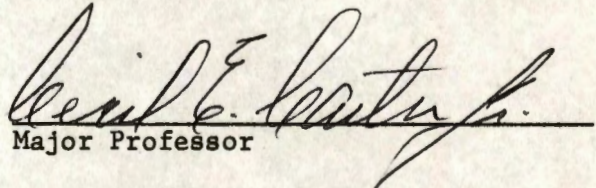


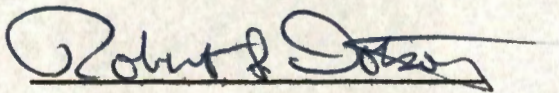
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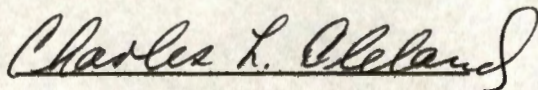
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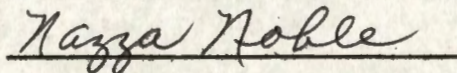
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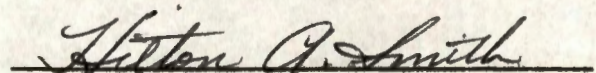
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Accepted for the Council:


Vice Chancellor for
Graduate Studies and Research

DIETARY ADEQUACY OF HOMEMAKERS PARTICIPATING IN EXTENSION'S
EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM
IN SELECTED TENNESSEE COUNTIES, 1971

A Thesis
Presented to
the Graduate Council of
The University of Tennessee

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
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ABSTRACT

The purpose of this study was to determine the relationships between adequacy of homemakers' diets and selected personal and family characteristics. The study was also designed to determine improvement in homemakers' diets from initial to latest 24-hour food recall.

The population of the study included all homemakers participating in the Expanded Food and Nutrition Education Program from the 10 original program counties in Tennessee who had been in the program for at least six months. The sample included 397 participant families, which represented a 5 percent random sample from each of the 10 original program counties.

The 18 independent variables considered in this study were grouped under three headings: (1) personal homemaker characteristics, (2) family characteristics, and (3) factors associated with assistance to families. The dependent variable was adequacy of homemakers' diets in each of the four major food groups.

A contingency table analysis program was used to determine the relation between adequacy of homemakers' diets for each food group and the independent variables. Chi-square statistical analysis was used to determine significance of relations between dependent and independent variables. These computations were done by the University of Tennessee Computing Center.

The other statistic used in this study was the t-test. This was used to determine if there had been a statistically significant

improvement from initial to latest 24-hour food recall in the proportion of homemakers with adequate servings from each of the four major food groups.

Major findings of this study were:

1. There were very significant increases from initial to latest 24-hour food recall in the proportion of homemakers with adequate diets, except for the meat group. Lower percents of homemakers in the study had adequate diets of milk and vegetables and fruits, than of meats and breads and cereals.

2. Young homemakers (under 25 years of age) had significantly less adequate servings of milk when they entered the program than other homemakers.

3. After being in the program for at least six months, younger homemakers had significantly more adequate intakes of meat than older ones.

4. Place of residence influenced the adequacy of homemakers' diets. Where significant differences existed, farm families had the highest percent of homemakers with adequate diets and urban families had the lowest percent with adequate diets.

5. Whether or not a family had a home garden influenced the dietary adequacy of the homemakers. Where significant differences existed, families who had home gardens tended to have more adequate diets than those families who did not have gardens.

6. Whether a family rented or owned their home influenced the adequacy of homemakers' diets. Where significant differences existed,

homemakers from families who rented their homes tended to have less adequate diets, than those who owned their homes.

7. According to the income groupings used in this study, homemakers from families whose yearly income was \$3,000 or more initially had a significantly more adequate diet of breads and cereals, than those with incomes of less than \$3,000.

8. Ethnic background influenced the adequacy of homemakers' diets. In all food groups where significant differences existed, except for the meat group, white homemakers tended to have more adequate diets than black homemakers.

9. According to the family size groupings used in this study, homemakers with six or more members in their families had the highest and those who lived alone had the lowest percents of homemakers with adequate servings of breads and cereals.

10. Whether or not there were family members over 64 years of age present in the household influenced the adequacy of milk intake. Homemakers from families with members over 64 years of age initially had significantly more adequate milk diets than those families who did not have elderly family members.

11. Whether or not a male adult was present in a household with dependent children influenced the milk intake. There initially were significantly poorer milk diets among those homemakers from families where no adult male was present.

12. Whether or not a family was on welfare influenced the dietary adequacy of the homemakers. In all food groups where significant

differences existed, homemakers from welfare families tended to have less adequate diets, than those from nonwelfare families.

13. Whether donated foods or food stamps were available in a county influenced the dietary adequacy of the homemakers in certain food groups. Where the donated food program was available, homemakers initially had significantly more adequate intakes of breads and cereals, than those where the food stamps were available. On the other hand, the latter had more adequate servings of meat on the final recall.

14. Whether a family had been assisted by one or more than one program assistant influenced dietary adequacy. Homemakers who had worked with only one program assistant had a significantly more adequate intake of vegetables and fruits on the last recall than did those whose families had worked with more than one program assistant.

15. Adequacy of homemakers' diets was not significantly related to years of school completed by the homemaker, level of living index score, number of dependent children, change in families' monthly incomes, and recorded time in the program.

Implications of findings, recommendations for use of findings, and recommendations for further study also were made.

TABLE OF CONTENTS

CHAPTER	PAGE
I. THE PROBLEM AND ITS SETTING	1
Introduction	1
Need for the Study	2
Statement of the Problem	3
Purpose of the Study	3
Limitations of the Study	5
Definition of Terms	5
II. METHODS OF PROCEDURES	7
The Population	7
The Sample	10
The Data	10
Food Recall Procedure	11
Food Groups	11
Collection of Data	12
Data Analysis	12
III. REVIEW OF LITERATURE	15
Literature Related to Effectiveness of 24-Hour Food	
Recall as a Measure of Dietary Adequacy	15
Literature Related to Improvement in Dietary Adequacy	
in the Expanded Food and Nutrition Education	
Program	18

CHAPTER

PAGE

Literature Related to Dietary Adequacy in Relation to	
Personal Homemaker Characteristics, Family	
Characteristics, and Factors Associated With	
Assistance to Families	21
Personal homemaker characteristics	21
Family characteristics	23
Factors associated with assistance to families	30
IV. FINDINGS OF THE STUDY	35
Relation of Adequacy of Homemakers' Diets in Each Food	
Group and Personal Homemaker Characteristics	37
Education of the homemaker	37
Age of the homemaker	41
Relation of Adequacy of Homemakers' Diets in Each Food	
Group and Family Characteristics	46
Place of residence	46
Home garden	50
Home ownership status	54
Level of living index score	57
Yearly family income	62
Ethnic background	65
Number of family members	69
Number of dependent children	74
Family members over 64 years of age present in the	
household	78

CHAPTER

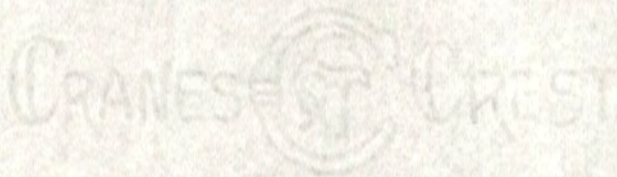
PAGE

Male adult present in household with dependent	
children	82
Change in monthly income	86
Relation of Adequacy of Homemakers' Diets in Each Food	
Group and Factors Associated with Assistance to	
Families	90
Family on welfare	90
Food assistance on a regular basis	94
U.S.D.A. food program available in the county	97
Recorded time in the program	101
Number of program assistants who had worked with a	
family	105
V. SUMMARY OF MAJOR FINDINGS, IMPLICATIONS, AND	
RECOMMENDATIONS	109
Purpose and Specific Objectives	109
Specific objectives	109
Method of Investigation	110
Method of Analysis	110
Major Findings	111
Relation of adequacy of homemakers' diets in each food	
group and personal homemaker characteristics	111
Relation of adequacy of homemakers' diets in each food	
group and family characteristics	113

CHAPTER

PAGE

Relation of adequacy of homemakers' diets in each food group and factors associated with assistance to families	119
Implications	122
Recommendations	125
Specific recommendations	126
Recommendations for Further Study	127
BIBLIOGRAPHY	128
APPENDIX	132
VITA	138



LIST OF TABLES

TABLE	PAGE
I. Comparison of Study Sample and Total Program Participant Characteristics for the United States and Tennessee . . .	9
II. Adequacy of Homemakers' Diets in Each Food Group Based on Food Recalls	36
III. Adequacy of Homemakers' Diets in Each Food Group by Years of School Completed by Homemaker	38
IV. Adequacy of Homemakers' Diets in Each Food Group by Age of Homemaker	42
V. Adequacy of Homemakers' Diets in Each Food Group by Place of Residence	47
VI. Adequacy of Homemakers' Diets in Each Food Group by Whether or Not Family Had a Home Garden	51
VII. Adequacy of Homemakers' Diets in Each Food Group by Home Ownership Status	55
VIII. Adequacy of Homemakers' Diets in Each Food Group by Level of Living Index Score	58
IX. Adequacy of Homemakers' Diets in Each Food Group by Yearly Income of Family	63
X. Adequacy of Homemakers' Diets in Each Food Group by Ethnic Background	66
XI. Adequacy of Homemakers' Diets in Each Food Group by Number of Family Members	70

TABLE

PAGE

XII.	Adequacy of Homemakers' Diets in Each Food Group by Number of Dependent Children	75
XIII.	Adequacy of Homemakers' Diets in Each Food Group by Family Members Over 64 Years of Age Present in Household	79
XIV.	Adequacy of Homemakers' Diets in Each Food Group by Adult Male Present in a Family with Dependent Children	83
XV.	Adequacy of Homemakers' Diets in Each Food Group by Change in Monthly Income	87
XVI.	Adequacy of Homemakers' Diets in Each Food Group by Family on Welfare	91
XVII.	Adequacy of Homemakers' Diets in Each Food Group by Food Assistance on a Regular Basis	95
XVIII.	Adequacy of Homemakers' Diets in Each Food Group by USDA Food Program Available in the County	98
XIX.	Adequacy of Homemakers' Diets in Each Food Group by Recorded Time in the Program	102
XX.	Adequacy of Homemakers' Diets in Each Food Group by Number of Program Assistants Who Had Worked With a Family	106

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CHAPTER I

THE PROBLEM AND ITS SETTING

I: INTRODUCTION

Extension type programs historically have been concerned with adequacy of families' diets even before the Cooperative Extension Service was officially established by the Smith-Lever Act of 1914. Family living programs were developed to teach homemakers to improve the health of their families by planning, producing, preparing, and preserving food for a nutritionally adequate diet on a year-round basis (20:9).*

Improvement of dietary adequacy has been and remains to be a primary objective of Nutrition Extension Education. Even though there have been major accomplishments, it has become obvious over the past decade that the neediest families are not being reached. The American people were shocked by the findings of the Citizens' Board of Inquiry into Hunger and Malnutrition in 1968 (2). Many could not believe that such widespread deprivation and hunger could exist in this, the wealthiest nation of the world.

It became obvious that new methods had to be sought to improve nutrition among low-income families. There is need for nutrition

*Numbers in parentheses refer to similarly numbered items in the Bibliography; those after the colon are page numbers.

education programs for all income levels. However, lack of knowledge works special hardships on the poor because their family food budgets have no leeway for mistakes or bad buys (10:130).

During November of 1964 the Federal Extension Service cooperating with the Alabama Extension Service initiated a pilot program using paraprofessionals to teach nutrition to low-income homemakers in four counties (18:478). The pilot effort proved to be very successful and the Expanded Food and Nutrition Education Program became established in other states by Executive Order in 1968. By 1969 the program came into existence in all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands, and became a regular part of the Cooperative Extension Service.

