.3
13-16 Male.....	75	0.0	8.0	261	1.1	5.7	70	5.7	2.9
13-16 Female.....	62	11.3	3.2	298	2.0	8.1	101	2.0	7.9
17-44 Male.....	43	4.7	16.3	148	2.7	8.8	70	2.9	4.3
17-44 Female.....	128	5.5	4.7	574	2.4	9.4	172	4.1	5.2
45-59 Male.....	46	4.3	6.5	74	6.8	10.8	30	0.0	10.0
45-59 Female.....	93	1.1	4.3	192	5.2	8.3	63	0.0	9.5
>59 Male.....	139	4.3	10.1	165	3.0	13.3	38	5.3	13.2
>59 Female.....	162	1.9	9.9	285	0.7	5.6	49	2.0	0.0

¹ Total includes persons with unknown age and unknown sex.

Serum Vitamin C Deficient and Low Value Classifications (mg/100ml)		
	Deficient	Low
All Ages.....	<0.10	0.10-0.19

Table 1C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Serum Vitamin C Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	1292	2.0	6.0	1036	1.8	8.2	353	2.3	4.8
<2 All.....	10	0.0	0.0	7	28.6	28.6	2	0.0	0.0
2-5 All.....	81	0.0	2.5	54	1.9	5.6	13	0.0	7.7
6-12 All.....	285	0.7	4.6	253	0.8	4.7	79	1.3	2.5
13-16 Male.....	76	0.0	5.8	67	1.5	9.0	20	10.0	0.0
13-16 Female.....	76	2.6	6.6	79	2.5	2.5	19	0.0	5.3
17-44 Male.....	184	1.5	11.9	85	3.5	11.8	40	2.5	7.5
17-44 Female.....	244	2.5	5.3	209	1.4	12.4	75	1.3	9.8
45-59 Male.....	84	3.6	16.7	57	1.8	14.0	24	4.2	4.2
45-59 Female.....	103	4.9	3.9	105	1.9	6.7	40	0.0	2.5
>59 Male.....	86	7.0	5.8	58	1.7	6.9	22	9.1	4.5
>59 Female.....	112	0.0	1.8	60	1.7	8.3	18	0.0	0.0

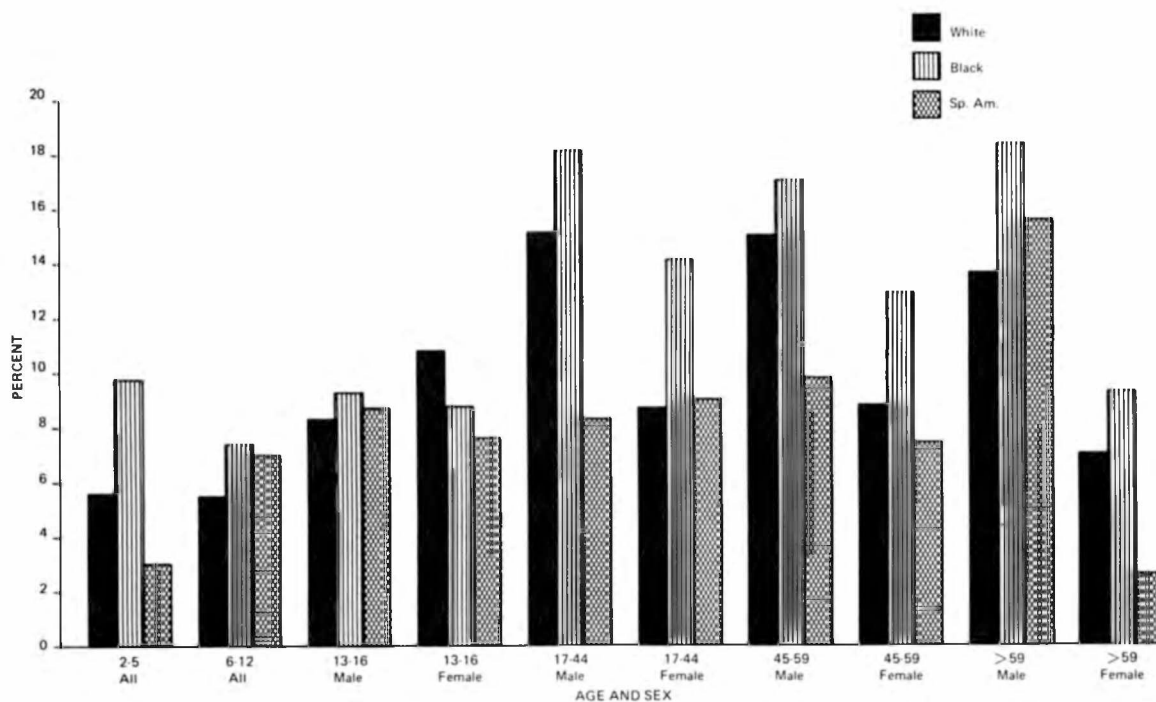
Table 1D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Serum Vitamin C Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	653	1.8	7.2	1566	3.4	12.1	260	4.2	4.6
<2 All.....	9	0.0	0.0	25	4.0	0.0	—	—	—
2-5 All.....	53	0.0	11.3	189	4.2	7.9	13	0.0	0.0
6-12 All.....	184	0.5	4.9	417	1.9	9.1	74	9.5	5.4
13-16 Male.....	30	0.0	16.7	114	1.8	12.3	25	0.0	8.0
13-16 Female.....	48	6.2	2.1	121	1.7	6.6	26	0.0	0.0
17-44 Male.....	48	2.1	12.5	97	6.2	24.7	11	0.0	9.1
17-44 Female.....	98	3.1	6.1	292	5.1	13.4	65	3.1	3.1
45-59 Male.....	30	0.0	6.7	51	3.9	13.7	7	0.0	14.3
45-59 Female.....	54	1.9	13.0	121	0.8	14.9	18	0.0	11.1
>59 Male.....	47	4.3	8.5	49	10.2	26.5	11	9.1	0.0
>59 Female.....	52	1.9	1.9	90	3.3	14.4	10	10.0	0.0

¹ Total includes persons with unknown age and unknown sex.

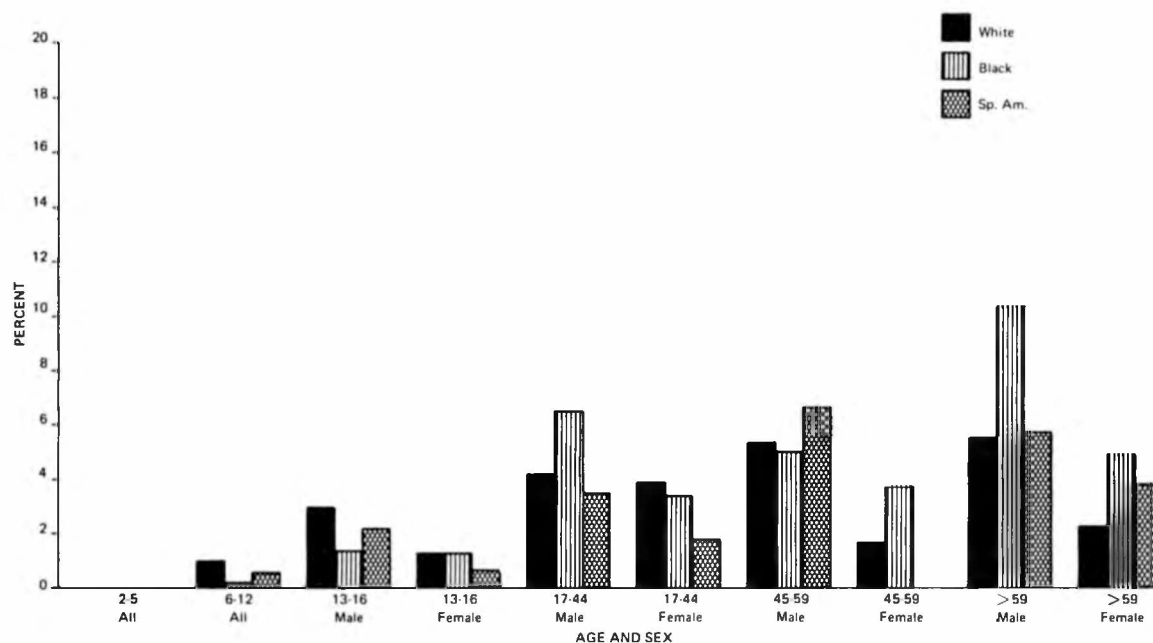
Serum Vitamin C Deficient and Low Value Classifications (mg/100ml)		
	Deficient	Low
All Ages.....	<0.10	0.10-0.19

Figure 2a—Percent of Persons Having Deficient or Low Serum Vitamin C Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classifications — Table Reference: 1D.

Figure 2b—Percent of Persons Having Deficient or Low Serum Vitamin C Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classifications — Table Reference: 2D.

Table 2A. *Percent of Persons Having Deficient or Low Serum Vitamin C Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	7815	0.5	2.5	1849	0.8	2.6	1881	0.8	1.6
<2 All	6	0.0	16.7	2	0.0	0.0	1	0.0	100.0
2-5 All	208	0.0	0.0	54	0.0	0.0	60	0.0	0.0
6-12 All	1477	0.1	0.9	488	0.0	0.2	468	0.0	0.6
18-16 Male	408	0.5	2.5	147	0.0	1.4	184	0.7	1.5
18-16 Female	898	0.5	0.8	152	0.0	1.8	149	0.0	0.7
17-44 Male	1057	0.8	8.4	169	0.0	6.5	227	0.9	2.6
17-44 Female	1776	0.6	8.8	441	0.7	2.7	494	0.2	1.6
45-59 Male	451	1.1	4.2	60	0.0	5.0	75	1.8	5.8
45-59 Female	589	0.0	1.7	186	0.0	8.7	180	0.0	0.0
>59 Male	595	1.8	4.2	78	1.8	9.0	85	0.0	5.7
>59 Female	858	0.1	2.2	121	0.8	4.1	52	0.0	8.8

Table 2B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Serum Vitamin C Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	1171	0.5	2.8	585	0.7	1.9	586	0.4	1.7
<2 All	8	0.0	88.8	—	—	—	—	—	—
2-5 All	42	0.0	0.0	23	0.0	0.0	25	0.0	0.0
6-12 All	281	0.0	0.9	160	0.0	0.0	146	0.0	1.4
18-16 Male	44	0.0	4.5	39	0.0	0.0	45	0.0	0.0
18-16 Female	47	0.0	0.0	42	0.0	4.8	58	0.0	0.0
17-44 Male	112	0.9	4.5	37	0.0	5.4	38	2.6	7.9
17-44 Female	256	0.4	4.8	180	1.5	2.8	144	0.7	2.1
45-59 Male	46	2.2	2.2	17	0.0	0.0	20	0.0	0.0
45-59 Female	46	0.0	2.2	28	0.0	0.0	38	0.0	0.0
>59 Male	111	1.8	5.4	22	4.5	18.6	10	0.0	10.0
>59 Female	288	0.4	1.7	37	2.7	0.0	14	0.0	0.0

¹ Total includes persons with unknown age and unknown sex.

Serum Vitamin C Deficient and Low Value Classifications (mg/100ml)		
	Deficient	Low
All Ages	<0.10	0.10-0.19

Table 2C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Serum Vitamin C Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	5877	0.5	2.5	1050	0.1	3.0	969	0.2	1.8
<2 All	8	0.0	0.0	1	0.0	0.0	1	0.0	100.0
2-5 All	144	0.0	0.0	25	0.0	0.0	23	0.0	0.0
6-12 All	1101	0.2	0.7	268	0.0	0.4	244	0.0	0.4
13-16 Male	300	0.7	2.3	80	0.0	2.5	66	1.5	3.0
13-16 Female	305	0.7	1.0	89	0.0	0.0	66	0.0	0.0
17-44 Male	841	0.8	3.4	92	0.0	6.5	149	0.7	2.0
17-44 Female	1325	0.7	3.2	248	0.4	3.2	260	0.0	1.5
45-59 Male	376	0.8	4.5	39	0.0	7.7	43	0.0	7.0
45-59 Female	505	0.0	1.6	91	0.0	5.5	66	0.0	0.0
>59 Male	431	1.4	3.7	49	0.0	6.1	21	0.0	4.8
>59 Female	544	0.0	2.6	68	0.0	5.9	30	0.0	6.7

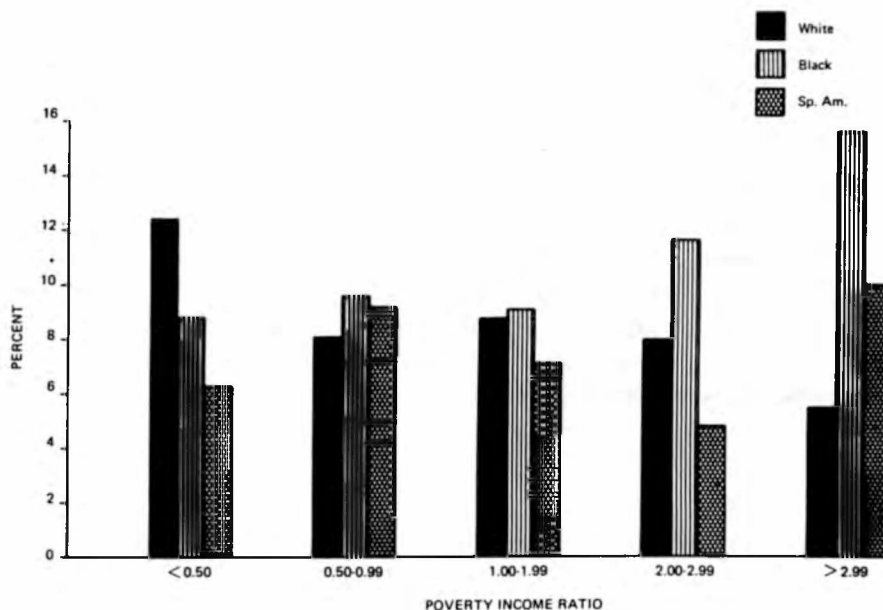
Table 2D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Serum Vitamin C Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	767	0.3	2.2	264	0.0	2.3	326	0.3	0.9
<2 All	—	—	—	1	0.0	0.0	—	—	—
2-5 All	22	0.0	0.0	6	0.0	0.0	12	0.0	0.0
6-12 All	145	0.0	2.1	60	0.0	0.0	78	0.0	0.0
13-16 Male	59	0.0	1.7	28	0.0	0.0	23	0.0	0.0
13-16 Female	41	0.0	0.0	21	0.0	0.0	30	0.0	3.3
17-44 Male	104	0.0	1.9	40	0.0	7.5	40	0.0	0.0
17-44 Female	195	0.5	2.6	63	0.0	1.6	90	0.0	1.1
45-59 Male	29	3.4	3.4	4	0.0	0.0	12	8.3	8.3
45-59 Female	38	0.0	2.6	17	0.0	0.0	26	0.0	0.0
>59 Male	53	0.0	5.7	7	0.0	14.3	4	0.0	0.0
>59 Female	81	0.0	1.2	16	0.0	6.2	8	0.0	0.0

¹ Total includes persons with unknown age and unknown sex.

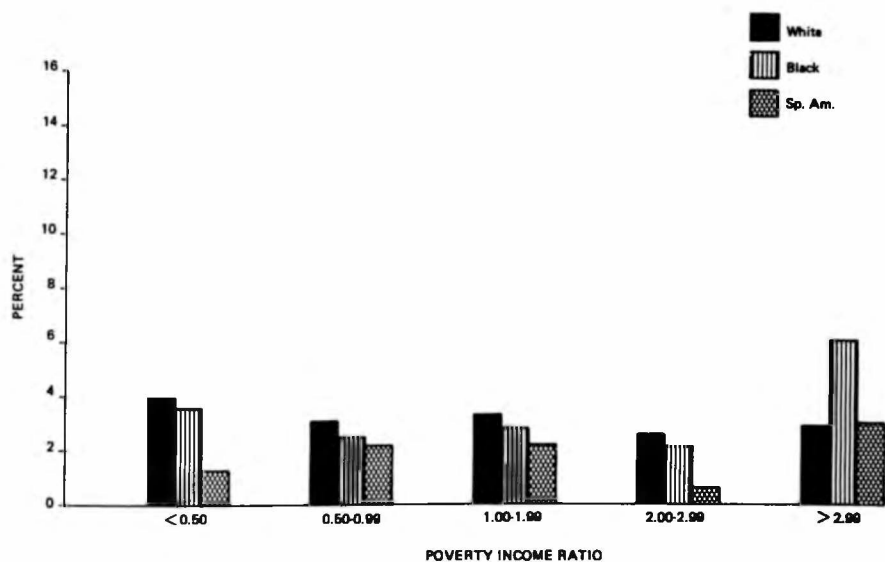
Serum Vitamin C Deficient and Low Value Classifications (mg/100ml)		
	Deficient	Low
All Ages	<0.10	0.10-0.19

Figure 3a—Percent of Persons Having Deficient or Low Serum Vitamin C Values by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classifications — Table Reference: 3A Appendix.

Figure 3b—Percent of Persons Having Deficient or Low Serum Vitamin C Values by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Deficient and Low Value Classifications — Table Reference: 3B Appendix.

Table 3. Means of Vitamin C Intake by Quartile of Serum Vitamin C Values for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Serum Vitamin C Quartile	Age Group								Pregnant or Lactating Females		All Persons 60 Years of Age and Over	
	0-36 Months		10-11 Years		12-14 Years		15-16 Years		mg	mg/1000 Calories	mg	mg/1000 Calories
	mg	mg/1000 Calories	mg	mg/1000 Calories	mg	mg/1000 Calories	mg	mg/1000 Calories				
Number of Persons.....	208	208	1851	1351	2356	2356	852	852	399	399	1655	1655
First Quartile.....	24.68	19.57	49.02	25.58	51.63	27.09	44.88	22.83	66.55	40.88	48.09	33.81
Second Quartile.....	37.64	32.05	59.96	30.27	54.85	26.09	56.27	24.69	94.71	52.71	55.41	40.01
Third Quartile.....	49.29	42.46	75.28	38.03	75.12	35.44	81.88	37.73	98.11	51.53	68.93	48.79
Fourth Quartile.....	57.97	49.40	83.43	41.26	98.86	42.38	106.69	53.21	115.38	55.81	87.14	58.67
Correlation Coefficient.....	0.17		0.19		0.21		0.26		0.13		0.20	

NOTE: For Serum Vitamin C quartile values refer to Table 4 Appendix.

APPENDIX

5. Vitamin C

Table 1A Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for All Persons Under Two Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	28	100.0	100.0	75	100.0	100.0	4	100.0	100.0
<0.10	—	—	—	3	4.0	4.0	—	—	—
0.10-0.19	—	—	—	7	9.3	13.3	1	25.0	25.0
0.20-0.29	3	10.7	10.7	17	22.7	36.0	—	—	25.0
0.30-0.39	2	7.1	17.8	8	10.7	46.7	—	—	25.0
0.40-0.59	3	10.7	28.5	22	29.3	76.0	—	—	25.0
0.60-0.79	8	28.6	57.1	11	14.7	90.7	1	25.0	50.0
0.80-0.99	4	14.3	71.4	6	8.0	98.7	—	—	50.0
1.00-1.19	2	7.1	78.5	1	1.3	100.0	1	25.0	75.0
1.20-1.39	2	7.1	85.6	—	—	100.0	—	—	75.0
1.40-1.59	1	3.6	89.2	—	—	100.0	1	25.0	100.0
1.60-1.79	—	—	89.2	—	—	100.0	—	—	100.0
>1.79	3	10.7	99.9	—	—	100.0	—	—	100.0
Mean	0.86			0.45			0.86		
Median	0.75			0.42			0.80		

Table 1B Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for All Persons Two through Five Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	215	100.0	100.0	523	100.0	100.0	68	100.0	100.0
<0.10	—	—	—	17	3.3	3.3	1	1.5	1.5
0.10-0.19	12	5.6	5.6	34	6.5	9.8	1	1.5	3.0
0.20-0.29	24	11.2	16.8	84	16.1	25.9	3	4.4	7.4
0.30-0.39	30	14.0	30.8	70	13.4	39.3	4	5.9	13.3
0.40-0.59	45	20.9	51.7	112	21.4	60.7	8	11.8	25.1
0.60-0.79	32	14.9	66.6	77	14.7	75.4	5	7.4	32.5
0.80-0.99	30	14.0	80.6	70	13.4	88.8	16	23.5	56.0
1.00-1.19	12	5.6	86.2	22	4.2	93.0	10	14.7	70.7
1.20-1.39	8	3.7	89.9	10	1.9	94.9	4	5.9	76.6
1.40-1.59	8	3.7	93.6	16	3.1	98.0	5	7.4	84.0
1.60-1.79	4	1.9	95.5	9	1.7	99.7	3	4.4	88.4
>1.79	10	4.7	100.2	2	0.4	100.1	8	11.8	100.2
Mean	0.70			0.58			1.00		
Median	0.58			0.50			0.95		

Table 1C Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for All Persons Six through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	704	100.0	100.0	1649	100.0	100.0	427	100.0	100.0
<0.10.....	7	1.0	1.0	31	1.9	1.9	15	3.5	3.5
0.10-0.19.....	32	4.5	5.5	90	5.5	7.4	15	3.5	7.0
0.20-0.29.....	58	8.2	13.7	232	14.1	21.5	17	4.0	11.0
0.30-0.39.....	97	13.8	27.5	217	13.2	34.7	16	3.7	14.7
0.40-0.59.....	181	25.7	53.2	351	21.3	56.0	50	11.7	26.4
0.60-0.79.....	95	13.5	66.7	227	13.8	69.8	65	15.2	41.6
0.80-0.99.....	91	12.9	79.6	171	10.4	80.2	73	17.1	58.7
1.00-1.19.....	53	7.5	87.1	105	6.4	86.6	56	13.1	71.8
1.20-1.39.....	35	5.0	92.1	85	5.2	91.8	38	8.9	80.7
1.40-1.59.....	19	2.7	94.8	56	3.4	95.2	24	5.6	86.3
1.60-1.79.....	15	2.1	96.9	39	2.4	97.6	16	3.7	90.0
>1.79.....	21	3.0	99.9	45	2.7	100.3	42	9.8	99.8
Mean	0.69			0.67			0.94		
Median	0.57			0.54			0.90		

Table 1D Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	181	100.0	100.0	442	100.0	100.0	115	100.0	100.0
<0.10.....	—	—	—	6	1.4	1.4	6	5.2	5.2
0.10-0.19.....	15	8.3	8.3	35	7.9	9.3	4	3.5	8.7
0.20-0.29.....	21	11.6	19.9	68	15.4	24.7	9	7.8	16.5
0.30-0.39.....	29	16.0	35.9	55	12.4	37.1	11	9.6	26.1
0.40-0.59.....	43	23.8	59.7	96	21.7	58.8	20	17.4	43.5
0.60-0.79.....	25	13.8	73.5	50	11.3	70.1	16	13.9	57.4
0.80-0.99.....	17	9.4	82.9	48	10.9	81.0	15	13.0	70.4
1.00-1.19.....	8	4.4	87.3	34	7.7	88.7	16	13.9	84.3
1.20-1.39.....	8	4.4	91.7	20	4.5	93.2	5	4.3	88.6
1.40-1.59.....	4	2.2	93.9	16	3.6	96.8	6	5.2	93.8
1.60-1.79.....	3	1.7	95.6	8	1.8	98.6	1	0.9	94.7
>1.79.....	8	4.4	100.0	6	1.4	100.0	6	5.2	99.9
Mean	0.65			0.63			0.76		
Median	0.52			0.52			0.69		

Table 1E Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	186	100.0	100.0	498	100.0	100.0	146	100.0	100.0
<0.10.....	12	6.5	6.5	10	2.0	2.0	2	1.4	1.4
0.10-0.19.....	8	4.3	10.8	34	6.8	8.8	9	6.2	7.6
0.20-0.29.....	14	7.5	18.3	71	14.3	23.1	5	3.4	11.0
0.30-0.39.....	36	19.4	37.7	66	13.3	36.4	5	3.4	14.4
0.40-0.59.....	39	21.0	58.7	101	20.3	56.7	14	9.6	24.0
0.60-0.79.....	24	12.9	71.6	62	12.4	69.1	25	17.1	41.1
0.80-0.99.....	18	9.7	81.3	58	11.6	80.7	27	18.5	59.6
1.00-1.19.....	13	7.0	88.3	31	6.2	86.9	21	14.4	74.0
1.20-1.39.....	7	3.8	92.1	30	6.0	92.9	13	8.9	82.9
1.40-1.59.....	8	4.3	96.4	13	3.6	96.5	7	4.8	87.7
1.60-1.79.....	3	1.6	98.0	14	2.8	99.3	7	4.8	92.5
>1.79.....	4	2.2	100.2	3	0.6	99.9	11	7.5	100.0
Mean	0.64			0.65			0.93		
Median	0.52			0.53			0.90		

Table 1F Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Males Seventeen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	225	100.0	100.0	330	100.0	100.0	121	100.0	100.0
<0.10.....	5	2.2	2.2	13	3.9	3.9	3	2.5	2.5
0.10-0.19.....	29	12.9	15.1	47	14.2	18.1	7	5.8	8.3
0.20-0.29.....	51	22.7	37.8	84	25.5	43.6	11	9.1	17.4
0.30-0.39.....	35	15.6	53.4	60	18.2	61.8	2	1.7	19.1
0.40-0.59.....	57	25.3	78.7	61	18.5	80.3	18	14.9	34.0
0.60-0.79.....	24	10.7	89.4	26	7.9	88.2	27	22.3	56.3
0.80-0.99.....	10	4.4	93.8	19	5.8	94.0	22	18.2	74.5
1.00-1.19.....	6	2.7	96.5	10	3.0	97.0	15	12.4	86.9
1.20-1.39.....	4	1.8	98.3	6	1.8	98.8	5	4.1	91.0
1.40-1.59.....	1	0.4	98.7	3	0.9	99.7	1	0.8	91.8
1.60-1.79.....	2	0.9	99.6	1	0.3	100.0	4	3.3	95.1
>1.79.....	1	0.4	100.0	—	—	100.0	6	5.0	100.1
Mean	0.46			0.43			0.78		
Median	0.38			0.34			0.74		

Table 1G Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Females Seventeen through Forty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	470	100.0	100.0	1075	100.0	100.0	312	100.0	100.0
<0.10.....	16	3.4	3.4	32	3.0	3.0	10	3.2	3.2
0.10-0.19.....	25	5.3	8.7	119	11.1	14.1	18	5.8	9.0
0.20-0.29.....	57	12.1	20.8	204	19.0	33.1	23	7.4	16.4
0.30-0.39.....	67	14.3	35.1	197	18.3	54.4	21	6.7	23.1
0.40-0.59.....	141	30.0	65.1	226	21.0	72.4	46	14.7	37.8
0.60-0.79.....	66	14.0	79.1	129	12.0	84.4	59	18.9	56.7
0.80-0.99.....	44	9.4	88.5	79	7.3	91.7	49	15.7	72.4
1.00-1.19.....	22	4.7	93.2	26	2.4	94.1	35	11.2	83.6
1.20-1.39.....	12	2.6	95.8	31	2.9	97.0	23	7.4	91.0
1.40-1.59.....	11	2.3	98.1	11	1.0	98.0	10	3.2	94.2
1.60-1.79.....	4	0.9	99.0	10	0.9	98.9	6	1.9	96.1
>1.79.....	5	1.1	100.1	11	1.0	99.9	12	3.8	99.9
Mean.....	0.58			0.50			0.77		
Median.....	0.50			0.39			0.73		

Table 1H Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Males Forty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	160	100.0	100.0	182	100.0	100.0	61	100.0	100.0
<0.10.....	5	3.1	3.1	8	4.4	4.4	1	1.6	1.6
0.10-0.19.....	19	11.9	15.0	28	12.6	17.0	5	8.2	9.8
0.20-0.29.....	35	21.9	36.9	54	29.7	46.7	8	13.1	22.9
0.30-0.39.....	29	18.1	55.0	26	14.8	61.0	6	9.8	32.7
0.40-0.59.....	37	23.1	78.1	38	18.1	79.1	10	16.4	49.1
0.60-0.79.....	16	10.0	88.1	12	6.6	85.7	12	19.7	68.8
0.80-0.99.....	6	3.8	91.9	12	6.6	92.3	9	14.8	83.6
1.00-1.19.....	6	3.8	95.7	4	2.2	94.5	7	11.5	95.1
1.20-1.39.....	4	2.5	98.2	5	2.7	97.2	1	1.6	96.7
1.40-1.59.....	3	1.9	100.1	3	1.6	98.8	—	—	96.7
1.60-1.79.....	—	—	100.1	1	0.5	99.3	1	1.6	98.3
>1.79.....	—	—	100.1	1	0.5	99.8	1	1.6	99.9
Mean.....	0.46			0.45			0.64		
Median.....	0.37			0.32			0.61		

Table 1I Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Females Forty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	250	100.0	100.0	418	100.0	100.0	121	100.0	100.0
<0.10.....	7	2.8	2.8	13	3.1	3.1	—	—	—
0.10-0.19.....	15	6.0	8.8	41	9.8	12.9	9	7.4	7.4
0.20-0.29.....	31	12.4	21.2	90	21.5	34.4	9	7.4	14.8
0.30-0.39.....	44	17.6	38.8	51	12.2	46.6	7	5.8	20.6
0.40-0.59.....	59	23.6	62.4	101	24.2	70.8	32	26.4	47.0
0.60-0.79.....	31	12.4	74.8	50	12.0	82.8	18	14.9	61.9
0.80-0.99.....	22	8.8	83.6	36	8.6	91.4	19	15.7	77.6
1.00-1.19.....	13	5.2	88.8	18	4.3	95.7	13	10.7	88.3
1.20-1.39.....	12	4.8	93.6	9	2.2	97.9	3	2.5	90.8
1.40-1.59.....	4	1.6	95.2	4	1.0	98.9	5	4.1	94.9
1.60-1.79.....	6	2.4	97.6	4	1.0	99.9	1	0.8	95.7
>1.79.....	6	2.4	100.0	1	0.2	100.1	5	4.1	99.8
Mean	0.62			0.51			0.78		
Median	0.49			0.43			0.64		

Table 1J Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Males Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	272	100.0	100.0	272	100.0	100.0	71	100.0	100.0
<0.10.....	14	5.1	5.1	11	4.0	4.0	5	7.0	7.0
0.10-0.19.....	23	8.5	13.6	39	14.3	18.3	6	8.5	15.5
0.20-0.29.....	43	15.8	29.4	55	20.2	38.5	4	5.6	21.1
0.30-0.39.....	34	12.5	41.9	44	16.2	54.7	3	4.2	25.3
0.40-0.59.....	58	21.3	63.2	46	16.9	71.6	9	12.7	38.0
0.60-0.79.....	34	12.5	75.7	22	8.1	79.7	8	11.3	49.3
0.80-0.99.....	31	11.4	87.1	27	9.9	89.6	19	26.8	76.1
1.00-1.19.....	13	4.8	91.9	13	4.8	94.4	12	16.9	93.0
1.20-1.39.....	9	3.3	95.2	5	1.8	96.2	3	4.2	97.2
1.40-1.59.....	7	2.6	97.8	5	1.8	98.0	—	—	97.2
1.60-1.79.....	2	0.7	98.5	5	1.8	99.8	—	—	97.2
>1.79.....	4	1.5	100.0	—	—	99.8	2	2.8	100.0
Mean	0.57			0.50			0.72		
Median	0.47			0.37			0.80		

Table 1K Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Females Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	326	100.0	100.0	435	100.0	100.0	77	100.0	100.0
<0.10.....	4	1.2	1.2	6	1.4	1.4	2	2.6	2.6
0.10-0.19.....	19	5.8	7.0	34	7.8	9.2	—	—	2.6
0.20-0.29.....	33	10.1	17.1	80	18.4	27.6	4	5.2	7.8
0.30-0.39.....	36	11.0	28.1	64	14.7	42.3	7	9.1	16.9
0.40-0.59.....	69	21.2	49.3	107	24.6	66.9	14	18.2	35.1
0.60-0.79.....	50	15.3	64.6	58	13.3	80.2	13	16.9	52.0
0.80-0.99.....	29	8.9	73.5	35	8.0	88.2	13	16.9	68.9
1.00-1.19.....	40	12.3	85.8	22	5.1	93.3	10	13.0	81.9
1.20-1.39.....	16	4.9	90.7	11	2.5	95.8	4	5.2	87.1
1.40-1.59.....	12	3.7	94.4	9	2.1	97.9	1	1.3	88.4
1.60-1.79.....	8	2.5	96.9	3	0.7	98.6	1	1.3	89.7
>1.79.....	10	3.1	100.0	6	1.4	100.0	8	10.4	100.1
Mean.....	0.72			0.56			0.85		
Median.....	0.61			0.46			0.78		

Table 2A Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for All Persons Under Two Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	6	100.0	100.0	2	100.0	100.0	1	100.0	100.0
<0.10.....	—	—	—	—	—	—	—	—	—
0.10-0.19.....	1	16.7	16.7	—	—	—	1	100.0	100.0
0.20-0.29.....	1	16.7	33.4	—	—	—	—	—	100.0
0.30-0.39.....	—	—	33.4	1	50.0	50.0	—	—	100.0
0.40-0.59.....	1	16.7	50.1	1	50.0	100.0	—	—	100.0
0.60-0.79.....	—	—	50.1	—	—	100.0	—	—	100.0
0.80-0.99.....	—	—	50.1	—	—	100.0	—	—	100.0
1.00-1.19.....	1	16.7	66.8	—	—	100.0	—	—	100.0
1.20-1.39.....	—	—	66.8	—	—	100.0	—	—	100.0
1.40-1.59.....	2	33.3	100.1	—	—	100.0	—	—	100.0
1.60-1.79.....	—	—	100.1	—	—	100.0	—	—	100.0
>1.79.....	—	—	100.1	—	—	100.0	—	—	100.0
Mean.....	0.83			0.43			0.15		
Median.....	0.60			0.40			0.15		

Table 2B Appendix. Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for All Persons Two through Five Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	208	100.0	100.0	54	100.0	100.0	60	100.0	100.0
<0.10	—	—	—	—	—	—	—	—	—
0.10-0.19	—	—	—	—	—	—	—	—	—
0.20-0.29	4	1.9	1.9	1	1.9	1.9	4	6.7	6.7
0.30-0.39	10	4.8	6.7	2	3.7	5.6	2	3.3	10.0
0.40-0.59	15	7.2	13.9	5	9.3	14.9	5	8.3	18.3
0.60-0.79	31	14.9	28.8	8	14.8	29.7	4	6.7	25.0
0.80-0.99	31	14.9	43.7	5	9.3	39.0	7	11.7	36.7
1.00-1.19	25	12.0	55.7	11	20.4	59.4	6	10.0	46.7
1.20-1.39	34	16.3	72.0	8	14.8	74.2	17	28.3	75.0
1.40-1.59	26	12.5	84.5	5	9.3	83.5	6	10.0	85.0
1.60-1.79	15	7.2	91.7	4	7.4	90.9	4	6.7	91.7
>1.79	17	8.2	99.9	5	9.3	100.2	5	8.3	100.0
Mean	1.10			1.10			1.12		
Median	1.10			1.11			1.22		

Table 2C Appendix. Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for All Persons Six through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	1477	100.0	100.0	488	100.0	100.0	468	100.0	100.0
<0.10	2	0.1	0.1	—	—	—	—	—	—
0.10-0.19	13	0.9	1.0	1	0.2	0.2	3	0.6	0.6
0.20-0.29	40	2.7	3.7	13	2.7	2.9	14	3.0	3.6
0.30-0.39	61	4.1	7.8	25	5.1	8.0	20	4.3	7.9
0.40-0.59	163	11.0	18.8	71	14.5	22.5	55	11.8	19.7
0.60-0.79	227	15.4	34.2	79	16.2	38.7	56	12.0	31.7
0.80-0.99	232	15.7	49.9	74	15.2	53.9	59	12.6	44.3
1.00-1.19	211	14.3	64.2	71	14.5	68.4	54	11.5	55.8
1.20-1.39	186	12.6	76.8	55	11.3	79.7	86	18.4	74.2
1.40-1.59	152	10.3	87.1	46	9.4	89.1	62	13.2	87.4
1.60-1.79	81	5.5	92.6	24	4.9	94.0	31	6.6	94.0
>1.79	109	7.4	100.0	29	5.9	99.9	28	6.0	100.0
Mean	1.08			0.99			1.07		
Median	1.00			0.95			1.10		

Table 2D Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	403	100.0	100.0	147	100.0	100.0	134	100.0	100.0
<0.10.....	2	0.5	0.5	—	—	—	1	0.7	0.7
0.10-0.19.....	10	2.5	3.0	2	1.4	1.4	2	1.5	2.2
0.20-0.29.....	14	3.5	6.5	8	5.4	6.8	7	5.2	7.4
0.30-0.39.....	30	7.4	13.9	16	10.9	17.7	8	6.0	13.4
0.40-0.59.....	60	14.9	28.8	32	21.8	39.5	25	18.7	32.1
0.60-0.79.....	67	16.6	45.4	24	16.3	55.8	13	9.7	41.8
0.80-0.99.....	59	14.6	60.0	25	17.0	72.8	23	17.2	59.0
1.00-1.19.....	57	14.1	74.1	11	7.5	80.3	18	13.4	72.4
1.20-1.39.....	39	9.7	83.8	10	6.8	87.1	13	9.7	82.1
1.40-1.59.....	30	7.4	91.2	12	8.2	95.3	13	9.7	91.8
1.60-1.79.....	18	4.5	95.7	4	2.7	98.0	3	2.2	94.0
>1.79.....	17	4.2	99.9	3	2.0	100.0	8	6.0	100.0
Mean	0.91			0.81			0.92		
Median	0.86			0.73			0.89		

Table 2E Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	393	100.0	100.0	152	100.0	100.0	149	100.0	100.0
<0.10.....	2	0.5	0.5	—	—	—	—	—	—
0.10-0.19.....	3	0.8	1.3	2	1.3	1.3	1	0.7	0.7
0.20-0.29.....	20	5.1	6.4	18	8.6	9.9	5	3.4	4.1
0.30-0.39.....	18	4.6	11.0	6	3.9	13.8	6	4.0	8.1
0.40-0.59.....	61	15.5	26.5	24	15.8	29.6	21	14.1	22.2
0.60-0.79.....	52	13.2	39.7	29	19.1	48.7	14	9.4	31.6
0.80-0.99.....	69	17.6	57.3	26	17.1	65.8	20	13.4	45.0
1.00-1.19.....	55	14.0	71.3	17	11.2	77.0	25	16.8	61.8
1.20-1.39.....	48	12.2	83.5	13	8.6	85.6	25	16.8	78.6
1.40-1.59.....	32	8.1	91.6	11	7.2	92.8	17	11.4	90.0
1.60-1.79.....	19	4.8	96.4	9	5.9	98.7	7	4.7	94.7
>1.79.....	14	3.6	100.0	2	1.3	100.0	8	5.4	100.1
Mean	0.94			0.87			1.03		
Median	0.92			0.81			1.06		

Table 2F Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Males Seventeen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1057	100.0	100.0	169	100.0	100.0	227	100.0	100.0
<0.10.....	8	0.8	0.8	—	—	—	2	0.9	0.9
0.10-0.19.....	36	3.4	4.2	11	6.5	6.5	6	2.6	3.5
0.20-0.29.....	78	7.4	11.6	14	8.3	14.8	15	6.6	10.1
0.30-0.39.....	111	10.5	22.1	19	11.2	26.0	28	12.3	22.4
0.40-0.59.....	181	17.1	39.2	42	24.9	50.9	33	14.5	36.9
0.60-0.79.....	154	14.6	53.8	28	16.6	67.5	40	17.6	54.5
0.80-0.99.....	149	14.1	67.9	23	13.6	81.1	30	13.2	67.7
1.00-1.19.....	138	13.1	81.0	13	7.7	88.8	31	13.7	81.4
1.20-1.39.....	101	9.6	90.6	6	3.6	92.4	23	10.1	91.5
1.40-1.59.....	58	5.5	96.1	5	3.0	95.4	10	4.4	95.9
1.60-1.79.....	26	2.5	98.6	6	3.6	99.0	1	0.4	96.3
>1.79.....	17	1.6	100.2	2	1.2	100.2	8	3.5	99.8
Mean.....	0.80			0.69			0.80		
Median.....	0.75			0.59			0.75		

Table 2G Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Females Seventeen through Forty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1776	100.0	100.0	441	100.0	100.0	494	100.0	100.0
<0.10.....	11	0.6	0.6	3	0.7	0.7	1	0.2	0.2
0.10-0.19.....	58	3.3	3.9	12	2.7	3.4	8	1.6	1.8
0.20-0.29.....	113	6.4	10.3	36	8.2	11.6	44	8.9	10.7
0.30-0.39.....	122	6.9	17.2	41	9.3	20.9	49	9.9	20.6
0.40-0.59.....	270	15.2	32.4	75	17.0	37.9	84	17.0	37.6
0.60-0.79.....	256	14.4	46.8	91	20.6	58.5	69	14.0	51.6
0.80-0.99.....	242	13.6	60.4	53	12.0	70.5	74	15.0	66.6
1.00-1.19.....	259	14.6	75.0	63	14.3	84.8	64	13.0	79.6
1.20-1.39.....	213	12.0	87.0	37	8.4	93.2	53	10.7	90.3
1.40-1.59.....	111	6.2	93.2	13	2.9	96.1	27	5.5	95.8
1.60-1.79.....	71	4.0	97.2	6	1.4	97.5	10	2.0	97.8
>1.79.....	50	2.8	100.0	11	2.5	100.0	11	2.2	100.0
Mean.....	0.87			0.77			0.82		
Median.....	0.85			0.72			0.78		

Table 2H Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Males Forty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	451	100.0	100.0	60	100.0	100.0	75	100.0	100.0
<0.10.....	5	1.1	1.1	—	—	—	1	1.3	1.3
0.10-0.19.....	19	4.2	5.3	3	5.0	5.0	4	5.3	6.6
0.20-0.29.....	41	9.1	14.4	4	6.7	11.7	9	12.0	18.6
0.30-0.39.....	49	10.9	25.3	7	11.7	23.4	8	10.7	29.3
0.40-0.59.....	78	17.3	42.6	9	15.0	38.4	13	17.3	46.6
0.60-0.79.....	52	11.5	54.1	10	16.7	55.1	9	12.0	58.6
0.80-0.99.....	71	15.7	69.8	11	18.3	73.4	9	12.0	70.6
1.00-1.19.....	50	11.1	80.9	9	15.0	88.4	10	13.3	83.9
1.20-1.39.....	34	7.5	88.4	5	8.3	96.7	5	6.7	90.6
1.40-1.59.....	27	6.0	94.4	1	1.7	98.4	4	5.3	95.9
1.60-1.79.....	12	2.7	97.1	1	1.7	100.1	2	2.7	98.6
>1.79.....	13	2.9	100.0	—	—	100.1	1	1.3	99.9
Mean.....	0.78			0.75			0.74		
Median.....	0.73			0.74			0.65		

Table 2I Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Females Forty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	589	100.0	100.0	136	100.0	100.0	130	100.0	100.0
<0.10.....	—	—	—	—	—	—	—	—	—
0.10-0.19.....	10	1.7	1.7	5	3.7	3.7	—	—	—
0.20-0.29.....	31	5.3	7.0	14	10.3	14.0	8	6.2	6.2
0.30-0.39.....	29	4.9	11.9	12	8.8	22.8	9	6.9	13.1
0.40-0.59.....	68	11.5	23.4	23	16.9	39.7	18	13.8	26.9
0.60-0.79.....	78	13.2	36.6	19	14.0	53.7	23	17.7	44.6
0.80-0.99.....	82	13.9	50.5	18	13.2	66.9	18	13.8	58.4
1.00-1.19.....	86	14.6	65.1	12	8.8	75.7	13	10.0	68.4
1.20-1.39.....	80	13.6	78.7	10	7.4	83.1	11	8.5	76.9
1.40-1.59.....	58	9.8	88.5	13	9.6	92.7	14	10.8	87.7
1.60-1.79.....	33	5.6	94.1	5	3.7	96.4	9	6.9	94.6
>1.79.....	34	5.8	99.9	5	3.7	100.1	7	5.4	100.0
Mean.....	1.00			0.83			0.96		
Median.....	0.99			0.75			0.88		

Table 2J Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Males Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	595	100.0	100.0	78	100.0	100.0	35	100.0	100.0
<0.10.....	8	1.3	1.3	1	1.3	1.3	—	—	—
0.10-0.19.....	25	4.2	5.5	7	9.0	10.3	2	5.7	5.7
0.20-0.29.....	37	6.2	11.7	12	15.4	25.7	4	11.4	17.1
0.30-0.39.....	52	8.7	20.4	9	11.5	37.2	5	14.3	31.4
0.40-0.59.....	85	14.3	34.7	18	23.1	60.3	4	11.4	42.8
0.60-0.79.....	99	16.6	51.3	10	12.8	73.1	4	11.4	54.2
0.80-0.99.....	76	12.8	64.1	8	10.3	83.4	7	20.0	74.2
1.00-1.19.....	78	13.1	77.2	5	6.4	89.8	3	8.6	82.8
1.20-1.39.....	56	9.4	86.6	4	5.1	94.9	1	2.9	85.7
1.40-1.59.....	36	6.1	92.7	3	3.8	98.7	4	11.4	97.1
1.60-1.79.....	22	3.7	96.4	—	—	98.7	1	2.9	100.0
>1.79.....	21	3.5	99.9	1	1.3	100.0	—	—	100.0
Mean.....	0.84			0.61			0.76		
Median.....	0.78			0.51			0.72		

Table 2K Appendix. *Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Females Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Vitamin C Values mg/100ml	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	858	100.0	100.0	121	100.0	100.0	52	100.0	100.0
<0.10.....	1	0.1	0.1	1	0.8	0.8	—	—	—
0.10-0.19.....	19	2.2	2.3	5	4.1	4.9	2	3.8	3.8
0.20-0.29.....	24	2.8	5.1	9	7.4	12.3	2	3.8	7.6
0.30-0.39.....	28	3.3	8.4	7	5.8	18.1	3	5.8	13.4
0.40-0.59.....	86	10.0	18.4	16	13.2	31.3	7	13.5	26.9
0.60-0.79.....	100	11.7	30.1	14	11.6	42.9	11	21.2	48.1
0.80-0.99.....	124	14.5	44.6	20	16.5	59.4	2	3.8	51.9
1.00-1.19.....	124	14.5	59.1	13	10.7	70.1	10	19.2	71.1
1.20-1.39.....	107	12.5	71.6	16	13.2	83.3	7	13.5	84.6
1.40-1.59.....	99	11.5	83.1	12	9.9	93.2	4	7.7	92.3
1.60-1.79.....	71	8.3	91.4	2	1.7	94.9	1	1.9	94.2
>1.79.....	75	8.7	100.1	6	5.0	99.9	3	5.8	100.0
Mean.....	1.08			0.90			0.93		
Median.....	1.07			0.88			0.90		

Figure 1a Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

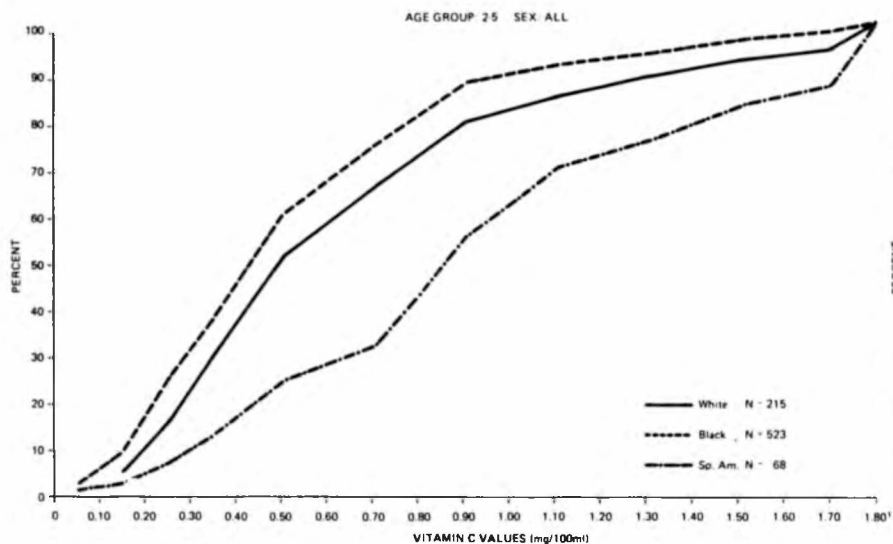


Table Reference 1B Appendix

Figure 1c Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

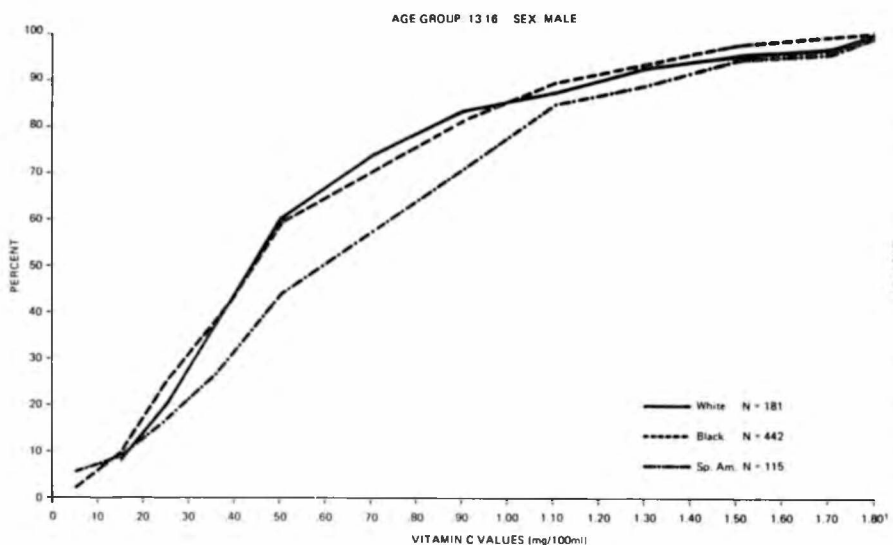
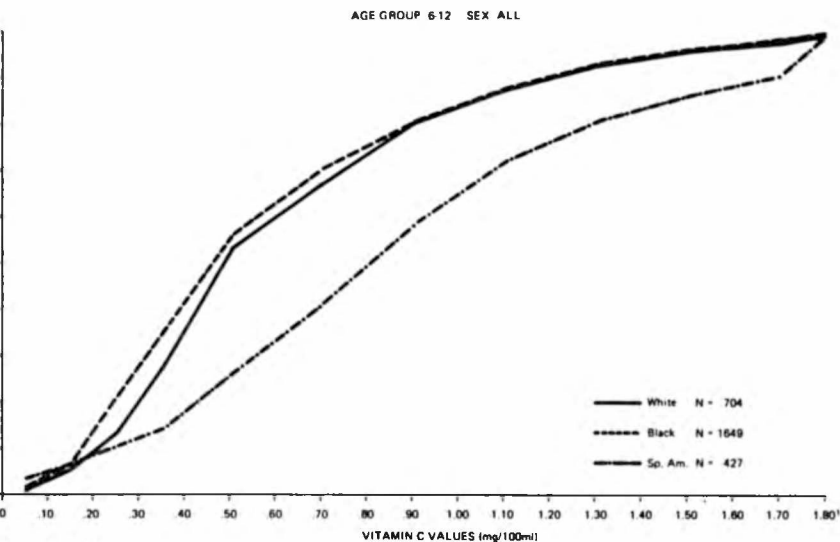


Table Reference 1D Appendix

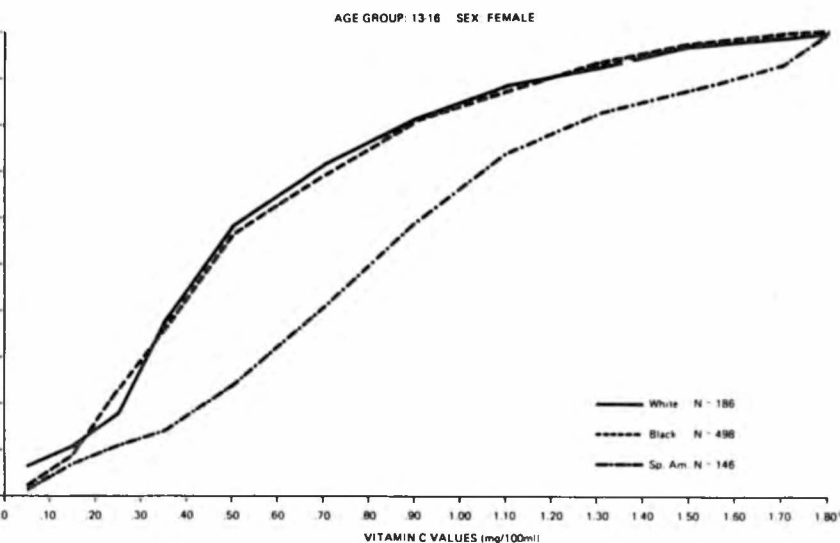
Figure 1b Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values > 1.79

Table Reference: 1C Appendix

Figure 1d Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All Values > 1.79

Table Reference: 1E Appendix

Figure 1e Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

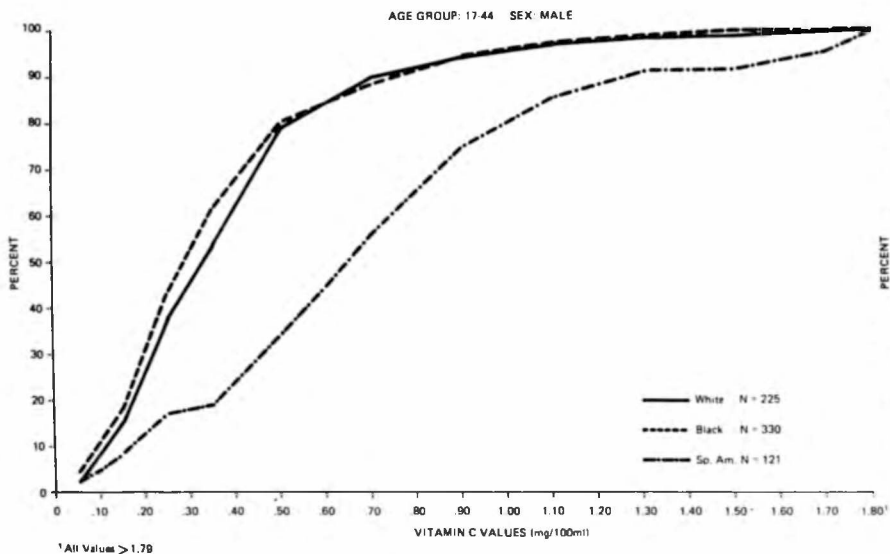


Table Reference: 1F Appendix

Figure 1g Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

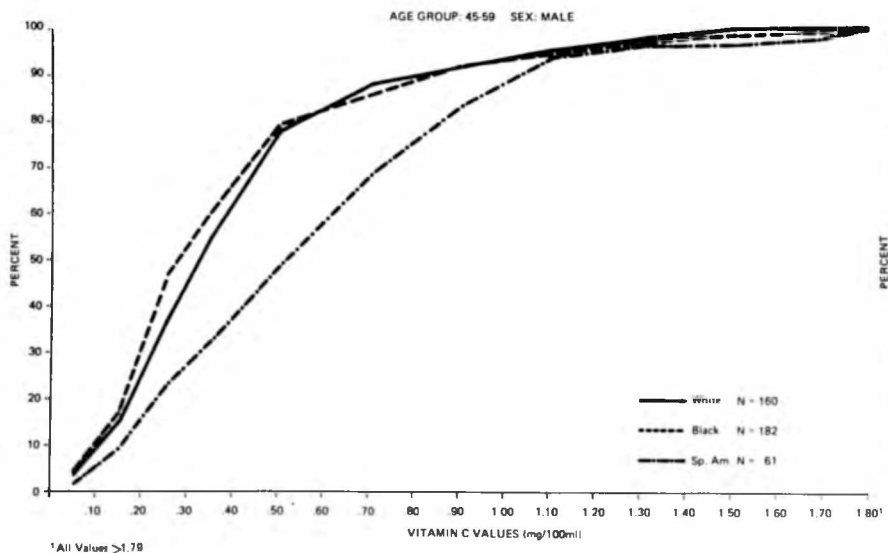


Table Reference: 1H Appendix

Figure 1f Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

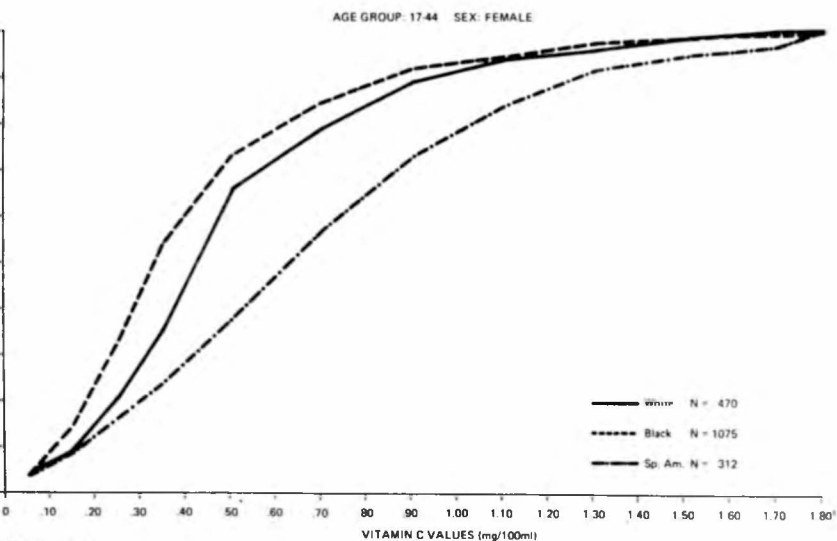


Table Reference: 1G Appendix

Figure 1h Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

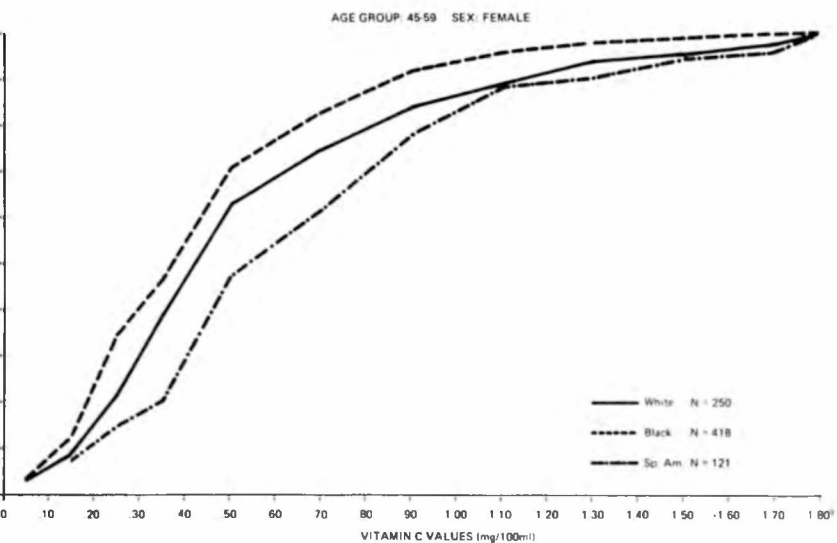


Table Reference: 1I Appendix

Figure 1f Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

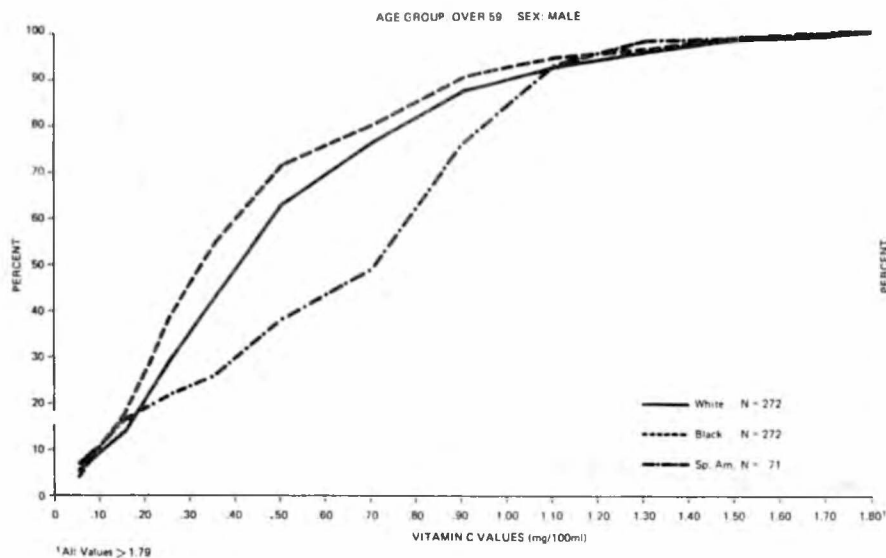


Table Reference 1J Appendix

Figure 1j Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

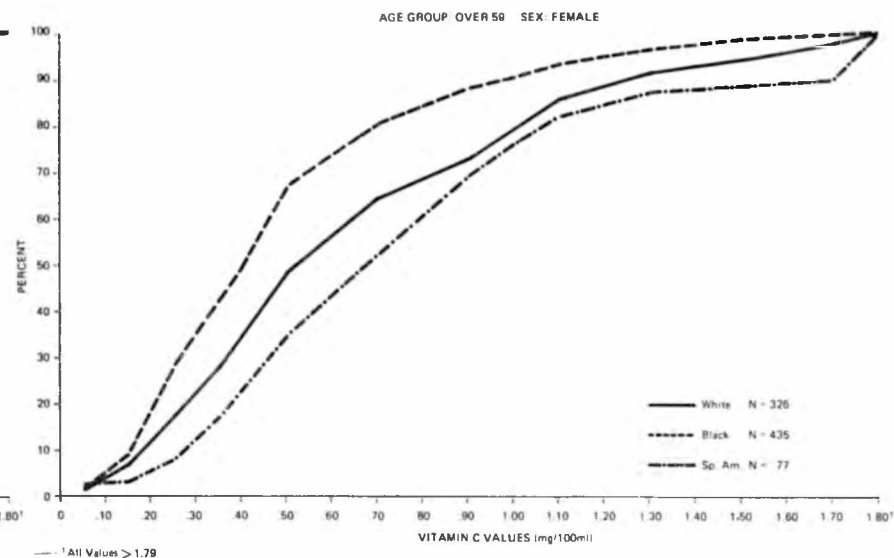


Table Reference 1K Appendix

Figure 2a Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

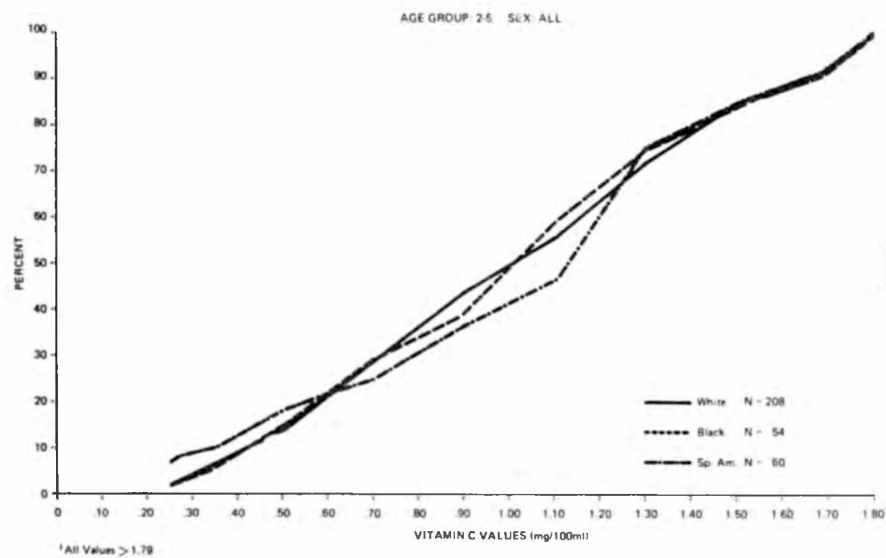


Table Reference 2B Appendix

Figure 2b Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

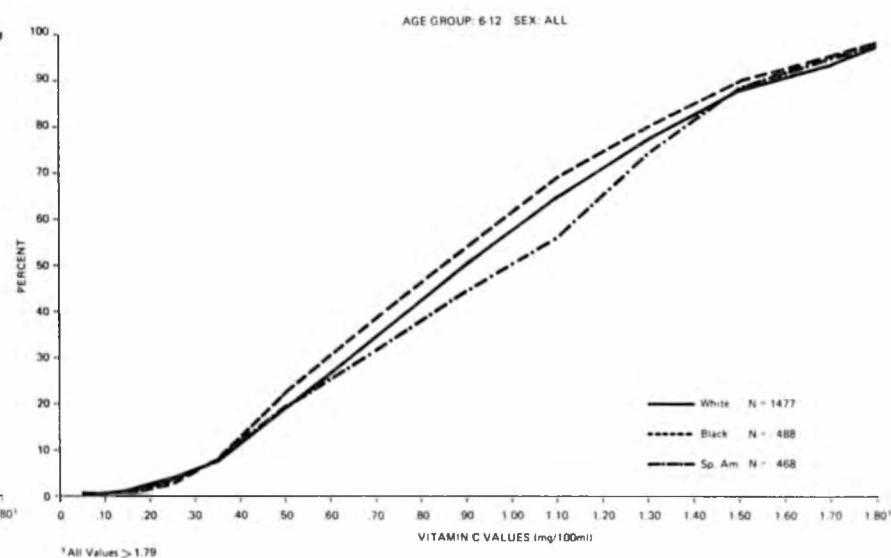


Table Reference 2C Appendix

Figure 2c Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

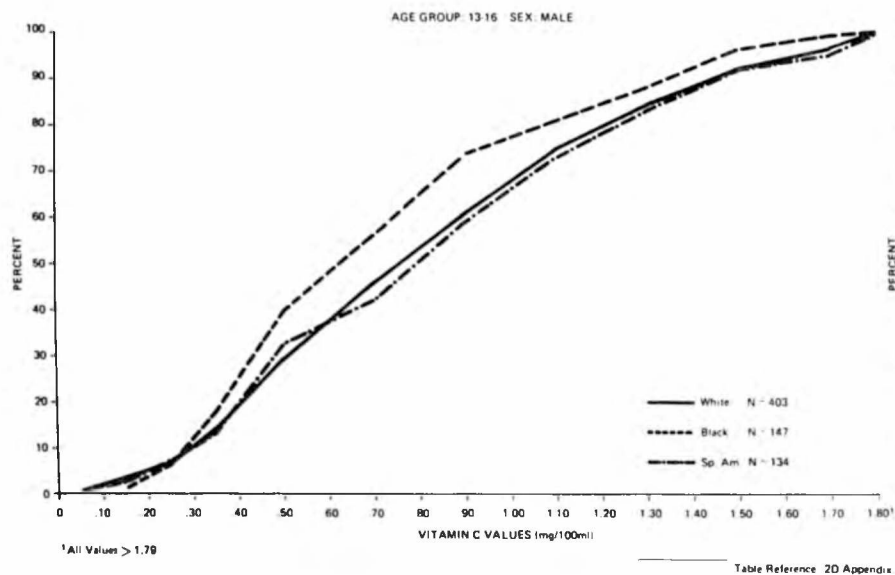


Figure 2d Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

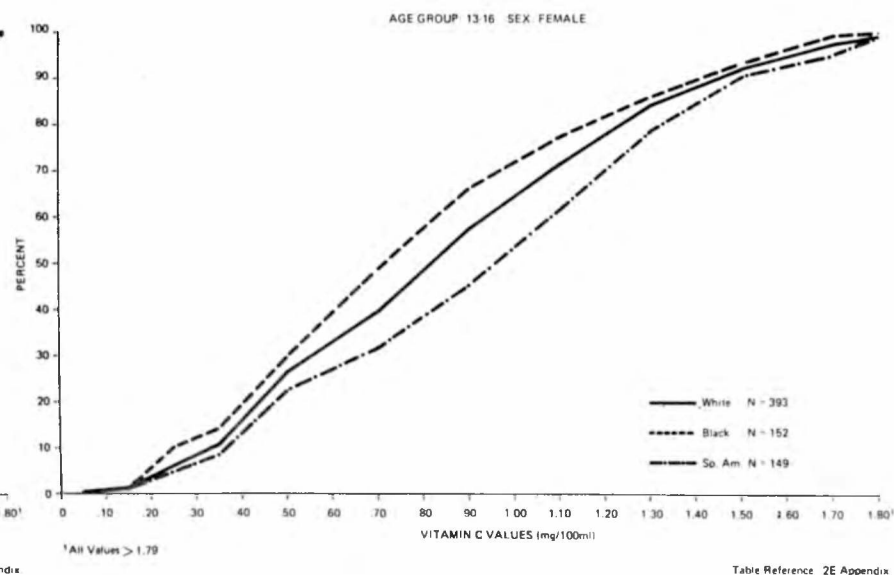


Figure 2e Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

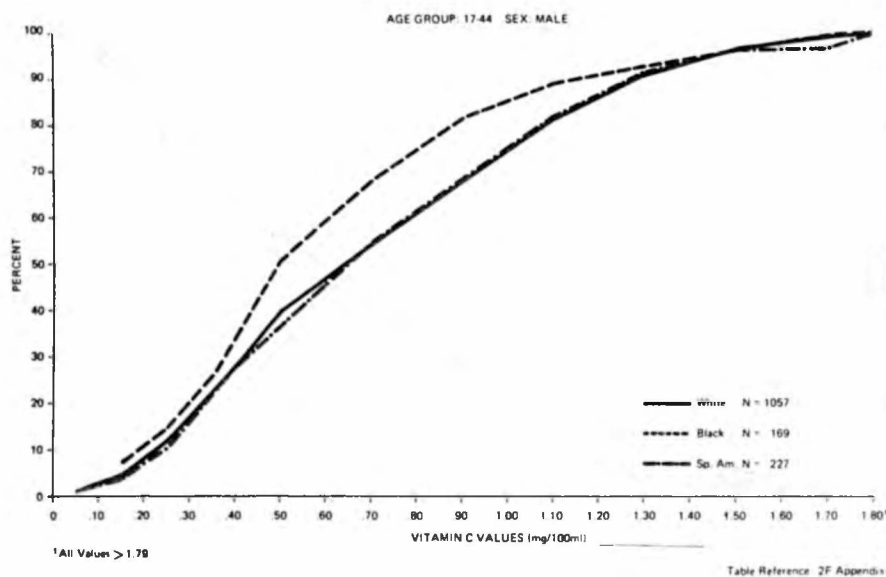


Figure 2f Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

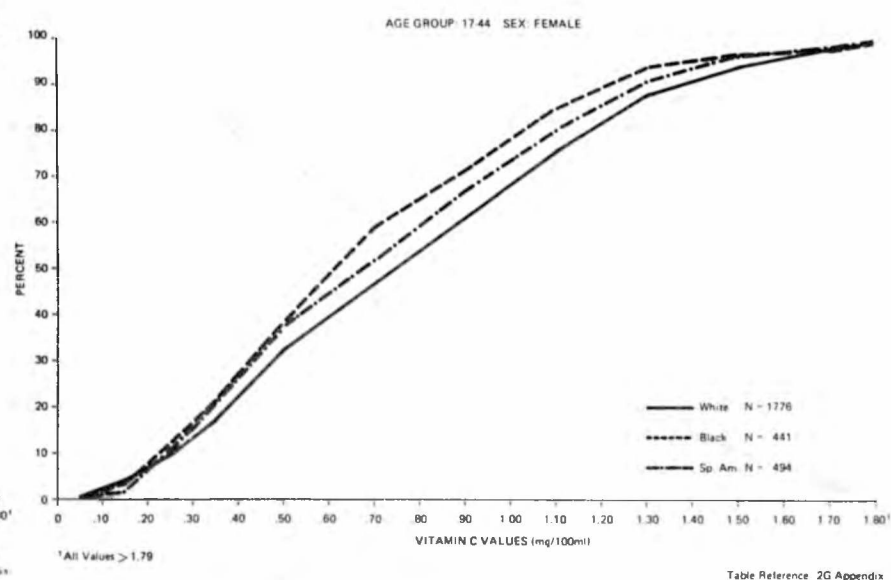


Figure 2g Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

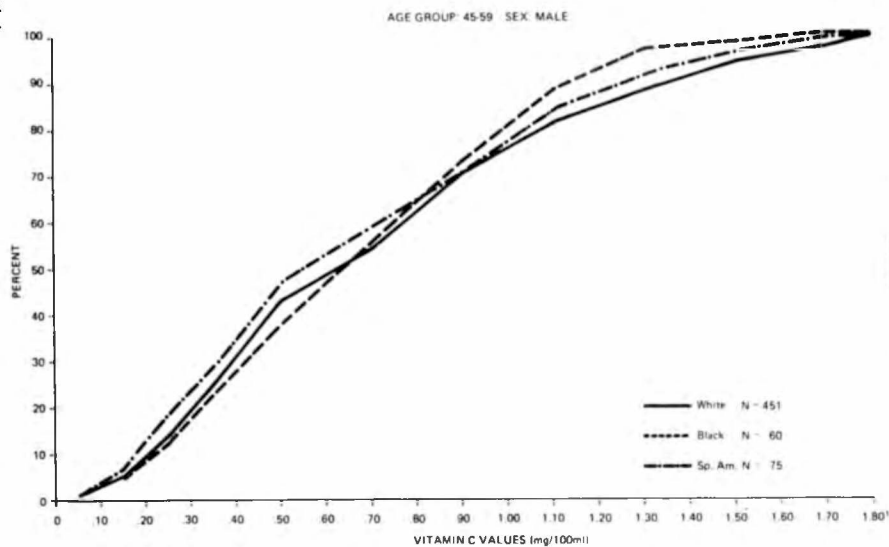


Table Reference: 24 Appendix

Figure 2h Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

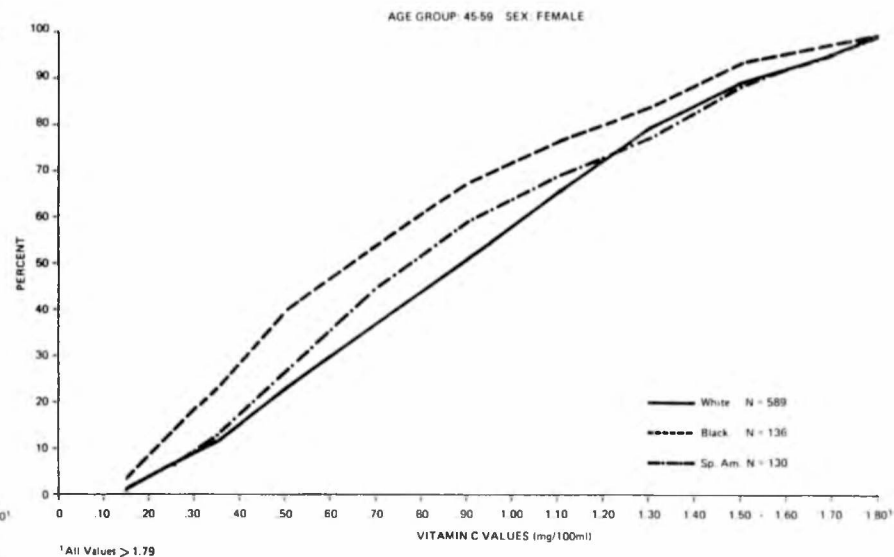


Table Reference: 21 Appendix

Figure 2i Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

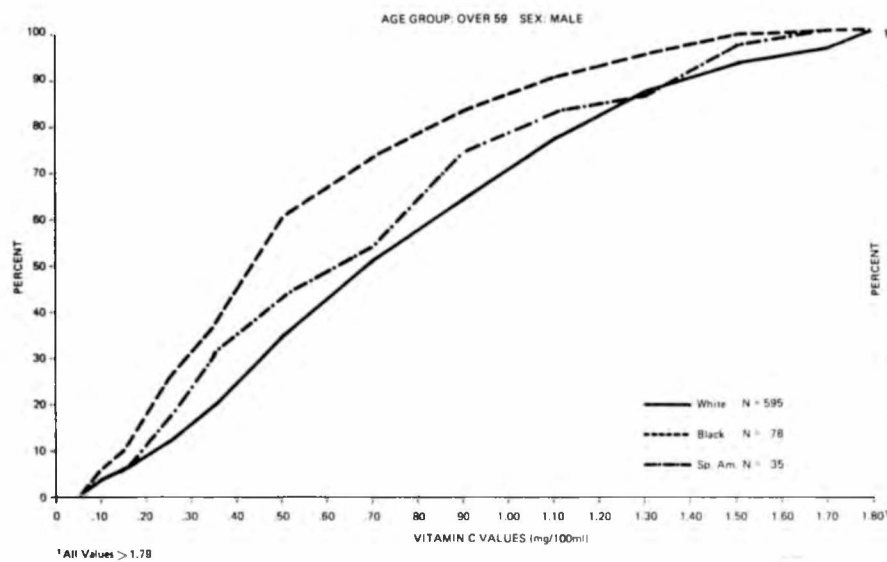


Table Reference: 2j Appendix

Figure 2j Appendix—Cumulative Percentage Distribution of Serum Vitamin C Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

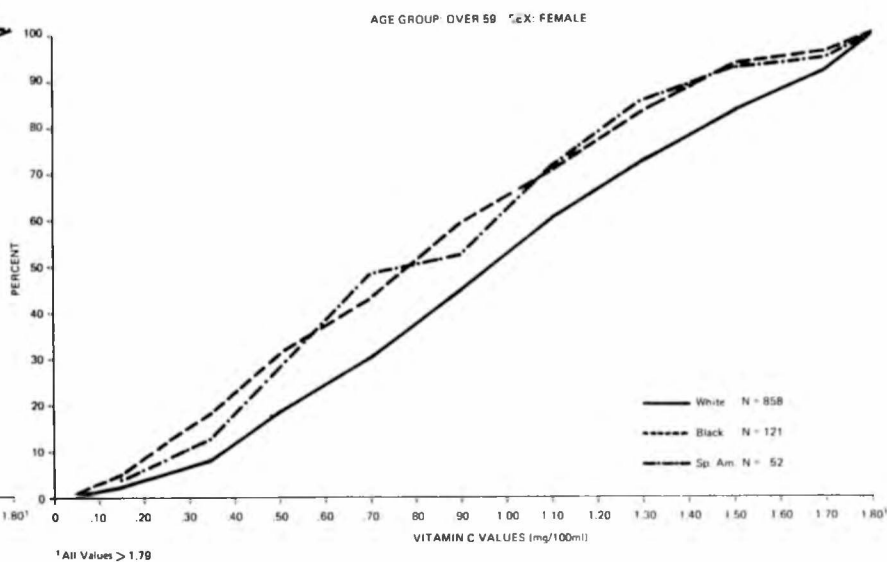


Table Reference: 2k Appendix

Table 3A Appendix. *Percent of Persons Having Deficient or Low Serum Vitamin C Values by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
Combined.....	3025	2.3	6.5	5909	2.5	8.5	1526	3.0	4.9
<0.50.....	394	3.3	9.1	1375	1.8	7.0	409	2.9	4.4
0.50-0.99.....	686	2.8	5.3	1932	2.7	6.9	504	2.8	6.4
1.00-1.99.....	733	2.7	6.1	808	1.7	7.4	281	1.8	5.3
2.00-2.99.....	323	1.2	6.8	145	1.4	10.3	42	2.4	2.4
>2.99.....	236	0.8	4.7	83	3.6	12.0	30	6.7	3.3
Unknown.....	653	1.8	7.2	1566	3.4	12.1	260	4.2	4.6

Table 3B Appendix. *Percent of Persons Having Deficient or Low Serum Vitamin C Values by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
Combined.....	7815	0.5	2.5	1849	0.3	2.6	1831	0.3	1.6
<0.50.....	279	1.1	2.9	83	1.2	2.4	77	1.3	0.0
0.50-0.99.....	892	0.3	2.8	452	0.7	1.8	459	0.2	2.0
1.00-1.99.....	2393	0.4	2.9	671	0.0	2.8	740	0.3	1.9
2.00-2.99.....	1670	0.6	2.0	229	0.4	1.7	162	0.0	0.6
>2.99.....	1814	0.6	2.3	150	0.0	6.0	67	0.0	3.0
Unknown.....	767	0.3	2.2	264	0.0	2.3	326	0.3	0.9

Serum Vitamin C Deficient and Low Value Classifications (mg/100ml)

	Deficient	Low
All Ages.....	<0.10	0.10-0.19

Table 4 Appendix. *Quartile Intervals of Serum Vitamin C Values for Corresponding Vitamin C Intakes for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Serum Vitamin C Quartile	Age Group				Pregnant or Lactating Females	All Persons 60 Years of Age and Over
	0-36 Months	10-11 Years	12-14 Years	15-16 Years		
Number.....	208	1351	2356	852	399	1655
First Quartile.....	<0.29	<0.50	<0.45	<0.37	<0.51	<0.39
Second Quartile.....	0.29-0.49	0.50-0.88	0.45-0.75	0.37-0.66	0.51-0.81	0.39-0.72
Third Quartile.....	0.50-0.75	0.89-1.27	0.76-1.15	0.67-1.08	0.82-1.11	0.73-1.13
Fourth Quartile.....	>0.75	>1.27	>1.15	>1.08	>1.11	>1.13

6. RIBOFLAVIN AND THIAMINE

Abstract: *Based on the prevalence of "deficient" and "low" values, riboflavin status was a potential problem particularly among young persons of all ethnic groups and among blacks and Spanish-Americans in the low-income-ratio states. Riboflavin status was related to income level in the low-income-ratio states but not in the high-income-ratio states. Urinary riboflavin excretion values also were related to dietary riboflavin intake.*

The prevalence of "deficient" and "low" urinary thiamine values was very low and appeared to be unrelated to ethnic background or economic status. There was a positive relationship between urinary thiamine excretion and dietary thiamine intake. Despite the limitations of thiamine analysis, it may be concluded that there is no apparent public health problem in the population surveyed in regard to thiamine nutriture.