Tennessee began the program in 1968. The program was initiated in 10 counties. The following year 10 more counties were added to the program and in 1971 the program expanded by an additional 20 counties.

II. NEED FOR THE STUDY

As stated by one of the early national evaluations of the Expanded Food and Nutrition Education Program, there is evidence that the educational objectives are being met. However, there is need for more precise allocation of effort (3:3). It goes on to say that because of the program's limited resources, it is essential that effort be applied to families with the greatest need (3:19).

Program guidelines suggest that the program should work with the hard-to-reach, low-income families, but it has been difficult to identify

those families with the greatest needs. Information is needed as to what characterizes families who show low nutritional adequacy in their diets, and what characterizes those families who tend to respond most to the program.

This information should be valuable to Tennessee state nutrition specialists, trainer agents, and program assistants for the determination of future program direction.

III. STATEMENT OF THE PROBLEM

Prior to this study, no formal attempt had been made in Tennessee to collect and analyze on a statewide basis data from individual family record forms available only in the counties. Current data for national and state program evaluation were only available in frequency-count form from a computer printout (e.g. number of homemakers with adequate servings of milk in the United States and by state, number of urban homemakers in the United States and by state, etc.).

There was no way, using the existing reporting system (periodic unit reports) to combine adequacy of diet and, for example, place of residence, to ascertain the proportion of urban homemakers with adequate servings of milk. For this reason the study was designed.

IV. PURPOSE OF THE STUDY

The purpose of this study was to show the relation between the proportion of homemakers with adequate diets in each of the four major food groups and personal homemaker characteristics, family characteristics,

and factors associated with assistance to families. This study also was designed to show improvement from initial to latest food recall according to the food groups and the factors considered. More specific objectives of this study were:

1. To determine the relation of adequacy of homemakers' diets by food groups and age of the homemaker and the number of years of school completed by the homemaker.

2. To determine the relation of adequacy of homemakers' diets by food groups and place of residence, number of family members, number of dependent children, whether or not there were family members over 64 in the household, whether or not there was a male adult present in a family with dependent children, home ownership status, level of living index score of the family, ethnic background, total yearly income of the family, and whether or not there had been a change in monthly income from initial to latest food recall.

3. To determine the relation of adequacy of homemakers' diets by food groups and whether or not the family was on welfare, received food assistance on a regular basis, had a home garden when the initial food recall was taken, and by which USDA food program was available in the county, the recorded length of time the family had participated in the program, and whether or not the family had had one or more than one program assistant working with it.

4. To determine the change in the proportion of homemakers with adequate servings from the initial to the latest 24-hour food recall with each independent variable.

V. LIMITATIONS OF THE STUDY

The population of this study included only those participant families from the 10 original Expanded Food and Nutrition Education Program counties in Tennessee.

The study was limited to one dependent variable and 18 independent variables. The dependent variable was adequacy of homemakers' diets in each of the four major food groups for each of the two 24-hour food recalls. The independent variables were grouped under three headings: (1) personal homemaker characteristics, (2) family characteristics, and (3) factors associated with assistance to families.

VI. DEFINITION OF TERMS

The following are definitions of some terms used in this study:

Adequate diet. For the purpose of this study, adequate diet of a homemaker was considered to consist of two or more daily servings from each of the milk and meat groups and four or more daily servings from each of the vegetables/fruits and breads/cereals groups.

Dependent children. For this study, dependent children were considered to be all children in a household under 15 years of age.

Food recall. A record of foods eaten by a homemaker during the previous 24 hour period. This information was collected by personal interview during a regular home visit and includes all meals, beverages, and snacks, beginning with the meal eaten prior to the interview.

Program assistant. A paid nonprofessional employed by the

Extension Service to teach nutrition to low-income families (also referred to as paraprofessionals).

Trainer agent. A professional home economist employed by the Extension Service to select, train, and supervise program assistants. She is responsible for the Expanded Food and Nutrition Education Program in a county.

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CHAPTER II

METHODS OF PROCEDURES

I. THE POPULATION

The population of this study included all homemakers from the 10 original program counties who had been participants for at least six months as of October, 1971, when the data were collected. The 10 original Expanded Food and Nutrition Education Program counties in Tennessee were Roane, Hawkins, Putnam, Dekalb, Warren, Coffee, Robertson, Davidson, Shelby, and Gibson (see Figure 1). These counties were fairly evenly distributed across the state, and at the time of the study, represented approximately 73 percent of the total number of participant families in Tennessee.

II. THE SAMPLE

The sample included 397 participant families, which represented a 5 percent sample from each of the 10 original counties. See Table I for a comparison of the sample study and the total program participant characteristics for the United States and Tennessee. It should be kept in mind that the sample study was representative only of the 10 original counties and not necessarily the entire state.

For a description of the random procedure used in this study to select the sample see Appendix, page 133. A 5 percent sample was decided upon as being adequate for this study. In order to obtain this size

TABLE I.

COMPARISON OF STUDY SAMPLE AND TOTAL PROGRAM PARTICIPANT
CHARACTERISTICS FOR THE UNITED STATES AND TENNESSEE

Characteristics	U.S. Program (As of 10/71)	Total Tennessee Program (As of 10/71)	Study Sample
-----Total Number of Families-----			
	341,349	13,389	397
-----Percent-----			
<u>Annual Income</u>			
Less than \$1,000	13	16	17
\$2,000 to 2,999	47	56	53
\$3,000 and Over	40	28	30
<u>Place of Residence</u>			
Urban	58	43	61
Rural Nonfarm	35	42	28
Farm	7	15	11
<u>Ethnic Background</u>			
White	34	64	47
Black	47	36	53
Other	29	0	0
<u>Receiving Welfare</u>	37	32	28
<u>Education of Homemaker</u>			
Less Than 8th Grade	37	39	40

sample, it was requested that every fifteenth folder be pulled from the county files. A slightly larger selection was requested, in order to allow for substitution for incomplete information. Ignoring the first folder in the filing system, a flip of a coin decided whether the second or third folder was to be pulled from the file first. There also were instructions for the procedure to follow if the family record form was incomplete; always keeping in mind the random nature of selection.

III. THE DATA

Data were collected and recorded from three family record forms available from the county Extension offices of the 10 original program counties (see Appendix, pages 134-137). The record forms for each family included:

1. Family Record--Part 1. This form, of a descriptive nature, was filled out on each family as it became enrolled in the program.

2. Family Record--Part 2 (initial record). This form, which served as a benchmark, also was filled out when the family initially enrolled in the program. Of primary concern to this study was item number five, which will be referred to hereafter as the 24-hour food recall (see Appendix, page 136). It shows the number of servings from each of the major food groups that the homemaker of the family had consumed during the 24 hours previous to the interview.

3. Family Record--Part 2 (latest record). In addition to the Family Record--Part 2 form being filled out for each family when it entered the program, the same form was also a program checking device

to be filled out every six months thereafter. Only the initial and the latest recorded Family Record--Part 2's were considered in this study. Again, the 24-hour food recall portion of this form was of primary concern in order to compare it with the initial 24-hour food recall.

IV. FOOD RECALL PROCEDURE

The 24-hour food recall is a technique used to determine relative nutritional adequacy of a homemaker in the Expanded Food and Nutrition Education Program. The procedure is for a program assistant, during a regular home visit, to ask the homemaker to recall and describe the kinds and amounts of food consumed during the previous 24 hours (9:317). This is done when the family becomes initially enrolled in the program and every six months thereafter. Research has shown that the homemaker most frequently was the poorest fed family member (23:637).

V. FOOD GROUPS

There are four basic food groups that were established by the United States Department of Agriculture in 1956 to serve as a guideline for homemakers to prepare nutritionally adequate meals for their families. These four food groups which were termed "Essentials of an Adequate Diet," include: (1) the milk group, (2) the meat group, (3) the vegetables and fruits group, and (4) the breads and cereals group (9:284).

For the food recall procedure used in the Expanded Food and Nutrition Education Program, dietary intake is recorded by number of

servings for each of the four food groups. This information is then matched for adequacy against the standard number of recommended servings for an adequate diet. Although nutritional intake needs differ from person to person, depending on age and sex of the individual, the standards used are most generally accepted for that of an average homemaker. At the time of the study, standard recommended number of servings for a homemaker was as follows: two servings from the milk group, two servings from the meat group, four servings from the vegetables and fruits group, and four servings from the breads and cereals group.

VI. COLLECTION OF DATA

With the cooperation and assistance of Dr. Vernon W. Darter, Dean of the Agricultural Extension Service of Tennessee and other Extension personnel and on giving assurance that the identities of individual participants would be kept confidential, it was possible to have the individual family record forms sent to the state Extension office to be recorded. A letter was sent to each district supervisor requesting the individual family records with instructions on how to select the family folders in a random manner (see Appendix, p. 133).

VII. DATA ANALYSIS

Data from the family record forms were coded, recorded, and punched on data cards. Most computations were made at the University of Tennessee Computing Center. Some computations were necessarily done by hand.

A contingency table analysis program was used to determine the relation between adequacy of homemakers' diets for each food group and each of the 18 independent variables. The program computed two-way tables consisting of column, row, and entire table percentages and frequencies. The statistical output of this program included chi-square with degrees of freedom.

Although not stated, there were assumed null hypotheses for each independent variable. The assumed null hypotheses were that no significant relations existed between adequacy of homemakers' diets for each food group and the independent variables. Significance for chi-square was determined at the .05 and the .01 levels of probability.

The other statistic used in this study was calculated by hand. It was the t-test, used to determine if there had been a significant improvement in the proportion of homemakers with adequate diets for each food group from the initial to the latest 24-hour food recall. Again, null hypotheses were not stated. However, an assumed null hypothesis was: that there was no significant difference between the percents of homemakers with adequate diets on the initial food recall and the latest food recall for each food group and each independent variable.

The statistic was calculated as follows (4:149):

$$S_{D_p} = \sqrt{\frac{P_1 Q_1}{N_1} + \frac{P_2 Q_2}{N_2}}$$

$$t = \frac{P_1 - P_2}{S_{D_p}}$$

P_1 = The percent of homemakers with adequate servings for each food group on the initial food recall.

$$Q_1 = 1 - P_1$$

P_2 = The percent of homemakers with adequate servings for each food group on the latest food recall.

$$Q_2 = 1 - P_2$$

$N_1 = N_2$ = The number of homemakers in the study.

SD_p = The standard deviation of $P_1 - P_2$.

Significance was determined for the t-test at the .05 and the .01 levels of probability.

CHAPTER III

REVIEW OF LITERATURE

The goal of the Expanded Food and Nutrition Education Program is not the number of families reached, but rather the number of families helped to achieve adequate diets (26:2).

A review of available literature on dietary adequacy in the Expanded Food and Nutrition Education Program and other related studies will be presented in this chapter. This topic will be discussed under the headings of (1) literature related to the effectiveness of the 24-hour food recall procedure as a measure of dietary adequacy, (2) literature related to improvement in dietary adequacy in the Expanded Food and Nutrition Education Program, and (3) literature related to dietary adequacy in relation to personal homemaker characteristics, family characteristics, and factors associated with assistance to families.

I. LITERATURE RELATED TO EFFECTIVENESS OF 24-HOUR FOOD RECALL AS A MEASURE OF DIETARY ADEQUACY

Wilson and others (32:351) state that there are four primary procedures in common use to evaluate dietary habits of individuals. They are: (1) the dietary history, (2) the 24-hour food recall, (3) the dietary record, and (4) weighed dietaries. The dietary history gives information of usual patterns of food consumption over a period of time. The 24-hour food recall involves a brief interview with an

individual who is asked to recall and describe all the food consumed over the previous 24 hour period. For the dietary record the individual must keep a written account of all the food consumed over a period of time. The fourth method actually involves weighing all food eaten.

Considering the large number of homemakers, the 24-hour food recall was chosen as the most expedient method to use as an evaluative tool for the Expanded Food and Nutrition Education Program.