Riboflavin and thiamine are two vitamins of the B-complex group. They are both water-soluble and intakes of these vitamins in excess of immediate body needs are rapidly excreted. Hence, urinary riboflavin and thiamine measurements usually reflect recent dietary intake of these vitamins.

In assessment of nutritional status, it is desirable to collect and analyze 24-hour urine samples. However, in a large survey such as the Ten-State Nutrition Survey such complete collections are not feasible. Therefore, random urine samples were obtained from survey participants when they attended the clinics.

The riboflavin and thiamine content of the urine samples are expressed in terms of the amount of these vitamins excreted per gram of creatinine, a urinary constituent which the average individual excretes daily in amounts roughly proportional to body weight. Problems with the use of this methodology stem from the variation in creatinine excretion which occurs during a single day and from changes in creatinine excretion occurring with age. The standards utilized for the evaluation of urinary excretion of nutrients takes these factors into consideration. Within the limitations noted above, the evaluation of urinary riboflavin and thiamine data (and of data for other urinary constituents) in relation to creatinine does allow comparison of data based on analyses of random urine samples from different subsegments of the population. This evaluation is not as precise and does not have the same degree of validity as interpretations based on blood nutrient analyses.

The biochemical control procedures for creatinine show that there was good reproducibility within and between laboratories for this determination. The data for riboflavin determinations similarly revealed good standardization of this analytic procedure. However, standardization of the urinary thiamine analyses was more difficult. In spite of the greater variation seen in urinary thiamine analyses, the data are useful in assessing the prevalence of unusually low values within specific subsegments of the population.

MEAN URINARY RIBOFLAVIN VALUES

Table 1 shows the mean riboflavin values by age, sex, and ethnic group in the low- and high-income-ratio states. The mean riboflavin values were all above those employed for the classification of "low" values. In some instances values were from six to nine times higher than the upper limit of the "low" range. Mean values decreased with age into adulthood for all ethnic groups. However, there seemed to be a slight increase with age for persons in the age groups above 35 years. The lowest mean values were observed most frequently for the age group 17-34 years.

Mean riboflavin values were lower for the black population than for either the white or the Spanish-American population in both groups of states and in all age groups. Mean values for Spanish-American persons of all ages in the low-income-ratio states were about midway between those of white and black persons. Mean values for all Spanish-Americans in the high-income-ratio states were not much different from those

of the white population. Mean riboflavin values in the low-income-ratio states were lower than those in the high-income-ratio states for all age, sex, and ethnic subgroups.

There were no consistent sex differences in riboflavin values. Therefore, the riboflavin values for both sexes were combined for further evaluation.

DEFICIENT OR LOW URINARY RIBOFLAVIN VALUES

Ethnic Differences

There was an extremely wide range of riboflavin values. The cumulative percentage distribution data included in the Appendix show the extremes of these values. Because of this wide range, there were persons with "deficient" and "low" riboflavin values despite the high mean values previously noted. The prevalence of "deficient" and "low" values for all ethnic groups was higher in the low-income-ratio states than in the high-income-ratio states (Tables 2A and 3A). This difference was more pronounced for Spanish-American populations than for other ethnic groups. In both groups of states, the prevalence of "deficient" and "low" values was higher for the black population than for either the white or Spanish-American population. This was consistent with the finding of lower mean values for the black population.

Age Differences

In general, the percentages of "deficient" and "low" values decreased with age. An exception was the 10- to 16-year-old age group. The general decrease in the prevalence of "deficient" and "low" values with age may seem contradictory in view of the finding that mean values also decreased with age. However, it should be noted that the standards used in defining "low" values were much higher for younger age groups.

A large percentage of children in both groups of states had "deficient" and "low" riboflavin values. Among children under 4 years of age in the low-income-ratio states, white children had 4.6 percent "deficient" values, blacks had 19.2 percent, and Spanish-Americans had 10.7 percent. The corresponding percentages in the high-income-ratio states were 2.9, 2.3, and 2.9.

Poverty-Income-Ratio Differences

In the low-income-ratio states, the prevalence of "deficient" and "low" values was slightly higher for persons with a Poverty Income Ratio (PIR)

less than one than for persons with a PIR greater than one (Tables 2B, 2C, and 2D). This held true, in general, for all age and ethnic groups, although the small number of persons in the younger age groups made meaningful comparisons difficult.

A similar comparison of persons in the high-income-ratio states with PIR less than one (Tables 3B-D) and PIR greater than one revealed no marked differences. In general, riboflavin values appeared to be related to PIR in the low-income-ratio states but unrelated in the high-income-ratio states.

URINARY RIBOFLAVIN AND DIETARY RIBOFLAVIN INTAKE

The relationship between urinary riboflavin values and dietary intakes of the vitamin was examined by separating selected population groups into quartiles on the basis of the urinary riboflavin values. Mean riboflavin intakes tended to increase from the first through the fourth quartile with relatively minor exceptions (Table 4). The mean riboflavin intakes were from 20 to 75 percent higher for persons in the fourth quartile than for those in the first quartile.

The coefficients of correlation between urinary riboflavin values and riboflavin intakes were low. The wide variation in urinary riboflavin values, together with the narrower range of dietary riboflavin intakes accounted, in part, for the low coefficients of correlation. The range of riboflavin values for different quartiles is presented in Appendix Table 3.

With minor exceptions there was an increase in the mean riboflavin intake per 1000 calories from the first through the fourth quartile (Table 4). The mean riboflavin intakes per 1000 calories for persons in the fourth quartiles were from 15 to 37 percent higher than those for persons in the first quartiles. The finding that urinary riboflavin excretion was related to both dietary riboflavin intake and the nutrient density of riboflavin (intake per 1000 calories) suggests that in our population riboflavin status was dependent on both riboflavin content of foods and overall caloric intake.

MEAN URINARY THIAMINE VALUES

A wide range of urinary thiamine values was found in the population surveyed. Mean values for children under 10 years of age in all ethnic groups were lower in the low-income-ratio states than in the high-income-ratio states, but in both groups of

states were well above the level defining "low" values (Figures 1a and 1b). Mean thiamine values decreased with age, reaching minimum values in most instances in the age group 17 to 34 years. The mean values for age groups under 10 years were approximately double those for the older age groups. The most consistent ethnic difference was the somewhat lower mean levels among black persons.

DEFICIENT AND LOW URINARY THIAMINE VALUES

Less than 2 percent of the people tested had urinary thiamine values that were classified as "deficient" and less than 10 percent had values classified as "low." The prevalence of "deficient" and "low" values tended to be slightly higher in the low-income-ratio states.

Age Differences

In both groups of states, the age group with the highest prevalence of "deficient" and "low" values was generally the 10- to 16-year-old group. It should be noted that the standard for this age group is more than twice as high as the standard used for adults 17 years of age and older. The sharp change in standards accounts, in part, for the high percentage of values falling into the "deficient" and "low" range (Tables 5A and 6A).

Ethnic Differences

Generally, a somewhat higher prevalence of "deficient" and "low" urinary thiamine values was seen in the black population than in either the white or the Spanish-American populations. Spanish-American in both low- and high-income-ratio states showed the lowest prevalence of "deficient" and "low" values.

Poverty-Income-Ratio Differences

Income level had no apparent influence on the prevalence of "deficient" and "low" urinary thiamine values. For all ethnic groups and in both low- and high-income-ratio states, there appeared to be no consistent difference in the prevalence of "deficient" and "low" values when persons with a PIR of less than one were compared with persons with a PIR greater than one (Tables 5B-D 6B-D).

URINARY THIAMINE VALUES AND DIETARY THIAMINE INTAKE

Estimates of dietary thiamine intake, by quartile of urinary thiamine values, generally demonstrated a positive relationship between

thiamine intake and urinary thiamine values, (Table 7). In the 15- to 16-year age group and in pregnant or lactating women there was a 30 percent increase in mean thiamine intake between the lowest and highest quartile of thiamine values. Within other subgroups there was some deviation from this trend. For example, the first quartile of the 12- to 14-year age group had a higher mean thiamine intake than the second or third quartile.

The mean thiamine intakes were above the standards for all quartiles of infants and adolescents, with the exception of the first quartile for 15- to 16-year adolescents, the first two quartiles of pregnant or lactating women, and the first two quartiles of persons 60 years of age and over.

The range of the urinary thiamine values for the different quartiles is presented in Appendix Table 4.

The thiamine intakes ranged from 0.54 to 0.66 mg/1000 calories for all quartiles of adolescents. With few exceptions, values for the older age subgroups included in Table 7 fell within this range. There was an overall trend, although not always consistent, toward an increase in the amount of dietary thiamine per 1000 calories from the lowest to the highest quartiles. Therefore, it appeared that, in general, persons with the highest values for urinary thiamine were consuming foods with higher thiamine content in relation to calories. The wide variation seen in both urinary thiamine levels and estimates of thiamine intake accounted for the low coefficients of correlation seen between these two variables.

SUMMARY

There were a large number of persons in both groups of states with "deficient" and "low" riboflavin values. Riboflavin status was age dependent, with a higher prevalence of "deficient" and "low" values found for persons 17 years of age and under, than for those over 17.

In both groups of states, the percentage of "deficient" and "low" riboflavin values was higher for the black population than for either the white or Spanish-American. For all ethnic groups, riboflavin status was less satisfactory in the low-income-ratio states than in the high-income-ratio states.

In the low-income-ratio states, there were relatively fewer "deficient" and "low" values for black persons with a PIR value greater than one than for those with a PIR value less than one.

This was less pronounced for the white and Spanish-American populations. In the high-income-ratio states, no relationship between riboflavin status and income level was apparent.

Urinary riboflavin values appeared to be directly related to dietary intakes of the vitamin, although the degree of correlation between the two was fairly low. The data suggest that this dependency is related to both total food intake and riboflavin quality of the foods consumed.

Because of the poor standardization of the method for thiamine analysis, the interpretation of urinary thiamine data must be made with caution. In general, there were relatively low percentages of "deficient" and "low" urinary thiamine values. Thiamine status did not appear to be closely related to ethnic background or to PIR value; there was little difference between the two groups of states or within each subgroup when the population was separated by PIR value. Urinary thiamine values decreased with age. However, thiamine status as estimated by the prevalence of "deficient" and "low" values did not appear to be age dependent. The 10- to 16-year adolescents represented an exception; the percentages of "deficient" and "low" values were higher for this group than for any other age group.

Persons with the highest urinary thiamine excretion consumed foods with a higher thiamine-

to-calorie ratio than did those with lower urinary thiamine values.

Since urinary values are less reliable indicators of nutritional status than blood values, analyses based on casual urinary specimens should be interpreted with caution. In the future, developments in biochemical methodologies relating riboflavin and thiamine status to specific serum enzyme determinations will provide more meaningful information as to the nutritional status of population groups. As with most nutrients studied in this survey, further studies are needed to investigate the relationship of the various measures of riboflavin and thiamine nutriture to health status.

The data presented here suggest that riboflavin nutriture was a potential problem in the populations studied, particularly for children and young adults. Black and Spanish-American populations of all ages in the low-income-ratio states had evidence of less satisfactory riboflavin nutriture.

There does not appear to be a public health problem in the area of thiamine nutriture. However, the slightly higher prevalence of "deficient" and "low" values among 10- to 16-year-olds suggest that this group may have somewhat less satisfactory thiamine status.

Table 1. *Mean Urinary Riboflavin Values by Age, Sex, and Ethnic Group for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Low Income Ratio States												
Age Group	Ethnic Group											
	White				Black				Spanish American			
	Male		Female		Male		Female		Male		Female	
	Number	Mean	Number	Mean	Number	Mean	Number	Mean	Number	Mean	Number	Mean
TOTAL.....	1120	953	1819	889	1684	495	2342	460	757	662	978	616
<4.....	53	2198	33	1990	124	1079	84	1230	38	1437	37	1049
4-5.....	61	1470	45	1223	125	646	114	703	49	1075	46	1024
6-9.....	151	1458	130	1330	295	654	233	599	161	923	121	785
10-16.....	336	892	303	844	659	429	742	381	248	498	248	585
17-34.....	94	492	218	559	138	248	426	292	86	476	203	505
35-59.....	189	594	317	686	161	312	427	395	101	427	245	587
>59.....	236	778	273	794	182	327	316	563	74	515	78	546
High Income Ratio States												
Age Group	Ethnic Group											
	White				Black				Spanish American			
	Male		Female		Male		Female		Male		Female	
	Number	Mean	Number	Mean	Number	Mean	Number	Mean	Number	Mean	Number	Mean
TOTAL.....	3961	982	4886	950	661	873	707	1303	983	978	888	1366
<4.....	141	2216	138	2443	45	1045	42	1815	54	2419	51	2297
4-5.....	193	1766	151	1768	58	1487	54	1552	74	1908	64	1687
6-9.....	536	1488	461	1379	135	905	131	809	137	1129	209	1373
10-16.....	866	929	782	854	314	555	334	528	315	943	302	703
17-34.....	768	628	1361	710	109	468	330	621	155	552	355	644
35-59.....	824	683	1111	724	127	424	280	674	151	576	318	615
>59.....	633	933	882	1091	85	499	318	649	36	1053	67	981

Note: Urinary Riboflavin measured in $\mu\text{g/gm}$ creatinine.

Table 2A. *Percent of Persons Having Deficient or Low Urinary Riboflavin Values by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL.....	2439	2.0	8.5	4026	5.2	21.9	1736	3.0	16.6
<4.....	86	4.6	16.3	208	19.2	25.0	75	10.7	26.7
4-5.....	106	2.8	13.2	239	5.8	30.1	95	3.2	20.0
6-9.....	281	3.6	7.8	528	3.6	22.7	282	3.5	22.3
10-16.....	639	3.0	12.5	1401	7.1	25.6	496	4.0	22.0
17-34.....	312	1.3	8.8	564	1.6	20.4	289	2.1	9.0
35-59.....	506	1.0	4.7	588	2.4	16.5	346	0.9	11.8
>59.....	509	1.0	5.5	498	2.6	13.2	153	1.3	7.2

Table 2B. *Percent of Persons with a Poverty Income Ratio Less Than One Having Deficient or Low Urinary Riboflavin Values by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL.....	922	2.9	8.7	2695	5.4	23.2	1078	3.0	18.4
<4.....	38	6.1	15.2	144	20.1	29.2	52	7.7	28.8
4-5.....	41	2.4	9.8	173	7.5	31.8	63	0.0	22.2
6-9.....	110	5.5	10.0	359	3.1	21.2	184	3.8	25.0
10-16.....	227	5.3	11.9	974	7.2	26.9	333	4.5	22.2
17-34.....	87	1.1	8.0	347	2.0	22.2	159	3.1	9.4
35-59.....	174	0.6	6.3	339	2.1	18.0	199	0.5	14.6
>59.....	250	1.6	6.0	359	2.8	14.5	88	0.0	5.7

Urinary Riboflavin Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)		
	Deficient	Low
<4.....	<150	150-499
4-5.....	<100	100-299
6-9.....	<85	85-269
10-16.....	<70	70-199
>16.....	<27	27-79

Table 2C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Urinary Riboflavin Values by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL	1109	1.7	8.8	710	4.2	19.7	886	3.6	11.1
<4	88	5.8	21.1	32	15.6	18.8	16	18.8	18.8
4-5	44	0.0	18.2	29	0.0	20.7	18	11.1	11.1
6-9	112	2.7	6.3	85	4.7	25.9	53	3.8	15.1
10-16	288	2.1	18.8	203	6.9	26.6	79	3.8	21.5
17-84	170	1.8	10.0	123	1.6	16.3	85	1.2	4.7
85-59	275	1.5	3.8	151	1.3	14.6	91	1.1	6.6
>59	187	0.5	5.8	87	3.4	11.5	44	4.5	6.8

Table 2D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Urinary Riboflavin Values by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL	408	1.0	7.4	621	5.2	18.7	272	2.2	17.6
<4	15	0.0	6.7	32	18.8	12.5	7	14.3	28.6
4-5	21	9.5	9.5	37	2.7	29.7	14	7.1	21.4
6-9	59	1.7	6.8	84	4.8	26.2	45	2.2	20.0
10-16	129	0.8	10.9	224	7.1	19.2	84	2.4	21.4
17-84	55	0.0	8.6	94	0.0	19.1	45	0.0	15.6
85-59	57	0.0	7.0	98	5.1	14.3	56	1.8	10.7
>59	72	0.0	4.2	52	0.0	7.7	21	0.0	14.3

Urinary Riboflavin Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)

	Deficient	Low
<4	<150	150-499
4-5	<100	100-299
6-9	<85	85-269
10-16	<70	70-199
>16	<27	27-79

Table 3A. *Percent of Persons Having Deficient or Low Urinary Riboflavin Values by Age and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL.....	8847	0.9	6.0	2176	1.2	12.5	2338	0.7	6.0
<4.....	279	2.9	14.7	87	2.3	17.2	105	2.9	7.6
4-5.....	344	1.7	10.5	112	0.9	12.5	138	0.7	2.9
6-9.....	997	0.8	1.4	266	0.4	9.8	396	1.3	5.6
10-16.....	1648	1.2	6.6	648	2.2	19.0	617	0.6	8.1
17-34.....	2129	0.7	6.4	439	1.4	8.4	510	0.0	5.9
35-59.....	1935	0.8	6.0	407	0.5	7.1	469	0.6	5.1
>59.....	1515	0.5	5.0	217	0.5	12.4	103	0.0	1.9

Table 3B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Urinary Riboflavin Values by Age and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL.....	1368	1.1	6.7	664	1.4	13.0	700	0.9	6.7
<4.....	50	2.0	20.0	34	2.9	23.5	32	3.1	3.1
4-5.....	61	0.0	11.5	39	2.6	12.8	53	1.9	5.7
6-9.....	178	1.1	4.5	94	1.1	11.7	140	1.4	6.4
10-16.....	233	2.1	7.7	209	1.9	19.1	200	1.0	8.5
17-34.....	284	1.4	5.6	129	0.0	10.1	114	0.0	8.8
35-59.....	201	0.5	7.0	97	2.1	4.1	132	0.0	5.3
>59.....	361	0.6	5.3	62	0.0	6.5	29	0.0	0.0

Urinary Riboflavin Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)

	Deficient	Low
<4.....	<150	150-499
4-5.....	<100	100-299
6-9.....	<85	85-269
10-16.....	<70	70-199
>16.....	<27	27-79

Table 3C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Urinary Riboflavin Values by Age and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL.....	6582	0.9	6.6	1201	1.3	12.7	1241	0.4	5.4
<4.....	196	2.6	14.3	38	2.6	13.2	50	2.0	10.0
4-5.....	246	2.0	12.2	57	0.0	10.5	64	0.0	1.6
6-9.....	722	0.7	7.8	139	0.0	7.9	197	0.0	6.1
10-16.....	1224	1.1	5.6	347	2.6	19.3	307	0.3	7.5
17-34.....	1591	0.6	6.5	233	2.1	8.6	300	0.0	4.0
35-59.....	1597	0.9	5.9	258	0.0	8.1	263	1.1	4.6
>59.....	1006	0.4	5.1	129	0.8	16.3	60	0.0	3.3

Table 3D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Urinary Riboflavin Values by Age and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL.....	897	0.6	7.2	311	0.6	10.9	397	1.3	6.5
<4.....	33	6.1	9.1	15	0.0	13.3	23	4.3	8.7
4-5.....	37	0.0	0.0	16	0.0	18.8	21	0.0	0.0
6-9.....	97	1.0	10.3	33	0.0	12.1	59	5.1	1.7
10-16.....	191	0.5	11.5	92	1.1	17.4	110	0.9	9.1
17-34.....	254	0.0	6.3	77	1.3	3.9	96	0.0	8.3
35-59.....	137	0.0	5.8	52	0.0	7.7	74	0.0	6.8
>59.....	148	0.7	4.1	26	0.0	7.7	14	0.0	0.0

Urinary Riboflavin Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)

	Deficient	Low
<4.....	<150	150-499
4-5.....	<100	100-299
6-9.....	<85	85-269
10-16.....	<70	70-199
>16.....	<27	27-79

Table 4. Means of Riboflavin Intake by Quartile of Urinary Riboflavin Values for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Urinary Riboflavin Quartile	Age Group								Pregnant or Lactating Females	All Persons 60 Years of Age and Over		
	0-36 Months		10-11 Years		12-14 Years		15-16 Years			mg	mg/1000 Calories	
	mg	mg/1000 Calories	mg	mg/1000 Calories	mg	mg/1000 Calories	mg	mg/1000 Calories				
Number.....	287	287	1495	1495	2315	2315	753	753	384	384	1556	1556
First Quartile.....	1.44	1.17	1.75	0.91	1.61	0.80	1.62	0.80	1.26	0.78	1.27	0.84
Second Quartile.....	1.51	1.13	1.81	0.96	2.01	0.92	2.17	0.91	1.83	0.91	1.40	0.92
Third Quartile.....	1.87	1.18	2.03	0.96	2.07	0.89	2.13	0.96	2.03	1.08	1.62	0.96
Fourth Quartile.....	1.74	1.34	2.30	1.09	2.44	1.03	2.81	1.05	2.04	1.07	1.79	1.11
Correlation Coefficient.....	0.09		0.12		0.10		0.11		0.13		0.09	

NOTE: For Urinary Riboflavin quartile values refer to Table 3 Appendix.

Figure 1a—Mean Urinary Thiamine Values by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

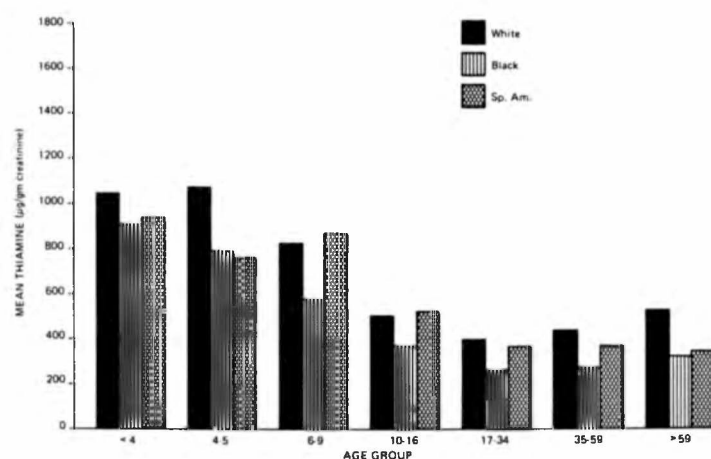


Table Reference: 4A 4G Appendix

Figure 1b—Mean Urinary Thiamine Values by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

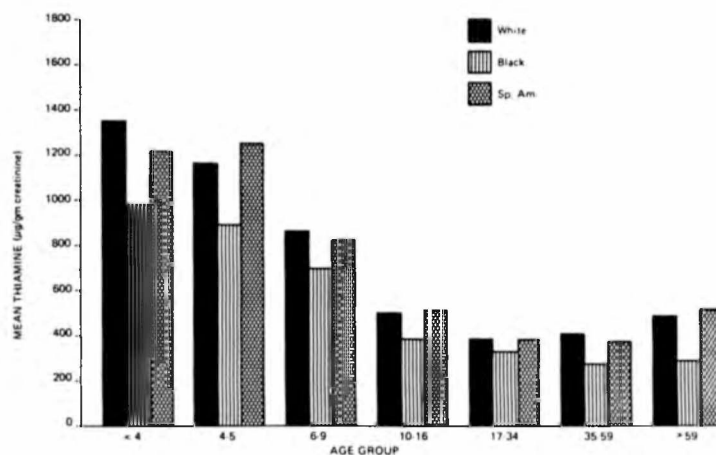


Table Reference: 5A 5G Appendix

Table 5A. *Percent of Persons Having Deficient or Low Urinary Thiamine Values by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent Deficient Values	Percent With Low Values	Total Number	Percent Deficient Values	Percent With Low Values	Total Number	Percent Deficient Values	Percent With Low Values
TOTAL ¹	2358	1.4	5.8	3791	1.7	9.5	1719	0.7	5.4
<4	78	3.8	6.4	181	3.9	5.0	73	1.4	2.7
4-5	96	1.0	2.1	222	2.3	1.4	88	0.0	1.3
6-9	264	1.5	7.6	494	2.0	6.3	269	0.0	4.8
10-16	623	2.4	10.3	1308	2.0	15.5	496	1.0	8.7
17-34	305	0.3	3.3	541	0.9	7.0	287	0.0	2.8
35-59	496	1.0	2.8	574	1.2	7.7	357	0.8	3.4
>59	496	0.6	4.2	471	0.8	7.2	149	2.0	9.4

Table 5B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Urinary Thiamine Values by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent Deficient Values	Percent With Low Values	Total Number	Percent Deficient Values	Percent With Low Values	Total Number	Percent Deficient Values	Percent With Low Values
TOTAL ¹	905	1.2	5.2	2517	1.7	9.6	1059	0.8	5.4
<4	29	0.0	6.9	128	4.9	2.4	49	2.0	2.0
4-5	38	0.0	0.0	166	3.0	1.8	56	0.0	1.8
6-9	108	0.9	9.2	335	1.8	5.7	178	0.0	3.9
10-16	230	2.2	7.8	902	1.7	15.5	332	1.2	7.5
17-34	84	0.0	1.2	328	1.2	6.7	159	0.0	2.5
35-59	171	1.8	4.1	322	1.6	9.3	196	1.0	4.6
>59	245	0.8	3.7	341	0.9	7.3	89	2.2	11.2

¹ Total excludes persons with unknown age.

Urinary Thiamine Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)

	Deficient	Low
<4	<120	120-175
4-5	<85	85-120
6-9	<70	70-180
10-16	<55	55-150
>16	<27	27-65

Table 5C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Urinary Thiamine Values by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With Deficient Values	Percent With Low Values	Total Number	Percent With Deficient Values	Percent With Low Values	Total Number	Percent With Deficient Values	Percent With Low Values
TOTAL ¹	1053	1.1	6.6	682	0.9	8.6	379	0.3	5.8
<4	34	2.9	5.9	29	0.0	6.9	17	0.0	5.9
4-5	38	2.6	5.3	26	0.0	0.0	19	0.0	0.0
6-9	98	2.0	6.1	78	0.0	9.0	45	0.0	8.9
10-16	267	2.2	13.5	190	1.6	14.7	77	0.0	13.0
17-34	166	0.0	4.2	121	0.8	5.8	80	0.0	2.5
35-59	270	0.4	2.2	155	0.6	7.1	100	0.0	2.0
>59	180	0.6	5.6	83	1.2	4.8	41	2.4	7.3

Table 5D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Urinary Thiamine Values by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With Deficient Values	Percent With Low Values	Total Number	Percent With Deficient Values	Percent With Low Values	Total Number	Percent With Deficient Values	Percent With Low Values
TOTAL ¹	400	2.2	5.5	592	2.4	10.3	281	0.7	5.0
<4	15	13.3	6.7	29	3.4	13.8	7	0.0	0.0
4-5	20	0.0	0.0	30	0.0	0.0	13	0.0	0.0
6-9	58	1.7	6.9	81	4.9	6.2	46	0.0	4.3
10-16	126	3.2	9.5	216	3.7	16.2	87	1.1	9.2
17-34	55	1.8	3.6	92	0.0	9.8	48	0.0	4.2
35-59	55	1.8	1.8	97	1.0	3.1	61	1.6	1.6
>59	71	0.0	2.8	47	0.0	10.6	19	0.0	5.3

¹ Total excludes persons with unknown age.

Urinary Thiamine Deficient and Low Value Classifications ($\mu\text{g/gm creatinine}$)

	Deficient	Low
<4	<120	120-175
4-5	<85	85-120
6-9	<70	70-180
10-16	<55	55-150
>16	<27	27-65

Table 6A. *Percent of Persons Having Deficient or Low Urinary Thiamine Values by Age and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent Deficient Values	With Low Values	Total Number	Percent Deficient Values	With Low Values	Total Number	Percent Deficient Values	With Low Values
TOTAL ¹	6527	0.6	3.6	1886	1.4	7.8	1878	0.6	4.8
<4	196	2.6	1.5	76	1.3	1.3	84	0.0	1.2
4-5	183	0.5	1.6	90	0.0	2.2	104	1.0	0.0
6-9	634	0.9	4.3	215	0.9	3.7	293	1.0	3.6
10-16	1402	0.8	6.8	590	1.2	13.4	516	0.6	7.0
17-34	1423	0.4	2.5	373	1.3	5.4	430	0.0	4.0
35-59	1372	0.4	3.1	353	2.3	6.8	370	1.1	5.1
>59	1317	0.5	2.1	189	2.1	6.9	81	0.0	8.6

Table 6B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Urinary Thiamine Values by Age and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent Deficient Values	With Low Values	Total Number	Percent Deficient Values	With Low Values	Total Number	Percent Deficient Values	With Low Values
TOTAL ¹	1006	0.8	3.2	563	1.1	7.6	553	0.5	6.3
<4	32	0.0	0.0	32	0.0	0.0	25	0.0	0.0
4-5	34	0.0	0.0	32	0.0	0.0	34	2.9	0.0
6-9	120	1.7	1.7	72	0.0	5.6	100	0.0	2.0
10-16	194	0.5	5.7	193	1.0	13.0	164	0.6	9.8
17-34	188	1.1	2.6	105	0.0	4.8	97	0.0	6.2
35-59	133	0.8	3.0	77	3.9	6.5	105	1.0	7.6
>59	305	0.6	3.3	52	1.9	7.7	28	0.0	10.7

¹ Total excludes persons with unknown age.

Urinary Thiamine Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)

	Deficient	Low
<4	<120	120-175
4-5	<85	85-120
6-9	<70	70-180
10-16	<55	55-150
>16	<27	27-65

Table 6C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Urinary Thiamine Values by Age and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent Deficient Values	Percent With Low Values	Total Number	Percent Deficient Values	Percent With Low Values	Total Number	Percent Deficient Values	Percent With Low Values
TOTAL ¹	4910	0.6	3.7	1044	1.6	6.6	1006	0.2	4.8
<4	137	2.9	2.2	32	3.1	3.1	38	0.0	0.0
4-5	134	0.7	2.2	47	0.0	2.1	53	0.0	0.0
6-9	460	0.9	5.2	115	0.9	1.7	152	0.6	5.3
10-16	1055	0.9	6.8	311	1.3	11.9	267	0.4	6.0
17-34	1090	0.3	2.5	198	2.0	5.0	248	0.0	3.6
35-59	1144	0.4	3.2	226	1.8	5.3	206	0.0	5.3
>59	890	0.4	1.8	115	2.6	5.2	42	0.0	9.5

Table 6D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Urinary Thiamine Values by Age and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent Deficient Values	Percent With Low Values	Total Number	Percent Deficient Values	Percent With Low Values	Total Number	Percent Deficient Values	Percent With Low Values
TOTAL ¹	611	0.5	3.3	279	1.4	12.5	319	1.9	2.8
<4	27	3.7	0.0	12	0.0	0.0	21	0.0	4.8
4-5	15	0.0	0.0	11	0.0	9.1	17	0.0	0.0
6-9	54	0.0	1.9	28	3.6	7.1	41	4.9	2.4
10-16	153	0.0	8.5	86	1.2	19.8	85	1.2	5.9
17-34	145	0.7	2.1	70	1.4	7.1	85	0.0	2.4
35-59	95	0.0	1.0	50	2.0	14.0	59	5.1	0.0
>59	122	0.8	1.6	22	0.0	13.6	11	0.0	0.0

¹ Total excludes persons with unknown age.

Urinary Thiamine Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)

	Deficient	Low
<4	<120	120-175
4-5	<85	85-120
6-9	<70	70-180
10-16	<55	55-150
>16	<27	27-65

Table 7. *Means of Thiamine Intake by Quartile of Urinary Thiamine Values for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Thiamine Quartile	Age Group								Pregnant or Lactating Females	All Persons 60 Years of Age and Over		
	0-36 Months		10-11 Years		12-14 Years		15-16 Years			mg	mg/1000 Calories	
	mg	mg/1000 Calories	mg	mg/1000 Calories	mg	mg/1000 Calories	mg	mg/1000 Calories				
Number.....	237	237	1326	1326	2092	2092	703	703	321	321	1405	1405
First Quartile.....	0.83	0.64	1.18	0.62	1.43	0.55	1.14	0.54	1.03	0.57	0.82	0.56
Second Quartile.....	0.86	0.64	1.23	0.61	1.31	0.60	1.40	0.56	0.97	0.55	0.99	0.61
Third Quartile.....	1.03	0.73	1.31	0.63	1.37	0.60	1.47	0.59	1.27	0.62	1.15	0.66
Fourth Quartile.....	1.02	0.63	1.37	0.66	1.46	0.63	1.55	0.64	1.28	0.70	1.01	0.61
Correlation Coefficient.....	0.02		0.06		0.06		0.07		0.02		0.01	

NOTE: For Urinary Thiamine quartile values refer to Table 6 Appendix.

APPENDIX

6. Riboflavin and Thiamine

Table 1A Appendix. *Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Under Four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	86	100.0	100.0	208	100.0	100.0	75	100.0	100.0
<0027.....	—	—	—	—	—	—	—	—	—
0027-0069.....	—	—	—	20	9.6	9.6	1	1.3	1.3
0070-0079.....	—	—	—	2	1.0	10.6	—	—	1.3
0080-0084.....	—	—	—	—	—	10.6	—	—	1.3
0085-0089.....	—	—	—	—	—	10.6	1	1.3	2.6
0090-0099.....	2	2.3	2.3	5	2.4	13.0	—	—	2.6
0100-0149.....	2	2.3	4.6	13	6.2	19.2	6	8.0	10.6
0150-0199.....	1	1.2	5.8	10	4.8	24.0	6	8.0	18.6
0200-0269.....	2	2.3	8.1	12	5.8	29.8	5	6.7	25.3
0270-0299.....	—	—	8.1	4	1.9	31.7	3	4.0	29.3
0300-0399.....	7	8.1	16.2	19	9.1	40.8	2	2.7	32.0
0400-0499.....	4	4.7	20.9	7	3.4	44.2	4	5.3	37.3
0500-0599.....	2	2.3	23.2	22	10.6	54.8	7	9.3	46.6
0600-0699.....	5	5.8	29.0	11	5.3	60.1	1	1.3	47.9
0700-0799.....	2	2.3	31.3	9	4.3	64.4	4	5.3	53.2
0800-0899.....	2	2.3	33.6	6	2.9	67.3	1	1.3	54.5
0900-0999.....	4	4.7	38.3	5	2.4	69.7	4	5.3	59.8
1000-1499.....	13	15.1	53.4	17	8.2	77.9	12	16.0	75.8
1500-1999.....	8	9.3	62.7	13	6.2	84.1	6	8.0	83.8
2000-2499.....	9	10.5	73.2	11	5.3	89.4	2	2.7	86.5
2500-2999.....	4	4.7	77.9	1	0.5	89.9	4	5.3	91.8
>2999.....	19	22.1	100.0	21	10.1	100.0	6	8.0	99.8
Mean.....	2118			1140			1245		
Median.....	1384			554			737		

Table 1B Appendix. *Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Four through Five Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	106	100.0	100.0	239	100.0	100.0	95	100.0	100.0
<0027.....	1	0.9	0.9	2	0.8	0.8	—	—	—
0027-0069.....	2	1.9	2.8	7	2.9	3.7	—	—	—
0070-0079.....	—	—	2.8	2	0.8	4.5	—	—	—
0080-0084.....	—	—	2.8	—	—	4.5	—	—	—
0085-0089.....	—	—	2.8	1	0.4	4.9	2	2.1	2.1
0090-0099.....	—	—	2.8	2	0.8	5.7	1	1.1	3.2
0100-0149.....	5	4.7	7.5	20	8.4	14.1	7	7.4	10.6
0150-0199.....	3	2.8	10.3	18	7.5	21.6	6	6.3	16.9
0200-0269.....	6	5.7	16.0	24	10.0	31.6	4	4.2	21.1
0270-0299.....	—	—	16.0	10	4.2	35.8	2	2.1	23.2
0300-0399.....	12	11.3	27.3	36	15.1	50.9	6	6.3	29.5
0400-0499.....	4	3.8	31.1	20	8.4	59.3	8	8.4	37.9
0500-0599.....	10	9.4	40.5	18	7.5	66.8	10	10.5	48.4
0600-0699.....	5	4.7	45.2	8	3.3	70.1	9	9.5	57.9
0700-0799.....	3	2.8	48.0	12	5.0	75.1	3	3.2	61.1
0800-0899.....	3	2.8	50.8	13	5.4	80.5	3	3.2	64.3
0900-0999.....	3	2.8	53.6	8	3.3	83.8	4	4.2	68.5
1000-1499.....	20	18.9	72.5	18	7.5	91.3	12	12.6	81.1
1500-1999.....	10	9.4	81.9	4	1.7	93.0	8	8.4	89.5
2000-2499.....	5	4.7	86.6	6	2.5	95.5	2	2.1	91.6
2500-2999.....	3	2.8	89.4	5	2.1	97.6	1	1.1	92.7
>2999.....	11	10.4	99.8	5	2.1	99.7	7	7.4	100.1
Mean.....	1365			673			1049		
Median.....	867			393			617		

Table 1C Appendix. Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Six through Nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	281	100.0	100.0	528	100.0	100.0	282	100.0	100.0
<0027	3	1.1	1.1	1	0.2	0.2	—	—	—
0027-0069	4	1.4	2.5	10	1.9	2.1	7	2.5	2.5
0070-0079	2	0.7	3.2	7	1.3	3.4	2	0.7	3.2
0080-0084	1	0.4	3.6	1	0.2	3.6	1	0.4	3.6
0085-0089	1	0.4	4.0	2	0.4	4.0	—	—	3.6
0090-0099	2	0.7	4.7	3	0.6	4.6	—	—	3.6
0100-0149	4	1.4	6.1	28	5.3	9.9	17	6.0	9.6
0150-0199	6	2.1	8.2	37	7.0	16.9	20	7.1	16.7
0200-0269	9	3.2	11.4	50	9.5	26.4	26	9.2	25.9
0270-0299	3	1.1	12.5	17	3.2	29.6	15	5.3	31.2
0300-0399	23	8.2	20.7	81	15.3	44.9	28	9.9	41.1
0400-0499	12	4.3	25.0	76	14.4	59.3	23	8.2	49.3
0500-0599	20	7.1	32.1	38	7.2	66.5	17	6.0	55.3
0600-0699	26	9.3	41.4	34	6.4	72.9	13	4.6	59.9
0700-0799	16	5.7	47.1	28	5.3	78.2	12	4.3	64.2
0800-0899	17	6.0	53.1	18	3.4	81.6	15	5.3	69.5
0900-0999	17	6.0	59.1	18	3.4	85.0	11	3.9	73.4
1000-1499	40	14.2	73.3	41	7.8	92.8	39	13.8	87.2
1500-1999	24	8.5	81.8	17	3.2	96.0	12	4.3	91.5
2000-2499	12	4.3	86.1	9	1.7	97.7	7	2.5	94.0
2500-2999	9	3.2	89.3	2	0.4	98.1	2	0.7	94.7
>2999	30	10.7	100.0	10	1.9	100.0	15	5.3	100.0
Mean	1399			630			864		
Median	850			436			512		