It appears that food intake studies ascertained by interviews are a fairly accurate measure of nutritional status of an individual. Madden (14:31) reported that 50 selected studies between 1950 and 1967 showed a striking consistency between results of nutrient intake studies and biochemical studies to evaluate nutritional status of individuals.

Some authors have reported inaccuracies in the use of the 24-hour food recall in comparison to other methods; however, the advantages seem to outweigh the possible inaccuracies.

Guthrie (9:317) found that some studies have shown that a comparison between diet records from seven-day written records and 24-hour food recall indicates that 24-hour recall tends to overstate the amount consumed, which may indicate that some individuals desire to impress the interviewer. She goes on to suggest some of the many advantages of the 24-hour procedure. Since the food recall is not announced beforehand, the individual will have no chance to alter food habits because he knows they are being assessed. It can be used with illiterate populations, because it requires no written records on the part of the subject. Since this is a personal interview method, a

trained interviewer may be able to seek out information that might have otherwise been overlooked.

Madden (14:33) suggests that inaccuracies may result because interviews may be taken during an unusually high or low food intake period. He also emphasizes the advantage that the individual has no foreknowledge of the interview and does not have time to try to alter his diet.

Other factors which may influence accuracy of the 24-hour food recall were pointed out in the "Food and Nutrition . . . Basic Lessons for Training Extension Aides" manual (6:61). These include the number of times the 24-hour food recall has been administered to the homemaker, that different interviews have different effects on people, and the aide's ability to write down what she thinks the homemaker means.

Frye (7:26) warns that certain limitations must be realized in the interpretation of the 24-hour food recalls. The food readings only show the number of servings from a food group in a 24 hour period. There is no exact measure of quantity of food consumed. There is no distinction for differences in quality and nutrition of the different foods within a major food group. He goes on to say that with other information, the 24-hour food recall does provide a way to identify poor nutrition practices and measures change caused by the program's educational effort.

A Maryland study by Wang and Ephross (31:8) also reported that they felt the improvements shown by the use of the 24-hour recall method was a good indication of the behavioral change in dietary habit caused by the educational efforts of the program.

II. LITERATURE RELATED TO IMPROVEMENT IN DIETARY ADEQUACY IN THE EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM

Datagraphics (3:6-7) made one of the first national evaluations of the Expanded Food and Nutrition Education Program for the United States Department of Agriculture. The study was carried out in seven states: Alabama, California, Illinois, New Jersey, Texas, Washington, and West Virginia. The findings showed that on the initial food recall there were dietary deficiencies in three of the four major food groups: the milk group, the vegetables and fruits group, and the breads and cereals group. They found that for the meat group the number of servings surpassed the minimum required for an adequate diet. After three months a second recall was taken that showed improvement in all three of the deficient groups, with particular improvements in the milk group and the vegetables and fruits group.

A later evaluation of the program by Robert E. Frye (7:23), of the Economic Research Service, reported that as of March, 1970, 215,000 homemakers had been given food recalls. From summary data, Frye found that the greatest dietary weakness of the program families was in the vegetables and fruits group. It also appeared to be an area where improvement was slow.

Frye (7:25) presented in tabular form the percents of homemakers with adequate diets as of March, 1970. The percents represent the combined number of homemakers for each of three food recalls, irrespective of the date when they were taken. For the milk group, 36

percent of the homemakers had adequate numbers of servings on the first recall, 49 percent on the second recall, and 54 percent on the third food recall. Seventy-five percent of the homemakers had adequate servings of meat on the first recall, 80 percent on the second recall, and 85 percent on the third food recall. For the vegetables and fruits group, 18 percent of the homemakers had adequate servings on the first recall, 28 percent on the second recall, and 31 percent on the third food recall. On the first food recall for the breads and cereals group, 36 percent of the homemakers had adequate servings, on the second recall 45 percent, and on the third recall 50 percent had adequate numbers of servings. Frye's general conclusions were that substantial progress had been made in improvement of diets among program families.

A recent national evaluation of the program for the United States Department of Agriculture done by Syntectics Corporation (25:14), showed shifts in dietary adequacy from initial to latest food recall for a sample of 3,120 homemakers from 10 states. The study showed that for the milk group on the initial food recall 35 percent of the homemakers had adequate numbers of servings, while 52 percent had adequate intakes on the latest food recall. Seventy-nine percent of the homemakers had adequate servings of meat on the initial food recall, and 85 percent had adequate servings on the latest food recall. On the initial food recall, 19 percent of the homemakers had sufficient amounts from the vegetables and fruits group, and 32 percent on the latest recall. Forty-five percent had adequate servings of breads and cereals on the initial food recall, and 64 percent on the latest food recall.

Gassie (8:1-2) reported program improvement in a research summary of the findings of two evaluative studies of the Expanded Food and Nutrition Education Program in Louisiana to determine the effect of discontinuance of the program on sustained changed behavior. The findings showed that for the milk group, 37 percent of the homemakers had adequate servings on the initial food recall, 62 percent had adequate servings by the end of the eight-week program, and 52 percent of the homemakers continued to have adequate servings four months after the program ended. For the meat group, 76 percent had adequate servings on the initial food recall, and 90 percent of the homemakers had adequate servings on both the recall immediately at the end of the program and four months after the program ended. Eleven percent had adequate servings from the vegetables and fruits group on the initial food recall. Thirty-eight percent had adequate servings after the eight-week program, and only 18 percent four months after the program ended. On the initial food recall, 45 percent had adequate servings of breads and cereals, 64 percent at the end of the program, and 81 percent four months after the program ended.

Jones (12:22) found, in another study in Louisiana of over 500 homemakers from 31 parishes, that the greatest change in dietary habits was in the increased use of milk. This study was an evaluation of an eight-week program. On the initial food recall, 33 percent of the homemakers had adequate servings, while 53 percent had adequate servings at the end of the eight-week program. For the meat group on the initial food recall 80 percent of the homemakers had adequate servings, and

eight weeks later 89 percent had adequate servings. At the beginning of the program for the vegetables and fruits group, only 8 percent had sufficient daily amounts and on the last recall at the end of the program 23 percent had adequate servings. For the breads and cereals group, 38 percent started off the program with adequate servings and 47 percent ended the program with sufficient intakes.

III. LITERATURE RELATED TO DIETARY ADEQUACY IN RELATION
TO PERSONAL HOMEMAKER CHARACTERISTICS, FAMILY
CHARACTERISTICS AND FACTORS ASSOCIATED
WITH ASSISTANCE TO FAMILIES

Personal Homemaker Characteristics

Education of homemaker. Education of the homemaker does appear to influence adequacy of family's and homemaker's diet. Jones (12:25-26), in an evaluation of an eight-week Expanded Food and Nutrition Education Program, found that in a comparison of the number of servings of milk before and after the program, that the homemakers with no education made the greatest change from initial to last food recall and those with the most education made the second greatest change.* Nineteen percent of the homemakers with no education had adequate numbers of servings of milk on the initial food recall, and 52 percent after the eight-week program. Of those homemakers with the most education, 44 percent began

*Change refers to the percent difference between the initial and the last food recall.

the program with adequate milk intake, and 65 percent ended the program with sufficient number of daily servings. According to Jones, those homemakers in general with more education, were more likely to consume adequate quantities of milk on both food recalls.

For the meat group, Jones (12:25, 27) reported that there appeared to be little relationship between adequacy in the number of servings and number of years of formal education. Among the homemakers with no formal education, a higher percent (90 percent) had adequate servings of meat at the beginning of the program than any other group of homemakers. However, the percent dropped to 85 percent of the homemakers with no education having adequate servings after the program.

Jones (12:28) found that for the vegetables and fruits group those homemakers with no education were least likely to make changes in the percents of homemakers with adequate servings, than those with some education.

As was true for the milk group, Jones (12:28) found that the greatest change in percents of homemakers with adequate intakes of breads and cereals was made by those homemakers with no education and those with the most education.

Wilson and others (32:343) found that there was a relationship between adequacy of diets of families and educational level of the homemaker. The majority of homemakers whose family's diets were adequate were high school graduates or had some college education. They also reported that when formal education of the homemaker and family income level were compared together, the influence of education on

dietary adequacy was greater than that of income. In addition, within an income bracket, the greater the number of years of formal education, the more adequate the family's diet was likely to be.

In a study of low-income food stamp and commodity distribution recipients in Pennsylvania, Madden (14:16) reported that education did not appear to be significantly related to dietary adequacy of a family.

Age of homemaker. Age of the homemaker was found by Madden (14:15) in his study in Pennsylvania to be negatively related to adequacy of diet.

Family Characteristics

Place of residence. Jones (12:24-25) found in his study of the Expanded Food and Nutrition Education Program in Louisiana that for the milk group, the farm homemakers made the greatest change in milk consumption from the initial to the last food recall at the end of the eight-week program. Urban homemakers made the least change. On the initial food recall, only 22 percent of the farm homemakers reported adequate intakes, while on the last recall at the end of the eight-week program 63 percent had adequate servings. Among the urban homemakers 35 percent had sufficient amounts of milk on the initial food recall and 47 percent on the last recall. Thirty-four percent of the rural nonfarm homemakers started the program with adequate servings, and 55 percent ended the eight-week program with adequate intake.

For the meat group, Jones (12:27) reported the smallest change from initial to the last food recall was among the urban homemakers.

Eighty-one percent of the urban homemakers started the program with adequate servings and 86 percent ended the eight-week program with adequate servings. The rural nonfarm homemakers made the greatest change; 72 percent started the program with adequate servings and 86 percent ended the program with adequate servings.

Although Jones (12:25,28) found that all residence groups made considerable change in the consumption of vegetables and fruits from initial to last food recall, the greatest change was made by the urban and farm homemakers. Only 6 percent of the rural nonfarm homemakers had adequate intakes from the vegetables and fruits on the first recall, and 18 percent on the last recall. Eight percent of the urban homemakers had adequate servings on the initial recall, and 26 percent after the eight-week program. Among the farm homemakers, 10 percent had sufficient amounts of vegetables and fruits on the first recall, and 28 percent on the last,

The 1965 Department of Agriculture's Report on Dietary Levels in the United States (29:7) stated that of those households with incomes under \$3,000 a year, about the same percentage of diets from urban, rural nonfarm, and farm families were rated poor. However, the United States Department of Agriculture's Food Consumption Survey of the same year reported that farm families use more milk and milk products than urban families. Farm families also used almost twice as much flour and cereals, and more sugars, eggs, and fats than urban families.

Wilson and others (32:339) suggest that because of their outdoor physical labor, farm families have higher energy intake. They also usually have supplies of home-produced foods.

Eppright and others (5:50) reported in a review of the data from the 1955 Department of Agriculture's Food Consumption Survey (27), that farm families consumed less meat than rural nonfarm or urban families. The 1965 Department of Agriculture's Household Food Consumption survey (28:1) also suggested that farm families tend to have better diets, because they often pay less for food than urban families. Many times they buy food from neighbors or local farmer's markets.

Annual family income. Poverty is one of the major reasons for hunger simply because food costs money (11:15). "The most noxious of poverty's effects is malnutrition and the most important of the causes of malnutrition is poverty" (1:11).

The 1965 Department of Agriculture's Household Food Consumption Survey (29:5) showed that adequacy of diet was related to family income. Each successively higher income level had a larger percent of households with adequate diets. This survey showed that among those families with incomes under \$3,000, 20 percent used less milk, cream, and cheese per person and 40 percent more grain than those families whose annual incomes are \$10,000 or larger.

Rockwell (22:16), in a study of 6,060 households in the United States in 1955, found that the consumption of all milk and dairy products, except butter, was lowest among low-income families and highest among high-income families. He also found that consumption of flour and cereal products varied inversely with family income level (22:21).

Guthrie (9:425) reported that the poor in many nutritional studies have been a group generally with less adequate diets. This can be attributed to limited financial resources for all necessities of life, including food. Another factor is that generally low-income families have less education and little nutrition knowledge on which to make sound food purchases.