Table 1D Appendix. Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Ten through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	639	100.0	100.0	1401	100.0	100.0	496	100.0	100.0
<0027	5	0.8	0.8	13	0.9	0.9	2	0.4	0.4
0027-0069	14	2.2	3.0	87	6.2	7.1	18	3.6	4.0
0070-0079	6	0.9	3.9	27	1.9	9.0	6	1.2	5.2
0080-0084	3	0.5	4.4	21	1.5	10.5	4	0.8	6.0
0085-0089	3	0.5	4.9	16	1.1	11.6	3	0.6	6.6
0090-0099	3	0.5	5.4	23	1.6	13.2	3	0.6	7.2
0100-0149	26	4.1	9.5	117	8.4	21.6	49	9.9	17.1
0150-0199	39	6.1	15.6	155	11.1	32.7	44	8.9	26.0
0200-0269	42	6.6	22.2	211	15.1	47.8	70	14.1	40.1
0270-0299	20	3.1	25.3	80	5.7	53.5	19	3.8	43.9
0300-0399	76	11.9	37.2	204	14.6	68.1	58	11.7	55.6
0400-0499	64	10.0	47.2	137	9.8	77.9	53	10.7	66.3
0500-0599	51	8.0	55.2	82	5.9	83.8	31	6.2	72.5
0600-0699	51	8.0	63.2	54	3.9	87.7	29	5.8	78.3
0700-0799	42	6.6	69.8	35	2.5	90.2	25	5.0	83.3
0800-0899	25	3.9	73.7	28	2.0	92.2	12	2.4	85.7
0900-0999	21	3.3	77.0	23	1.6	93.8	9	1.8	87.5
1000-1499	65	10.2	87.2	53	3.8	97.6	35	7.1	94.6
1500-1999	28	4.4	91.6	16	1.1	98.7	13	2.6	97.2
2000-2499	17	2.7	94.3	7	0.5	99.2	4	0.8	98.0
2500-2999	12	1.9	96.2	3	0.2	99.4	3	0.6	98.6
>2999	26	4.1	100.3	9	0.6	100.0	6	1.2	99.8
Mean	869			403			541		
Median	536			281			352		

Table 1E Appendix. *Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Seventeen through Thirty-Four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	312	100.0	100.0	564	100.0	100.0	289	100.0	100.0
< 0027.....	4	1.3	1.3	9	1.6	1.6	6	2.1	2.1
0027-0069.....	22	7.1	8.4	93	16.5	18.1	20	6.9	9.0
0070-0079.....	4	1.3	9.7	22	3.9	22.0	6	2.1	11.1
0080-0084.....	4	1.3	11.0	11	2.0	24.0	1	0.3	11.4
0085-0089.....	2	0.6	11.6	14	2.5	26.5	7	2.4	13.8
0090-0099.....	9	2.9	14.5	24	4.3	30.8	11	3.8	17.6
0100-0149.....	36	11.5	26.0	79	14.0	44.8	35	12.1	29.7
0150-0199.....	17	5.4	31.4	71	12.6	57.4	32	11.1	40.8
0200-0269.....	30	9.6	41.0	72	12.8	70.2	30	10.4	51.2
0270-0299.....	14	4.5	45.5	21	3.7	73.9	9	3.1	54.3
0300-0399.....	45	14.4	59.9	48	8.5	82.4	34	11.8	66.1
0400-0499.....	27	8.7	68.6	32	5.7	88.1	29	10.0	76.1
0500-0599.....	20	6.4	75.0	21	3.7	91.8	17	5.9	82.0
0600-0699.....	11	3.5	78.5	6	1.1	92.9	11	3.8	85.8
0700-0799.....	15	4.8	83.3	7	1.2	94.1	3	1.0	86.8
0800-0899.....	10	3.2	86.5	6	1.1	95.2	7	2.4	89.2
0900-0999.....	9	2.9	89.4	5	0.9	96.1	1	0.3	89.5
1000-1499.....	19	6.1	95.5	13	2.3	98.4	13	4.5	94.0
1500-1999.....	7	2.2	97.7	4	0.7	99.1	8	2.8	96.8
2000-2499.....	2	0.6	98.3	3	0.5	99.6	2	0.7	97.5
2500-2999.....	—	—	98.3	—	—	99.6	1	0.3	97.8
> 2999.....	5	1.6	99.9	3	0.5	100.1	6	2.1	99.9
Mean.....	538			281			496		
Median.....	331			171			262		

Table 1F Appendix. *Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Thirty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	506	100.0	100.0	588	100.0	100.0	346	100.0	100.0
< 0027.....	5	1.0	1.0	14	2.4	2.4	3	0.9	0.9
0027-0069.....	21	4.2	5.2	78	13.3	15.7	32	9.2	10.1
0070-0079.....	3	0.6	5.8	19	3.2	18.9	9	2.6	12.7
0080-0084.....	3	0.6	6.4	14	2.4	21.3	2	0.6	18.3
0085-0089.....	3	0.6	7.0	12	2.0	23.3	3	0.9	14.2
0090-0099.....	12	2.4	9.4	17	2.9	26.2	8	2.3	16.5
0100-0149.....	47	9.3	18.7	99	16.8	43.0	30	8.7	25.2
0150-0199.....	42	8.3	27.0	52	8.8	51.8	37	10.7	35.9
0200-0269.....	53	10.5	37.5	74	12.6	64.4	41	11.8	47.7
0270-0299.....	14	2.8	40.3	25	4.3	68.7	18	5.2	52.9
0300-0399.....	80	15.8	56.1	55	9.4	78.1	39	11.3	64.2
0400-0499.....	43	8.5	64.6	30	5.1	83.2	26	7.5	71.7
0500-0599.....	30	5.9	70.5	20	3.4	86.6	15	4.3	76.0
0600-0699.....	25	4.9	75.4	11	1.9	88.5	15	4.3	80.3
0700-0799.....	17	3.4	78.8	12	2.0	90.5	13	3.8	84.1
0800-0899.....	16	3.2	82.0	8	1.4	91.9	10	2.9	87.0
0900-0999.....	16	3.2	85.2	8	1.4	93.3	6	1.7	88.7
1000-1499.....	35	6.9	92.1	21	3.6	96.9	20	5.8	94.5
1500-1999.....	13	2.6	94.7	7	1.2	98.1	7	2.0	96.5
2000-2499.....	6	1.2	95.9	4	0.7	98.8	4	1.2	97.7
2500-2999.....	7	1.4	97.3	2	0.3	99.1	3	0.9	98.6
> 2999.....	15	3.0	100.3	6	1.0	100.1	5	1.4	100.0
Mean.....	651			372			505		
Median.....	362			189			283		

Table 1G Appendix. *Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	509	100.0	100.0	498	100.0	100.0	153	100.0	100.0
<0027.....	5	1.0	1.0	13	2.6	2.6	2	1.3	1.3
0027-0069.....	22	4.3	5.3	50	10.0	12.6	7	4.6	5.9
0070-0079.....	6	1.2	6.5	16	3.2	15.8	4	2.6	8.5
0080-0084.....	3	0.6	7.1	11	2.2	18.0	5	3.3	11.8
0085-0089.....	3	0.6	7.7	3	0.6	18.6	—	—	11.8
0090-0099.....	3	0.6	8.3	13	2.6	21.2	2	1.3	13.1
0100-0149.....	45	8.8	17.1	74	14.9	36.1	18	11.8	24.9
0150-0199.....	38	7.5	24.6	68	13.7	49.8	14	9.2	34.1
0200-0269.....	56	11.0	35.6	59	11.8	61.6	20	13.1	47.2
0270-0299.....	16	3.1	38.7	19	3.8	65.4	9	5.9	53.1
0300-0399.....	54	10.6	49.3	38	7.6	73.0	15	9.8	62.9
0400-0499.....	47	9.2	58.5	32	6.4	79.4	9	5.9	68.8
0500-0599.....	33	6.5	65.0	17	3.4	82.8	18	11.8	80.6
0600-0699.....	18	3.5	68.5	13	2.6	85.4	4	2.6	83.2
0700-0799.....	22	4.3	72.8	7	1.4	86.8	4	2.6	85.8
0800-0899.....	22	4.3	77.1	11	2.2	89.0	2	1.3	87.1
0900-0999.....	8	1.6	78.7	7	1.4	90.4	3	2.0	89.1
1000-1499.....	42	8.3	87.0	18	3.6	94.0	6	3.9	93.0
1500-1999.....	23	4.5	91.5	9	1.8	95.8	5	3.3	96.3
2000-2499.....	17	3.3	94.8	8	1.6	97.4	1	0.7	97.0
2500-2999.....	4	0.8	95.6	—	—	97.4	1	0.7	97.7
>2999.....	22	4.3	99.9	12	2.4	99.8	4	2.6	100.3
Mean.....	786			477			530		
Median.....	407			201			285		

Table 2A Appendix. *Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Under Four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	279	100.0	100.0	87	100.0	100.0	105	100.0	100.0
<0027.....	1	0.4	0.4	—	—	—	—	—	—
0027-0069.....	3	1.1	1.5	—	—	—	—	—	—
0070-0079.....	—	—	1.5	—	—	—	1	1.0	1.0
0080-0084.....	—	—	1.5	—	—	—	—	—	1.0
0085-0089.....	—	—	1.5	—	—	—	—	—	1.0
0090-0099.....	—	—	1.5	—	—	—	1	1.0	2.0
0100-0149.....	4	1.4	2.9	2	2.3	2.3	1	1.0	3.0
0150-0199.....	3	1.1	4.0	1	1.1	3.4	1	1.0	4.0
0200-0269.....	10	3.6	7.6	3	3.4	6.8	1	1.0	5.0
0270-0299.....	5	1.8	9.4	2	2.3	9.1	1	1.0	6.0
0300-0399.....	9	3.2	12.6	3	3.4	12.5	3	2.9	8.9
0400-0499.....	14	5.0	17.6	6	6.9	19.4	2	1.9	10.8
0500-0599.....	12	4.3	21.9	8	9.2	28.6	5	4.8	15.6
0600-0699.....	9	3.2	25.1	8	9.2	37.8	3	2.9	18.5
0700-0799.....	9	3.2	28.3	7	8.0	45.8	3	2.9	21.4
0800-0899.....	10	3.6	31.9	1	1.1	46.9	6	5.7	27.1
0900-0999.....	9	3.2	35.1	7	8.0	54.9	1	1.0	28.1
1000-1499.....	40	14.3	49.4	16	18.4	73.3	16	15.2	43.3
1500-1999.....	36	12.9	62.3	10	11.5	84.8	19	18.1	61.4
2000-2499.....	28	10.0	72.3	2	2.3	87.1	5	4.8	66.2
2500-2999.....	15	5.4	77.7	3	3.4	90.5	9	8.6	74.8
>2999.....	62	22.2	99.9	8	9.3	99.8	27	25.7	100.5
Mean.....	2828			1416			2360		
Median.....	1521			936			1697		

Table 2B Appendix. Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Four through Five Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	344	100.0	100.0	112	100.0	100.0	138	100.0	100.0
<0027.....	1	0.3	0.3	—	—	—	—	—	—
0027-0069.....	1	0.3	0.6	1	0.9	0.9	1	0.7	0.7
0070-0079.....	2	0.6	1.2	—	—	0.9	—	—	0.7
0080-0084.....	—	—	1.2	—	—	0.9	—	—	0.7
0085-0089.....	—	—	1.2	—	—	0.9	—	—	0.7
0090-0099.....	2	0.6	1.8	—	—	0.9	—	—	0.7
0100-0149.....	7	2.0	3.8	3	2.7	3.6	—	—	0.7
0150-0199.....	5	1.5	5.3	2	1.8	5.4	2	1.4	2.1
0200-0269.....	13	3.8	9.1	4	3.6	9.0	1	0.7	2.8
0270-0299.....	11	3.2	12.3	5	4.5	13.5	1	0.7	3.5
0300-0399.....	18	5.2	17.5	5	4.5	18.0	2	1.4	4.9
0400-0499.....	18	5.2	22.7	7	6.2	24.2	6	4.3	9.2
0500-0599.....	11	3.2	25.9	9	8.0	32.2	9	6.5	15.7
0600-0699.....	14	4.1	30.0	9	8.0	40.2	7	5.1	20.8
0700-0799.....	15	4.4	34.4	4	3.6	43.8	13	9.4	30.2
0800-0899.....	12	3.5	37.9	7	6.2	50.0	5	3.6	33.8
0900-0999.....	19	5.5	43.4	6	5.4	55.4	13	9.4	43.2
1000-1499.....	58	16.9	60.3	20	17.9	73.3	24	17.4	60.6
1500-1999.....	35	10.2	70.5	10	8.9	82.2	15	10.9	71.5
2000-2499.....	21	6.1	76.6	4	3.6	85.8	9	6.5	78.0
2500-2999.....	21	6.1	82.7	1	0.9	86.7	8	5.8	83.8
>2999.....	60	17.4	100.1	15	13.4	100.1	22	15.9	99.7
Mean.....	1766			1518			1805		
Median.....	1198			900			1188		

Table 2C Appendix. Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Six through Nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	997	100.0	100.0	266	100.0	100.0	396	100.0	100.0
<0027.....	1	0.1	0.1	—	—	—	—	—	—
0027-0069.....	5	0.5	0.6	1	0.4	0.4	4	1.0	1.0
0070-0079.....	1	0.1	0.7	—	—	0.4	1	0.3	1.3
0080-0084.....	1	0.1	0.8	—	—	0.4	—	—	1.3
0085-0089.....	—	—	0.8	1	0.4	0.8	—	—	1.3
0090-0099.....	4	0.4	1.2	1	0.4	1.2	1	0.3	1.6
0100-0149.....	12	1.2	2.4	8	3.0	4.2	5	1.3	2.9
0150-0199.....	16	1.6	4.0	4	1.5	5.7	4	1.0	3.9
0200-0269.....	42	4.2	8.2	12	4.5	10.2	12	3.0	6.9
0270-0299.....	19	1.9	10.1	4	1.5	11.7	6	1.5	8.4
0300-0399.....	59	5.9	16.0	32	12.0	23.7	22	5.6	14.0
0400-0499.....	64	6.4	22.4	33	12.4	36.1	39	9.8	23.8
0500-0599.....	71	7.1	29.5	33	12.4	48.5	28	7.1	30.9
0600-0699.....	59	5.9	35.4	28	10.5	59.0	33	8.3	39.2
0700-0799.....	70	7.0	42.4	27	10.2	69.2	22	5.6	44.8
0800-0899.....	67	6.7	49.1	10	3.8	73.0	22	5.6	50.4
0900-0999.....	59	5.9	55.0	6	2.3	75.3	22	5.6	56.0
1000-1499.....	178	17.9	72.9	33	12.4	87.7	87	22.0	78.0
1500-1999.....	81	8.1	81.0	16	6.0	93.7	34	8.6	86.6
2000-2499.....	45	4.5	85.5	5	1.9	95.6	22	5.6	92.2
2500-2999.....	32	3.2	88.7	3	1.1	96.7	9	2.3	94.5
>2999.....	111	11.1	99.8	9	3.4	100.1	23	5.8	100.3
Mean.....	1437			858			1258		
Median.....	913			614			895		

Table 2D Appendix. *Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Ten through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1648	100.0	100.0	648	100.0	100.0	617	100.0	100.0
<0027.....	1	0.1	0.1	1	0.2	0.2	—	—	—
0027-0069.....	18	1.1	1.2	13	2.0	2.2	4	0.6	0.6
0070-0079.....	7	0.4	1.6	4	0.6	2.8	2	0.3	0.9
0080-0084.....	2	0.1	1.7	2	0.3	3.1	1	0.2	1.1
0085-0089.....	1	0.1	1.8	3	0.5	3.6	1	0.2	1.3
0090-0099.....	3	0.2	2.0	11	1.7	5.3	4	0.6	1.9
0100-0149.....	45	2.7	4.7	53	8.2	13.5	19	3.1	5.0
0150-0199.....	50	3.0	7.7	50	7.7	21.2	23	3.7	8.7
0200-0269.....	88	5.3	13.0	68	10.5	31.7	51	8.3	17.0
0270-0299.....	47	2.9	15.9	29	4.5	36.2	18	2.9	19.9
0300-0399.....	194	11.8	27.7	98	15.1	51.3	87	14.1	34.0
0400-0499.....	169	10.3	38.0	68	10.5	61.8	74	12.0	46.0
0500-0599.....	139	8.4	46.4	57	8.8	70.6	59	9.6	55.6
0600-0699.....	141	8.6	55.0	43	6.6	77.2	41	6.6	62.2
0700-0799.....	116	7.0	62.0	42	6.5	83.7	38	6.2	68.4
0800-0899.....	90	5.5	67.5	23	3.5	87.2	36	5.8	74.2
0900-0999.....	81	4.9	72.4	19	2.9	90.1	26	4.2	78.4
1000-1499.....	234	14.2	86.6	30	4.6	94.7	82	13.3	91.7
1500-1999.....	94	5.7	92.3	14	2.2	96.9	16	2.6	94.3
2000-2499.....	46	2.8	95.1	8	1.2	98.1	14	2.3	96.6
2500-2999.....	26	1.6	96.7	3	0.5	98.6	6	1.0	97.6
>2999.....	56	3.4	100.1	9	1.4	100.0	15	2.4	100.0
Mean.....	892			541			766		
Median.....	642			392			542		

Table 2E Appendix. *Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Seventeen through Thirty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	2129	100.0	100.0	439	100.0	100.0	510	100.0	100.0
<0027.....	14	0.7	0.7	6	1.4	1.4	—	—	—
0027-0069.....	107	5.0	5.7	30	6.8	8.2	21	4.1	4.1
0070-0079.....	29	1.4	7.1	7	1.6	9.8	9	1.8	5.9
0080-0084.....	20	0.9	8.0	5	1.1	10.9	5	1.0	6.9
0085-0089.....	18	0.8	8.8	8	1.8	12.7	3	0.6	7.5
0090-0099.....	42	2.0	10.8	8	1.8	14.5	7	1.4	8.9
0100-0149.....	177	8.3	19.1	64	14.6	29.1	47	9.2	18.1
0150-0199.....	173	8.1	27.2	35	8.0	37.1	48	9.4	27.5
0200-0269.....	193	9.1	36.3	63	14.4	51.5	65	12.7	40.2
0270-0299.....	79	3.7	40.0	22	5.0	56.5	27	5.3	45.5
0300-0399.....	242	11.4	51.4	51	11.6	68.1	64	12.5	58.0
0400-0499.....	210	9.9	61.3	28	6.4	74.5	42	8.2	66.2
0500-0599.....	139	6.5	67.8	22	5.0	79.5	30	5.9	72.1
0600-0699.....	121	5.7	73.5	9	2.1	81.6	29	5.7	77.8
0700-0799.....	101	4.7	78.2	14	3.2	84.8	20	3.9	81.7
0800-0899.....	66	3.1	81.3	9	2.1	86.9	11	2.2	83.9
0900-0999.....	53	2.5	83.8	6	1.4	88.3	12	2.4	86.3
1000-1499.....	154	7.2	91.0	23	5.2	93.5	33	6.5	92.8
1500-1999.....	67	3.1	94.1	9	2.1	95.6	12	2.4	95.2
2000-2499.....	37	1.7	95.8	4	0.9	96.5	7	1.4	96.6
2500-2999.....	26	1.2	97.0	4	0.9	97.4	5	1.0	97.6
>2999.....	61	2.9	99.9	12	2.7	100.1	18	2.5	100.1
Mean.....	680			583			616		
Median.....	388			263			336		

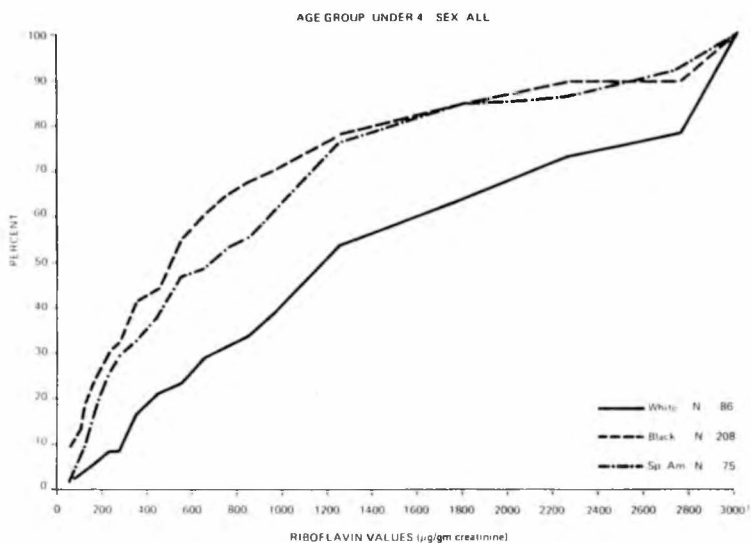
Table 2F Appendix. Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Thirty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	1935	100.0	100.0	407	100.0	100.0	469	100.0	100.0
<0027	15	0.8	0.8	2	0.5	0.5	3	0.6	0.6
0027-0069	89	4.6	5.4	23	5.7	6.2	19	4.1	4.7
0070-0079	28	1.4	6.8	6	1.5	7.7	5	1.1	5.8
0080-0084	10	0.5	7.3	6	1.5	9.2	3	0.6	6.4
0085-0089	16	0.8	8.1	7	1.7	10.9	3	0.6	7.0
0090-0099	33	1.7	9.8	9	2.2	13.1	8	1.7	8.7
0100-0149	179	9.3	19.1	43	10.6	23.7	43	9.2	17.9
0150-0199	159	8.2	27.3	44	10.8	34.5	30	6.4	24.3
0200-0269	201	10.4	37.7	54	13.3	47.8	59	12.6	36.9
0270-0299	74	3.8	41.5	20	4.9	52.7	22	4.7	41.6
0300-0399	222	11.5	53.0	57	14.0	66.7	56	11.9	53.5
0400-0499	160	8.3	61.3	35	8.6	75.3	48	10.2	63.7
0500-0599	142	7.3	68.6	22	5.4	80.7	32	6.8	70.5
0600-0699	86	4.4	73.0	12	2.9	83.6	26	5.5	76.0
0700-0799	78	4.0	77.0	11	2.7	86.3	19	4.1	80.1
0800-0899	68	3.5	80.5	6	1.5	87.8	11	2.3	82.4
0900-0999	53	2.7	83.2	9	2.2	90.0	13	2.8	85.2
1000-1499	107	5.5	88.7	13	3.2	93.2	32	6.8	92.0
1500-1999	76	3.9	92.6	11	2.7	95.9	18	3.8	95.8
2000-2499	38	2.0	94.6	5	1.2	97.1	3	0.6	96.4
2500-2999	30	1.6	96.2	1	0.2	97.3	5	1.1	97.5
>2999	71	3.7	99.9	11	2.7	100.0	11	2.3	99.8
Mean	707			596			602		
Median	374			284			370		

Table 2G Appendix. Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for All Persons Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Urinary Riboflavin Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	1515	100.0	100.0	217	100.0	100.0	103	100.0	100.0
<0027	7	0.5	0.5	1	0.5	0.5	—	—	—
0027-0069	61	4.0	4.5	16	7.4	7.9	1	1.0	1.0
0070-0079	15	1.0	5.5	11	5.1	18.0	1	1.0	2.0
0080-0084	10	0.7	6.2	1	0.5	13.5	1	1.0	3.0
0085-0089	12	0.8	7.0	4	1.8	15.3	2	1.9	4.9
0090-0099	21	1.4	8.4	2	0.9	16.2	1	1.0	5.9
0100-0149	110	7.3	15.7	28	12.9	29.1	9	8.7	14.6
0150-0199	108	7.1	22.8	14	6.5	35.6	7	6.8	21.4
0200-0269	159	10.5	33.3	29	13.4	49.0	9	8.7	30.1
0270-0299	62	4.1	37.4	9	4.1	53.1	6	5.8	35.9
0300-0399	136	9.0	46.4	26	12.0	65.1	12	11.7	47.6
0400-0499	115	7.6	54.0	14	6.5	71.6	4	3.9	51.5
0500-0599	88	5.8	59.8	7	3.2	74.8	3	2.9	54.4
0600-0699	69	4.6	64.4	7	3.2	78.0	8	7.8	62.2
0700-0799	64	4.2	68.6	6	2.8	80.8	1	1.0	63.2
0800-0899	44	2.9	71.5	7	3.2	84.0	4	3.9	67.1
0900-0999	40	2.6	74.1	6	2.8	86.8	4	3.9	71.0
1000-1499	129	8.5	82.6	9	4.1	90.9	11	10.7	81.7
1500-1999	59	3.9	86.5	9	4.1	95.0	6	5.8	87.5
2000-2499	46	3.0	89.5	2	0.9	95.9	5	4.9	92.4
2500-2999	40	2.6	92.1	—	—	95.9	3	2.9	95.3
>2999	120	7.9	100.0	9	4.1	100.0	5	4.9	100.2
Mean	1025			590			1008		
Median	449			278			462		

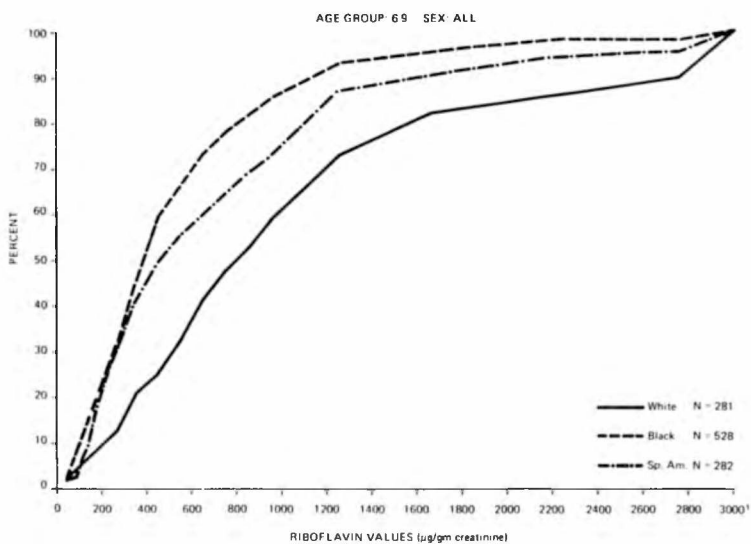
Figure 1a Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 2999

Table Reference 1A Appendix.

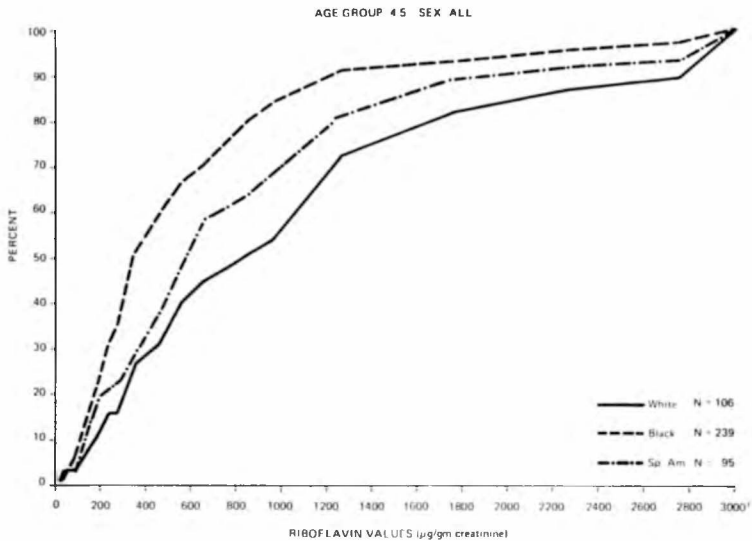
Figure 1c Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 2999

Table Reference 1C Appendix.

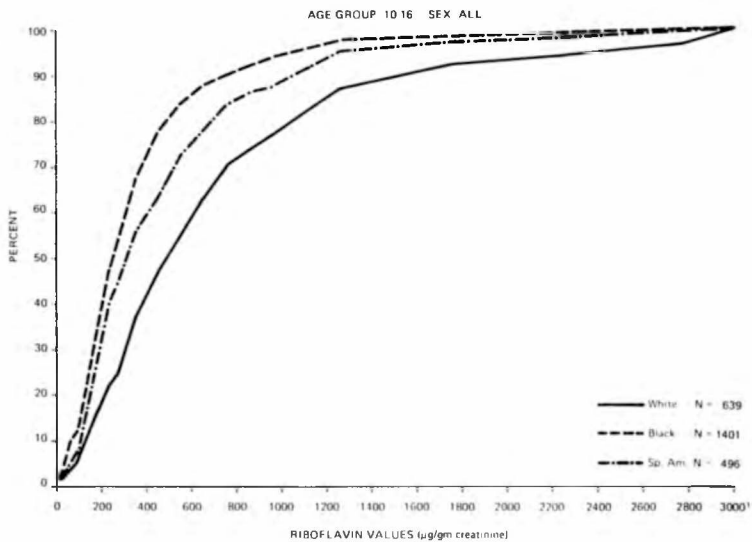
Figure 1b Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 2999

Table Reference 1B Appendix

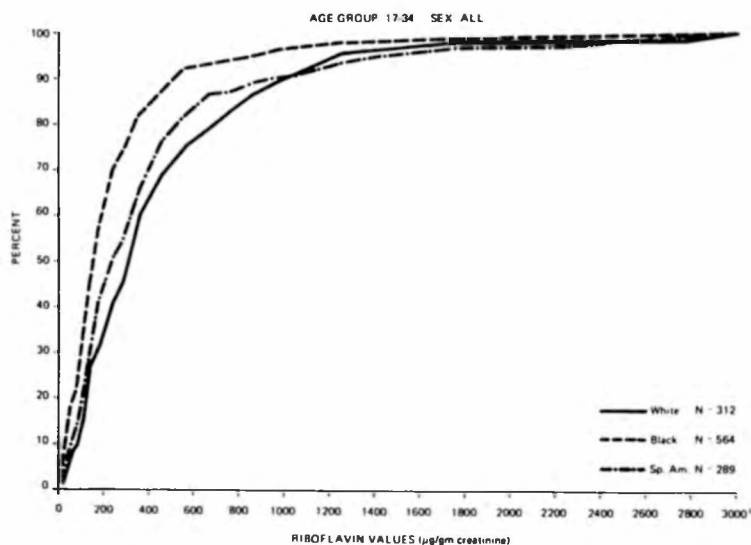
Figure 1d Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 2999

Table Reference 1D Appendix

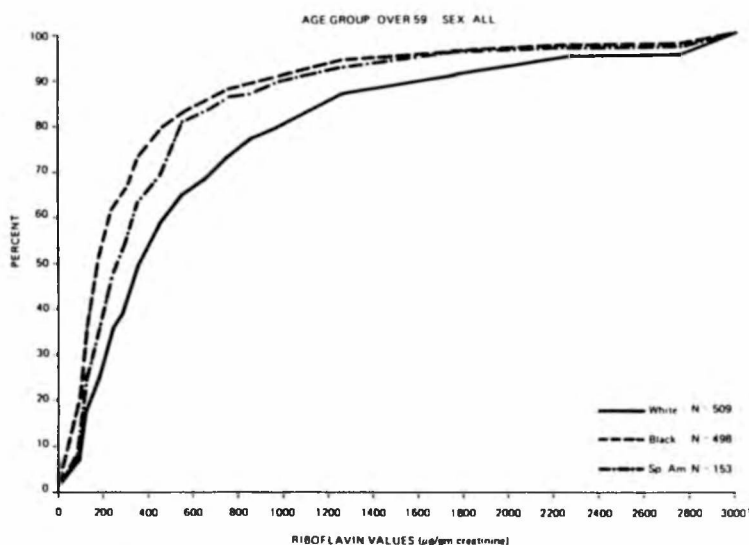
Figure 1e Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 2999

Table Reference 1E Appendix

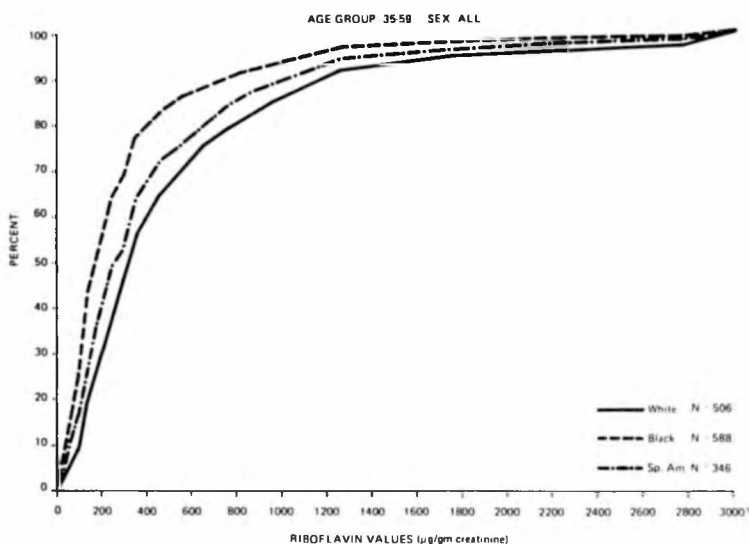
Figure 1g Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 2999

Table Reference 1G Appendix

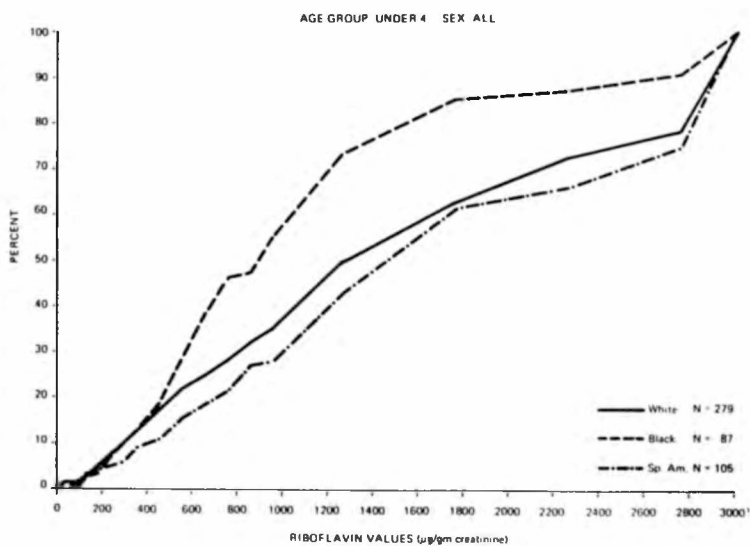
Figure 1f Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2999

Table Reference: 1f Appendix

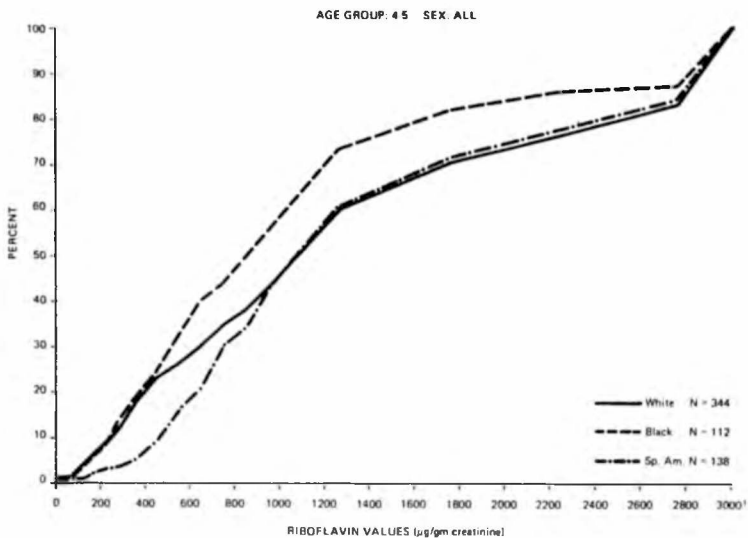
Figure 2a Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values < 2.50 or > 6.49

Table Reference: 2a Appendix

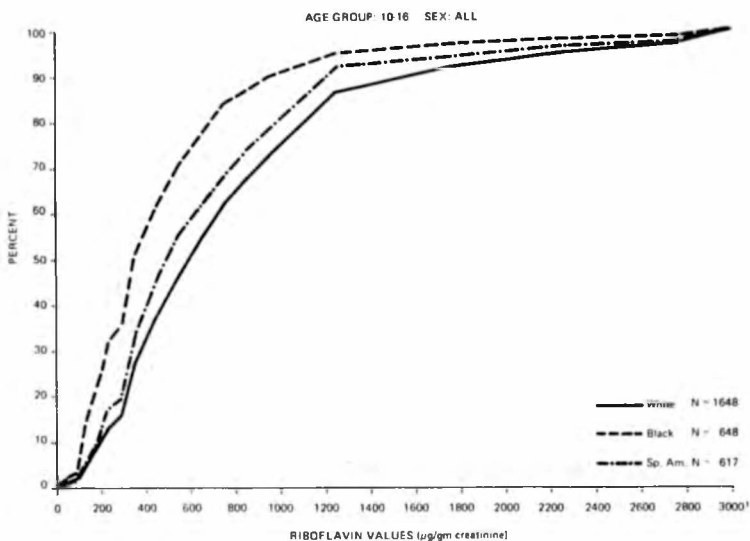
Figure 2b Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2999

Table Reference: 2B Appendix

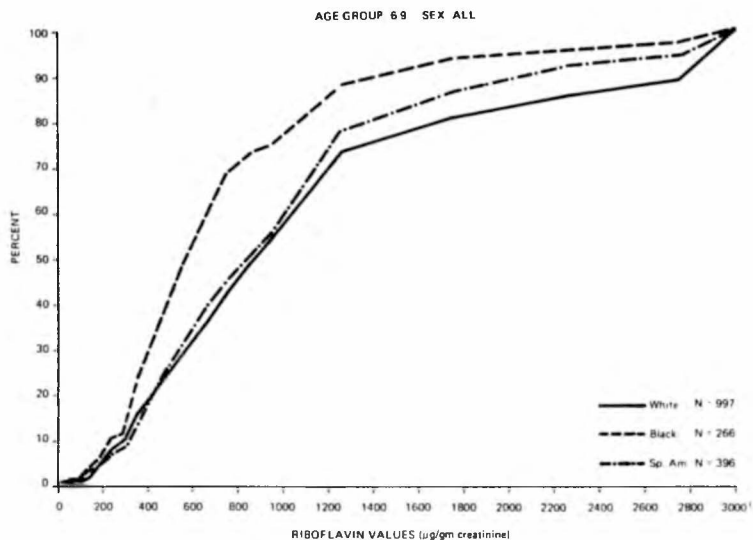
Figure 2d Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2999

Table Reference: 2D Appendix

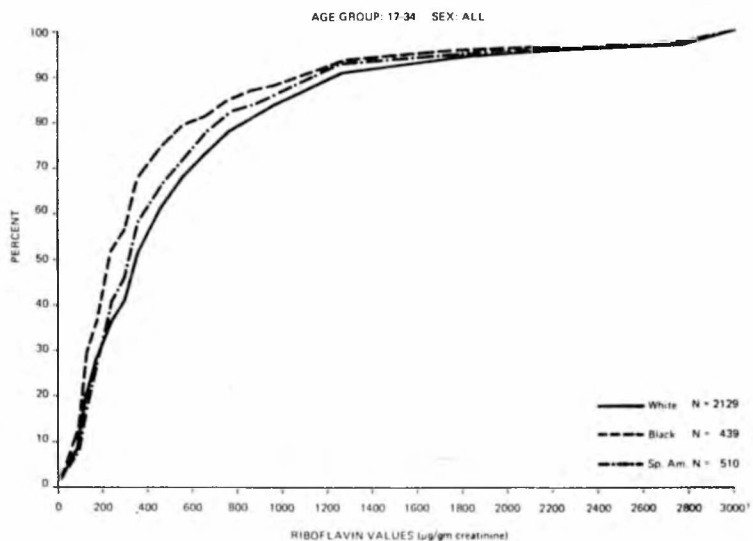
Figure 2c Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2999

Table Reference: 2C Appendix

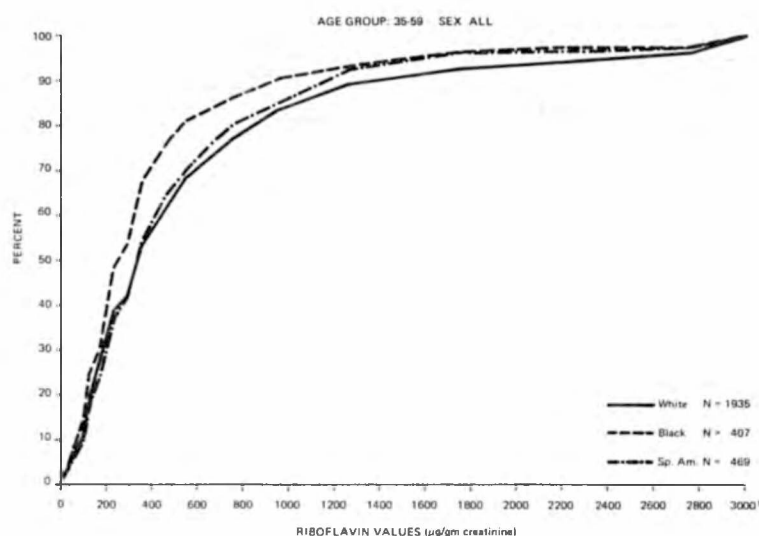
Figure 2e Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2999

Table Reference: 2E Appendix

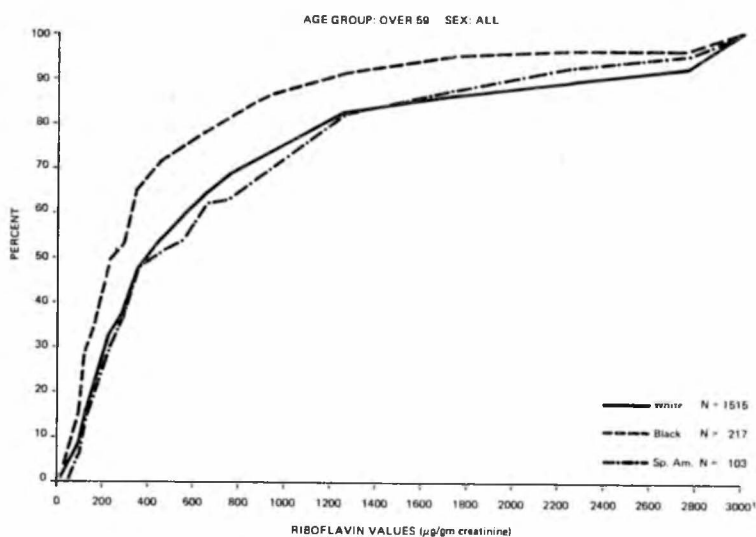
Figure 2f Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 2999

Table Reference: 2F Appendix.