A statement made during the White House Conference on Food, Nutrition, and Health (33:40) pointed out that evidence has shown that families with limited incomes, oftentimes, have other priorities more demanding than their food budget. These priorities include such necessities as clothing, shelter, and medical expenses which leave the low-income family with little money to spend for food (15:30).

As was pointed out by the United States Senate Committee on Nutrition and Human Needs (30:454), high income alone was no assurance of good diet. They reported that even in households where income was \$10,000 or more approximately 9 percent of the families were found to have poor diets. Eppright and others (5:42-43) stated that in general, a high income means a better diet; however, increased expenditures for food does not insure this. Rockwell (22:iv-v) points out that higher income families have a tendency to buy more expensive foods, which are not necessarily of high nutritional value. Wilson and others (32:340) state that increase in food expenditure among high income families many times goes for convenient foods requiring less time to prepare and buying meals away from home.

According to the 1965 Department of Agriculture's Household Food Consumption Survey (29:5-6), among some of the reasons why low-income

families have adequate diets were that they had access to food from home production, received food benefits from food stamp or commodity distribution program, received food as pay or gifts, and a high average return for food dollars for the low-income family. Out of necessity low-income families buy some foods in large quantities at lower cost. Many of these foods are very nutritious; such as enriched bread and flour, cereals, dry beans, and potatoes.

Jones (12:24) found, in his study of the Expanded Food and Nutrition Education Program in Louisiana, that families with the lowest income were least likely to increase their use of milk during the eight-week program. Twenty-seven percent of the homemakers with incomes less than \$1,000 had adequate servings of milk on the initial food recall, and only 29 percent at the end of the eight-week program. On the latest food recall each successive income category generally had higher percents of homemakers with adequate milk intake. Generally, the higher the income level of the family, the greater the percent of homemakers with adequate milk intake on both the initial and the last food recall.

Jones (12:27-28) found similar results for the meat group and the vegetables and fruits group. Generally, those homemakers from families with higher incomes consumed more meat and vegetables and fruits on both food recalls. For the vegetables and fruits group, only 8 percent of those homemakers with incomes less than \$1,000 had adequate servings on the initial food recall, and only 11 percent after the eight-week program. Of those homemakers with incomes of \$5,000 or more, 18 percent started with sufficient intake, and 29 percent ended the program with adequate servings of fruits and vegetables.

There appeared to be no pattern for the breads and cereals group, according to income level, for the percents of homemakers with adequate servings on the initial or the last food recall (12:25).

Jones (12:56) concluded that for the eight week program, changes were more likely to be made where sufficient income was available for buying food. A lack of change in many homes was simply a lack of income to buy needed foods.

Frye (7:26) also warns that in evaluating the Expanded Food and Nutrition Education Program's effectiveness in relation to percent of homemakers with adequate diets, it should be realized that the application of skills learned in the program may be limited by food purchasing power available to families.

Number of family members. Madden (14:15), in a Pennsylvania study of low-income food stamp and commodity distribution recipients, found that family size was significantly related to dietary adequacy. He found that families with from five to six members had the most adequate diets.

Rockwell (22:16-18) found, in a study of 6,060 households in the United States in 1955, that consumption of dairy products per person tended to be smaller in larger families, than in smaller families. He goes on to say that this was a fairly consistent tendency for all food groups. The larger the family size, the smaller the consumption per person (22:44).

Reasons why food consumption per person tends to be smaller in large families were found to be that there are fewer leftovers after a

meal, for some foods smaller amounts are discarded in the preparation, and large households tend to have small children who generally eat less than adults (22:40). Generally, food can be prepared more economically for a large number of persons and quantities of foods are used more sparingly in larger households, especially high cost items (32:341-342).

Orshansky (19:8), in a review of the data on the dietary levels of households as reported in the 1955 Department of Agriculture's Household Food Consumption Survey, stated that on the whole, large families are less likely to have adequate diets. She reported that one-fourth of the two-person families and one-half of the families with six or more members had less than adequate amounts of calcium.

Orshansky (19:8) also reported that large families tend to have lower incomes than smaller families. In fact, the chances for low income increases as the family size grows in size, because it becomes more difficult for the mother to work, which is necessary for many families to stay out of poverty (19:16). From recent consumption data, Orshansky (19:8) reports that, given the opportunity, large families spend no larger percent of their income for food than do smaller families within the same economic level.

Ethnic background. Wang and Ephross (31:14-15) commented, in their study of the Expanded Food and Nutrition Education Program in Maryland, that there was a tendency for black homemakers to report less adequate diets than white homemakers.

Jones (12:23) found in the youth phase of the Expanded Food and Nutrition Education Program in Louisiana that, except for the meat

group, black children reported less adequate diets than white children on the initial food recall. On the last food recall, black children, except for the meat group, made the greatest change from first to last food recall and also had the highest percents with adequate servings from the milk, the vegetables and fruits, and the breads and cereals groups.

Miller (16:53) states that thousands of surveys have shown that Blacks lag behind whites in many aspects of life, including health and education. The surveys show that the conditions in the poorest slum areas are getting worse, not better.

Home garden. Madden (14:15), in his Pennsylvania study of low-income food stamp and commodity food recipients, found that families with home gardens had significantly better diets than those reporting none.

The 1965 Department of Agriculture's Home Food Consumption Survey (28:1) stated that home food production by farm families greatly added to the value of food used in the home. They found that almost all farm families used some home-produced food. Only 7 percent of rural nonfarm families and 1 percent of urban families raised some home-produced food.

Monthly change in income. Rockwell (22:iv) found in his study that for all income groups, food expenditures decrease as income decreases and purchases of food increase as income increases.

Factors Associated with Assistance to Families

U.S.D.A. food programs available in the county. The Commodity

Distribution Program was primarily established to alleviate the problem of agricultural surpluses. Only of secondary importance, was it a way to supply food to needy families. The U.S. Department of Agriculture purchases surplus from farmers and in turn ships them to states and localities desiring assistance. Locally the foods are distributed to schools, other institutions, and low-income families who qualify (14:20).

Madden (14:1) found, in his study in Pennsylvania, that families participating in the Commodity Distribution Program had no better diets than nonparticipating families living under similar socioeconomic conditions.

A study by Loyd and Breimyer (13:935) of the Commodity Distribution Program in Harrison County, Missouri, found that for three of the four major food groups, a higher percentage of families showed adequate number of servings after the program began in comparison to before.

The present Food Stamp Program began on a pilot basis in 1961. Stamps are sold to qualifying families at prices below their face value and can be used for food purchases at cooperating grocery stores (14:21).

The Food Stamp Program appears to be a more preferable form of food assistance to needy families than the donated food program, because users have a free choice in food buying to suit their cultural patterns, special nutrition needs, and food tastes (10:126-127).

An evaluative study of the pilot Food Stamp Program by the Economic Research Service (21:7) reported that participant families had substantially increased their food consumption in terms of dollar value since the initiation of the program. They found that in Detroit, money

value of foods consumed was 34 percent higher than before the program. In Fayette County, a rural area, there was a 9 percent increase.

Madden (14:3) found that the only difference in dietary adequacy of participants in the Food Stamp Program over nonparticipants was when more than two weeks had elapsed since payday. Although there were no overall increases in food expenditure, food stamp recipients, two weeks or more after payday, had a significantly higher intake of some nutrients than nonparticipants. Madden concluded that it appeared that a large portion of increased food purchasing power is being spent on items other than food, and that families are not using increased food purchasing power on foods that would supply nutrients most deficient in the family's diet.

Time in the program. Spindler and Browne (24:322) have commented that for lasting improvements, families should be in the program long enough to develop new food habit patterns, and new food skills. The White House Conference on Food, Nutrition and Health (33:174) recommended that the most critical audience, the hard-to-reach poor, need person-to-person intensive educational effort over extended periods of time before behavioral changes can be expected.

There is a growing concern that knowledgeable homemakers are retained in the program longer than necessary (3:9). As the program continues there might be a tendency for program assistants to work with families with whom they are comfortable or where a strong dependence relationship has been established (26:2).

It has been suggested that the food recall could be used to decide when a homemaker has gained maximum benefits from the program. A homemaker who consistently reports adequate servings from all four food groups could be moved into some other type of Extension activity (3:23).

A national study of the program by Synectics Corporation (25:13) showed that there was no significant difference in adequacy of diet on initial food recall for those homemakers who dropped out within the first six months and those who stayed for that period of time. However, from six months onward, it was found that homemakers with better initial diets left the program sooner than homemakers with less adequate diets on the initial food recall.

Frye (7:23) found in his evaluation of the Expanded Food and Nutrition Education Program that there were improvements over time in the percents of homemakers with adequate diets. Initially only 9 percent of the homemakers had adequate servings from all of the food groups. After six months in the program, 16 percent had adequate diets and after 12 months, 19 percent had adequate diets.

The Synectics Corporation (25:13-14), in an evaluative study of the Expanded Food and Nutrition Program in 1971, suggested a possible guideline which could be used to determine how long a homemaker should participate in the program. Homemakers which fall in the bottom quarter of adequacy of diet on the initial food recall should probably participate between one and two years in order to receive maximum benefit. Of these homemakers, those who are faster learners could stay in from one

year to 18 months. They suggest that the middle group of homemakers could participate actively from 6 to 18 months. Again the faster learners could move more rapidly. Those homemakers in the upper quarter of adequacy on the initial food recall could gain most that is currently available from the program within the first six months.

CHAPTER IV

FINDINGS OF THE STUDY

The findings of this study will be presented in this chapter under the major headings of: (1) relation between adequacy of homemakers' diets in each food group and personal homemaker characteristics, (2) relation between adequacy of homemakers' diets in each food group and family characteristics, and (3) relation between adequacy of homemakers' diets and factors associated with assistance to families.

For all food groups, except the meat group, there were very significant increases in the percents of homemakers with adequate daily servings from the initial to the latest 24-hour food recall (see Table II). The milk group and the vegetables and fruits group had lower percents of homemakers with adequate servings on both food recalls, than the meat group and the breads and cereals group.

Although the meat group had the highest percents of homemakers on both recalls with adequate recorded numbers of daily servings, there was only a 2 percent difference between the initial and latest 24-hour food recall. For the breads/cereals group there was a 10 percent difference, for the milk group an 18 percent difference, and for the vegetables/fruits group a 21 percent difference from initial to latest food recall.

Adequacy of homemakers' diets for each food group based on food recall was presented in tabular form. Each table represents a different independent variable.

TABLE II
ADEQUACY OF HOMEMAKERS' DIETS IN EACH
FOOD GROUP BASED ON FOOD RECALLS*

Food Group	N = 397	
	Initial Recall	Latest Recall
	-----Percent with Adequate Diet-----	
Milk	29	47 ^a
Meat	75	77
Vegetables/Fruits	19	40 ^a
Breads/Cereals	44	54 ^a

*Adequate diet by food group is based on two daily servings from each of the milk and meat groups and four daily servings from each of the vegetables/fruits and breads/cereals groups.

^aThe t value is significant at the .01 level for the improvement from initial to latest food recall for the food group.

Note: For clarity, the same footnote letter will designate the same statistical test and level of significance throughout the tables.

The tables are divided vertically into two 24-hour food recalls. The initial food recall was taken for all homemakers in the study when the family first became enrolled in the program. The latest food recall represents the latest recorded food recall for a participant family as of October, 1971 when the data were collected.

Under each food recall the table is also divided into the four major food groups: (1) milk, (2) meat, (3) vegetables/fruits, and (4) breads/cereals.

Two statistical tests for significance were used in this study. The chi-square test was used to determine the horizontal relationship between adequacy of homemakers' diets for each food group according to food recall, and the independent variable.

The second statistical test used was the t-test to determine, for each food group and each independent variable, if the percent of homemakers with adequate servings on the initial food recall was significantly different from the percent of homemakers with adequate servings on the latest food recall.

Significance for both tests were determined at the .05 and the .01 levels.

I. RELATION OF ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP AND PERSONAL HOMEMAKER CHARACTERISTICS

Education of the Homemaker

Table III, page 38, shows the percents of homemakers with

TABLE III
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY YEARS OF SCHOOL COMPLETED BY HOMEMAKER*

Food Group	Years of School Completed by Homemaker (N = 397)	
	Less than 8 Years (N = 161)	8 or More Years (N = 226)
-----Percent with Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk	34	27
Meat	73	77
Vegetables/Fruits	22	16
Breads/Cereals	48	39
<u>Latest Food Recall</u>		
Milk	48 ^a	47 ^a
Meat	76	79
Vegetables/Fruits	38 ^a	42 ^a
Breads/Cereals	52	59 ^a

*See Table II, page 36.

^aThe t value is significant at the .01 level for the (vertical) improvement from the initial to the latest food recall for the food group.

adequate servings from the food groups according to the 24-hour food recalls, and the number of years of formal education completed by the homemaker. This independent variable was divided into two categories: (1) those homemakers with less than eight years of school, and (2) those homemakers with eight or more years of school.

Milk group. For the milk group on the initial food recall, there was no significant relation between percents of homemakers with adequate intakes of milk and other dairy products and education of the homemakers. Although the difference was not significant, there were a lower percent of homemakers with adequate servings among those with eight or more years of school (27 percent). Thirty-four percent of those homemakers with less than eight years of school had adequate servings.

On the latest food recall, again there was no significant difference between the two groups of homemakers. The only difference was very slight. Among those homemakers with eight or more years of school 47 percent had adequate servings and among those with less than eight years 48 percent had adequate servings. From initial to latest recall both groups of homemakers made very significant improvements in the percents of homemakers with adequate milk intakes.

Meat group. The difference that existed for the meat group on the initial food recall was not significant. Among those homemakers with eight or more years of school, 77 percent had adequate servings from the meat group. Seventy-three percent of those with less than eight years of school had adequate servings.

Likewise, on the latest food recall for the meat the difference that existed was not significant. Seventy-nine percent of those homemakers with eight or more years of school had adequate meat intake, and 76 percent of the other group of homemakers. For both groups of homemakers there was no significant improvement in the percents of homemakers with adequate servings of meat from the initial to the latest food recall.

Vegetables and fruits group. There was no significant relation between percents of homemakers with adequate servings from the vegetables/fruits group and years of formal education of the homemaker. Sixteen percent of those homemakers with eight or more years of school had adequate servings on the initial food recall, and 22 percent of the other homemakers had adequate intakes from this food group.

On the latest food recall, the difference was also not significant. Forty-two percent of those homemakers with eight or more years of school had adequate servings, and 38 percent of those with less than eight years had adequate intakes of fruits and vegetables. Both groups of homemakers made very significant improvements from initial to latest recall in the percents of homemakers with adequate servings.

Breads and cereals group. On both food recalls there were no significant differences between percents of homemakers with sufficient intakes from the breads/cereals group and years of formal education. Among those homemakers with eight or more years of school 39 percent had adequate servings, while those with less than eight years had 48 percent with adequate servings.

On the latest recall there were 59 percent of those homemakers with eight or more years of school who had consumed adequate servings of breads and cereals, and 52 percent of the other homemakers. Those homemakers with less than eight years of school made no significant improvement in the percent of homemakers with adequate servings from initial to latest recall. Those with eight or more years of school made a very significant improvement.

In summary, according to the years of education groupings used in this study there was no significant relation between adequacy of homemakers' diets and years of formal education of the homemaker. Among those homemakers with eight or more years of school, there appeared to be a lower percent with adequate servings on the initial food recall, except for the meat group, however, in general they seem to have made a greater improvement from initial to latest food recall.

Age of the Homemaker

Table IV, page 42, gives the percents of homemakers with adequate servings from the food groups based on food recalls, and age of the homemaker. The age groupings used in this study were the following: (1) homemakers under 25 years of age, (2) homemakers between the ages of 25 and 34, (3) homemakers between the ages of 35 and 64, and (4) homemakers over 64 years of age.

Milk group. On the initial food recall, there was a very significant relation between age of the homemaker and percents with adequate servings from the milk group. Only 15 percent of the

TABLE IV
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD
GROUP BY AGE OF HOMEMAKER*

Food Group	Age of Homemaker (N = 397)			
	Under 25 (N = 41)	25 to 34 (N = 86)	35 to 64 (N = 199)	Over 64 (N = 71)
-----Percent With Adequate Diet-----				
<u>Initial Food Recall</u>				
Milk ^b	15	35	25	44
Meat	81	76	77	68
Vegetables/Fruits	10	15	21	21
Breads/Cereals	49	48	41	41
<u>Latest Food Recall</u>				
Milk	51 ^a	47	47 ^a	47
Meat ^b	90	87	73	72
Vegetables/Fruits	59 ^a	36 ^a	41 ^a	35
Breads/Cereals	68	59	52 ^c	54

*See Table II, page 36.

^aSee Table III, page 38.

^bChi-square value is significant at the .01 level for the (horizontal) relationship between adequacy of diet according to the food group and the independent variable.

^cThe t value is significant at the .05 level for the (vertical) improvement from initial to latest food recall for the food group.

homemakers under 25 years of age had sufficient intakes from the milk group, while 44 percent of those homemakers over 64, 35 percent of those between the ages of 25 and 34, and 25 percent of those between the ages of 35 and 64 had adequate servings on the initial food recall.

According to the age groupings used in this study, there appeared to be no relation on the latest food recall between percents of homemakers with adequate servings from the milk group and age of the homemaker. Among the homemakers under 25 years of age, 51 percent had adequate daily intakes, while 47 percent of each of the other age groups had adequate number of servings.

For the milk group, all age groups of homemakers made a very significant improvement in the percents of homemakers with adequate daily servings from initial to latest food recall, except the homemakers over 64 years of age and those between the ages of 25 to 34.

Meat group. Although not significant, from the data in the table, there was a trend for the younger homemaker to have a more adequate daily intake from the meat group on the initial food recall. Eighty-one percent of the homemakers under 25 years of age had adequate servings of meat, while 76 percent of those between the ages of 25 and 34, 77 percent of those between the ages of 35 and 64, and 68 percent of those over 64 years of age had adequate servings from the meat group on the initial food recall.

On the latest food recall this trend was more pronounced to the point where the relationship was very significant. Ninety percent of

the homemakers under 25 years of age had sufficient servings from the meat group. Eighty-seven percent between the ages of 25 and 34, 73 percent between the ages of 35 and 64, and 72 percent over 64 years of age had adequate number of servings of meat on the latest food recall.

None of the groups of homemakers made a significant improvement in the percents of homemakers with adequate intakes of meat from the initial to the latest food recall.

Vegetables and fruits group. According to the age groupings used in this study, there was no significant relationship between homemakers with adequate servings from the vegetables/fruits group and age of the homemaker on either of the 24-hour food recalls. Only 10 percent of the homemakers under 25 years of age had adequate servings on the initial food recall for the vegetables/fruits group. Among those homemakers between the ages of 25 and 34, 15 percent had adequate servings. Twenty-one percent of each of the other two age groupings (35 to 64 and over 64 years of age) had adequate servings from the vegetables/fruits group.

Whereas on the initial food recall the homemakers under 25 years of age had the lowest percent with adequate servings from the vegetables/fruits group, they had the highest percent on the latest food recall. Fifty-nine percent of those homemakers under 25 years of age had adequate servings, as compared with 36 percent between the ages of 25 and 34, 41 percent between the ages of 35 and 64, and 35 percent of those homemakers over 64 years of age.

All age groups of homemakers made very significant improvement in the percent of homemakers with adequate servings from the

vegetables/fruits group from the initial to the latest food recall, except those over 64 years of age.

Breads and cereals group. On the initial food recall for the breads/cereals group there was no significant difference between age of the homemaker and percents with adequate servings. A higher percent of those homemakers under 25 years of age tended to have a sufficient intake from the breads/cereals group (49 percent), than the other groups of homemakers. Forty-eight percent of those homemakers between 25 and 34 and 41 percent of each of those between 35 and 64 and over 64 years of age had adequate servings.

On the latest food recall, although not significant, a higher percent of those homemakers under 25 years of age had adequate intakes from the breads/cereals group (68 percent), than among the other age groupings. Fifty-nine percent of those between the ages of 25 and 34, 52 percent of those between the ages of 35 and 64, and 54 percent of those over 64 years of age had adequate servings of breads and cereals on the latest food recall.

For the breads/cereals group only those homemakers between the ages of 35 to 64 made a significant improvement from initial to latest food recall.

In summary, there was a very significant relationship on the initial food recall for the milk group and on the latest recall for the meat group between the percents of homemakers with adequate number of daily servings and age of the homemaker. In general, younger homemakers (under 25 years of age) had the lowest percent with adequate

servings from the milk and the vegetables/fruits groups on the initial food recall, and that they appear to have made the most improvement from initial to latest recall. In fact, on the latest food recall, they had the highest percent of homemakers with adequate diets for all food groups, than all the other age groupings used in this study. Those homemakers over 64 years of age appear to have the least improvement,

II. RELATION OF ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP AND FAMILY CHARACTERISTICS

Place of Residence

Table V, page 47, gives the percents of homemakers with adequate servings from the food groups based on food recall, and place of residence of the family. The place of residence groupings used in this study were: (1) urban, (2) rural nonfarm, and (3) farm.

Milk group. On the initial 24-hour food recall there was a significant relation between homemakers with adequate servings of milk and place of residence. A much higher percent of farm homemakers (41 percent) had the recommended number of servings from the milk group than the urban homemakers (23 percent). The percent of rural nonfarm homemakers (38 percent) was only slightly less than the farm homemakers, but considerably higher than the percent of the urban homemakers.

On the latest food recall there was no significant relationship between homemakers with adequate numbers of milk servings and place of residence. Even though there was a significant difference by place of

TABLE V
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD
GROUP BY PLACE OF RESIDENCE*

Food Group	Place of Residence (N = 397)		
	Urban (N = 244)	Rural Nonfarm (N = 111)	Farm (N = 42)
-----Percent with Adequate Diet-----			
<u>Initial Food Recall</u>			
Milk ^b	24	38	41
Meat	77	73	71
Vegetables/Fruits ^d	15	21	33
Breads/Cereals ^b	37	52	57
<u>Latest Food Recall</u>			
Milk	45 ^a	51 ^c	53
Meat	80	74	74
Vegetables/Fruits ^b	34 ^a	48 ^a	60 ^a
Breads/Cereals ^d	51 ^a	62	67

*See Table II, page 36.

^aSee Table III, page 38.

^bSee Table IV, page 42.

^cSee Table IV, page 42.

^dChi-square value is significant at the .05 level for the (horizontal) relationship between adequacy of diet according to food group and the independent variable.

residence on the initial food recall, on the latest food recall the percent of homemakers with adequate servings from the milk group improved to about the same level, irrespective of place of residence. Although no significant difference existed, the farm homemakers did tend to have more adequate intakes from the milk group than either the rural nonfarm or the urban homemakers.

For the milk group, only the urban homemakers made a very significant improvement from initial to latest food recall. The rural nonfarm homemakers made a significant improvement, whereas, the farm homemakers made no significant improvement.

Meat group. For the meat group there was no significant relationship between homemakers with adequate number of servings of meat and place of residence on either the initial or latest food recall. It appeared that a slightly higher percent of homemakers from urban families (77 percent) had an adequate number of servings on the initial food recall than either the rural nonfarm (73 percent) or the farm (71 percent) homemakers. None of the groups of homemakers made a significant improvement for the meat group in the percent of homemakers with adequate servings from the initial to the latest food recall.

Vegetables and fruits group. For Table V, page 47, the chi-square test showed a significant relationship between homemakers with adequate numbers of servings for the vegetables/fruits group, and place of residence on both food recalls. On the initial food recall the percent of homemakers with an adequate number of servings was significantly less

(15 percent) than for either the rural nonfarm (21 percent) and the farm (33 percent) homemakers.