Figure 2g Appendix—Cumulative Percentage Distribution of Urinary Riboflavin Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 2999

Table Reference: 2G Appendix.

Table 3 Appendix. *Quartile Intervals of Urinary Riboflavin Values for Corresponding Riboflavin Intakes for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Riboflavin Quartile	Age Group				Pregnant or Lactating Females	All Persons 60 Years of Age and Over
	0-36 Months	10-11 Years	12-14 Years	15-16 Years		
Number.....	287	1495	2315	753	384	1556
First Quartile.....	<450	<803	<245	<203	<173	<182
Second Quartile.....	450-1387	303-531	245-438	203-360	173-498	182-371
Third Quartile.....	1388-2713	532-957	439-780	361-623	499-1100	372-846
Fourth Quartile.....	>2713	>957	>780	>623	>1100	>846

Table 4A Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Under Four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	78	100.0	100.0	181	100.0	100.0	73	100.0	100.0
<0021.....	—	—	—	—	—	—	—	—	—
0021-0026.....	—	—	—	—	—	—	—	—	—
0027-0049.....	1	1.3	1.3	—	—	—	—	—	—
0050-0054.....	—	—	1.3	—	—	—	—	—	—
0055-0059.....	—	—	1.3	2	1.1	1.1	—	—	—
0060-0065.....	—	—	1.3	—	—	1.1	—	—	—
0066-0069.....	1	1.3	2.6	—	—	1.1	—	—	—
0070-0084.....	—	—	2.6	—	—	1.1	—	—	—
0085-0119.....	1	1.3	3.9	5	2.8	3.9	1	1.4	1.4
0120-0149.....	4	5.1	9.0	5	2.8	6.7	1	1.4	2.8
0150-0174.....	1	1.3	10.3	4	2.2	8.9	1	1.4	4.2
0175-0179.....	—	—	10.3	—	—	8.9	1	1.4	5.6
0180-0199.....	—	—	10.3	2	1.1	10.0	3	4.1	9.7
0200-0299.....	10	12.8	23.1	11	6.1	16.1	7	9.6	19.3
0300-0399.....	2	2.6	25.7	12	6.6	22.7	6	8.2	27.5
0400-0499.....	3	3.8	29.5	19	10.5	33.2	7	9.6	37.1
0500-0749.....	17	21.8	51.3	38	21.0	54.2	11	15.1	52.2
0750-0999.....	14	17.9	69.2	31	17.1	71.3	9	12.3	64.5
1000-1499.....	6	7.7	76.9	27	14.9	86.2	14	19.2	83.7
1500-1999.....	10	12.8	89.7	9	5.0	91.2	7	9.6	93.3
2000-2499.....	1	1.3	91.0	8	4.4	95.6	2	2.7	96.0
>2499.....	7	9.0	100.0	8	4.4	100.0	3	4.1	100.1
Mean.....	1048			912			941		
Median.....	735			701			716		

Table 4B Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Four through Five Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	96	100.0	100.0	222	100.0	100.0	88	100.0	100.0
<0021.....	—	—	—	—	—	—	—	—	—
0021-0026.....	—	—	—	—	—	—	—	—	—
0027-0049.....	—	—	—	2	0.9	0.9	—	—	—
0050-0054.....	—	—	—	—	—	0.9	—	—	—
0055-0059.....	—	—	—	2	0.9	1.8	—	—	—
0060-0065.....	—	—	—	—	—	1.8	—	—	—
0066-0069.....	—	—	—	—	—	1.8	—	—	—
0070-0084.....	1	1.0	1.0	1	0.5	2.3	—	—	—
0085-0119.....	2	2.1	3.1	3	1.4	3.7	1	1.1	1.1
0120-0149.....	1	1.0	4.1	4	1.8	5.5	—	—	1.1
0150-0174.....	—	—	4.1	5	2.3	7.8	1	1.1	2.2
0175-0179.....	—	—	4.1	1	0.5	8.3	1	1.1	3.3
0180-0199.....	2	2.1	6.2	2	0.9	9.2	2	2.3	5.6
0200-0299.....	5	5.2	11.4	18	8.1	17.3	6	6.8	12.4
0300-0399.....	10	10.4	21.8	22	9.9	27.2	10	11.4	23.8
0400-0499.....	8	8.3	30.1	19	8.6	35.8	7	8.0	31.8
0500-0749.....	18	18.7	48.8	49	22.1	57.9	20	22.7	54.5
0750-0999.....	16	16.7	65.5	39	17.6	75.5	20	22.7	77.2
1000-1499.....	18	18.7	84.2	38	14.9	90.4	14	15.9	93.1
1500-1999.....	6	6.2	90.4	8	3.6	94.0	4	4.5	97.6
2000-2499.....	5	5.2	95.6	9	4.1	98.1	2	2.3	99.9
>2499.....	4	4.2	99.8	5	2.3	100.4	—	—	99.9
Mean.....	1077			794			759		
Median.....	766			668			700		

Table 4C Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Six through Nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	264	100.0	100.0	494	100.0	100.0	269	100.0	100.0
<0021.....	—	—	—	—	—	—	—	—	—
0021-0026.....	1	0.4	0.4	2	0.4	0.4	—	—	—
0027-0049.....	2	0.8	1.2	1	0.2	0.6	—	—	—
0050-0054.....	—	—	1.2	—	—	—	—	—	—
0055-0059.....	1	0.4	1.6	3	0.6	1.2	—	—	—
0060-0065.....	—	—	1.6	1	0.2	1.4	—	—	—
0066-0069.....	—	—	1.6	3	0.6	2.0	—	—	—
0070-0084.....	1	0.4	2.0	3	0.6	2.6	—	—	—
0085-0119.....	3	1.1	3.1	7	1.4	4.0	3	1.1	1.1
0120-0149.....	4	1.5	4.6	9	1.8	5.8	6	2.2	3.3
0150-0174.....	11	4.2	8.8	8	1.6	7.4	3	1.1	4.4
0175-0179.....	1	0.4	9.2	4	0.8	8.2	1	0.4	4.8
0180-0199.....	3	1.1	10.3	9	1.8	10.0	4	1.5	6.3
0200-0299.....	24	9.1	19.4	83	16.8	26.8	21	7.8	14.1
0300-0399.....	27	10.2	29.6	74	15.0	41.8	29	10.8	24.9
0400-0499.....	21	8.0	37.6	65	13.2	55.0	31	11.5	36.4
0500-0749.....	64	24.2	61.8	112	22.7	77.7	57	21.2	57.6
0750-0999.....	33	12.5	74.3	58	11.7	89.4	40	14.9	72.5
1000-1499.....	40	15.2	89.5	32	6.5	95.9	49	18.2	90.7
1500-1999.....	14	5.3	94.8	8	1.6	97.5	11	4.1	94.8
2000-2499.....	2	0.8	95.6	7	1.4	98.9	4	1.5	96.3
>2499.....	12	4.5	100.1	5	1.0	99.9	10	3.7	100.0
Mean	832			576			871		
Median	629			462			660		

Table 4D Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Ten through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	623	100.0	100.0	1308	100.0	100.0	496	100.0	100.0
<0021.....	3	0.5	0.5	6	0.5	0.5	—	—	—
0021-0026.....	2	0.3	0.8	3	0.2	0.7	1	0.2	0.2
0027-0049.....	7	1.1	1.9	12	0.9	1.6	4	0.8	1.0
0050-0054.....	3	0.5	2.4	5	0.4	2.0	—	—	1.0
0055-0059.....	3	0.5	2.9	2	0.2	2.2	1	0.2	1.2
0060-0065.....	3	0.5	3.4	7	0.5	2.7	2	0.4	1.6
0066-0069.....	1	0.2	3.6	7	0.5	3.2	1	0.2	1.8
0070-0084.....	10	1.6	5.2	21	1.6	4.8	6	1.2	3.0
0085-0119.....	25	4.0	9.2	77	5.9	10.7	17	3.4	6.4
0120-0149.....	22	3.5	12.7	89	6.8	17.5	16	3.2	9.6
0150-0174.....	21	3.4	16.1	67	5.1	22.6	18	3.6	13.2
0175-0179.....	4	0.6	16.7	16	1.2	23.8	7	1.4	14.6
0180-0199.....	28	4.5	21.2	65	5.0	28.8	21	4.2	18.8
0200-0299.....	118	18.9	40.1	294	22.5	51.3	72	14.5	33.3
0300-0399.....	89	14.3	54.4	230	17.6	68.9	68	13.7	47.0
0400-0499.....	64	10.3	64.7	123	9.4	78.3	62	12.5	59.5
0500-0749.....	121	19.4	84.1	179	13.7	92.0	108	21.8	81.3
0750-0999.....	44	7.1	91.2	57	4.4	96.4	49	9.9	91.2
1000-1499.....	24	3.9	95.1	37	2.8	99.2	28	5.6	96.8
1500-1999.....	14	2.2	97.3	3	0.2	99.4	5	1.0	97.8
2000-2499.....	10	1.6	98.9	4	0.3	99.7	5	1.0	98.8
>2499.....	7	1.1	100.0	4	0.3	100.0	5	1.0	99.8
Mean.....	508			372			523		
Median.....	369			294			423		

Table 4E Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Seventeen through Thirty-four Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Groups								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	305	100.0	100.0	541	100.0	100.0	287	100.0	100.0
<0021.....	1	0.3	0.3	3	0.6	0.6	—	—	—
0021-0026.....	—	—	0.3	2	0.4	1.0	—	—	—
0027-0049.....	2	0.7	1.0	16	3.0	4.0	4	1.4	1.4
0050-0054.....	2	0.7	1.7	5	0.9	4.9	1	0.3	1.7
0055-0059.....	—	—	1.7	9	1.7	6.6	2	0.7	2.4
0060-0065.....	6	2.0	3.7	8	1.5	8.1	1	0.3	2.7
0066-0069.....	3	1.0	4.7	9	1.7	9.8	—	—	2.7
0070-0084.....	9	3.0	7.7	26	4.8	14.6	11	3.8	6.5
0085-0119.....	28	9.2	16.9	74	13.7	28.3	19	6.6	13.1
0120-0149.....	17	5.6	22.5	57	10.5	38.8	17	5.9	19.0
0150-0174.....	17	5.6	28.1	36	6.7	45.5	22	7.7	26.7
0175-0179.....	1	0.3	28.4	4	0.7	46.2	4	1.4	28.1
0180-0199.....	13	4.3	32.7	28	5.2	51.4	15	5.2	33.3
0200-0299.....	67	22.0	54.7	120	22.2	73.6	53	18.5	51.8
0300-0399.....	42	13.8	68.5	51	9.4	83.0	51	17.8	69.6
0400-0499.....	31	10.2	78.7	35	6.5	89.5	31	10.8	80.4
0500-0749.....	36	11.8	90.5	34	6.3	95.8	34	11.8	92.2
0750-0999.....	15	4.9	95.4	13	2.4	98.2	8	2.8	95.0
1000-1499.....	6	2.0	97.4	5	0.9	99.1	8	2.8	97.8
1500-1999.....	4	1.3	98.7	5	0.9	100.0	4	1.4	99.2
2000-2499.....	2	0.7	99.4	1	0.2	100.2	2	0.7	99.9
>2499.....	3	1.0	100.4	—	—	100.2	—	—	—
Mean.....	396			260			366		
Median.....	280			195			290		

Table 4F Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Thirty-five through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	496	100.0	100.0	574	100.0	100.0	357	100.0	100.0
<0021.....	3	0.6	0.6	5	0.9	0.9	—	—	—
0021-0026.....	2	0.4	1.0	2	0.3	1.2	3	0.8	0.8
0027-0049.....	7	1.4	2.4	22	3.8	5.0	5	1.4	2.2
0050-0054.....	3	0.6	3.0	8	1.4	6.4	2	0.6	2.8
0055-0059.....	2	0.4	3.4	10	1.7	8.1	3	0.8	3.6
0060-0065.....	2	0.4	3.8	4	0.7	8.8	2	0.6	4.2
0066-0069.....	2	0.4	4.2	9	1.6	10.4	—	—	4.2
0070-0084.....	13	2.6	6.8	25	4.4	14.8	8	2.2	6.4
0085-0119.....	32	6.5	13.3	77	13.4	28.2	24	6.7	13.1
0120-0149.....	41	8.3	21.6	68	11.8	40.0	27	7.6	20.7
0150-0174.....	26	5.2	26.8	44	7.7	47.7	23	6.4	27.1
0175-0179.....	7	1.4	28.2	17	3.0	50.7	4	1.1	28.2
0180-0199.....	28	5.6	33.8	37	6.4	57.1	19	5.3	33.5
0200-0299.....	97	19.6	53.4	104	18.1	75.2	90	25.2	58.7
0300-0399.....	66	13.3	66.7	55	9.6	84.8	50	14.0	72.7
0400-0499.....	46	9.3	76.0	21	3.7	88.5	26	7.3	80.0
0500-0749.....	57	11.5	87.5	34	5.9	94.4	37	10.4	90.4
0750-0999.....	23	4.6	92.1	11	1.9	96.3	15	4.2	94.6
1000-1499.....	20	4.0	96.1	12	2.1	98.4	11	3.1	97.7
1500-1999.....	7	1.4	97.5	5	0.9	99.3	5	1.4	99.1
2000-2499.....	4	0.8	98.3	3	0.5	99.8	1	0.3	99.4
>2499.....	8	1.6	99.9	1	0.2	100.0	2	0.6	100.0
Mean.....	440			269			369		
Median.....	282			178			262		

Table 4G Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Groups								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	496	100.0	100.0	471	100.0	100.0	149	100.0	100.0
<0021	—	—	—	2	0.4	.4	3	2.0	2.0
0021-0026	3	0.6	0.6	2	0.4	.8	—	—	2.0
0027-0049	7	1.4	2.0	18	3.8	4.6	5	3.4	5.4
0050-0054	5	1.0	3.0	5	1.1	5.7	3	2.0	7.4
0055-0059	5	1.0	4.0	7	1.5	7.2	1	0.7	8.1
0060-0065	4	0.8	4.8	4	0.8	8.0	5	3.4	11.5
0066-0069	5	1.0	5.8	6	1.3	9.3	1	0.7	12.2
0070-0084	10	2.0	7.8	24	5.1	14.4	8	5.4	17.6
0085-0119	29	5.8	13.6	53	11.3	25.7	8	5.4	23.0
0120-0149	47	9.5	23.1	55	11.7	37.4	7	4.7	27.7
0150-0174	25	5.0	28.1	35	7.4	44.8	6	4.0	31.7
0175-0179	3	0.6	28.7	8	1.7	46.5	2	1.3	33.0
0180-0199	30	6.0	34.7	24	5.1	51.6	7	4.7	37.7
0200-0299	89	17.9	52.6	85	18.0	69.6	34	22.8	60.5
0300-0399	66	13.3	65.9	42	8.9	78.5	26	17.4	77.9
0400-0499	42	8.5	74.4	32	6.8	85.3	11	7.4	85.3
0500-0749	54	10.9	85.3	29	6.2	91.5	16	10.7	96.0
0750-0999	18	3.6	88.9	17	3.6	95.1	2	1.3	97.3
1000-1499	27	5.4	94.3	10	2.1	97.2	1	0.7	98.0
1500-1999	5	1.0	95.3	8	1.7	98.9	—	—	98.0
2000-2499	6	1.2	96.5	2	0.4	99.3	—	—	98.0
>2499	16	3.2	99.7	3	0.6	99.9	3	2.0	100.0
Mean	525			321			346		
Median	284			194			254		

Table 5A Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Groups for All Persons Under Four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values µg/gm creatinine	Ethnic Groups								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	196	100.0	100.0	76	100.0	100.0	84	100.0	100.0
<0021.....	—	—	—	—	—	—	—	—	—
0021-0026.....	—	—	—	—	—	—	—	—	—
0027-0049.....	—	—	—	1	1.3	1.3	—	—	—
0050-0054.....	—	—	—	—	—	1.3	—	—	—
0055-0059.....	—	—	—	—	—	1.3	—	—	—
0060-0065.....	—	—	—	—	—	1.3	—	—	—
0066-0069.....	—	—	—	—	—	1.3	—	—	—
0070-0084.....	2	1.0	1.0	—	—	1.3	—	—	—
0085-0119.....	3	1.5	2.5	—	—	1.3	—	—	—
0120-0149.....	2	1.0	3.5	—	—	1.3	—	—	—
0150-0174.....	2	1.0	4.5	1	1.3	2.6	1	1.2	1.2
0175-0179.....	—	—	4.5	—	—	2.6	1	1.2	2.4
0180-0199.....	2	1.0	5.5	—	—	2.6	—	—	2.4
0200-0299.....	15	7.7	13.2	5	6.6	9.2	2	2.4	4.8
0300-0399.....	4	2.0	15.2	8	10.5	19.7	3	3.6	8.4
0400-0499.....	13	6.6	21.8	10	13.2	32.9	5	6.0	14.4
0500-0749.....	31	15.8	37.6	17	22.4	55.3	20	23.8	38.2
0750-0999.....	26	13.3	50.9	8	10.5	65.8	14	16.7	54.9
1000-1499.....	34	17.3	68.2	9	11.8	77.6	22	26.2	81.1
1500-1999.....	25	12.8	81.0	9	11.8	89.4	5	6.0	87.1
2000-2499.....	11	5.6	86.6	3	3.9	93.3	5	6.0	93.1
>2499.....	26	13.3	99.9	5	6.6	99.9	6	7.1	100.2
Mean.....	1345			983			1218		
Median.....	981			691			929		

Table 5B Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Four and Five Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Groups								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	183	100.0	100.0	90	100.0	100.0	104	100.0	100.0
<0021.....	—	—	—	—	—	—	—	—	—
0021-0026.....	—	—	—	—	—	—	—	—	—
0027-0049.....	—	—	—	—	—	—	—	—	—
0050-0054.....	—	—	—	—	—	—	—	—	—
0055-0059.....	—	—	—	—	—	—	—	—	—
0060-0065.....	—	—	—	—	—	—	—	—	—
0066-0069.....	—	—	—	—	—	—	1	1.0	1.0
0070-0084.....	1	0.5	.5	—	—	—	—	—	1.0
0085-0119.....	3	1.6	2.1	2	2.2	2.2	—	—	1.0
0120-0149.....	1	0.5	2.6	—	—	2.2	—	—	1.0
0150-0174.....	3	1.6	4.2	—	—	2.2	1	1.0	2.0
0175-0179.....	—	—	4.2	—	—	2.2	—	—	2.0
0180-0199.....	—	—	4.2	1	1.1	3.3	—	—	2.0
0200-0299.....	5	2.7	6.9	4	4.4	7.7	1	1.0	3.0
0300-0399.....	14	7.7	14.6	9	10.0	17.7	8	7.7	10.7
0400-0499.....	13	7.1	21.7	6	6.7	24.4	11	10.6	21.3
0500-0749.....	36	19.7	41.4	22	24.4	48.8	17	16.3	37.6
0750-0999.....	32	17.5	58.9	17	18.9	67.7	24	23.1	60.7
1000-1499.....	36	19.7	78.6	17	18.9	86.6	22	21.2	81.9
1500-1999.....	15	8.2	86.8	8	8.9	95.5	5	4.8	86.7
2000-2499.....	9	4.9	91.7	2	2.2	97.7	2	1.9	88.6
>2499.....	15	8.2	99.9	2	2.2	99.9	12	11.5	100.1
Mean.....	1167			888			1258		
Median.....	871			765			885		

Table 5C Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Six through Nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Groups								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	634	100.0	100.0	215	100.0	100.0	293	100.0	100.0
<0021.....	1	0.2	0.2	—	—	—	—	—	—
0021-0026.....	—	—	0.2	—	—	—	—	—	—
0027-0049.....	3	0.5	0.7	2	0.9	0.9	2	0.7	0.7
0050-0054.....	—	—	0.7	—	—	0.9	—	—	0.7
0055-0059.....	—	—	0.7	—	—	0.9	—	—	0.7
0060-0065.....	1	0.2	0.9	—	—	0.9	1	0.3	1.0
0066-0069.....	1	0.2	1.1	—	—	0.9	—	—	1.0
0070-0084.....	1	0.2	1.3	—	—	0.9	—	—	1.0
0085-0119.....	7	1.1	2.4	4	1.9	2.8	4	1.4	2.4
0120-0149.....	10	1.6	4.0	3	1.4	4.2	2	0.7	3.1
0150-0174.....	8	1.3	5.3	1	0.5	4.7	5	1.7	4.8
0175-0179.....	1	0.2	5.5	—	—	4.7	—	—	4.8
0180-0199.....	9	1.4	6.9	2	0.9	5.6	5	1.7	6.5
0200-0299.....	41	6.5	13.4	22	10.2	15.8	21	7.2	13.7
0300-0399.....	60	9.5	22.9	27	12.6	28.4	28	9.6	23.3
0400-0499.....	55	8.7	31.6	35	16.3	44.7	35	11.9	35.2
0500-0749.....	165	26.0	57.6	58	27.0	71.7	71	24.2	59.4
0750-0999.....	100	15.8	73.4	29	13.5	85.2	49	16.7	76.1
1000-1499.....	100	15.8	89.2	16	7.4	92.6	40	13.7	89.8
1500-1999.....	30	4.7	93.9	4	1.9	94.5	12	4.1	93.9
2000-2499.....	9	1.4	95.3	8	3.7	98.2	8	2.7	96.6
>2499.....	32	5.0	100.3	4	1.9	100.1	10	3.4	100.0
Mean.....	873			699			825		
Median.....	680			550			653		

Table 5D Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Ten through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1402	100.0	100.0	590	100.0	100.0	516	100.0	100.0
<0021	—	—	—	1	0.2	0.2	2	0.4	0.4
0021-0026	2	0.1	0.1	—	—	0.2	—	—	0.4
0027-0049	9	0.6	0.7	5	0.8	1.0	1	0.2	0.6
0050-0054	—	—	0.7	1	0.2	1.2	—	—	0.6
0055-0059	4	0.3	1.0	1	0.2	1.4	1	0.2	0.8
0060-0065	—	—	1.0	2	0.3	1.7	—	—	0.8
0066-0069	1	0.1	1.1	1	0.2	1.9	—	—	0.8
0070-0084	3	0.2	1.3	5	0.8	2.7	4	0.8	1.6
0085-0119	40	2.9	4.2	33	5.6	8.3	10	1.9	3.5
0120-0149	48	3.4	7.6	37	6.3	14.6	22	4.3	7.8
0150-0174	62	4.4	12.0	25	4.2	18.8	17	3.3	11.1
0175-0179	16	1.1	13.1	6	1.0	19.8	6	1.2	12.3
0180-0199	41	2.9	16.0	19	3.2	23.0	13	2.5	14.8
0200-0299	233	16.6	32.6	139	23.6	46.6	92	17.8	32.6
0300-0399	213	15.2	47.8	129	21.9	68.5	77	14.9	47.5
0400-0499	202	14.4	62.2	64	10.8	79.3	69	13.4	60.9
0500-0749	264	18.8	81.0	70	11.9	91.2	116	22.5	83.4
0750-0999	144	10.3	91.3	24	4.1	95.3	42	8.1	91.5
1000-1499	80	5.7	97.0	18	3.1	98.4	30	5.8	97.3
1500-1999	25	1.8	98.8	5	0.8	99.2	9	1.7	99.0
2000-2499	4	0.3	99.1	2	0.3	99.5	2	0.4	99.4
>2499	11	0.8	99.9	3	0.5	100.0	3	0.6	100.0
Mean	513			388			518		
Median	414			316			419		

Table 5E Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Seventeen through Thirty-four Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1423	100.0	100.0	373	100.0	100.0	430	100.0	100.0
<0021.....	4	0.3	0.3	2	0.5	0.5	—	—	—
0021-0026.....	2	0.1	0.4	3	0.8	1.3	—	—	—
0027-0049.....	9	0.6	1.0	9	2.4	3.7	7	1.6	1.6
0050-0054.....	4	0.3	1.3	4	1.1	4.8	1	0.2	1.8
0055-0059.....	6	0.4	1.7	5	1.3	6.1	3	0.7	2.5
0060-0065.....	16	1.1	2.8	2	0.5	6.6	6	1.4	3.9
0066-0069.....	5	0.4	3.2	2	0.5	7.1	2	0.5	4.4
0070-0084.....	32	2.2	5.4	9	2.4	9.5	6	1.4	5.8
0085-0119.....	101	7.1	12.5	47	12.6	22.1	27	6.3	12.1
0120-0149.....	119	8.4	20.9	40	10.7	32.8	35	8.1	20.2
0150-0174.....	114	8.0	28.9	32	8.6	41.4	34	7.9	28.1
0175-0179.....	13	0.9	29.8	5	1.3	42.7	6	1.4	29.5
0180-0199.....	79	5.6	35.4	18	4.8	47.5	17	4.0	33.5
0200-0299.....	306	21.5	56.9	68	18.2	65.7	96	22.3	55.8
0300-0399.....	204	14.3	71.2	47	12.6	78.3	64	14.9	70.7
0400-0499.....	133	9.3	80.5	22	5.9	84.2	45	10.5	81.2
0500-0749.....	143	10.0	90.5	28	7.5	91.7	34	7.9	89.1
0750-0999.....	48	3.4	93.9	13	3.5	95.2	18	4.2	93.3
1000-1499.....	43	3.0	96.9	10	2.7	97.9	15	3.5	96.8
1500-1999.....	15	1.1	98.0	4	1.1	99.0	9	2.1	98.9
2000-2499.....	9	0.6	98.6	1	0.3	99.3	2	0.5	99.4
>2499.....	18	1.3	99.9	2	0.5	99.8	3	0.7	100.1
Mean.....	398			324			393		
Median.....	268			212			274		

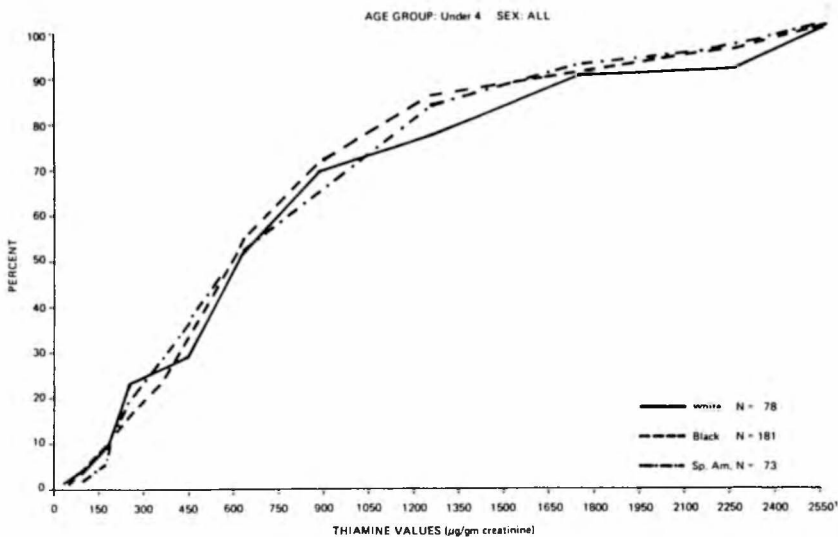
Table 5F Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Thirty-five through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1372	100.0	100.0	353	100.0	100.0	370	100.0	100.0
<0021.....	5	0.4	0.4	6	1.7	1.7	3	0.8	0.8
0021-0026.....	1	0.1	0.5	2	0.6	2.3	1	0.3	1.1
0027-0049.....	16	1.2	1.7	9	2.5	4.8	9	2.4	3.5
0050-0054.....	6	0.4	2.1	3	0.8	5.6	3	0.8	4.3
0055-0059.....	9	0.7	2.8	2	0.6	6.2	5	1.4	5.7
0060-0065.....	11	0.8	3.6	10	2.8	9.0	2	0.5	6.2
0066-0069.....	7	0.5	4.1	8	2.3	11.3	2	0.5	6.7
0070-0084.....	33	2.4	6.5	10	2.8	14.1	11	3.0	9.7
0085-0119.....	112	8.2	14.7	52	14.7	28.8	24	6.5	16.2
0120-0149.....	99	7.2	21.9	46	13.0	41.8	28	7.6	23.8
0150-0174.....	108	7.9	29.8	23	6.5	48.3	31	8.4	32.2
0175-0179.....	20	1.5	31.8	7	2.0	50.3	8	2.2	34.4
0180-0199.....	85	6.2	38.0	19	5.4	55.7	18	4.9	39.3
0200-0299.....	279	20.3	57.8	80	22.7	78.4	74	20.0	59.3
0300-0399.....	194	14.1	71.9	26	7.4	85.8	43	11.6	70.9
0400-0499.....	101	7.4	79.3	16	4.5	90.3	39	10.5	81.4
0500-0749.....	120	8.7	88.0	18	5.1	95.4	29	7.8	89.2
0750-0999.....	66	4.8	92.8	5	1.4	96.8	18	4.9	94.1
1000-1499.....	51	3.7	96.5	3	0.8	97.6	10	2.7	96.8
1500-1999.....	20	1.5	98.0	3	0.8	98.4	7	1.9	98.7
2000-2499.....	12	0.9	98.9	4	1.1	99.5	1	0.3	99.0
>2499.....	17	1.2	100.1	1	0.3	99.8	4	1.1	100.1
Mean.....	409			268			379		
Median.....	262			178			254		

Table 5G Appendix. *Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for All Persons Over Fifty-nine Years of Age for High Ratio States—Ten-State Nutrition Survey (1968-1970)*

Thiamine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1317	100.0	100.0	189	100.0	100.0	81	100.0	100.0
<0021.....	4	0.3	0.3	3	1.6	1.6	—	—	—
0021-0026.....	3	0.2	0.5	1	0.5	2.1	—	—	—
0027-0049.....	16	1.2	1.7	7	3.7	5.8	1	1.2	1.2
0050-0054.....	4	0.3	2.0	3	1.6	7.4	4	4.9	6.1
0055-0059.....	2	0.2	2.2	3	1.6	9.0	2	2.5	8.6
0060-0065.....	6	0.5	2.7	—	—	9.0	—	—	8.6
0066-0069.....	6	0.5	3.2	5	2.6	11.6	—	—	8.6
0070-0084.....	32	2.4	5.6	7	3.7	15.3	4	4.9	13.5
0085-0119.....	103	7.8	13.4	29	15.3	30.6	3	3.7	17.2
0120-0149.....	109	8.3	21.7	20	10.6	41.2	5	6.2	23.4
0150-0174.....	76	5.7	27.4	12	6.3	47.5	5	6.2	29.6
0175-0179.....	10	0.8	28.2	1	0.5	48.0	—	—	29.6
0180-0199.....	68	5.2	33.4	7	3.7	51.7	3	3.7	33.3
0200-0299.....	257	19.5	52.9	39	20.6	72.3	15	18.5	51.8
0300-0399.....	137	10.4	63.3	20	10.6	82.9	9	11.1	62.9
0400-0499.....	103	7.8	71.1	9	4.8	87.7	3	3.7	66.6
0500-0749.....	170	12.9	84.0	10	5.3	93.0	11	13.6	80.2
0750-0999.....	67	5.1	89.1	5	2.6	95.6	4	4.9	85.1
1000-1499.....	71	5.4	94.5	4	2.1	97.7	6	7.4	92.5
1500-1999.....	40	3.0	97.5	2	1.1	98.8	3	3.7	96.2
2000-2499.....	18	1.4	98.9	1	0.5	99.3	1	1.2	97.4
>2499.....	16	1.2	100.1	1	0.5	99.8	2	2.5	99.9
Mean.....	489			289			519		
Median.....	286			190			290		

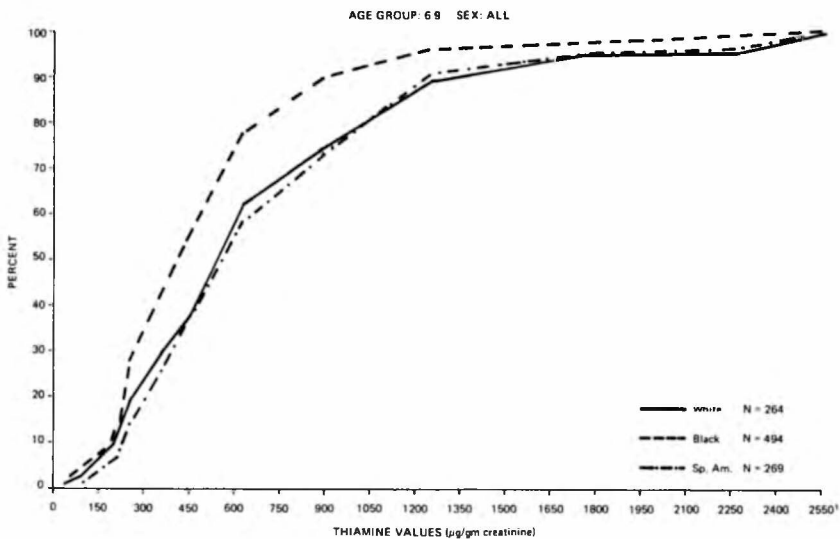
Figure 3a Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: 4A Appendix

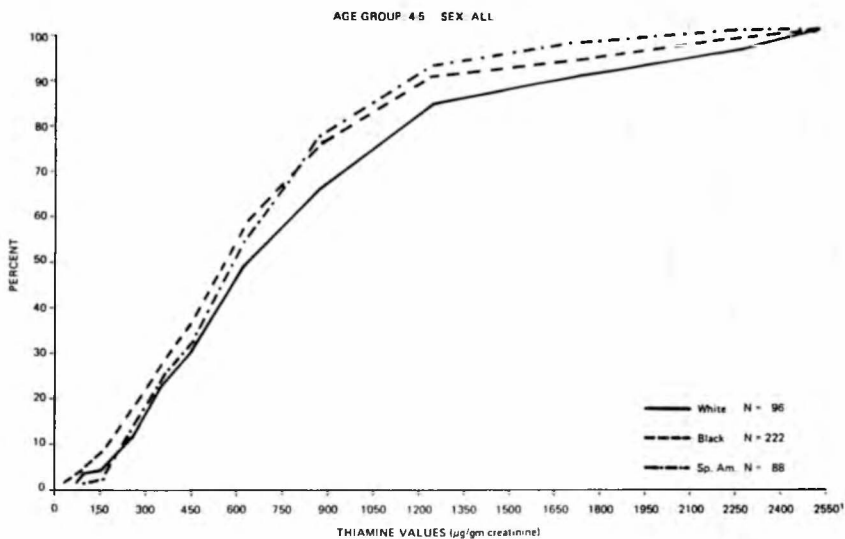
Figure 3c Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: 4C Appendix

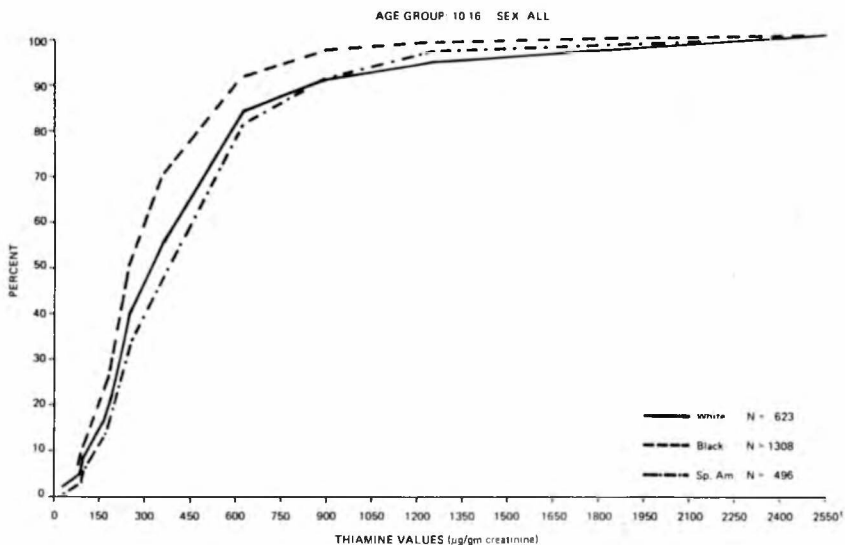
Figure 3b Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference 4B Appendix.

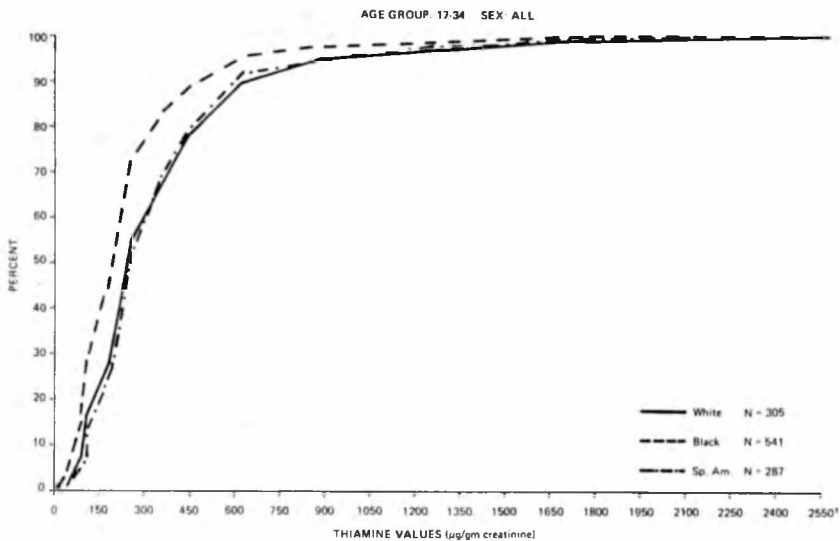
Figure 3d Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference 4D Appendix

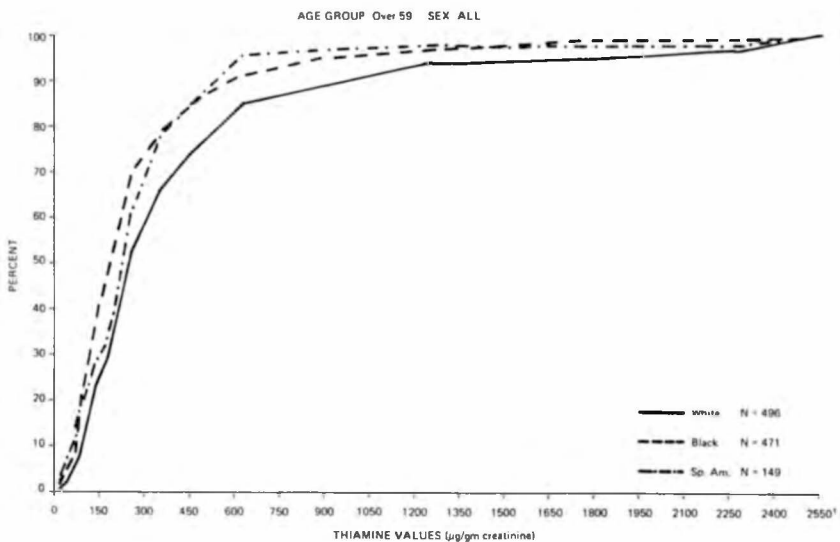
Figure 3e Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: 4E Appendix.