On the latest food recall there was even a more significant relationship between homemakers' place of residence and adequacy of vegetables and fruits diet. Again, the percent of urban homemakers with sufficient intakes of vegetables and fruits was significantly less (34 percent), than for the rural nonfarm (48 percent) and the farm (60 percent) homemakers.

All groups of homemakers made a very significant improvement for the vegetables/fruits group from initial to latest food recall.

Breads and cereals group. From Table V, page 47, there was a significant relationship between homemakers who had consumed a recommended number of servings from the breads/cereals group and place of residence on both recalls.

As was true for the milk and vegetables/fruits groups, a significantly lower percent of urban homemakers had an adequate number of servings from the breads/cereals group on both food recalls. On the initial food recall only 37 percent of the urban homemakers had an adequate number of servings, as compared with 52 percent of the rural nonfarm homemakers and 57 percent of the farm homemakers. Fifty-one percent of the urban homemakers had adequate servings on the latest food recall compared with 62 percent of the rural nonfarm homemakers and 67 percent of the farm homemakers.

For the breads/cereals group, only the urban homemakers made a very significant improvement from the initial to the latest food recall.

In summary, there was a significant relationship between homemakers' place of residence and their having an adequate number of servings on the initial food recall from the milk, vegetables/fruits, and breads/cereals groups. On the latest food recall, there was a significant relationship between place of residence and percents of homemakers with adequate number of servings from the vegetables/fruits and the breads/cereals groups.

With the exception of the meat group, the percent of urban homemakers with adequate number of servings from the food groups was the lowest on both food recalls, however there was a tendency for urban homemakers to make the most improvement from the initial food recall to the latest. In general, the urban homemakers had the poorest diets, had the greatest capacity for improvement, and made the greatest improvement from initial to latest 24-hour food recall.

Home Garden

Table VI, page 51, shows the percents of homemakers with adequate diets according to food groups based on food recalls, and whether or not the family had a home garden.

Milk group. For the milk group on the initial food recall there was a significant relationship between homemakers with adequate servings from the milk group and the family having a home garden. Thirty-seven percent of the homemakers who did have a garden had adequate intakes from the milk group, while only 25 percent of the homemakers without a garden had adequate intakes.

TABLE VI
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY WHETHER OR NOT FAMILY HAD A HOME GARDEN*

Food Group	Family Had a Home Garden (N = 397)	
	Yes (N = 137)	No (N = 260)
-----Percent with Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk ^d	37	25
Meat	76	75
Vegetables/Fruits ^b	26	14
Breads/Cereals ^b	57	36
<u>Latest Food Recall</u>		
Milk	50 ^c	46 ^a
Meat	74	80
Vegetables/Fruits ^b	54 ^a	34 ^a
Breads/Cereals ^d	64	51 ^a

*See Table II, page 36.

^aSee Table III, page 38.

^bSee Table IV, page 42.

^cSee Table IV, page 42.

^dSee Table V, page 47.

For the milk group on the latest food recall there was no significant relationship between adequacy of milk intake and whether or not the homemaker's family had a home garden. Although not significant, the homemakers from families who had a garden tended to have a slightly higher intake from the milk group (50 percent), than those whose families did not have a garden (46 percent).

Only those homemakers who did not have a garden made very significant improvements in the percents of homemakers with adequate servings from the milk group from the initial to the latest food recall, however those families who did have a garden did make a significant improvement.

Meat group. For the meat group there was no significant relationship on either food recall between homemakers with adequate meat intakes and the family having a home garden. Only the homemakers from families who did not have gardens made a very significant improvement in daily servings for the meat group from initial to latest food recall.

Vegetables and fruits group. As would be expected, there was a very significant relationship between homemakers with sufficient servings from the vegetables/fruits group and whether or not the family had a home garden. On the initial food recall, 26 percent of the homemakers whose families had home gardens also had adequate intakes from the fruits and vegetables group, while only 14 percent had adequate servings of those whose families did not have home gardens.

As one can see from the data of Table VI, page 51, there also was a very significant relationship for the vegetables/fruits group on the latest food recall. Among those homemakers whose families did have a home garden, over one-half (54 percent) reported adequate intakes from the vegetables/fruits group. Thirty-four percent of the homemakers whose families did not have gardens had adequate servings from the vegetables/fruits group on the latest food recall.

Both groups of homemakers made very significant improvements in percents of homemakers with adequate servings from the vegetables group from the initial to the latest food recall.

Breads and cereals group. On the initial food recall for the breads and cereals group there was a very significant relationship between homemakers having adequate servings and the family having a home garden. Fifty-seven percent of the homemakers from families who did have a home garden had adequate servings of breads and cereals, while 36 percent of the homemakers from families who did not have a garden had adequate servings.

Although not as significant as on the initial food recall, the difference was still significant between whether or not a family had a home garden, and the percents of homemakers with adequate servings from the breads/cereals group. Among the homemakers whose families did have home gardens, 64 percent had adequate numbers of servings. Fifty-one percent of the homemakers whose families did not have home gardens had sufficient daily servings of breads and cereals.

Only those homemakers who did not have gardens made very significant improvements in percents of homemakers with adequate servings from this food group.

In summary, on the initial food recall there was a significant relationship between homemakers with adequate diets and the family having a home garden. On the latest food recall there was a significant relationship for the vegetables/fruits and the breads/cereals groups.

Home Ownership Status

Table VII, page 55, shows the percents of homemakers with adequate servings from the major food groups based on food recalls and whether the family owns or rents their home.

Milk group. As shown from the data in the table, there was a very high relationship between percents of homemakers with adequate daily servings from the milk group on the initial food recall and whether the family owns or rents their home. Thirty-seven percent of the homemakers whose families owned their own home had sufficient milk intakes, while only 25 percent of those whose families rented their homes had adequate number of servings.

On the latest recall, there was not as much difference as on the initial, however the relationship was still significant. Fifty-five percent of the owners had adequate intakes from the milk group, while only 42 percent of the renters had adequate servings.

Both groups of homemakers made very significant improvements from initial to latest food recall in the percent of homemakers with adequate servings.



TABLE VII
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY HOME OWNERSHIP STATUS*

Food Group	Home Ownership Status (N = 390)**	
	Owner (N = 149)	Renter (N = 241)
-----Percent with Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk ^d	37	25
Meat	78	74
Vegetables/Fruits ^b	30	11
Breads/Cereals ^d	52	38
<u>Latest Food Recall</u>		
Milk ^d	55 ^a	42 ^a
Meat	76	79
Vegetables/Fruits ^b	52 ^a	33 ^a
Breads/Cereals	57	55 ^a

*See Table II, page 36.

**For the statement of home ownership there were four homemakers who mentioned other than owner or renter and three who did not reply (total N = 397).

^aSee Table III, page 38.

^bSee Table IV, page 42.

^dSee Table IV, page 42.

Meat group. Although not significant, those homemakers from families who owned their homes tended to have a higher percent with adequate intakes of meat on the initial food recall than among those whose families rented their home. Among those who owned their homes, 78 percent of the homemakers had sufficient amounts of meat, and 74 percent among those whose families rented their homes.

Unlike the initial food recall, for the meat group those homemakers from families who rented their homes tended to have higher percents (79 percent) with adequate servings, than for those whose families owned their homes (76 percent).

None of the homemakers made a significant improvement from initial to latest food recall in the percents of homemakers with adequate servings from the meat group.

Vegetables and fruits group. For the vegetables/fruits group there was a very significant relationship on both food recalls between percents of homemakers with adequate servings and whether the family rented or owned their home. On the initial food recall, 30 percent of those who owned their homes and only 11 percent of those who rented their homes had adequate number of servings of fruits and vegetables. On the latest food recall 52 percent of those who owned their homes and 33 percent of those who rented their homes had adequate servings.

Both groups of homemakers made a very significant improvement from initial to latest food recall in the percent of homemakers with adequate servings of vegetables and fruits.

Breads and cereals group. On the initial food recall there was also a very significant relationship between adequacy of servings from the breads/cereals group and whether the family rented or owned their home. Fifty-two percent of those whose families owned their homes had enough servings of breads and cereals, while 38 percent of those whose families rented their homes had adequate servings.

Although no significant difference existed on the latest food recall, again the families who owned their homes tended to have a higher percent of homemakers with adequate servings from the breads/cereals group (57 percent), than those who rented their homes (55 percent).

Only among those homemakers who rented their home was there a very significant improvement from initial to latest recall in the percents of homemakers with adequate intakes from the breads/cereals group.

In summary, there was a very significant relationship between whether a family rented or owned their home and the percents of homemakers with adequate servings from the milk, vegetables/fruits, and breads/cereals groups on the initial food recall, and from the vegetables/fruits group on the latest food recall. There was a significant relationship for the milk group on the latest recall. Generally, the homemakers from families who rented their homes had significantly poorer diets than those from families who owned their homes, however they tended to make a greater improvement from initial to latest food recall.

Level of Living Index Score

Table VIII, page 58, indicates the percents of homemakers with

TABLE VIII
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY LEVEL OF LIVING INDEX SCORE*

Food Group	Level of Living Index Score (N = 397)		
	1 to 2 Items (N = 48)	3 Items (N = 132)	4 to 5 Items (N = 217)
-----Percent With Adequate Diet-----			
<u>Initial Food Recall</u>			
Milk	26	31	39
Meat	67	77	77
Vegetables/Fruit	19	20	18
Breads/Cereals	52	47	38
<u>Latest Food Recall</u>			
Milk	44	50 ^a	47
Meat	81	74	79
Vegetables/Fruit	38 ^c	44 ^a	39 ^a
Breads/Cereals	60	58	54 ^a

*See Table II, page 36.

^aSee Table III, page 38.

^cSee Table IV, page 42.

adequate diets according to food group based on food recalls and the level of living index score used in this study. The level of living index score was based on the presence or absence of five selected household items for a family. The household items used in this study were: (1) running water, (2) a refrigerator, (3) a freezer, (4) a cook stove, and (5) an oven. The scale was from one to five depending on the number of items in each household.

From the data in Table VIII, page 58, there appeared to be no significant relationship between level of living index score and adequacy of diets of homemakers, however there were some differences that can be pointed out.

Milk group. First of all, for the milk group on the initial food recall the families with only one or two of the items had the lowest percent of homemakers with adequate servings (26 percent). The percent of homemakers with adequate servings seemed to have increased as the families possessed more of the items. Among those homemakers who had three items in the household, 31 percent had adequate servings from the milk group. The highest percent of homemakers with adequate servings was among those with four to five items (39 percent).

On the latest food recall there appeared to be less difference and the ordering of the percents was not the same as on the initial food recall. This time for the milk group those respondents with three items had the highest percent with sufficient intakes (50 percent). The next highest was among those homemakers with from four to five

items (47 percent). Forty-four percent of those with only one or two items had adequate intakes.

Only those homemakers with three household items made a very significant improvement from initial to latest food recall in the percents of homemakers with adequate servings.

Meat group. For the meat group on the initial food recall, the homemakers with only one or two items had the lowest percent with adequate servings (67 percent), while among each of the other two groups 77 percent had sufficient daily amounts of meat.

On the latest food recall for the meats group the homemakers with only one or two of the selected household items had the highest percent with adequate servings (81 percent). Seventy-nine percent of those with four to five items and 74 percent of those with three items had sufficient amounts from the meat group.

None of the groups of homemakers made a significant improvement from initial to latest food recall in the percents of homemakers with adequate servings.

Vegetables and fruits group. There appeared to be only a very slight difference in the percents of homemakers with adequate servings from the vegetables/fruits group and the number of household items, ranging from 18 percent of the homemakers with from four to five items to 20 percent of those with three items.

On the latest food recall the difference between groups of homemakers was only slightly greater than on the initial recall. The

highest percent of homemakers with adequate intakes was among those with three of the selected items (44 percent). Thirty-eight percent of those with one or two items and 39 percent of those with four or five items had adequate amounts from the vegetables/fruits group.