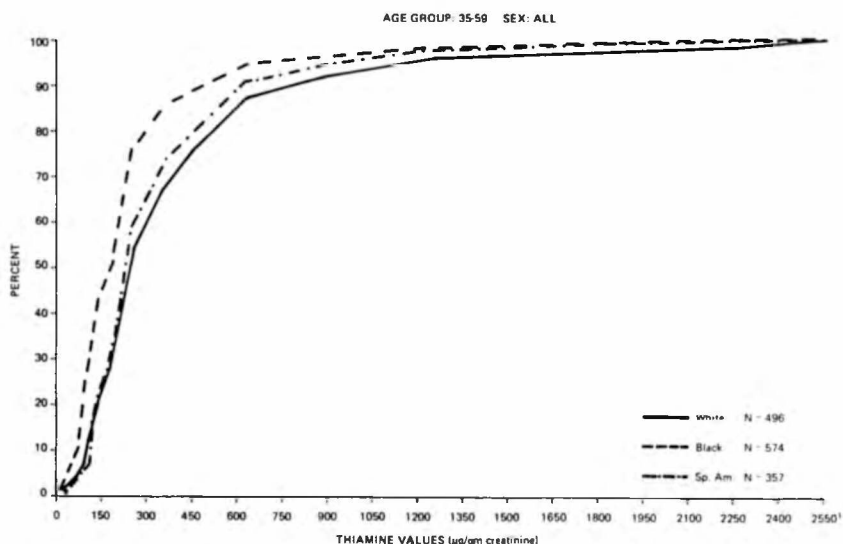
Figure 3g Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: 4G Appendix.

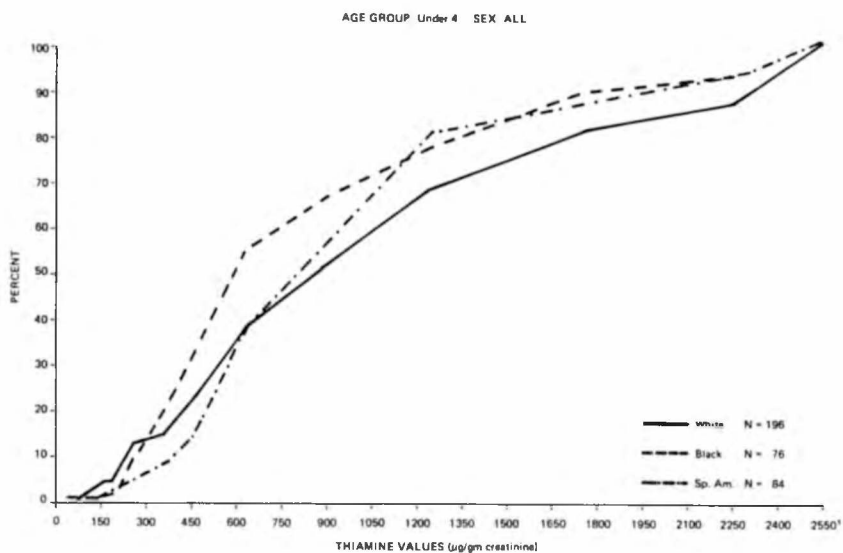
Figure 3f Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2490

Table Reference: 4F Appendix

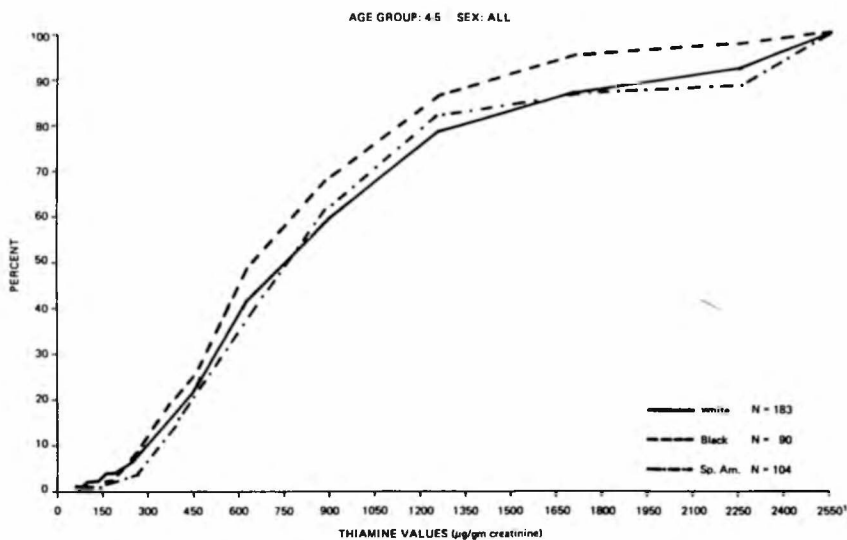
Figure 4a Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: 5A Appendix

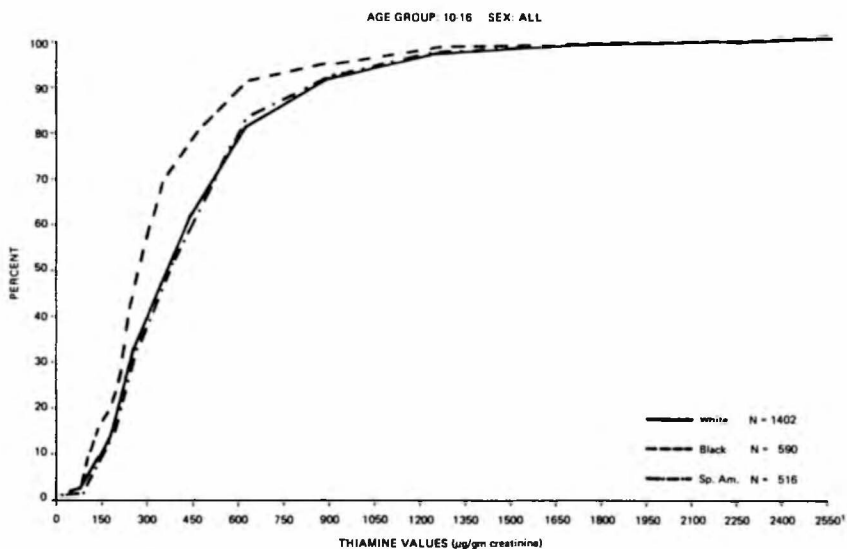
Figure 4b Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: 5B Appendix.

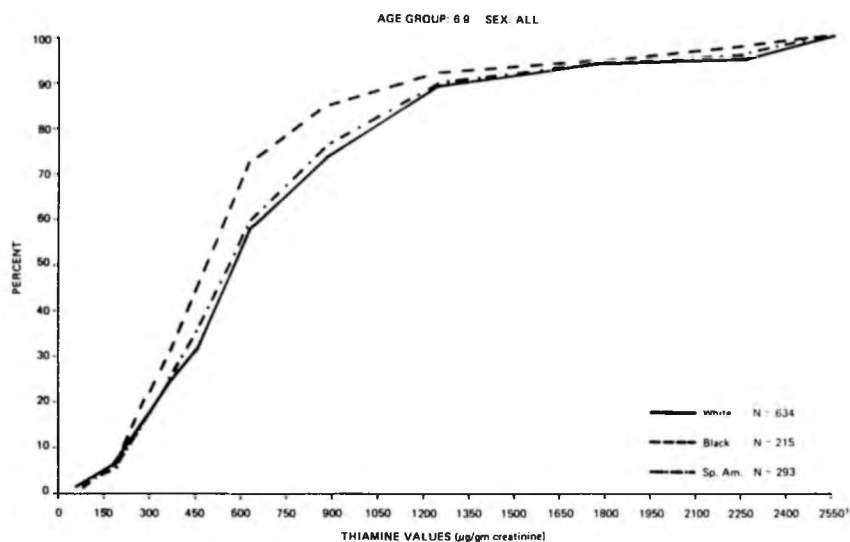
Figure 4d Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: 5D Appendix.

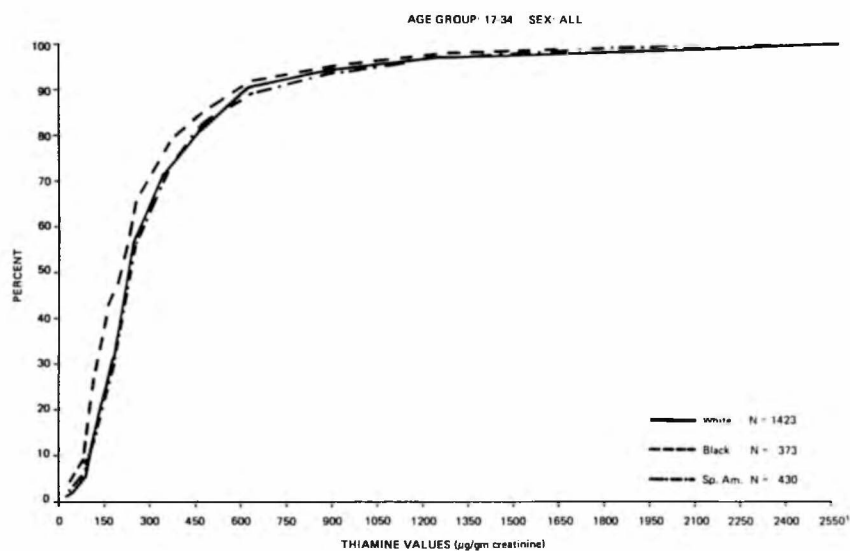
Figure 4c Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: SC Appendix.

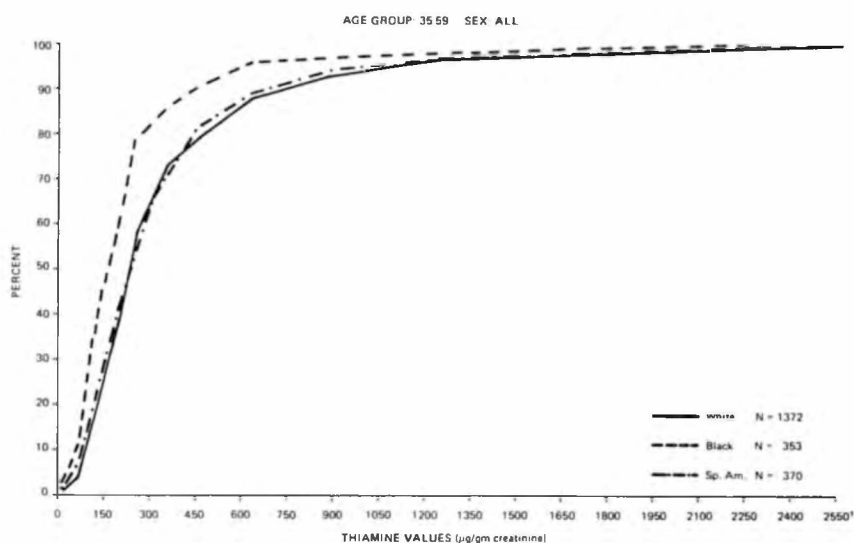
Figure 4e Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: SE Appendix.

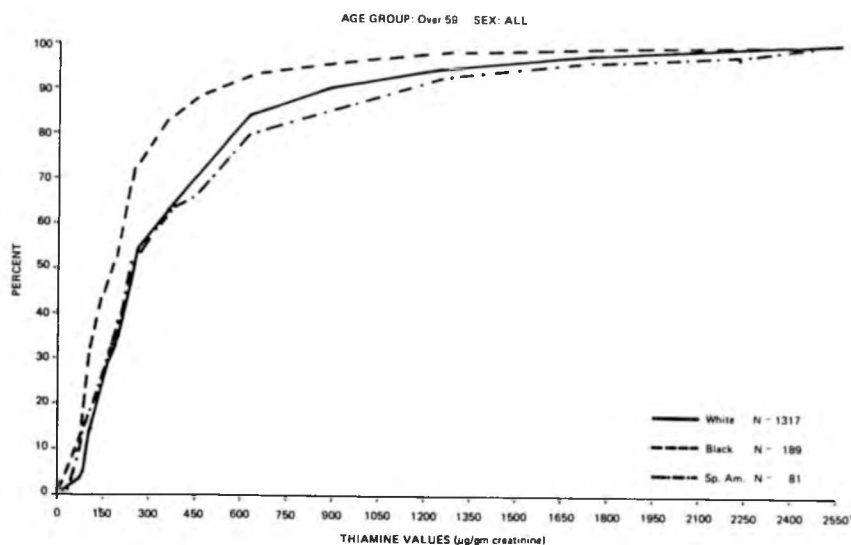
Figure 4f Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: 5F Appendix

Figure 4g Appendix—Cumulative Percentage Distribution of Urinary Thiamine Values by Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹ All values > 2499

Table Reference: 5G Appendix

Table 6 Appendix. *Quartile Intervals of Urinary Thiamine Values for Corresponding Thiamine Intakes for All Persons in Selected Age Groups for Low and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Urinary Thiamine Quartile	Age Group				Pregnant or Lactating Females	All Persons 60 Years of Age and Over
	0-36 Months	10-11 Years	12-14 Years	15-16 Years		
Number.....	237	1326	2092	703	321	1405
First Quartile.....	<487	<288	<213	<174	<267	<143
Second Quartile.....	487-820	288-460	213-341	174-268	267-444	143-245
Third Quartile.....	821-1500	461-702	342-527	269-427	445-800	246-489
Fourth Quartile.....	>1500	>702	>527	>427	>800	>489

7. IODINE

Abstract: *A high prevalence of goiter was identified in some areas. However, no relationship was found between the prevalence of goiter and the occurrence of "deficient" and "low" urinary iodine values. Most segments of the population had urinary iodine excretions well above levels seen in areas of endemic goiter. There does not seem to be a public health problem in regard to iodine nutriture. However, some groups of the population may be relatively iodine deficient. Iodination of salt remains an important public health measure.*

Iodine is an essential nutrient; it is required for normal thyroid function. A lack of sufficient iodine intake in a population may result in a high prevalence of goiter, an enlargement of the thyroid gland. However, estimating intakes of dietary iodine is quite difficult, since the iodine content of foods varies as widely as the content in the soils on which they are grown. Water supplies contain iodine, but, again, in variable amounts. Thus, accurate evaluation of iodine intakes would require actual analysis of representative samples of the foods and the water consumed by individuals or populations.

Measurement of the urinary excretion of iodine is a less accurate but far more practical means of estimating iodine intake. Therefore, urinary iodine values were determined on random urine specimens. Iodine excretion data were expressed in terms of the amount of iodine excreted per gram of urinary creatinine.

There are important limitations to the methodology employed. Both urinary iodine and urinary creatinine may vary within the same individual during a single day to that a random specimen may not accurately define an individual's iodine supply. However, when results from a population are evaluated, the overall iodine status of the population can be characterized. Another limitation in evaluating the iodine data is that values employed for defining "deficient" and "low" are somewhat arbitrary, since the data concerning exact human requirements are limited.

The analyses of urine specimens were conducted by a single laboratory facility. Therefore, results were not subject to the inter-laboratory variation encountered for some other biochemical determinations.

Iodine status was also evaluated by a clinical

examination designed to detect the presence of goiter, or enlarged thyroid gland. However, there are certain pathological conditions that also cause an enlargement of the thyroid gland even though iodine intake is adequate.

DEFICIENT AND LOW URINARY IODINE VALUES

The range of urinary iodine values was extremely wide, varying from less than $25\mu\text{gm/gm}$ creatinine to greater than $800\mu\text{gm/gm}$ creatinine. The cumulative percentage distribution data for iodine by age, sex, and ethnic group in both groups of states indicated that the majority of the iodine values were considerably higher than the upper limit of the range of values selected for the "low" classification. In addition, the modest degrees of thyroid enlargement encountered in the survey are not easily or reliably identified.

The data for both the low- and high-income-ratio states indicate that less than one percent of values fell within the "deficient" range (Tables 1A and 2A). More "deficient" and "low" values were seen for adults than for children. However, this apparent decrease in iodine excretion in adults is due in part to the normal increase in creatinine excretion with age. Since adults excrete more creatinine than children, the ratio of iodine to creatinine in adults is decreased.

There was no obvious relationship between the percent of "deficient" and "low" values and sex, but ethnic group did appear to play some role. Spanish-Americans in both the low- and high-income-ratio states had a strikingly low percentage of "deficient" and "low" values.

In the low-income-ratio states, the percentage of "deficient" and "low" values tended to be somewhat higher for persons with a Poverty Income Ratio (PIR) of less than one than for those with

a PIR above one (Tables 1B-D). This trend was not seen in the high-income-ratio states (Tables 2B-D). It would appear that there is generally little consistent relationship between income level and urinary iodine excretion.

MEDIAN URINARY IODINE VALUES

Median values for iodine excretion are presented in the Appendix. Median values ranged from greater than 500 $\mu\text{g/gm}$ creatinine in young children to as low as 141 $\mu\text{g/gm}$ creatinine for some groups of adults. Median values generally were in the range of 200 $\mu\text{g/gm}$ for adults and were considerably higher for children. This finding is of importance, since in areas where endemic goiter is prevalent urinary iodine values may average only 20 $\mu\text{g/gm}$ creatinine. Therefore, median values for the survey population are in the range of 10 times higher than values found in areas of endemic goiter. This finding suggests that endemic goiter would be highly unlikely in the population surveyed.

URINARY IODINE VALUES AND GOITER PREVALENCE

The prevalence of "deficient" and "low" values for urinary iodine in each of the ten states and New York City, together with data showing the prevalence of goiter in each area, are presented in Table 3. The prevalence of goiter varied widely, from 0.4 percent in Massachusetts to 7.2 percent in California, and no consistent regional pattern was evident. Also, there was no consistent relationship between goiter prevalence and the prevalence of "deficient" and "low" values for urinary iodine.

Historically, goitrous regions or "goiter belts," where higher goiter prevalences are found, have been identified in the United States. This region has been defined as extending from the Appalachian region across the Great Lakes area and continuing across the northern part of the nation to the northwest corner. The introduction of iodized salt, as well as changes in food habits and food distribution, had greatly reduced the prevalence of goiter so that this historical pattern was no longer evident. For example, Michigan has been considered to be within the "goiter belt,"

yet the prevalence of goiter found there was only 1.1 percent. Other states, such as Texas, are not usually considered to be goitrous and yet had a relatively high prevalence of goiter. These findings may reflect changes in the pattern of goiter prevalence; or they may reflect limitations of the survey technique, such as the non-random nature of the population studied or variation in the assessment of goiter by the various examiners.

These findings suggested that the goiters found were related to factors other than iodine status. Iodine intakes may have played a role but did not appear to be the controlling factor. Either goitrogens or unrecognized thyroid abnormalities may have been responsible for some of the goiter seen. Also, many of the persons identified as having goiter may have had normal iodine intakes and normal thyroid function with no health consequence related to the thyroid enlargement.

SUMMARY

The populations studied generally had urinary iodine excretion values far above levels that would suggest the risk of endemic goiter. The areas identified as showing the highest goiter prevalence did not generally correspond to areas located in the so-called "goiter belt."

Moreover, goiter prevalence was not consistently related to the occurrence of "deficient" and "low" iodine excretion values. These important findings suggest that the goiters found are related to factors other than iodine status. Iodine supply may play a role but does not appear to be the controlling factor. Goitrogens or unrecognized thyroid abnormalities may be responsible for some of the goiter seen. Many of the persons identified as having goiter may, in fact, have a normal iodine supply and normal thyroid function, with no health consequence related to the thyroid enlargement.

Although the population as a whole had an iodine excretion far above a level that would suggest the risk of endemic goiter, some segments of the population may be relatively iodine deficient. In order to assure that all persons have adequate iodine supply, the iodination of salt remains an important public health measure.

Table 1A. *Percent of Persons Having Deficient or Low Urinary Iodine Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	2118	0.9	2.1	3715	0.5	1.8	1838	0.0	0.2
<2 All.....	5	0.0	0.0	16	0.0	0.0	11	0.0	0.0
2-5 Male.....	90	0.0	2.2	206	0.0	1.0	96	0.0	0.0
2-5 Female.....	58	1.7	0.0	174	0.0	1.1	81	0.0	0.0
6-9 Male.....	122	0.0	2.5	267	0.7	0.7	164	0.0	0.0
6-9 Female.....	106	0.9	0.9	226	0.4	0.9	124	0.0	0.0
10-12 Male.....	144	0.7	0.7	276	0.4	0.4	134	0.0	0.0
10-12 Female.....	136	0.7	0.0	376	0.3	0.0	117	0.0	0.0
13-16 Male.....	188	0.7	1.4	300	0.0	1.7	118	0.0	0.0
13-16 Female.....	153	0.7	0.0	391	0.3	1.5	144	0.0	0.7
17-59 Male.....	260	0.4	2.3	269	0.4	3.7	196	0.0	0.0
17-59 Female.....	463	1.9	2.4	803	1.1	2.6	489	0.0	0.4
>59 Male.....	194	1.5	4.1	152	0.0	3.3	82	0.0	0.0
>59 Female.....	244	0.4	4.5	253	1.2	4.7	79	0.0	0.0

Table 1B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Urinary Iodine Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	828	1.9	3.3	2555	0.6	2.1	1144	0.0	0.2
<2 All.....	2	0.0	0.0	7	0.0	0.0	9	0.0	0.0
2-5 Male.....	40	0.0	2.5	157	0.0	0.6	66	0.0	0.0
2-5 Female.....	24	4.2	0.0	123	0.0	1.6	56	0.0	0.0
6-9 Male.....	52	0.0	5.8	183	1.1	1.1	107	0.0	0.0
6-9 Female.....	37	2.7	2.7	164	0.6	0.6	84	0.0	0.0
10-12 Male.....	46	2.2	2.2	213	0.5	0.5	88	0.0	0.0
10-12 Female.....	43	2.3	0.0	256	0.4	0.0	79	0.0	0.0
13-16 Male.....	65	1.5	1.5	220	0.0	1.4	76	0.0	0.0
13-16 Female.....	55	1.8	0	268	0.0	2.2	98	0.0	1.0
17-59 Male.....	71	1.4	2.8	152	0.7	4.6	110	0.0	0.0
17-59 Female.....	173	3.5	3.5	507	1.4	3.2	273	0.0	0.4
>59 Male.....	98	2.0	8.2	101	0.0	3.0	46	0.0	0.0
>59 Female.....	118	0.8	3.4	201	1.0	5.5	50	0.0	0.0

¹ Total includes persons with unknown age and unknown sex.

Urinary Iodine Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)		
	Deficient	Low
All Ages	<25	25-49

Table 1C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Urinary Iodine Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	996	0.1	1.5	704	0.6	1.8	410	0.0	0.0
<2 All.....	2	0.0	0.0	3	0.0	0.0	2	0.0	0.0
2-5 Male.....	36	0.0	2.8	29	0.0	3.4	24	0.0	0.0
2-5 Female.....	28	0.0	0.0	28	0.0	0.0	12	0.0	0.0
6-9 Male.....	47	0.0	0.0	44	0.0	0.0	27	0.0	0.0
6-9 Female.....	53	0.0	0.0	36	0.0	2.8	25	0.0	0.0
10-12 Male.....	73	0.0	0.0	39	0.0	0.0	22	0.0	0.0
10-12 Female.....	62	0.0	0.0	57	0.0	0.0	17	0.0	0.0
13-16 Male.....	55	0.0	1.8	42	0.0	4.8	18	0.0	0.0
13-16 Female.....	61	0.0	0.0	59	1.7	0.0	21	0.0	0.0
17-59 Male.....	165	0.0	2.4	95	0.0	3.2	69	0.0	0.0
17-59 Female.....	237	0.4	1.7	189	1.1	1.6	131	0.0	0.0
>59 Male.....	75	0.0	0.0	46	0.0	4.3	24	0.0	0.0
>59 Female.....	101	0.0	5.0	34	2.9	2.9	18	0.0	0.0

Table 1D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Urinary Iodine Values by Age, Sex, and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	294	1.0	1.0	456	0.0	0.4	283	0.0	0.3
<2 All.....	1	0.0	0.0	6	0.0	0.0	—	—	—
2-5 Male.....	14	0.0	0.0	20	0.0	0.0	6	0.0	0.0
2-5 Female.....	6	0.0	0.0	23	0.0	0.0	13	0.0	0.0
6-9 Male.....	23	0.0	0.0	40	0.0	0.0	30	0.0	0.0
6-9 Female.....	16	0.0	0.0	26	0.0	0.0	15	0.0	0.0
10-12 Male.....	25	0.0	0.0	24	0.0	0.0	24	0.0	0.0
10-12 Female.....	31	0.0	0.0	63	0.0	0.0	21	0.0	0.0
13-16 Male.....	18	0.0	0.0	38	0.0	0.0	24	0.0	0.0
13-16 Female.....	37	0.0	0.0	64	0.0	0.0	25	0.0	0.0
17-59 Male.....	24	0.0	0.0	22	0.0	0.0	17	0.0	0.0
17-59 Female.....	53	3.8	1.9	107	0.0	1.9	85	0.0	1.2
>59 Male.....	21	4.8	0.0	5	0.0	0.0	12	0.0	0.0
>59 Female.....	25	0.0	8.0	18	0.0	0.0	11	0.0	0.0

¹ Total includes persons with unknown age and unknown sex.

Urinary Iodine Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)

	Deficient	Low
All Ages	<25	25-49

Table 2A. *Percent of Persons Having Deficient or Low Urinary Iodine Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	5831	0.3	1.1	1775	0.4	2.1	1035	0.1	1.6 ^a
<2 All.....	27	0.0	0.0	7	0.0	0.0	8	0.0	0.0
2-5 Male.....	153	0.0	0.0	62	0.0	0.0	43	0.0	0.0
2-5 Female.....	128	0.0	0.0	60	0.0	0.0	39	0.0	0.0
6-9 Male.....	254	0.4	0.0	80	0.0	0.0	50	0.0	0.0
6-9 Female.....	221	0.0	0.0	78	0.0	0.0	45	0.0	0.0
10-12 Male.....	387	0.5	0.2	139	0.0	0.0	119	0.0	0.0
10-12 Female.....	354	0.6	0.8	172	0.0	0.6	122	0.8	0.0
13-16 Male.....	331	0.9	0.3	128	0.0	0.0	90	0.0	2.2
13-16 Female.....	331	0.3	0.6	171	0.6	1.7	99	0.0	1.0
17-59 Male.....	882	0.6	2.4	156	1.3	6.4	110	0.0	3.6
17-59 Female.....	1478	0.2	1.5	544	0.5	3.7	251	0.0	2.8
>59 Male.....	525	0.2	1.7	64	0.0	1.6	17	0.0	5.9
>59 Female.....	759	0.1	0.8	114	0.9	2.6	37	0.0	2.7

Table 2B. *Percent of Persons with a Poverty Income Ratio Less than One Having Deficient or Low Urinary Iodine Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	983	0.4	1.2	524	0.0	1.9	329	0.0	1.8
<2 All.....	1	0.0	0.0	4	0.0	0.0	2	0.0	0.0
2-5 Male.....	26	0.0	0.0	24	0.0	0.0	19	0.0	0.0
2-5 Female.....	20	0.0	0.0	22	0.0	0.0	14	0.0	0.0
6-9 Male.....	46	2.2	0.0	30	0.0	0.0	18	0.0	0.0
6-9 Female.....	43	0.0	0.0	22	0.0	0.0	15	0.0	0.0
10-12 Male.....	58	0.0	0.0	44	0.0	0.0	27	0.0	0.0
10-12 Female.....	60	1.7	0.0	64	0.0	0.0	41	0.0	0.0
13-16 Male.....	37	0.0	0.0	40	0.0	0.0	31	0.0	0.0
13-16 Female.....	43	0.0	0.0	46	0.0	0.0	41	0.0	0.0
17-59 Male.....	102	2.0	3.9	28	0.0	7.1	25	0.0	4.0
17-59 Female.....	202	0.0	1.5	145	0.0	4.8	75	0.0	5.3
>59 Male.....	125	0.0	2.4	19	0.0	5.3	5	0.0	20.0
>59 Female.....	220	0.0	0.9	36	0.0	0.0	13	0.0	0.0

¹ Total includes persons with unknown age and unknown sex.

Urinary Iodine Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)		
	Deficient	Low
All Ages.....	<25	25-49

Table 2C. *Percent of Persons with a Poverty Income Ratio Greater than One Having Deficient or Low Urinary Iodine Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	4329	0.3	1.2	990	0.6	2.4	538	0.2	1.3
<2 All.....	21	0.0	0.0	3	0.0	0.0	4	0.0	0.0
2-5 Male.....	107	0.0	0.0	29	0.0	0.0	18	0.0	0.0
2-5 Female.....	93	0.0	0.0	32	0.0	0.0	15	0.0	0.0
6-9 Male.....	189	0.0	0.0	45	0.0	0.0	27	0.0	0.0
6-9 Female.....	163	0.0	0.0	42	0.0	0.0	23	0.0	0.0
10-12 Male.....	290	0.7	0.3	75	0.0	0.0	68	0.0	0.0
10-12 Female.....	252	0.4	1.2	86	0.0	1.2	57	1.7	0.0
13-16 Male.....	248	1.2	0.4	66	0.0	0.0	46	0.0	0.0
13-16 Female.....	246	0.4	0.8	100	1.0	3.0	43	0.0	2.3
17-59 Male.....	723	0.4	2.4	93	2.1	7.5	71	0.0	2.8
17-59 Female.....	1164	0.3	1.5	316	0.6	3.5	137	0.0	2.2
>59 Male.....	363	0.3	1.7	39	0.0	0.0	9	0.0	0.0
>59 Female.....	469	0.0	0.8	64	1.6	3.1	20	0.0	5.0

Table 2D. *Percent of Persons with Poverty Income Ratio Unknown Having Deficient or Low Urinary Iodine Values by Age, Sex, and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age and Sex	Ethnic Group								
	White			Black			Spanish American		
	Total Number	Percent With		Total Number	Percent With		Total Number	Percent With	
		Deficient Values	Low Values		Deficient Values	Low Values		Deficient Values	Low Values
TOTAL ¹	519	0.2	0.4	261	0.4	1.5	168	0.0	2.4
<2 All.....	5	0.0	0.0	—	—	—	2	0.0	0.0
2-5 Male.....	20	0.0	0.0	9	0.0	0.0	6	0.0	0.0
2-5 Female.....	15	0.0	0.0	6	0.0	0.0	10	0.0	0.0
6-9 Male.....	19	0.0	0.0	5	0.0	0.0	5	0.0	0.0
6-9 Female.....	15	0.0	0.0	14	0.0	0.0	7	0.0	0.0
10-12 Male.....	39	0.0	0.0	20	0.0	0.0	24	0.0	0.0
10-12 Female.....	42	0.0	0.0	22	0.0	0.0	24	0.0	0.0
13-16 Male.....	46	0.0	0.0	22	0.0	0.0	13	0.0	15.4
13-16 Female.....	42	0.0	0.0	25	0.0	0.0	15	0.0	0.0
17-59 Male.....	57	0.0	0.0	35	0.0	2.9	14	0.0	7.1
17-59 Female.....	112	0.0	1.8	83	1.2	2.4	39	0.0	0.0
>59 Male.....	37	0.0	0.0	6	0.0	0.0	3	0.0	0.0
>59 Female.....	70	1.4	0.0	14	0.0	7.1	4	0.0	0.0

¹ Total includes persons with unknown age and unknown sex.

Urinary Iodine Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)		
	Deficient	Low
All Ages.....	<25	25-49

Table 3. *Percent of Persons Having Deficient or Low Iodine Values and Percent of Persons with Goiter by State—Ten-State Nutrition Survey (1968-1970)*

States and New York City	Iodine Values			Goiter	
	Total ¹ Number	Percent Deficient	Percent Low	Total ² Persons Examined	Percent Positive Findings
California.....	833	0.2	0.8	4971	7.2
Kentucky.....	1185	2.4	3.0	1362	4.9
Louisiana.....	207	0.0	0.0	3932	3.9
Massachusetts.....	2550	0.6	2.1	3619	0.4
Michigan.....	1383	0.2	0.7	1947	1.1
New York City.....	1160	0.2	2.8	1625	2.4
New York State.....	1130	0.4	1.4	2709	2.7
South Carolina.....	2210	0.2	2.6	3739	3.6
Texas.....	3426	0.1	0.3	3632	5.3
Washington.....	1990	0.0	0.4	4379	1.2
West Virginia.....	725	0.7	1.9	1810	1.9

¹ Computed for All Ages.

² Persons Six Years of Age and Over.

Urinary Iodine Deficient and Low Value Classifications ($\mu\text{g/gm}$ creatinine)		
	Deficient	Low
All Ages	<25	25-49

APPENDIX

7. Iodine

Table 1A Appendix. Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for All Persons Under Two Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	5	100.0	100.0	16	100.0	100.0	11	100.0	100.0
<025.....	—	—	—	—	—	—	—	—	—
025-049.....	—	—	—	—	—	—	—	—	—
050-099.....	—	—	—	—	—	—	—	—	—
100-199.....	—	—	—	2	12.5	12.5	—	—	—
200-299.....	—	—	—	3	18.8	31.3	—	—	—
300-399.....	1	20.0	20.0	2	12.5	43.8	2	18.2	18.2
400-499.....	1	20.0	40.0	1	6.2	50.0	—	—	18.2
500-599.....	—	—	40.0	1	6.2	56.2	1	9.1	27.3
600-699.....	—	—	40.0	1	6.2	62.4	1	9.1	36.4
700-799.....	—	—	40.0	1	6.2	68.6	1	9.1	45.5
>799.....	3	60.0	100.0	5	31.3	99.9	6	54.5	100.0
Mean.....	739.0			559.9			786.6		
Median.....	>799.0 ¹			600.0			>799.0 ¹		

¹ Median cannot be computed because it falls in an open ended class.

Table 1B Appendix. Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Two through Five Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	90	100.0	100.0	206	100.0	100.0	96	100.0	100.0
<025.....	—	—	—	—	—	—	—	—	—
025-049.....	2	2.2	2.2	2	1.0	1.0	—	—	—
050-099.....	1	1.1	3.3	9	4.4	5.4	—	—	—
100-199.....	10	11.1	14.4	23	11.2	16.6	—	—	—
200-299.....	10	11.1	25.5	27	13.1	29.7	3	3.1	3.1
300-399.....	14	15.6	41.1	22	10.7	40.4	4	4.2	7.3
400-499.....	10	11.1	52.2	22	10.7	51.1	10	10.4	17.7
500-599.....	5	5.6	57.8	16	7.8	58.9	7	7.3	25.0
600-699.....	3	3.3	61.1	14	6.8	65.7	5	5.2	30.2
700-799.....	4	4.4	65.5	9	4.4	70.1	11	11.5	41.7
>799.....	31	34.4	99.9	62	30.1	100.2	56	58.3	100.0
Mean.....	559.3			548.7			778.1		
Median.....	480.0			490.0			>799.0 ¹		

¹ Median cannot be computed because it falls in an open ended class.