The groups of homemakers with three items and four to five items made very significant improvements from initial to latest food recall in the percents of homemakers with adequate servings of vegetables and fruits. Among those homemakers with only one or two of the items there was a significant improvement.

Breads and cereals group. As shown in Table VIII, page 58, the greatest difference between groups of homemakers, although not quite significant, occurred for the breads/cereals group on the initial 24-hour food recall. The percents of homemakers with adequate servings ranged from a low of 38 percent for those with four or five items to a high of 52 percent for those with one or two selected household items.

On the latest food recall the trend was in the same direction, however the differences were not as great as on the initial food recall. Fifty-four percent of the homemakers with four or five items, 58 percent with three items, and 60 percent with one or two items had adequate servings from the breads/cereals group.

Only among those homemakers with four or five of the household items was there a very significant improvement in the percents of homemakers with adequate servings from initial to latest food recall.

To summarize, there appeared to be no significant relationship

between adequacy of homemaker's diets and the number of selected items present in a household.

Yearly Family Income

Table IX gives the percents of homemakers with adequate servings from the food groups based on food recalls and yearly family income. Income levels for families were grouped in this study into those families with incomes of less than \$3,000 and those with incomes of \$3,000 or more.

Milk group. According to the income groupings used in this study, there appeared to be no significant relationship between percents of homemakers with adequate intakes from the milk group on either of the two food recalls and level of yearly family income. Thirty-one percent of those with \$3,000 or more income had adequate servings of milk, and 29 percent of those homemakers with less than \$3,000 had adequate servings on the initial food recall.

On the latest food recall, 46 percent of those with incomes of \$3,000 or more had adequate intakes of milk and 48 percent of those with less than \$3,000 yearly incomes had adequate servings. Those homemakers with incomes under \$3,000 made very significant improvements from initial to latest food recall in the percents of homemakers with adequate servings of milk, and those with incomes over \$3,000 made a significant improvement.

Meat group. There appeared to be no significant difference between income level and percents of homemakers with adequate servings

TABLE IX
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY YEARLY INCOME OF FAMILY*

Food Group	Yearly Income (N = 397)	
	Under \$3,000 (N = 279)	\$3,000 and Over (N = 118)
-----Percent with Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk	29	31
Meat	74	80
Vegetables/Fruits	16	24
Breads/Cereals ^d	39	52
<u>Latest Food Recall</u>		
Milk	48 ^a	46 ^c
Meat	75	84
Vegetables/Fruits	40 ^a	42 ^a
Breads/Cereals	53 ^a	62

*See Table II, page 36.

^aSee Table III, page 38.

^cSee Table IV, page 42.

^dSee Table V, page 47.

from the meat group on either food recall. On the initial food recall, 74 percent of those homemakers whose family income was under \$3,000, and 80 percent of those with incomes of \$3,000 or more had adequate servings.

On the latest food recall, 75 percent of those with incomes under \$3,000 and 84 percent of those with family incomes of \$3,000 or more had sufficient amounts from the meats group. Neither group of homemakers made a significant improvement from initial to latest food recall in the percent of homemakers with adequate servings.

Vegetables and fruits group. There was no significant relationship between the percents of homemakers with adequate servings from the vegetables/fruits group on either food recall and yearly family income level. Among those homemakers with incomes under \$3,000, 16 percent had adequate intakes and 24 percent of those with incomes of \$3,000 or more had adequate servings.

On the latest food recall, among those homemakers whose family income was less than \$3,000, 40 percent had adequate intakes, and 42 percent had adequate intakes among those with incomes of \$3,000 or more. Both groups of homemakers made very significant improvements from initial to latest food recall in the percents of homemakers with adequate servings.

Breads and cereals group. There was a significant relationship between percents of homemakers with adequate servings from the breads/cereals group and family income level, according to the income groupings used in this study. Among those homemakers with incomes under \$3,000,

there was a significantly lower percent with adequate servings (39 percent), than among those homemakers with incomes of \$3,000 or more (52 percent).

On the latest food recall, although there was a 9 percent difference between the two groups of homemakers in the percent with adequate servings of breads and cereals, this difference was not significant. Fifty-three percent of those homemakers with incomes of less than \$3,000 had adequate intakes, while 62 percent of those with yearly incomes of \$3,000 or more had adequate servings. Only among those homemakers with incomes under \$3,000 was there very significant improvements in the percent of homemakers with adequate servings from initial to latest food recall.

In summary, the only significant relationship between percents of homemakers with adequate servings and income level was for the breads/cereals group on the initial food recall. In general, on the initial food recall, there tended to be a lower percent of homemakers with adequate diets among those with yearly family incomes under \$3,000. However, they tended to make a greater improvement, except for the meat group, in the percent of homemakers with adequate diets from initial to latest food recall.

Ethnic Background

Table X, page 66, gives the percents of homemakers with adequate diets according to food groups based on food recall and ethnic background of the participant family.

TABLE X
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY ETHNIC BACKGROUND*

Food Group	Ethnic Background (N = 397)	
	White (N = 188)	Black (N = 209)
-----Percent With Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk ^b	38	22
Meat ^d	70	80
Vegetables/Fruits	22	15
Breads/Cereals ^d	50	37
<u>Latest Food Recall</u>		
Milk	51 ^c	45 ^a
Meat	75	80
Vegetables/Fruits ^d	46 ^a	35 ^a
Breads/Cereals	57	55 ^a

*See Table II, page 36.

^aSee Table III, page 38.

^bSee Table IV, page 42.

^cSee Table IV, page 42.

^dSee Table V, page 47.



Milk group. For the milk group on the initial food recall, there was a very significant relationship between percents of homemakers with adequate number of servings of milk and whether the homemakers came from a white or a black family. Thirty-eight percent of the white homemakers had adequate servings, while a significantly lower percent (22 percent) of the black homemakers had adequate intakes from the milk group.

From the data in the table, there appeared to be no significant relationship between ethnic background and percents of homemakers with sufficient servings of milk on the latest food recall. However, the data indicated that a slightly higher percent of white homemakers (51 percent) had adequate milk intakes, than the black homemakers (45 percent).

Both black and white homemakers made significant improvements from initial to latest food recall in the percents of homemakers with adequate servings from the milk group, however among the black homemakers there was a very significant improvement.

Meat group. For the meat group on the initial food recall there was a significant relationship between ethnic background and percent of homemakers with adequate intakes from the meat group. A higher percent of black homemakers (80 percent) had adequate intakes of meat, than among the white homemakers (70 percent).

On the latest food recall there was no significant relationship between percent of homemakers with adequate servings and ethnic background of the homemakers. Neither group of homemakers made a significant

improvement in the percents of homemakers with adequate intakes from the meats group.

Vegetables and fruits group. On the initial food recall, there was no significant differences between ethnic background and percents of homemakers with sufficient amounts from the vegetables/fruits group. Although not significant, the white homemakers tended to have a higher percent with adequate servings (22 percent), than among the black homemakers (15 percent).

On the latest recall there was a significant relationship between percents of homemakers with adequate servings from the vegetables/fruits group and whether a homemaker came from a white or black family. Forty-six percent of the white homemakers and 35 percent of the black homemakers had adequate intakes of vegetables and fruits.

Both groups of homemakers made very significant improvements in the percent of homemakers with adequate servings from initial to latest 24-hour food recall.

Breads and cereals group. The data showed a significant relationship between percents of homemakers with adequate servings of breads and cereals and ethnic background. One-half (50 percent) of the white homemakers had adequate servings of breads and cereals, while only 37 percent of the black homemakers had adequate intakes from the breads/cereals group.

On the latest food recall no significant relationship existed between percents of homemakers with adequate servings from the

breads/cereals group and ethnic background. Fifty-seven percent of the white homemakers and 55 percent of the black homemakers had adequate intakes from the breads/cereals group on the latest food recall.

Only the black homemakers made a very significant improvement from initial to latest food recall in the percents of homemakers with adequate servings.

In summary, on the initial food recall there was a significant relationship between ethnic background and percents of homemakers with adequate servings from the milk, meat and breads/cereals groups. On the latest food recall, there was a significant relationship for the vegetables/fruits group. On the whole, except for the meat group, the black homemakers tended to have poorer diets on both food recalls, however they tended to make a greater improvement from initial to latest food recall in the percents of homemakers with adequate servings.

Number of Family Members

Table XI, page 70, shows the percents of homemakers with adequate servings from the food groups based on food recalls, and the number of family members present in the household. The family size groupings used in this study were: (1) one family member (homemaker living alone), (2) two to three family members, (3) four to five family members, and, (4) over five family members.

Milk group. On the initial food recall for the milk group, there was no significant relationship between percents of homemakers with adequate servings and number of family members. However, those from

TABLE XI
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY NUMBER OF FAMILY MEMBERS*

Food Group	Number of Family Members (N = 397)			
	1 (N = 51)	2 to 3 (N = 123)	4 to 5 (N = 145)	Over 5 (N = 78)
-----Percent with Adequate Diet-----				
<u>Initial Food Recall</u>				
Milk	39	27	26	32
Meat	61	79	76	77
Vegetables/Fruits	24	18	16	19
Breads/Cereals ^d	33	44	36	53
<u>Latest Food Recall</u>				
Milk	47	50 ^a	46 ^a	46
Meat	67	81	79	77
Vegetables/Fruits	28	42	48 ^a	38 ^a
Breads/Cereals	51	57 ^c	56 ^a	56

*See Table II, page 36.

^aSee Table III, page 38.

^cSee Table IV, page 42.

^dSee Table V, page 47.

families with over five members, and those who were living alone, had the highest percents of homemakers with adequate intakes. Among those homemakers living alone, 39 percent had adequate intakes from the milk group, and 32 percent of those with over five members had adequate servings. Twenty-seven percent of those with from two to three members and 26 percent of those with from four to five members had adequate servings from the milk group.

On the latest food recall for the milk group there appeared to be very little difference between the percents of homemakers with adequate servings and the number of family members. The percents of homemakers ranged from 46 percent for those from families with four to five members to 50 percent for those with from two to three members. Forty-seven percent of those homemakers living alone had adequate servings of milk on the latest food recall.

Only those homemakers with from two to three and four to five family members made very significant improvements from initial to latest food recall in the percents of homemakers with adequate servings of milk.

Meat group. Although no significant relationship existed, those homemakers living alone tended to have a lower percent with adequate servings from the meat group (61 percent), than the other groups of homemakers. The percents of homemakers with sufficient daily intakes of meat ranged from 76 percent for those with from four to five members to 79 percent for those with from two to three members.

On the latest food recall, again, among the homemakers living alone there tended to be a lower percent (67 percent) with adequate

servings, than for the other groups of homemakers. The percents of the other homemakers with adequate servings ranged from 77 percent of those with over five members to 81 percent with from two to three members.

Vegetables and fruits group. Although not significant, a greater proportion of homemakers living alone had adequate servings from the vegetables/fruits group (24 percent) on the initial food recall, than for the other groups of homemakers. Nineteen percent of those with over five members, 18 percent of those with from two to three members, and only 16 percent of those homemakers with from four to five members had adequate intakes from the vegetables/fruits group on the initial 24-hour food recall.

On the latest recall, the lowest percent of homemakers with adequate servings of vegetables and fruits was found among those homemakers who were living alone (28 percent). The next lowest percent was among those homemakers from families with over five members (38 percent). Forty-two percent of those with from two to three members and 48 percent of those with from four to five members had adequate servings of fruits and vegetables.

All groups of homemakers made very significant improvements in the percents of homemakers with adequate intakes of vegetables and fruits from initial to latest 24-hour food recall, except among those living alone.

Breads and cereals group. The only significant relationship between percents of homemakers with adequate servings and number of

family members was the breads/cereals group on the initial food recall. The lowest percent of homemakers with adequate servings from this group was among those homemakers living alone (33 percent) and the highest among those with over five members (53 percent). Thirty-six percent of those with four to five members and 44 percent of those with from two to three members had adequate servings on the initial food recall.