Table 1C Appendix. Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Two through Five Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	58	100.0	100.0	174	100.0	100.0	81	100.0	100.0
<025.....	1	1.7	1.7	—	—	—	—	—	—
025-049.....	—	—	1.7	2	1.1	1.1	—	—	—
050-099.....	1	1.7	3.4	5	2.9	4.0	—	—	—
100-199.....	11	19.0	22.4	18	10.3	14.3	1	1.2	1.2
200-299.....	6	10.3	32.7	30	17.2	31.5	3	3.7	4.9
300-399.....	5	8.6	41.3	15	8.6	40.1	9	11.1	16.0
400-499.....	7	12.1	53.4	18	10.3	50.4	7	8.6	24.6
500-599.....	5	8.6	62.0	14	8.0	58.4	11	13.6	38.2
600-699.....	3	5.2	67.2	11	6.3	64.7	6	7.4	45.6
700-799.....	3	5.2	72.4	10	5.7	70.4	5	6.2	51.8
>799.....	16	27.6	100.0	51	29.3	99.7	39	48.1	99.9
Mean.....	535.2			544.2			726.7		
Median.....	471.0			494.0			770.0		

Table 1D Appendix. Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Six through Nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	122	100.0	100.0	267	100.0	100.0	164	100.0	100.0
<025.....	—	—	—	2	0.7	0.7	—	—	—
025-049.....	3	2.5	2.5	2	0.7	1.4	—	—	—
050-099.....	4	3.3	5.8	4	1.5	2.9	1	0.6	0.6
100-199.....	13	10.7	16.5	30	11.2	14.1	1	0.6	1.2
200-299.....	14	11.5	28.0	44	16.5	30.6	11	6.7	7.9
300-399.....	17	13.9	41.9	38	14.2	44.8	13	7.9	15.8
400-499.....	13	10.7	52.6	29	10.9	55.7	19	11.6	27.4
500-599.....	20	16.4	69.0	28	10.5	66.2	15	9.1	36.5
600-699.....	6	4.9	73.9	22	8.2	74.4	14	8.5	45.0
700-799.....	5	4.1	78.0	14	5.2	79.6	16	9.8	54.8
>799.....	27	22.1	100.1	54	20.2	99.8	74	45.1	99.9
Mean.....	502.5			501.4			715.9		
Median.....	475.0			446.0			750.0		

Table 1E Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Six through Nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	106	100.0	100.0	226	100.0	100.0	124	100.0	100.0
<025.....	1	0.9	0.9	1	0.4	0.4	—	—	—
025-049.....	1	0.9	1.8	2	0.9	1.3	—	—	—
050-099.....	4	3.8	5.6	3	1.3	2.6	1	0.8	0.8
100-199.....	16	15.1	20.7	31	13.7	16.3	3	2.4	3.2
200-299.....	14	13.2	33.9	40	17.7	34.0	8	6.5	9.7
300-399.....	15	14.2	48.1	41	18.1	52.1	14	11.3	21.0
400-499.....	8	7.5	55.6	31	13.7	65.8	15	12.1	33.1
500-599.....	6	5.7	61.3	17	7.5	73.3	12	9.7	42.8
600-699.....	12	11.3	72.6	15	6.6	79.9	13	10.5	53.3
700-799.....	6	5.7	78.3	7	3.1	83.0	9	7.3	60.6
>799.....	23	21.7	100.0	38	16.8	99.8	49	39.5	100.1
Mean.....	496.1			456.6			682.1		
Median.....	427.0			386.0			667.0		

Table 1F Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Ten through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	144	100.0	100.0	276	100.0	100.0	134	100.0	100.0
<025.....	1	0.7	0.7	1	0.4	0.4	—	—	—
025-049.....	1	0.7	1.4	1	0.4	0.8	—	—	—
050-099.....	3	2.1	3.5	8	2.9	3.7	—	—	—
100-199.....	27	18.7	22.2	55	19.9	23.6	4	3.0	3.0
200-299.....	18	12.5	34.7	65	23.6	47.2	12	9.0	12.0
300-399.....	20	13.9	48.6	42	15.2	62.4	17	12.7	24.7
400-499.....	18	12.5	61.1	35	12.7	75.1	14	10.4	35.1
500-599.....	13	9.0	70.1	23	8.3	83.4	22	16.4	51.5
600-699.....	9	6.2	76.3	15	5.4	88.8	9	6.7	58.2
700-799.....	9	6.2	82.5	8	2.9	91.7	10	7.5	65.7
>799.....	25	17.4	99.9	23	8.3	100.0	46	34.3	100.0
Mean.....	469.8			378.7			640.8		
Median.....	413.0			319.0			589.0		

Table 1G Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Ten through Twelve Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	186	100.0	100.0	376	100.0	100.0	117	100.0	100.0
<025.....	1	0.7	0.7	1	0.3	0.3	—	—	—
025-049.....	—	0.7	0.7	—	—	0.3	—	—	—
050-099.....	5	3.7	4.4	25	6.6	6.9	—	—	—
100-199.....	28	20.6	25.0	77	20.5	27.4	4	3.4	3.4
200-299.....	17	12.5	37.5	100	26.6	54.0	17	14.5	17.9
300-399.....	22	16.2	53.7	54	14.4	68.4	12	10.3	28.2
400-499.....	14	10.3	64.0	35	9.3	77.7	16	13.7	41.9
500-599.....	16	11.8	75.8	24	6.4	84.1	19	16.2	58.1
600-699.....	6	4.4	80.2	21	5.6	89.7	8	6.8	64.9
700-799.....	7	5.1	85.3	8	2.1	91.8	10	8.5	73.4
>799.....	20	14.7	100.0	31	8.2	100.0	31	26.5	99.9
Mean.....	435.3			354.8			593.6		
Median.....	376.0			284.0			550.0		

Table 1H Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	188	100.0	100.0	300	100.0	100.0	118	100.0	100.0
<025.....	1	0.7	0.7	—	—	—	—	—	—
025-049.....	2	1.4	2.1	5	1.7	1.7	—	—	—
050-099.....	13	9.4	11.5	23	7.7	9.4	1	0.8	0.8
100-199.....	30	21.7	33.2	64	21.3	30.7	7	5.9	6.7
200-299.....	20	14.5	47.7	73	24.3	55.0	18	15.3	22.0
300-399.....	20	14.5	62.2	55	18.3	73.3	14	11.9	33.9
400-499.....	10	7.2	69.4	37	12.3	85.6	19	16.1	50.0
500-599.....	7	5.1	74.5	12	4.0	89.6	13	11.0	61.0
600-699.....	11	8.0	82.5	7	2.3	91.9	12	10.2	71.2
700-799.....	12	8.7	91.2	6	2.0	93.9	9	7.6	78.8
>799.....	12	8.7	99.9	18	6.0	99.9	25	21.2	100.0
Mean.....	383.7			325.3			545.8		
Median.....	315.0			279.0			500.0		

Table 1I Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	153	100.0	100.0	391	100.0	100.0	144	100.0	100.0
< 025.....	1	0.7	0.7	1	0.3	0.3	—	—	—
025-049.....	—	—	0.7	6	1.5	1.8	1	0.7	0.7
050-099.....	11	7.2	7.9	38	9.7	11.5	1	0.7	1.4
100-199.....	38	24.8	32.7	105	26.9	38.4	18	12.5	13.9
200-299.....	36	23.5	56.2	82	21.0	59.4	24	16.7	30.6
300-399.....	14	9.2	65.4	60	15.3	74.7	27	18.7	49.3
400-499.....	13	8.5	73.9	26	6.6	81.3	15	10.4	59.7
500-599.....	8	5.2	79.1	27	6.9	88.2	8	5.6	65.3
600-699.....	6	3.9	83.0	11	2.8	91.0	12	8.3	73.6
700-799.....	3	2.0	85.0	13	3.3	94.3	5	3.5	77.1
> 799.....	23	15.0	100.0	22	5.6	99.9	33	22.9	100.0
Mean.....	382.5			315.0			505.1		
Median.....	273.0			255.0			406.0		

Table 1J Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Seventeen through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	260	100.0	100.0	269	100.0	100.0	196	100.0	100.0
< 025.....	1	0.4	0.4	1	0.4	0.4	—	—	—
025-049.....	6	2.3	2.7	10	3.7	4.1	—	—	—
050-099.....	20	7.7	10.4	31	11.5	15.6	3	1.5	1.5
100-199.....	54	20.8	31.2	68	25.3	40.9	36	18.4	19.9
200-299.....	51	19.6	50.8	59	21.9	62.8	40	20.4	40.3
300-399.....	38	14.6	65.4	42	15.6	78.4	27	13.8	54.1
400-499.....	26	10.0	75.4	21	7.8	86.2	22	11.2	65.3
500-599.....	20	7.7	83.1	18	6.7	92.9	10	5.1	70.4
600-699.....	14	5.4	88.5	5	1.9	94.8	17	8.7	79.1
700-799.....	4	1.5	90.0	7	2.6	97.4	8	4.1	83.2
> 799.....	26	10.0	100.0	7	2.6	100.0	33	16.8	100.0
Mean.....	366.1			280.1			454.9		
Median.....	296.0			241.0			370.0		

Table 1K Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Seventeen through Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	463	100.0	100.0	803	100.0	100.0	489	100.0	100.0
<025.....	9	1.9	1.9	9	1.1	1.1	—	—	—
025-049.....	11	2.4	4.3	21	2.6	3.7	2	0.4	0.4
050-099.....	47	10.2	14.5	90	11.2	14.9	5	1.0	1.4
100-199.....	117	25.3	39.8	256	31.9	46.8	65	13.3	14.7
200-299.....	85	18.4	58.2	142	17.7	64.5	70	14.3	29.0
300-399.....	50	10.8	69.0	110	13.7	78.2	75	15.3	44.3
400-499.....	28	6.0	75.0	59	7.3	85.5	63	12.9	57.2
500-599.....	35	7.6	82.6	33	4.1	89.6	52	10.6	67.8
600-699.....	18	3.9	86.5	26	3.2	92.8	30	6.1	73.9
700-799.....	10	2.2	88.7	11	1.4	94.2	20	4.1	78.0
>799.....	53	11.4	100.1	46	5.7	99.9	107	21.9	99.9
Mean.....	347.8			288.3			508.1		
Median.....	256.0			217.0			443.0		

Table 1L Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	194	100.0	100.0	152	100.0	100.0	82	100.0	100.0
<025.....	3	1.5	1.5	—	—	—	—	—	—
025-049.....	8	4.1	5.6	5	3.3	3.3	—	—	—
050-099.....	17	8.8	14.4	19	12.5	15.8	1	1.2	1.2
100-199.....	55	28.4	42.8	48	31.6	47.4	10	12.2	13.4
200-299.....	34	17.5	60.3	34	22.4	69.8	12	14.6	28.0
300-399.....	17	8.8	69.1	23	15.1	84.9	10	12.2	40.2
400-499.....	19	9.8	78.9	11	7.2	92.1	15	18.3	58.5
500-599.....	7	3.6	82.5	4	2.6	94.7	12	14.6	73.1
600-699.....	9	4.6	87.1	3	2.0	96.7	3	3.7	76.8
700-799.....	5	2.6	89.7	2	1.3	98.0	5	6.1	82.9
>799.....	20	10.3	100.0	3	2.0	100.0	14	17.1	100.0
Mean.....	332.2			250.6			496.9		
Median.....	241.0			211.0			453.0		

Table 1M Appendix. Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Over Fifty-nine Years of Age for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	244	100.0	100.0	253	100.0	100.0	79	100.0	100.0
< 025.....	1	0.4	0.4	3	1.2	1.2	—	—	—
025-049.....	11	4.5	4.9	12	4.7	5.9	—	—	—
050-099.....	19	7.8	12.7	29	11.5	17.4	2	2.5	2.5
100-199.....	55	22.5	35.2	58	22.9	40.3	4	5.1	7.6
200-299.....	33	13.5	48.7	57	22.5	62.8	8	10.1	17.7
300-399.....	32	13.1	61.8	34	13.4	76.2	12	15.2	32.9
400-499.....	23	9.4	71.2	23	9.1	85.3	6	7.6	40.5
500-599.....	12	4.9	76.1	11	4.3	89.6	5	6.3	46.8
600-699.....	13	5.3	81.4	8	3.2	92.8	6	7.6	54.4
700-799.....	8	3.3	84.7	4	1.6	94.4	6	7.6	62.0
> 799.....	37	15.2	99.9	14	5.5	99.9	30	38.0	100.0
Mean.....	391.6			293.2			630.8		
Median.....	309.0			242.0			641.0		

Table 2A Appendix. Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for All Persons Under Two Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL	27	100.0	100.0	7	100.0	100.0	8	100.0	100.0
< 025.....	—	—	—	—	—	—	—	—	—
025-049.....	—	—	—	—	—	—	—	—	—
050-099.....	1	3.7	3.7	1	14.3	14.3	—	—	—
100-199.....	2	7.4	11.1	1	14.3	28.6	—	—	—
200-299.....	6	22.2	33.3	2	28.6	57.2	2	25.0	25.0
300-399.....	1	3.7	37.0	—	—	57.2	2	25.0	50.0
400-499.....	3	11.1	48.1	2	28.6	85.8	—	—	50.0
500-599.....	1	3.7	51.8	—	—	85.8	—	—	50.0
600-699.....	3	11.1	62.9	—	—	85.8	—	—	50.0
700-799.....	3	11.1	74.0	—	—	85.8	1	12.5	62.5
> 799.....	7	25.9	99.9	1	14.3	100.1	3	37.5	100.0
Mean.....	557.1			376.5			595.5		
Median.....	550.0			275.0			400.0		

Table 2B Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Two through Five Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	153	100.0	100.0	62	100.0	100.0	43	100.0	100.0
<025.....	—	—	—	—	—	—	—	—	—
025-049.....	—	—	—	—	—	—	—	—	—
050-099.....	2	1.3	1.3	5	8.1	8.1	—	—	—
100-199.....	16	10.5	11.8	11	17.7	25.8	4	9.3	9.3
200-299.....	21	13.7	25.5	11	17.7	43.5	6	14.0	23.3
300-399.....	15	9.8	35.3	10	16.1	59.6	3	7.0	30.3
400-499.....	25	16.3	51.6	5	8.1	67.7	3	7.0	37.3
500-599.....	18	11.8	63.4	5	8.1	75.8	2	4.7	42.0
600-699.....	14	9.2	72.6	4	6.5	82.3	7	16.3	58.3
700-799.....	12	7.8	80.4	4	6.5	88.8	4	9.3	67.6
>799.....	30	19.6	100.0	7	11.3	100.1	14	32.6	100.2
Mean.....	524.4			413.4			612.7		
Median.....	490.0			340.0			650.0		

Table 2C Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Two through Five Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	128	100.0	100.0	60	100.0	100.0	39	100.0	100.0
<025.....	—	—	—	—	—	—	—	—	—
025-049.....	—	—	—	—	—	—	—	—	—
050-099.....	—	—	—	2	3.3	3.3	—	—	—
100-199.....	7	5.5	5.5	7	11.7	15.0	2	5.1	5.1
200-299.....	19	14.8	20.3	11	18.3	33.3	4	10.3	15.4
300-399.....	13	10.2	30.5	15	25.0	58.3	4	10.3	25.7
400-499.....	24	18.8	49.3	6	10.0	68.3	6	15.4	41.1
500-599.....	12	9.4	58.7	5	8.3	76.6	3	7.7	48.8
600-699.....	7	5.5	64.2	5	8.3	84.9	3	7.7	56.5
700-799.....	10	7.8	72.0	3	5.0	89.9	5	12.8	69.3
>799.....	36	28.1	100.1	6	10.0	99.9	12	30.8	100.1
Mean.....	584.1			432.2			604.4		
Median.....	508.0			366.0			616.0		

Table 2D Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Six through Nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	254	100.0	100.0	80	100.0	100.0	50	100.0	100.0
<025.....	1	0.4	0.4	—	—	—	—	—	—
025-049.....	—	—	0.4	—	—	—	—	—	—
050-099.....	4	1.6	2.0	3	3.8	3.8	3	6.0	6.0
100-199.....	24	9.4	11.4	19	23.8	27.6	7	14.0	20.0
200-299.....	50	19.7	31.1	19	23.8	51.4	5	10.0	30.0
300-399.....	45	17.7	48.8	14	17.5	68.9	6	12.0	42.0
400-499.....	31	12.2	61.0	7	8.8	77.7	8	16.0	58.0
500-599.....	24	9.4	70.4	4	5.0	82.7	5	10.0	68.0
600-699.....	14	5.5	75.9	4	5.0	87.7	5	10.0	78.0
700-799.....	11	4.3	80.2	2	2.5	90.2	2	4.0	82.0
>799.....	50	19.7	99.9	8	10.0	100.2	9	18.0	100.0
Mean.....	489.7			363.9			485.6		
Median.....	409.0			294.0			450.0		

Table 2E Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Six through Nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	221	100.0	100.0	78	100.0	100.0	45	100.0	100.0
<025.....	—	—	—	—	—	—	—	—	—
025-049.....	—	—	—	—	—	—	—	—	—
050-099.....	5	2.3	2.3	6	7.7	7.7	4	8.9	8.9
100-199.....	19	8.6	10.9	19	24.4	32.1	11	24.4	33.3
200-299.....	44	19.9	30.8	17	21.8	53.9	5	11.1	44.4
300-399.....	49	22.2	53.0	12	15.4	69.3	7	15.6	60.0
400-499.....	22	10.0	63.0	9	11.5	80.8	5	11.1	71.1
500-599.....	23	10.4	73.4	5	6.4	87.2	3	6.7	77.8
600-699.....	16	7.2	80.6	3	3.8	91.0	2	4.4	82.2
700-799.....	12	5.4	86.0	4	5.1	96.1	1	2.2	84.4
>799.....	31	14.0	100.0	3	3.8	99.9	7	15.6	100.0
Mean.....	462.1			326.6			393.6		
Median.....	386.0			282.0			335.0		

Table 2F Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Ten through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	387	100.0	100.0	139	100.0	100.0	119	100.0	100.0
< 025.....	2	0.5	0.5	—	—	—	—	—	—
025-049.....	1	0.3	0.8	—	—	—	—	—	—
050-099.....	11	2.8	3.6	14	10.1	10.1	5	4.2	4.2
100-199.....	55	14.2	17.8	34	24.5	34.6	29	24.4	28.6
200-299.....	83	21.4	39.2	30	21.6	56.2	19	16.0	44.6
300-399.....	74	19.1	58.3	19	13.7	69.9	19	16.0	60.0
400-499.....	48	12.4	70.7	16	11.5	81.4	12	10.1	70.7
500-599.....	37	9.6	80.3	12	8.6	90.0	6	5.0	75.7
600-699.....	25	6.5	86.8	6	4.3	94.3	8	6.7	82.4
700-799.....	9	2.3	89.1	3	2.2	96.5	7	5.9	88.3
> 799.....	42	10.9	100.0	5	3.6	100.1	14	11.8	100.1
Mean.....	414.1			319.7			409.7		
Median.....	356.0			271.0			334.0		

Table 2G Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Ten through Twelve Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	354	100.0	100.0	172	100.0	100.0	122	100.0	100.0
< 025.....	2	0.6	0.6	—	—	—	1	0.8	0.8
025-049.....	3	0.8	1.4	1	0.6	0.6	—	—	0.8
050-099.....	11	3.1	4.5	18	10.5	11.1	4	3.3	4.1
100-199.....	64	18.1	22.6	47	27.3	38.4	18	14.8	18.9
200-299.....	65	18.4	41.0	46	26.7	65.1	28	23.0	41.9
300-399.....	58	16.4	57.4	19	11.0	76.1	17	13.9	55.8
400-499.....	46	13.0	70.4	15	8.7	84.8	17	13.9	69.7
500-599.....	32	9.0	79.4	9	5.2	90.0	8	6.6	76.3
600-699.....	18	5.1	84.5	6	3.5	93.5	9	7.4	83.7
700-799.....	9	2.5	87.0	3	1.7	95.2	6	4.9	88.6
> 799.....	46	13.0	100.0	8	4.7	99.9	14	11.5	100.1
Median.....	417.0			295.0			424.2		
Mean.....	355.0			243.0			358.0		

Table 2H Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	331	100.0	100.0	128	100.0	100.0	90	100.0	100.0
<025.....	3	0.9	0.9	—	—	—	—	—	—
025-049.....	1	0.3	1.2	—	—	—	2	2.2	2.2
050-099.....	15	4.5	5.7	11	8.6	8.6	6	6.7	8.9
100-199.....	81	24.5	30.2	48	37.5	46.1	24	26.7	35.6
200-299.....	76	23.0	53.2	29	22.7	68.8	19	21.1	56.7
300-399.....	48	14.5	67.7	20	15.6	84.4	15	16.7	73.4
400-499.....	40	12.1	79.8	9	7.0	91.4	8	8.9	82.3
500-599.....	17	5.1	84.9	8	6.3	97.7	5	5.6	87.9
600-699.....	15	4.5	89.4	2	1.6	99.3	2	2.2	90.1
700-799.....	8	2.4	91.8	—	—	99.3	6	6.7	96.8
>799.....	27	8.2	100.0	1	0.8	100.1	3	3.3	100.1
Mean.....	354.1			250.6			320.7		
Median.....	286.0			217.0			268.0		

Table 2I Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Thirteen through Sixteen Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	331	100.0	100.0	171	100.0	100.0	99	100.0	100.0
<025.....	1	0.3	0.3	1	0.6	0.6	—	—	—
025-049.....	2	0.6	0.9	3	1.8	2.4	1	1.0	1.0
050-099.....	17	5.1	6.0	23	13.5	15.9	6	6.1	7.1
100-199.....	91	27.5	33.5	60	35.1	51.0	28	28.3	35.4
200-299.....	83	25.1	58.6	46	26.9	77.9	19	19.2	54.6
300-399.....	50	15.1	73.7	26	15.2	93.1	12	12.1	66.7
400-499.....	28	8.5	82.2	4	2.3	95.4	14	14.1	80.8
500-599.....	23	6.9	89.1	3	1.8	97.2	4	4.0	84.8
600-699.....	8	2.4	91.5	1	0.6	97.8	6	6.1	90.9
700-799.....	10	3.0	94.5	3	1.8	99.6	3	3.0	93.9
>799.....	18	5.4	99.9	1	0.6	100.2	6	6.1	100.0
Mean.....	323.0			223.0			344.5		
Median.....	265.0			197.0			276.0		

Table 2J Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Seventeen through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	882	100.0	100.0	156	100.0	100.0	110	100.0	100.0
<025.....	5	0.6	0.6	2	1.3	1.3	—	—	—
025-049.....	21	2.4	3.0	10	6.4	7.7	4	3.6	3.6
050-089.....	169	19.2	22.2	44	28.2	35.9	19	17.3	20.9
100-199.....	326	37.0	59.2	53	34.0	69.9	31	28.2	49.1
200-299.....	172	19.5	78.7	32	20.5	90.4	18	16.4	65.5
300-399.....	68	7.7	86.4	6	3.8	94.2	19	17.3	82.8
400-499.....	34	3.9	90.3	3	1.9	96.1	6	5.5	88.3
500-599.....	22	2.5	92.8	4	2.6	98.7	8	7.3	95.6
600-699.....	16	1.8	94.6	—	—	98.7	—	—	95.6
700-799.....	10	1.1	95.7	1	0.6	99.3	2	1.8	97.4
>799.....	39	4.4	100.1	1	0.6	99.9	3	2.7	100.1
Mean.....	234.7			166.1			258.5		
Median.....	175.0			141.0			205.0		

Table 2K Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Seventeen through Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	1478	100.0	100.0	544	100.0	100.0	251	100.0	100.0
<025.....	3	0.2	0.2	3	0.6	0.6	—	—	—
025-049.....	22	1.5	1.7	20	3.7	4.3	7	2.8	2.8
050-099.....	193	13.1	14.8	113	20.8	25.1	38	15.1	17.9
100-199.....	495	33.5	48.3	216	39.7	64.8	84	33.5	51.4
200-299.....	332	22.5	70.8	107	19.7	84.5	45	17.9	69.3
300-399.....	155	10.5	81.3	43	7.9	92.4	20	8.0	77.3
400-499.....	108	7.3	88.6	18	3.3	95.7	24	9.6	86.9
500-599.....	60	4.1	92.7	8	1.5	97.2	11	4.4	91.3
600-699.....	42	2.8	95.5	2	0.4	97.6	7	2.8	94.1
700-799.....	19	1.3	96.8	—	—	97.6	8	3.2	97.3
>799.....	49	3.3	100.1	14	2.6	100.2	7	2.8	100.1
Mean.....	265.5			197.6			264.5		
Median.....	207.0			162.0			195.0		

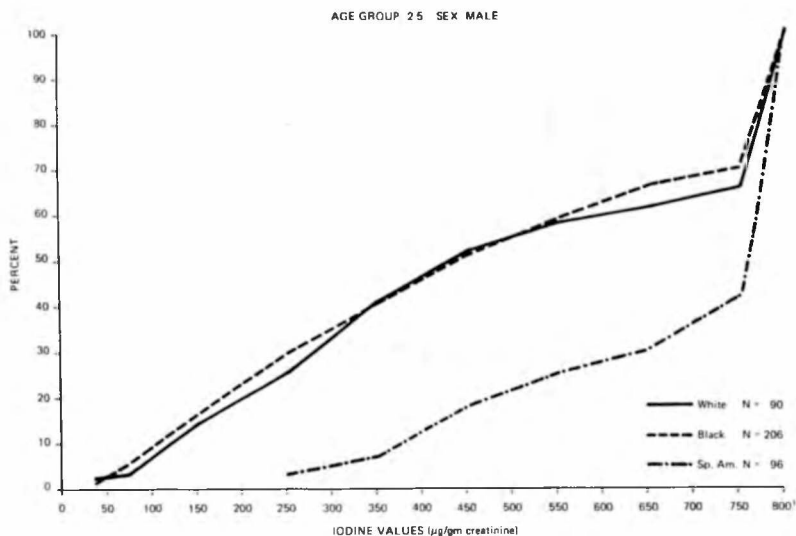
Table 2L Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Males Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	525	100.0	100.0	64	100.0	100.0	17	100.0	100.0
<025.....	1	0.2	0.2	—	—	—	—	—	—
025-049.....	9	1.7	1.9	1	1.6	1.6	1	5.9	5.9
050-099.....	65	12.4	14.3	11	17.2	18.8	2	11.8	17.7
100-199.....	161	30.7	45.0	22	34.4	53.2	5	29.4	47.1
200-299.....	115	21.9	66.9	16	25.0	78.2	3	17.6	64.7
300-399.....	80	15.2	82.1	6	9.4	87.6	3	17.6	82.8
400-499.....	30	5.7	87.8	1	1.6	89.2	—	—	82.8
500-599.....	22	4.2	92.0	—	—	89.2	2	11.8	94.1
600-699.....	11	2.1	94.1	5	7.8	97.0	1	5.9	100.0
700-799.....	14	2.7	96.8	1	1.6	98.6	—	—	100.0
>799.....	17	3.2	100.0	1	1.6	100.2	—	—	100.0
Mean.....	274.0			237.7			269.0		
Median.....	223.0			190.0			216.0		

Table 2M Appendix. *Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Females Over Fifty-nine Years of Age for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Iodine Values μg/gm creatinine	Ethnic Group								
	White			Black			Spanish American		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
TOTAL.....	759	100.0	100.0	114	100.0	100.0	37	100.0	100.0
<025.....	1	0.1	0.1	1	0.9	0.9	—	—	—
025-049.....	6	0.8	0.9	3	2.6	3.5	1	2.7	2.7
050-099.....	75	9.9	10.8	16	14.0	17.5	1	2.7	5.4
100-199.....	217	28.6	39.4	44	38.6	56.1	9	24.3	29.7
200-299.....	195	25.7	65.1	21	18.4	74.5	13	35.1	64.8
300-399.....	85	11.2	76.3	16	14.0	88.5	4	10.8	75.6
400-499.....	61	8.0	84.3	4	3.5	92.0	4	10.8	86.4
500-599.....	42	5.5	89.8	4	3.5	95.5	2	5.4	91.8
600-699.....	28	3.7	93.5	—	—	95.5	1	2.7	94.5
700-799.....	17	2.2	95.7	1	0.9	96.4	1	2.7	97.2
>799.....	32	4.2	99.9	4	3.5	99.9	1	2.7	99.9
Mean.....	295.1			238.4			303.1		
Median.....	241.0			184.0			257.0		

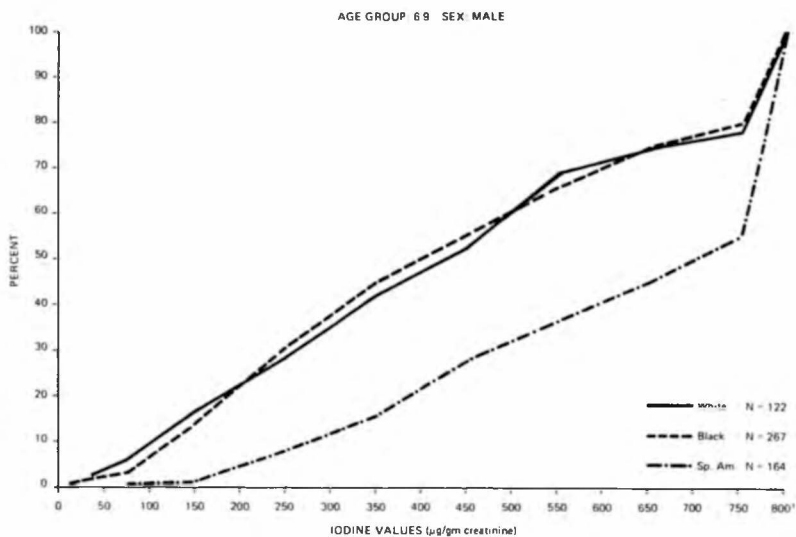
Figure 1a Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference: 1B Appendix

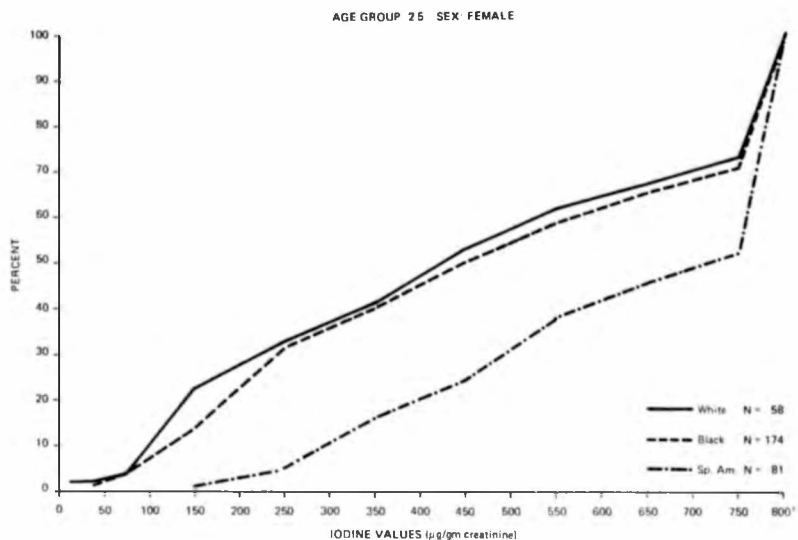
Figure 1c Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference: 1D Appendix

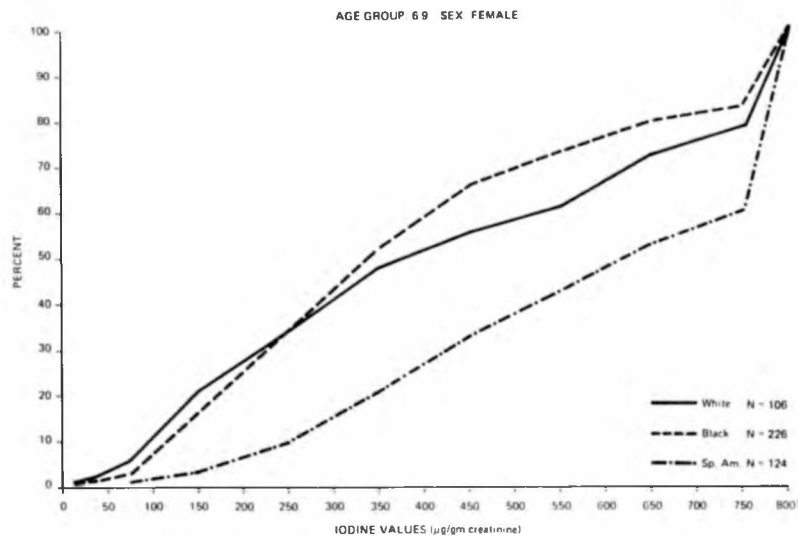
Figure 1b Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 1C Appendix

Figure 1d Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 1E Appendix

Figure 1e Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

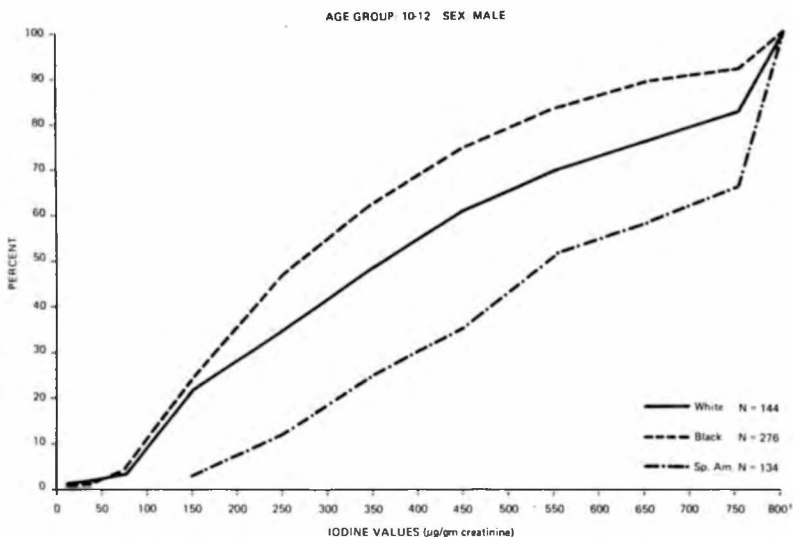
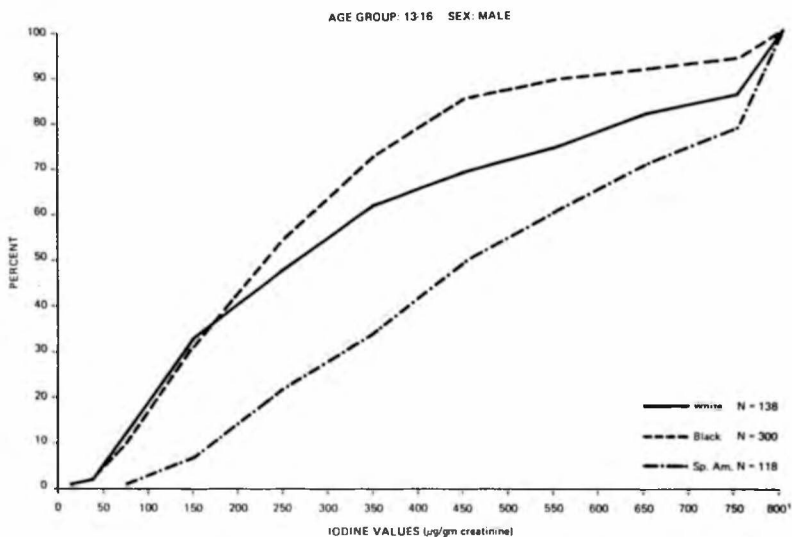


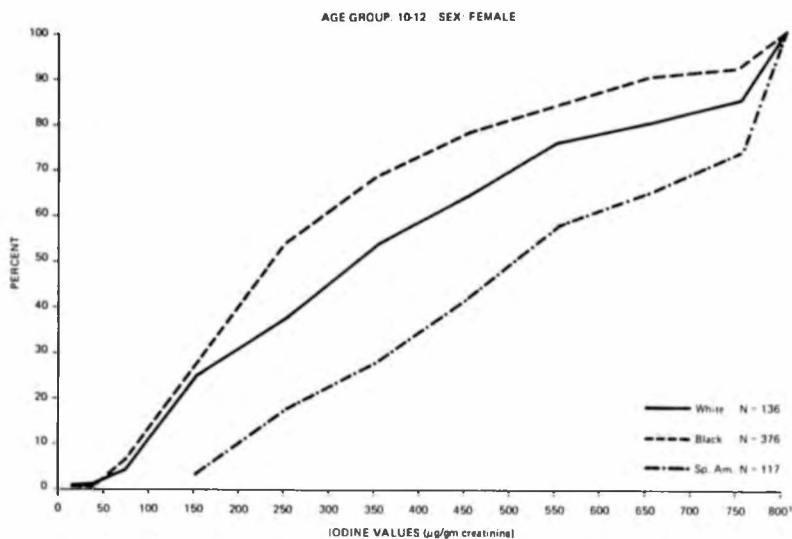
Figure 1g Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference: 1H Appendix

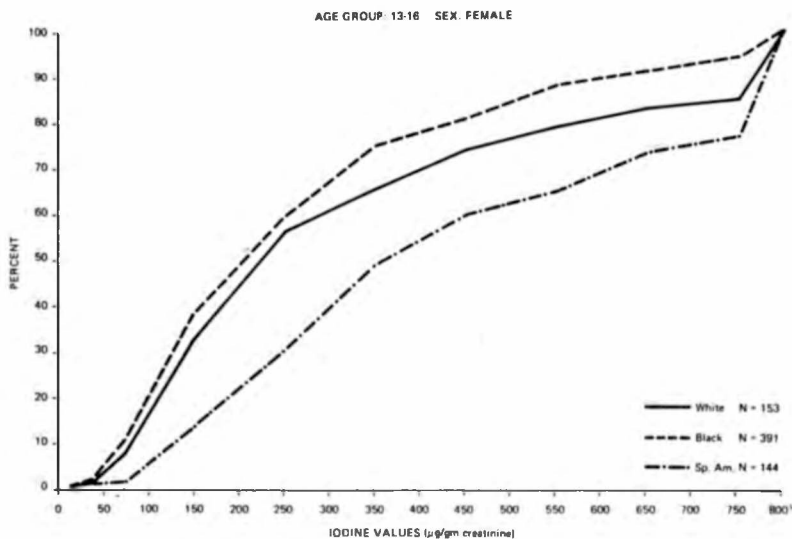
Figure 1f Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 1G Appendix

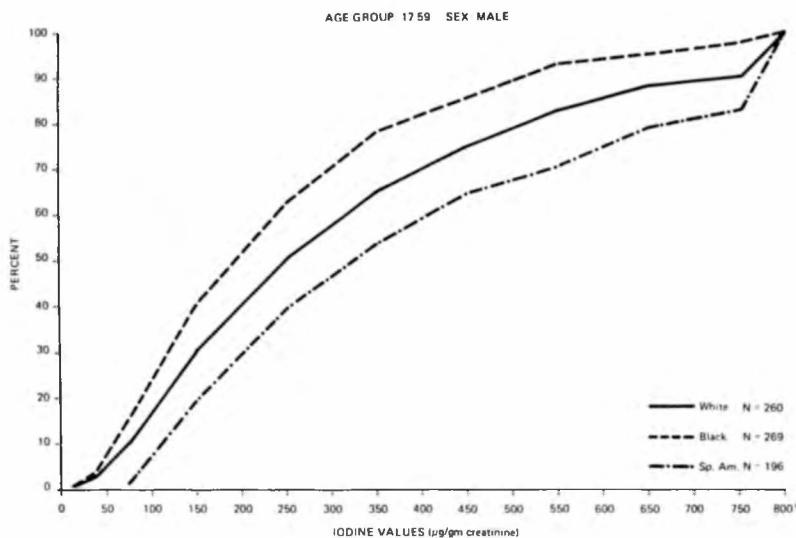
Figure 1h Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 1I Appendix

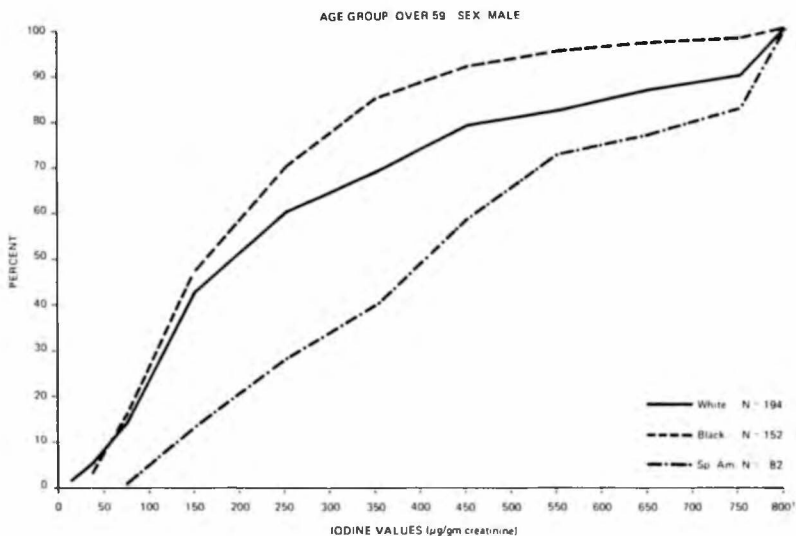
Figure 11 Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 1J Appendix

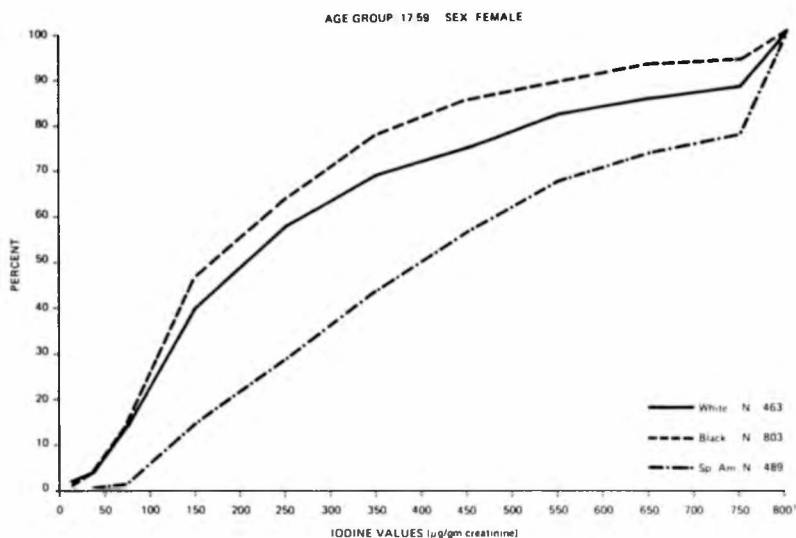
Figure 1k Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 1L Appendix

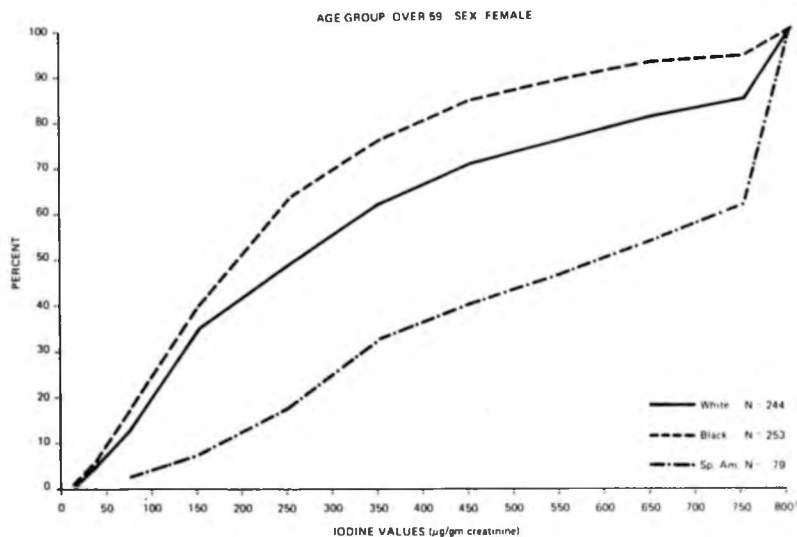
Figure 1j Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States —Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 1K Appendix

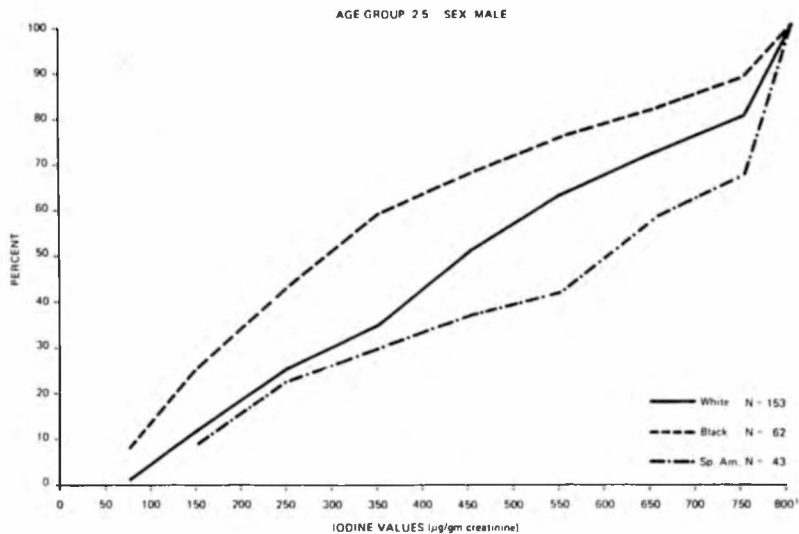
Figure 1l Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group for Low Income Ratio States —Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 1M Appendix

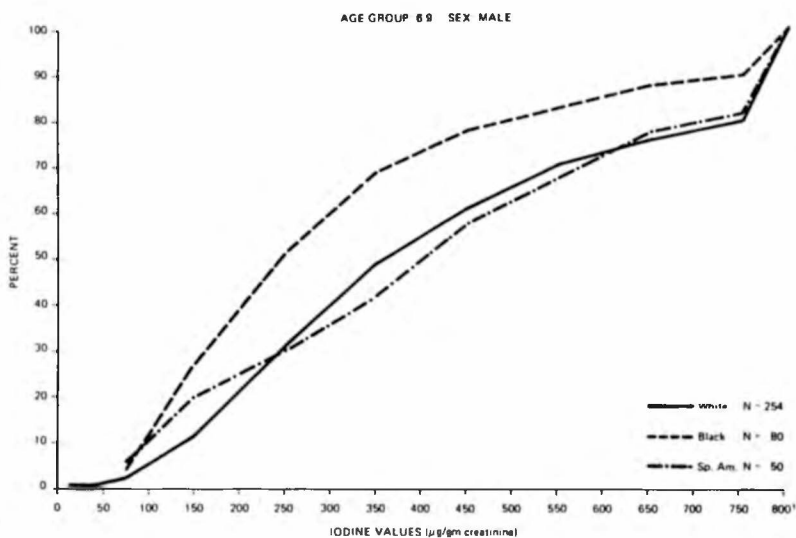
Figure 2a Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 28 Appendix

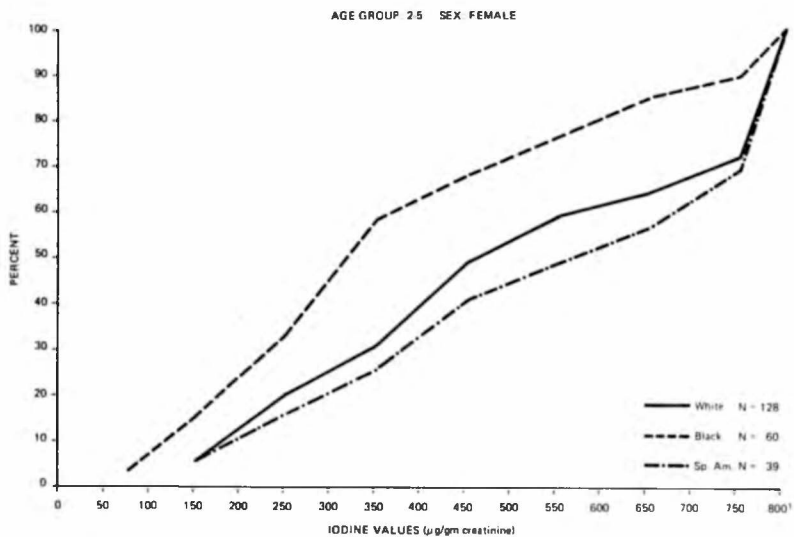
Figure 2c Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 20 Appendix

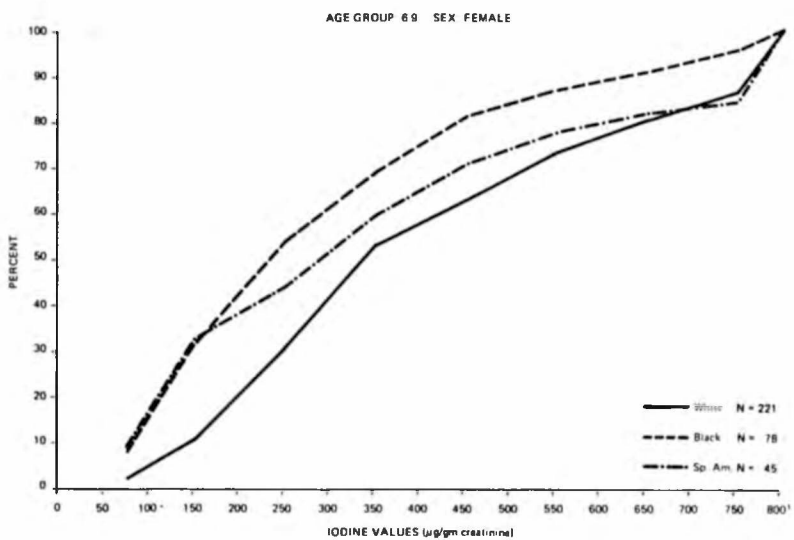
Figure 2b Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 2C Appendix

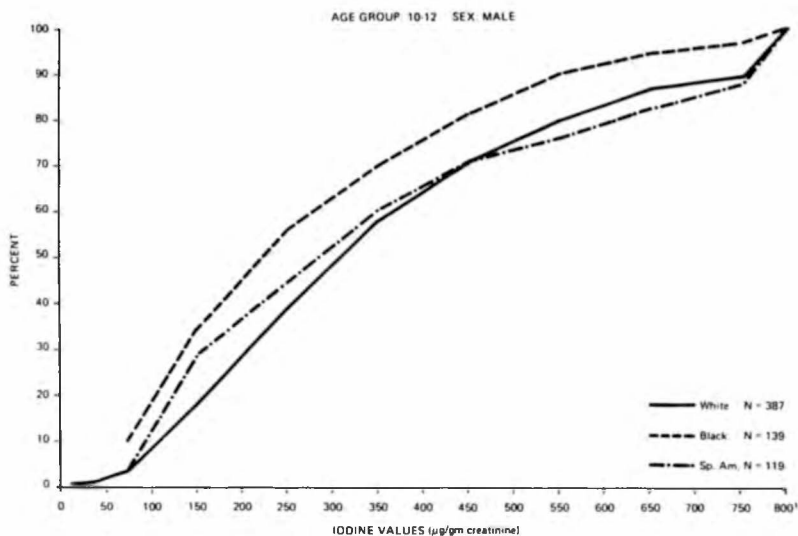
Figure 2d Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 2E Appendix

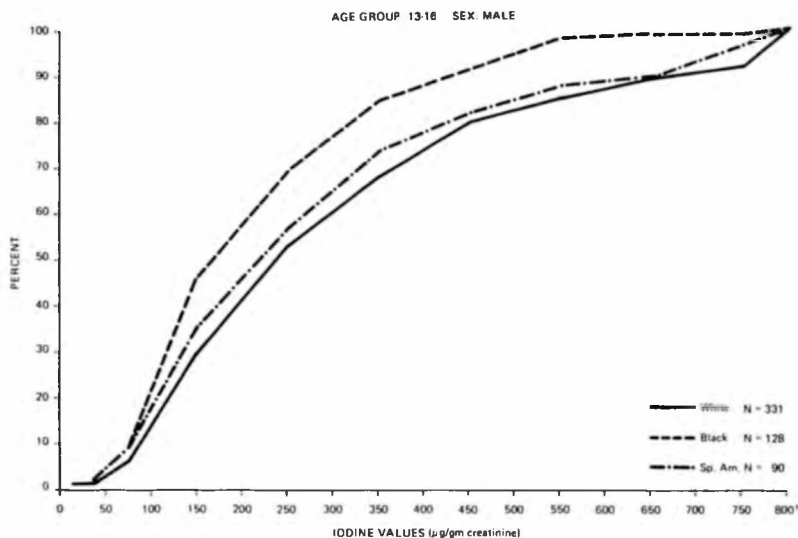
Figure 2e Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference: 2F Appendix

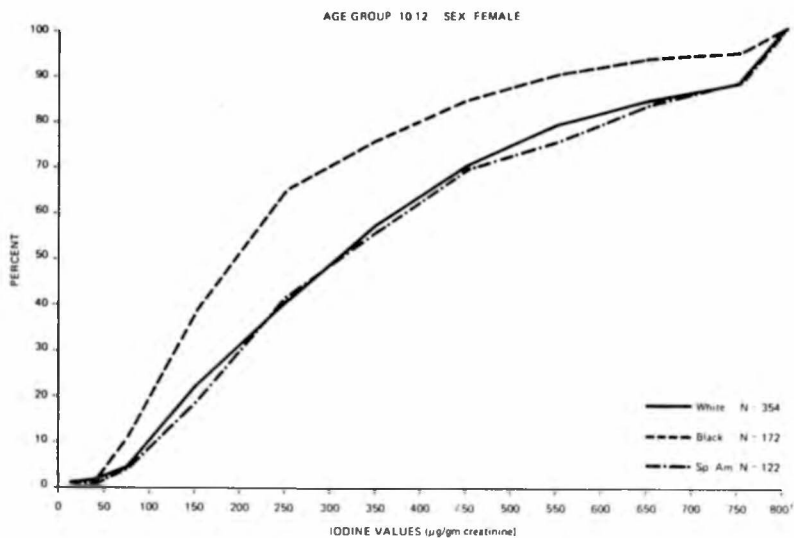
Figure 2g Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference: 2H Appendix

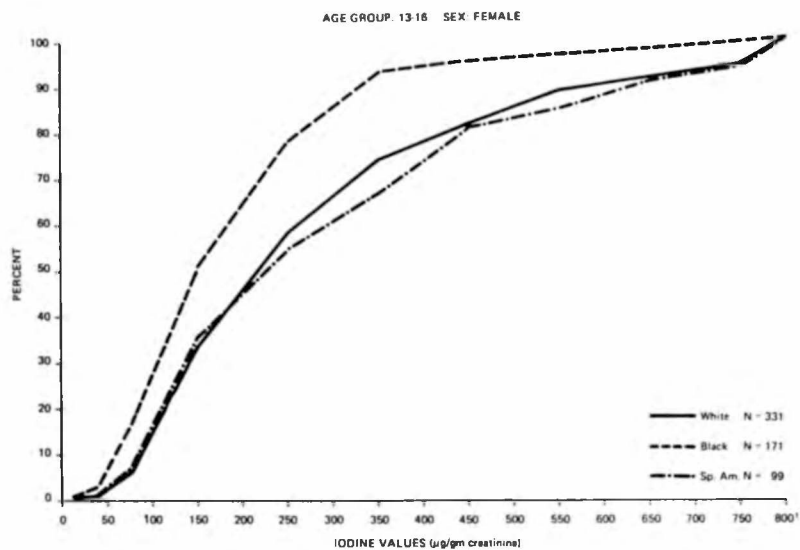
Figure 2f Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 2G Appendix

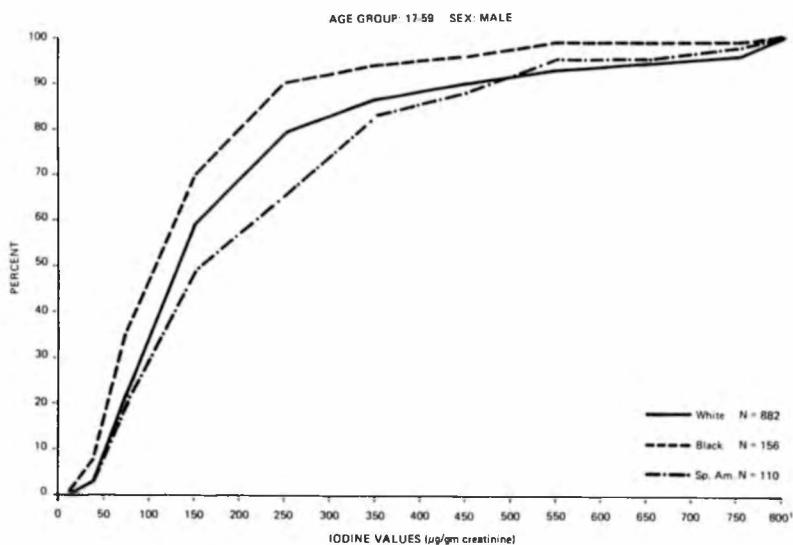
Figure 2h Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 2I Appendix

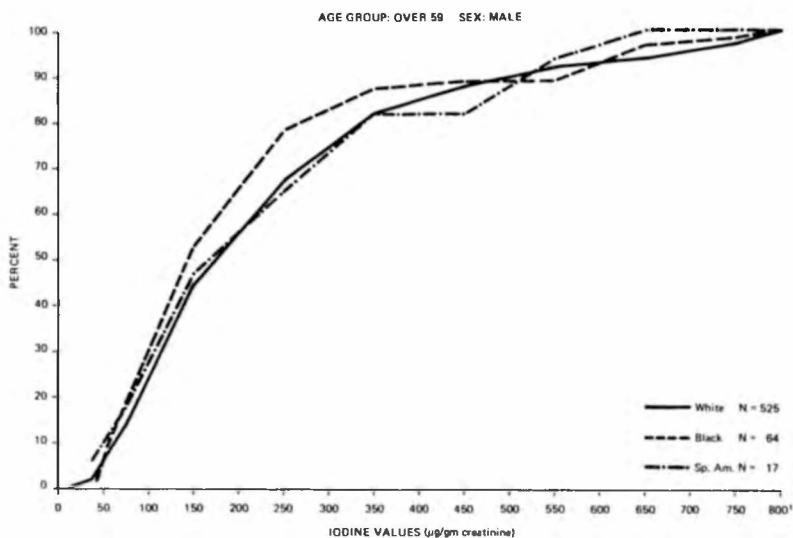
Figure 2i Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference: 2J Appendix.

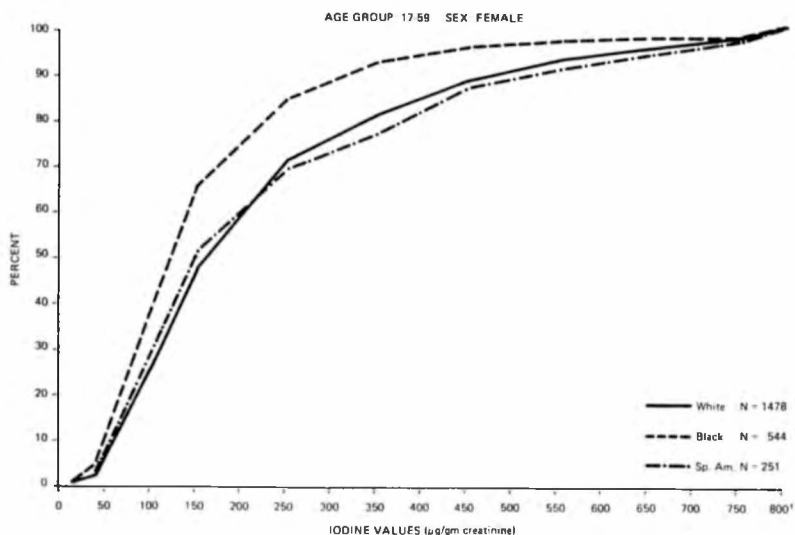
Figure 2k Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference: 2L Appendix.

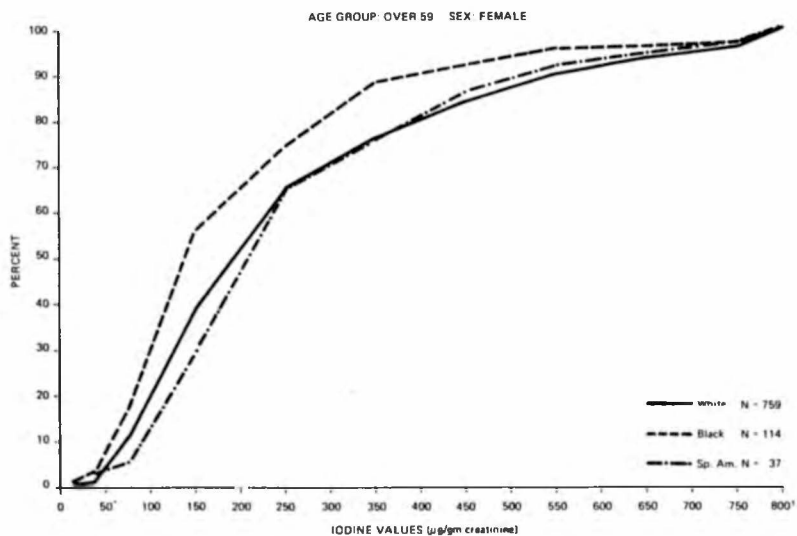
Figure 2j Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 2K Appendix

Figure 2l Appendix—Cumulative Percentage Distribution of Urinary Iodine Values by Ethnic Group of High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



¹All values > 799

Table Reference 2M Appendix

8. MULTIPLE DEFICIENT OR LOW BIOCHEMICALS

Abstract: *In general, data for multiple "deficient" and "low" biochemical values paralleled findings for the individual biochemical presentations. For all subgroups of the population there was a higher prevalence of multiple "deficient" and "low" values in the low-income-ratio states than in the high-income-ratio states. Generally, blacks and Spanish-Americans had a higher prevalence than whites. In some segments of the population a relationship was seen between income level and the prevalence of multiple "deficient" and "low" values. An increase in the number of years of school completed by the homemaker was associated with a decreased prevalence of multiple "deficient" and "low" values.*

Preceding sections have presented data relating to individual or closely related biochemical parameters. This section will evaluate the prevalence of persons with multiple values that were either "deficient" or "low." For this purpose the data for six biochemical parameters were used: hemoglobin, serum albumin, serum vitamin A, serum vitamin C, urinary thiamine and urinary riboflavin. Since it is well known that diets are rarely deficient in only a single nutrient, an analysis of the prevalence of multiple "deficient" or "low" biochemical values is worthwhile in indicating generally poor diets due to limited consumption of protective foods.

Other biochemical measurements were not included for various reasons. Plasma carotene was excluded from this analysis because it is closely associated with vitamin A nutriture. Total serum protein was not included because it bears a relationship to serum albumin. Serum iron, transferrin saturation, serum folates, and red cell folates were not determined for all blood samples and therefore could not be evaluated for all individuals. Urinary iodine values were not included because excretion values from single random specimens, although useful in evaluating populations, are unreliable as indicators of nutrient status of individuals.

ETHNIC GROUP COMPARISON

In the low-income-ratio states, approximately one-third of the black and Spanish-American population and about 60 percent of the white population were found to have no "deficient" and "low" values for any of the six selected biochemical parameters (Table 1). The prevalence of one "deficient" or "low" value in this group of states was 31.9 percent for whites, 38.6 percent for

blacks, and 38.2 percent for Spanish-Americans. In this respect there was not much difference between ethnic groups. However, the percentages of black and Spanish-American persons with two or more "deficient" or "low" values were three times as high as the percentage for white persons. In general, these differences between ethnic groups held true for all ages (Table 1). Younger persons tended to have somewhat higher percentages of one or more "deficient" or "low" biochemical values than did persons in older age groups.

In the high-income-ratio states, the black populations had the highest percentage of persons with one "deficient" or "low" biochemical value (Table 2). The percentage of black persons with two or more "deficient" or "low" values was more than twice as high as that for either the white or the Spanish-American population. The difference between age groups noted above for the low-income-ratio states was not as consistent in this group of states, although 10- to 16-year-old blacks and Spanish-Americans had the highest percentages of two or more "deficient" or "low" values.

Comparison of Figures 1 and 2 shows that for all ethnic groups the percentage of persons with acceptable values was lower in the low-income-ratio states. For the Spanish-American population there was a twofold difference between the two groups of states. The difference between the two categories of states in the percentages of persons with two or more "deficient" or "low" biochemical values is even more striking; for all ethnic groups in the low-income-ratio states the prevalence was at least twice as high.

In the low-income-ratio states, blacks and Spanish-Americans had a higher prevalence of

persons with three (Figure 3) or four (Figure 4) "deficient" or "low" biochemical values. In the high-income-ratio states, the prevalence in the black population was higher than in the white or Spanish-American population.

SEX DIFFERENCES

In the low-income-ratio states, the percentage of people with no "deficient" or "low" biochemical values was slightly higher for females than for males (Table 3). Conversely, the percentages of females with from one to three "deficient" or "low" values was slightly lower than those of males. The percentages of persons with four or five "deficient" or "low" values were quite low for both sexes.

In the high-income-ratio states, approximately equal percentages of males and females of all ethnic groups had no "deficient" or "low" biochemical values (Table 4). Only among the black population were there any persons with as many as four "deficient" or "low" values.

POVERTY INCOME RATIO COMPARISON

In the low-income-ratio states, for all ethnic groups, the percentage of persons with no "deficient" or "low" biochemical values increased with an increase in Poverty Income Ratio (PIR) (Table 5). There was no consistent relationship between PIR and the percentages of persons with one "deficient" or "low" biochemical value. However, the prevalence of persons with two or more "deficient" or "low" values did decrease with an increase in PIR. Disparities for the two highest PIR groups for the black and Spanish-American populations were probably not meaningful because of the small number of persons in these groups.

For the white and Spanish-American populations in the high-income-ratio states, there was little relationship between PIR and the percentage of persons with a specified number of "deficient" or "low" biochemical values. For the black population, with an increase in PIR there was a trend towards an increased percentage of persons with no "deficient" or "low" values and a decreasing percentage of persons with two or more such values (Table 6). Thus, for all ethnic groups in the low-income-ratio states and for the black population in the high-income-ratio states, there appeared to be a relationship between PIR and the number of "deficient" or "low" values for the six selected biochemical measurements.

YEARS OF SCHOOL COMPLETED

An evaluation was made of the relationship between years of school completed by the wife of the head of family or female head of family and the prevalence of multiple "deficient" or "low" biochemical values. In both groups of states, multiple "deficient" or "low" values were seen with greater frequency in children from families where the wife of the family head or the female head of the family had few or no years of schooling (Tables 7 and 8).

Among adults, this relationship between the years of school completed and the prevalence of multiple "deficient" or "low" biochemical values was seen only in the low-income-ratio states (Tables 9 and 10). In general, it would appear that a lack of schooling or a low level of school years completed is associated with a higher prevalence of "deficient" or "low" biochemical values. This relationship is seen most consistently in data from the low-income-ratio states.

SUMMARY

The prevalence of multiple "deficient" or "low" biochemical values was greater in the low-income-ratio states for all age, ethnic, and PIR subgroups. In both groups of states, a higher percentage of persons with no "deficient" or "low" biochemical values and a lower percentage of persons with two or more such values was found for the white population than for either the black or Spanish-American population. In the high-income-ratio states the difference between white and Spanish-American persons was small. In the low-income-ratio states and among blacks in the high-income-ratio states, there tended to be a relationship between higher economic status and a lower prevalence of multiple "deficient" or "low" biochemical values.

In general, an increase in the years of school completed by the wife of the head of the family or the female head of the family was accompanied by a lower prevalence of persons with multiple "deficient" or "low" biochemical values.

Data presented in this section support the conclusions previously reached concerning the prevalence of specific "deficient" or "low" values; persons with lower income, with lesser parental education, blacks, Spanish-Americans, and persons from low-income areas tend to have a higher prevalence of multiple deficiencies.

Table 1. *Number of Persons Tested for Six Biochemicals and Percent with Deficient or Low Values in None, One, or Two or More of the Six by Age and Ethnic Group for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group											
	White				Black				Spanish American			
	Total Number	Percent with Specified Number of Deficient or Low Values			Total Number	Percent with Specified Number of Deficient or Low Values			Total Number	Percent with Specified Number of Deficient or Low Values		
		None	One	Two or More		None	One	Two or More		None	One	Two or More
TOTAL ¹	1697	59.6	31.9	8.5	2335	33.1	38.6	28.2	1067	33.7	38.2	28.0
2-5.....	71	56.0	36.6	7.0	97	33.0	34.0	33.0	26	26.9	38.5	34.6
6-9.....	176	52.3	36.9	10.8	261	28.0	42.1	29.9	133	26.3	41.4	32.3
10-16.....	478	57.9	32.4	9.6	889	34.0	39.3	26.8	361	29.4	38.2	32.4
17-44.....	381	62.2	30.7	7.1	542	31.4	37.3	31.4	314	38.2	36.6	25.2
45-59.....	208	60.6	30.1	9.1	233	39.5	36.1	24.5	129	38.0	41.1	20.9
>59.....	382	62.3	30.1	7.6	307	33.9	39.7	26.4	104	41.0	35.6	23.1

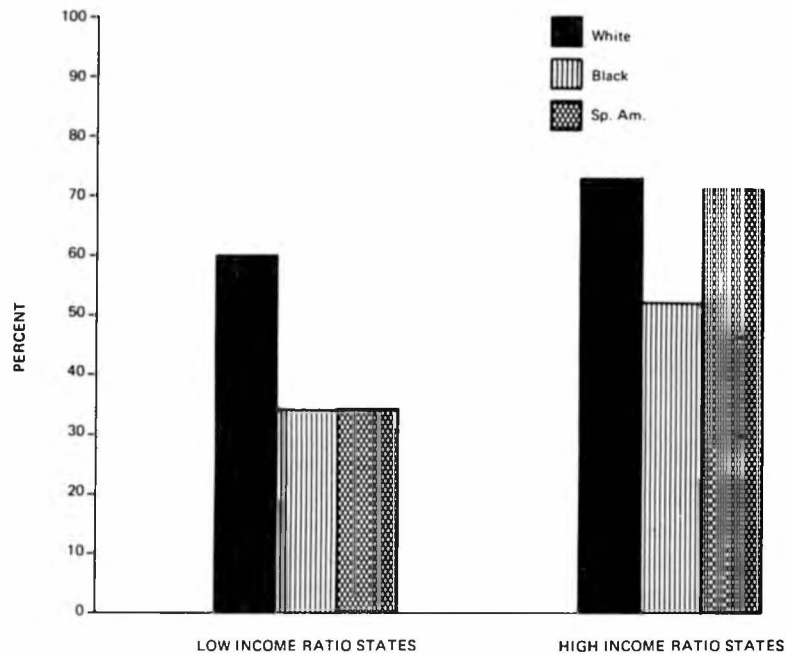
Table 2. *Number of Persons Tested for Six Biochemicals and Percent with Deficient or Low Values in None, One, or Two or More of the Six by Age and Ethnic Group for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Age Group	Ethnic Group											
	White				Black				Spanish American			
	Total Number	Percent with Specified Number of Deficient or Low Values			Total Number	Percent with Specified Number of Deficient or Low Values			Total Number	Percent with Specified Number of Deficient or Low Values		
		None	One	Two or More		None	One	Two or More		None	One	Two or More
TOTAL ¹	4145	72.7	22.9	4.4	1338	52.1	35.2	12.5	1197	70.6	24.4	5.0
2-5.....	40	70.0	30.0	0.0	32	59.4	34.4	6.2	25	80.0	16.0	4.0
6-9.....	301	72.1	24.6	3.3	116	54.3	37.1	8.6	109	81.7	13.8	4.6
10-16.....	871	72.9	22.8	4.2	451	53.2	31.5	15.3	362	69.1	25.4	5.5
17-44.....	1479	70.7	24.5	4.6	446	49.3	37.9	12.8	501	69.3	25.7	5.0
45-59.....	578	77.9	19.0	3.1	152	57.2	31.6	11.2	143	71.3	25.2	3.5
>59.....	876	72.9	21.5	5.6	141	48.2	41.1	10.6	56	66.1	28.6	5.4

¹ Total includes persons under two years of age.

NOTE: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

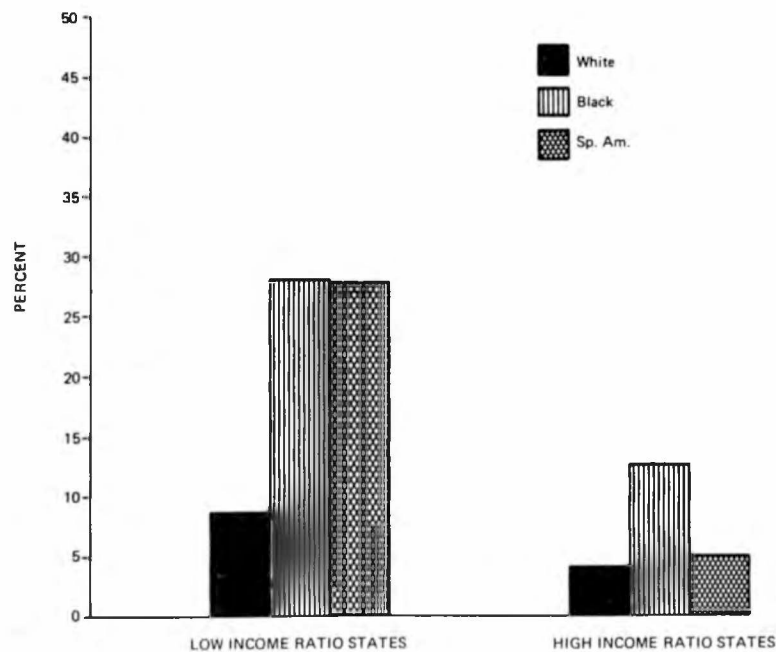
Figure 1—Percent of Persons Having Acceptable Values in All Six Biochemical Tests by Ethnic Group for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Note: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table Reference: 1 and 2.

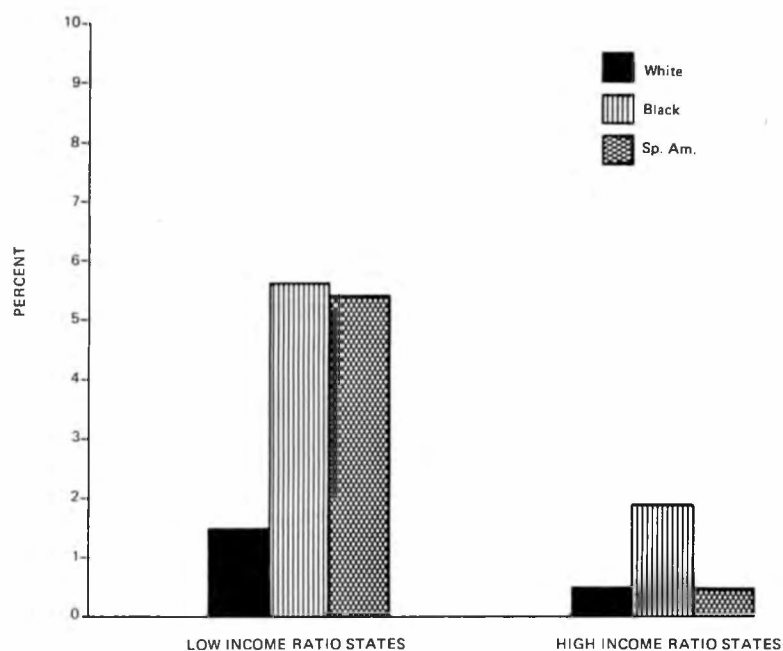
Figure 2—Percent of Persons Having Deficient or Low Values in Two or More of Six Biochemical Tests by Ethnic Group for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Note: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table Reference: 1 and 2.

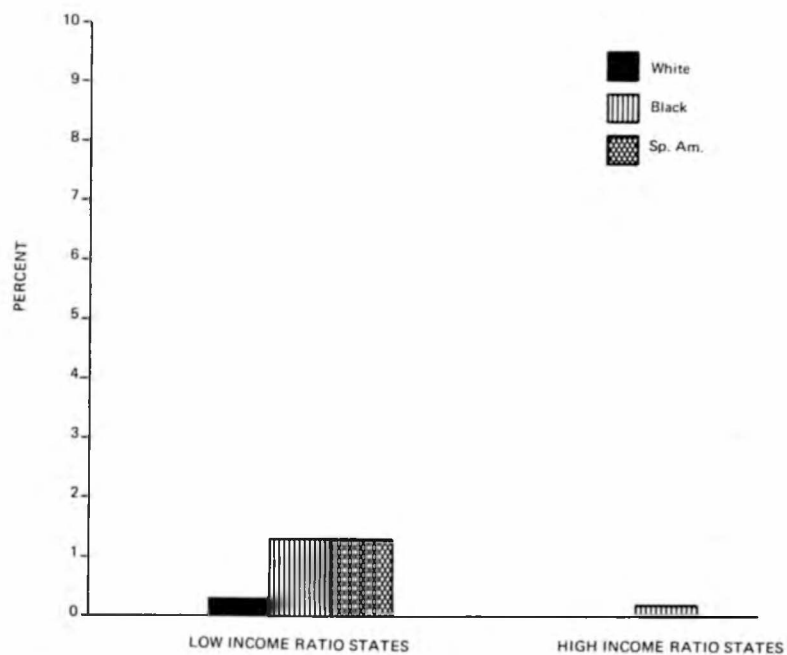
Figure 3—Percent of Persons Having Deficient or Low Values in Three of Six Biochemical Tests by Ethnic Group for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Note: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table Reference: 3 and 4.

Figure 4—Percent of Persons Having Deficient or Low Values in Four or More of Six Biochemical Tests by Ethnic Group for Low Income Ratio States and High Income Ratio States—Ten-State Nutrition Survey (1968-1970)



Note: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table Reference: 3 and 4.

Table 3. Number of Persons Tested for Six Biochemicals and Percent with a Specified Number of Deficient or Low Values by Ethnic Group and Sex for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Ethnic Group and Sex	Total Number	Percent with Specified Number of Deficient or Low Values						
		Six	Five	Four	Three	Two	One	None
White.....	1697	59.6	31.9	6.8	1.5	0.3	0.0	0.0
Female.....	801	56.2	34.2	7.2	1.9	0.5	0.0	0.0
Male.....	896	62.6	29.8	6.4	1.1	0.1	0.0	0.0
Black.....	2335	33.1	38.6	21.3	5.7	1.2	0.1	0.0
Male.....	938	28.8	40.3	23.2	6.4	1.3	0.0	0.0
Female.....	1397	36.1	37.5	20.0	5.2	1.1	0.1	0.0
Spanish American.....	1067	33.7	38.2	21.3	5.4	1.2	0.1	0.0
Male.....	442	31.0	39.6	21.3	7.0	1.1	0.0	0.0
Female.....	625	35.7	37.3	21.3	4.3	1.3	0.2	0.0

NOTE: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table 4. Number of Persons Tested for Six Biochemicals and Percent with a Specified Number of Deficient or Low Values by Ethnic Group and Sex for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)

Ethnic Group and Sex	Total Number	Percent with Specified Number of Deficient or Low Values						
		None	One	Two	Three	Four	Five	Six
White.....	4145	72.7	22.9	3.9	0.5	0.0	0.0	0.0
Male.....	1867	71.7	23.7	4.1	0.5	0.0	0.0	0.0
Female.....	2278	73.6	22.3	3.6	0.5	0.0	0.0	0.0
Black.....	1338	52.1	35.2	10.5	1.9	0.2	0.0	0.0
Male.....	532	52.6	36.7	9.0	1.5	0.2	0.0	0.0
Female.....	806	51.7	34.2	11.5	2.2	0.2	0.0	0.0
Spanish American.....	1197	70.6	24.4	4.5	0.5	0.0	0.0	0.0
Male.....	517	69.8	25.5	4.3	0.4	0.0	0.0	0.0
Female.....	680	71.2	23.5	4.7	0.6	0.0	0.0	0.0

NOTE: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table 5. *Number of Persons Tested for Six Biochemicals and Percent with Deficient or Low Values in None, One, or Two or More of the Six by Ethnic Group and Selected Poverty Income Ratio Groups for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group											
	White				Black				Spanish American			
	Total Number	Percent with Specified Number of Deficient or Low Values			Total Number	Percent with Specified Number of Deficient or Low Values			Total Number	Percent with Specified Number of Deficient or Low Values		
		None	One	Two or More		None	One	Two or More		None	One	Two or More
Combined.....	1697	59.6	31.9	8.6	2335	33.1	38.6	28.2	1067	33.7	38.2	28.2
<0.50.....	242	57.9	28.1	14.0	692	30.8	37.6	31.6	289	27.7	42.2	30.0
0.50-0.99.....	423	58.6	32.6	8.8	830	33.6	39.6	26.7	358	35.5	34.6	29.9
1.00-1.99.....	460	62.2	29.8	8.0	390	37.4	38.5	24.1	192	44.3	39.1	16.7
2.00-2.99.....	172	59.9	32.6	7.6	49	46.9	28.6	24.5	27	48.1	22.2	29.6
>2.99.....	112	60.7	34.8	4.5	20	40.0	45.0	15.0	21	33.3	47.6	19.0
Unknown.....	288	57.6	35.8	6.6	354	29.7	39.5	30.8	180	26.7	39.4	33.9

NOTE: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table 6. *Number of Persons Tested for Six Biochemicals and Percent with Deficient or Low Values in None, One, or Two or More of the Six by Ethnic Group and Selected Poverty Income Ratio Groups for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Poverty Income Ratio	Ethnic Group											
	White				Black				Spanish American			
	Total Number	Percent with Specified Number of Deficient or Low Values			Total Number	Percent with Specified Number of Deficient or Low Values			Total Number	Percent with Specified Number of Deficient or Low Values		
		None	One	Two or More		None	One	Two or More		None	One	Two or More
Combined.....	4145	72.7	22.9	4.4	1338	52.1	35.2	12.7	1197	70.6	24.4	5.0
<0.50.....	134	70.9	24.6	4.5	59	44.1	32.2	23.7	46	67.4	28.3	4.3
0.50-0.99.....	461	72.7	23.0	4.3	317	53.3	36.3	10.4	301	71.4	22.6	6.0
1.00-1.99.....	1304	71.4	24.0	4.6	488	49.6	36.9	13.6	510	70.0	25.1	4.9
2.00-2.99.....	928	73.2	22.1	4.7	162	54.9	31.5	13.6	100	74.0	22.0	4.0
>2.99.....	963	73.4	22.8	3.7	112	61.6	32.1	6.3	38	71.1	23.7	5.3
Unknown.....	355	75.2	20.3	4.5	200	51.0	35.0	14.0	202	69.8	25.7	4.5

NOTE: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table 7. *Percent of Persons Under Seventeen Years of Age with Deficient or Low Biochemical Values in Two or More of Six Biochemicals Tested by Years of School Completed by Wife of Head of Family or Female Head of Family for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Years of School Completed	Number of Persons with Six Biochemical Tests	Persons with Two or More Deficient or Low Biochemical Values	
		Number	Percent
TOTAL	2363	557	23.6
None	122	49	40.2
1-4	369	109	29.5
5-8	896	206	23.0
9-12	899	181	20.1
Post High School	24	4	16.7
College	49	8	16.3
Other	4	0	0.0

NOTE: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table 8. *Percent of Persons Under Seventeen Years of Age with Deficient or Low Biochemical Values in Two or More of Six Biochemicals Tested by Years of School Completed by Wife of Head of Family or Female Head of Family for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Years of School Completed	Number of Persons with Six Biochemical Tests	Persons with Two or More Deficient or Low Biochemical Values	
		Number	Percent
TOTAL	2289	151	6.6
None	64	10	15.6
1-4	165	12	7.3
5-8	451	25	5.5
9-12	1387	91	6.6
Post High School	52	3	5.8
College	169	10	5.9
Other	1	0	0.0

NOTE: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table 9. *Percent of Persons Twenty-one Years of Age and Over with Deficient or Low Biochemical Values in Two or More of Six Biochemicals Tested by Years of School Completed for Low Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Years of School Completed	Number of Persons with Six Biochemical Tests	Persons with Two or More Deficient or Low Biochemical Values	
		Number	Percent
TOTAL	2291	451	19.7
None	181	46	25.4
1-4	424	93	21.9
5-8	869	153	17.6
9-12	687	143	20.8
Post High School	20	2	10.0
College	108	14	13.0
Other	2	0	0.0

NOTE: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.

Table 10. *Percent of Persons Twenty-one Years of Age and Over with Deficient or Low Biochemical Values in Two or More of Six Biochemicals Tested by Years of School Completed for High Income Ratio States—Ten-State Nutrition Survey (1968-1970)*

Years of School Completed	Number of Persons with Six Biochemical Tests	Persons with Two or More Deficient or Low Biochemical Values	
		Number	Percent
TOTAL	4065	248	6.1
None	125	6	4.8
1-4	311	20	6.4
5-8	972	64	6.6
9-12	1811	122	6.7
Post High School	144	6	4.2
College	696	30	4.3
Other	6	0	0.0

NOTE: Biochemicals tested: Hemoglobin, Plasma Vitamin A, Serum Albumin, Serum Vitamin C, Urinary Riboflavin, and Urinary Thiamine. For Deficient and Low Value Classifications refer to the appropriate Biochemical sections in this Chapter.