There appeared to be less difference on the latest food recall. Again, among those homemakers living alone there was the lowest percent with adequate servings (51 percent). The other groups of homemakers ranged from 56 percent to 57 percent with adequate servings. Only among those homemakers from families with from four to five members was there a very significant improvement from initial to latest food recall in the percent of homemakers with adequate servings of breads and cereals. There was a significant improvement among the homemakers from families with from two to three members.

In summary, according to the family size groupings used in this study, the only significant relation between percents of homemakers with adequate servings and number of family members was for the breads/cereals group on the initial food recall. In general, on the initial food recall for the milk and the vegetables/fruits groups, there tended to be higher percents of homemakers with adequate servings among those homemakers living alone and those over five family members, however those homemakers living alone tended to make less improvement from initial to latest food recall.

Number of Dependent Children

Table XII, page 75, gives the percents of homemakers with adequate servings from the food groups based on food recalls, and the number of dependent children in the family. For the purpose of this study, the number of dependent children groupings were the following: (1) no dependent children, (2) one to two dependent children, (3) three to four dependent children, and (4) over four dependent children.

Milk group. There appeared to be no significant relationship between percents of homemakers with adequate servings of milk and number of dependent children in the family, however those homemakers with no dependent children and those with over four tended to have higher percents with adequate milk intake. Thirty-two percent of those with no dependent children reported adequate servings, while 30 percent of those with over four had adequate servings. Twenty-seven percent and 28 percent respectively of those with from one to two and from three to four dependent children had adequate intakes from the milk group on the initial food recall.

On the latest food recall those homemakers with over four dependent children had the lowest percent of homemakers with adequate servings (40 percent). Those with no dependent children had 47 percent, those with from one to two children had 48 percent, and those with three to four dependent children had 52 percent of the homemakers with adequate milk intake.

All groups of homemakers made very significant improvements in the percents of homemakers with adequate milk intakes from initial to

TABLE XII
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY NUMBER OF DEPENDENT CHILDREN*

Food Group	Number of Dependent Children (N = 397)			
	None (N = 142)	1 to 2 (N = 118)	3 to 4 (N = 87)	Over 4 (N = 50)
-----Percent with Adequate Diet-----				
<u>Initial Food Recall</u>				
Milk	32	27	28	30
Meat	73	80	72	78
Vegetables/Fruits	21	17	17	16
Breads/Cereals	39	44	45	50
<u>Latest Food Recall</u>				
Milk	47 ^a	48 ^a	52 ^a	40
Meat	74	79	82	78
Vegetables/Fruits	35 ^a	47 ^a	46 ^a	32
Breads/Cereals	51 ^c	60 ^c	56	56

*See Table II, page 36.

^aSee Table III, page 38.

^cSee Table IV, page 42.

latest food recall, except among those homemakers with over four dependent children.

Meat group. For the meat group on the initial food recall there were no significant relationships, however there were a higher percent of homemakers with adequate servings among those with from one to two dependent children (80 percent). The next highest was among those homemakers with over four dependent children (78 percent). Seventy-two percent of those with from three to four children, and 73 percent of those with no dependent children had adequate intakes from the meat group.

On the latest food recall, those homemakers with from three to four dependent children had the highest percent with adequate servings (82 percent). Those homemakers with no dependent children had 74 percent with adequate intakes, while those with from one to two and over four dependent children had 79 percent and 78 percent respectively with adequate servings from the meat group. None of the groups of homemakers made significant improvements in the percents of homemakers with adequate servings from initial to latest food recall.

Vegetables and fruits group. The lowest percent of homemakers with adequate servings from the vegetables/fruits group was among those homemakers with over four dependent children (16 percent). Those with from one to two and three to four dependent children each had 17 percent of the homemakers with adequate servings. Among those homemakers living alone, 21 percent had adequate intakes.

On the latest food recall, again the lowest percent with adequate servings was among those homemakers with more than four dependent children (32 percent). The second lowest percent was among those with no dependent children (35 percent). Forty-six percent of those with from three to four and 47 percent of those with from one to two dependent children had adequate servings.

All groups of homemakers made very significant improvements from initial to latest food recall in the percents of homemakers with adequate servings of vegetables and fruits, except those with over four dependent children.

Breads and cereals group. On the initial food recall, the lowest percent of homemakers with adequate servings from the breads/cereals group was among those homemakers with no dependent children (39 percent). As the number of dependent children increased, there tended to be a higher percent of homemakers with adequate servings. Forty-four percent of those with from one to two dependent children, 45 percent with from three to four, and 50 percent of the homemakers with over four dependent children had adequate servings on the initial food recall.

On the latest recall, again the lowest percent of homemakers with adequate servings appeared among those homemakers with no dependent children (51 percent). Those with from three to four and over four dependent children each had 56 percent of the homemakers with adequate servings. Those with from one to two dependent children had 60 percent with sufficient intakes from the breads/cereals group. The only groups

of homemakers to make a significant improvement in the percents of homemakers with adequate servings from initial to latest food recall was among those homemakers with no dependent children and those with from one to two dependent children. The other two groups of homemakers made no significant improvements.

In summary, according to the number of dependent children groupings used in this study there was no significant relationship between percents of homemakers with adequate diets and number of dependent children in a family. In general, those homemakers with no dependent children tended to have higher percents of homemakers with adequate diets on the initial food recall, except for the breads/ cereals group. Those homemakers with over four dependent children were the only group not to make any significant improvements in diet from initial to latest food recall.

Family Members Over 64 Years of Age Present in the Household

Table XIII, page 79, indicates the percents of homemakers with adequate diets according to the major food groups based on food recalls, and whether or not there were family members over 64 years of age present in the household.

Milk group. For the milk group on the initial food recall there was a significant relationship between percents of homemakers with adequate servings from the milk group and whether or not there were family members over 64 years of age in the household. Only 26 percent of the homemakers from families with no members over 64 years of age had

TABLE XIII

ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP BY FAMILY
MEMBERS OVER 64 YEARS OF AGE PRESENT IN HOUSEHOLD*

Food Group	Members Over 64 (N = 397)	
	Yes (N = 115)	No (N = 282)
-----Percent with Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk ^d	38	26
Meat	75	76
Vegetables/Fruits	23	17
Breads/Cereals	39	45
<u>Latest Food Recall</u>		
Milk	47	48 ^a
Meat	77	78
Vegetables/Fruits	40 ^a	41 ^a
Breads/Cereals	53 ^c	57 ^a

*See Table II, page 36.

^aSee Table III, page 38.

^cSee Table IV, page 42.

^dSee Table V, page 47.

adequate servings from the milk group, while 38 percent of the homemakers from families where there were family members over 64 reported adequate milk intake on the initial food recall.

On the latest food recall there was no significant differences between percents of homemakers with sufficient intakes from the milk group and whether or not there were family members of 64 years of age in the household. Forty-eight percent of those homemakers where there were no family members over 64, and 47 percent of those homemakers where there were family members over 64 had adequate servings from the milk group.

Only among those homemakers where there were no family members over 64 present made very significant improvements in percents of homemakers with adequate daily servings from initial to the latest food recall.

Meat group. For the meat group on both food recalls there was no significant relationship between percents of homemakers with adequate servings, and whether or not there were family members over 64 years of age present in the household.

Neither group of homemakers made significant improvement in the percent of homemakers with sufficient intakes from the meat group from initial to latest food recall.

Vegetables and fruits group. Although there was no significant relationship, it appeared from the data that for the vegetables/fruits group on the initial food recall, the homemakers where one or more

persons over 64 years of age was present in the household tended to have a higher percent of homemakers with adequate servings (23 percent). Those without persons over 64 in the household had only 17 percent with adequate servings.

On the latest food recall for the vegetables/fruits group, there was much less difference between the two groups of homemakers. The percents of homemakers with adequate intakes ranged from 40 to 41 percent.

Both groups of respondents made very significant improvements in the percents of homemakers with adequate servings from the vegetables and fruits group from initial to latest food recall.

Breads and cereals group. For the breads and cereals group there was no significant relationship between the percents of homemakers with sufficient intakes from this group and whether or not there were family members over 64 years of age present in the household on both food recalls. Thirty-nine percent of those homemakers where family members over 64 were present, and 45 percent of those homemakers where family members over 64 were not present had adequate servings from the breads/cereals group on the initial food recall.

On the latest food recall, 53 percent of those homemakers where there were family members over 64 present and 57 percent of those where no members over 64 years of age were present had adequate servings. Only among those homemakers where there were family members over 64 present was there a very significant improvement from initial to latest food recall in the percents of homemakers with adequate servings. The homemakers from families where no members over 64 were present made a

significant improvement in the percent of homemakers with adequate intakes from initial to latest food recall.

In summary, there was a significant relationship between percents of homemakers with adequate number of servings for the milk group on the initial food recall. The homemakers from families with members over 64 years of age had a higher percent with adequate intakes from the milk group, than the other group of homemakers. In general, homemakers without family members over 64 years of age had poorer diets on the initial food recall, however, they tended to make greater improvements in the percents of homemakers with adequate servings from initial to latest food recall than the other group of homemakers.

Male Adult Present in Household with Dependent Children

Table XIV, page 83, indicates the percents of homemakers with adequate servings from the food groups based on food recalls, and whether or not an adult male was present in a family with dependent children. Only those families with dependent children were considered in this table.

Milk group. There was a very significant relationship between whether or not a male adult was present in a family with dependent children and the percent of homemakers with adequate servings from the milk group on the initial food recall. Only 17 percent of those homemakers where no male adult was present had adequate servings, while 34 percent of those where an adult male was present had adequate milk intake.

TABLE XIV

ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP BY ADULT
MALE PRESENT IN A FAMILY WITH DEPENDENT CHILDREN*

Food Group	Adult Male Present (N = 255)**	
	Yes (N = 167)	No (N = 88)
-----Percent with Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk ^b	34	17
Meat	77	76
Vegetables/Fruits	18	15
Breads/Cereals	48	41
<u>Latest Food Recall</u>		
Milk	49 ^a	46 ^a
Meat	79	81
Vegetables/Fruits	47 ^a	38 ^a
Breads/Cereals	59 ^c	57 ^c

*See Table II, page 36.

**Only families with dependent children were included in this table (total N = 397).

^aSee Table III, page 38.

^bSee Table IV, page 42.

^cSee Table IV, page 42.

On the latest food recall the difference was not significant. Forty-six percent of those homemakers where an adult male was not present, and 49 percent where an adult male was present had adequate servings from the milk group. Both groups of homemakers made very significant improvements from initial to latest food recall in the percents of homemakers with adequate servings.

Meat group. There was no significant relationship between percents of homemakers who reported sufficient daily intakes from the meat group, and whether or not there was a male adult present in the household. In fact, on the initial food recall, there was only a 1 percent difference between the two groups of homemakers. Among those homemakers where an adult male was present, 77 percent had adequate servings and those where a male adult was not present had 76 percent with sufficient meat intakes.

On the latest food recall, again there was no significant relationship between percents of homemakers with adequate servings of meat, and whether or not an adult male was present in the household. Eighty-one percent of those homemakers where an adult male was not present, and 79 percent of those where an adult male was present had adequate servings. Neither of the two groups of homemakers made a significant improvement in the percent of homemakers with adequate servings from initial to latest food recall.

Vegetables and fruits group. There was no significant relationship between percents of homemakers with sufficient servings

from the vegetables/fruits group on either the initial or the latest food recall, and whether or not an adult male was present in a household with dependent children. On the initial food recall, 15 percent of those homemakers where no adult male was present and 18 percent where an adult male was present had adequate servings.

On the latest food recall, 38 percent of those homemakers where no adult male was present and 47 percent of those where an adult male was present had adequate intakes from the vegetables/fruits group. Both groups of homemakers made very significant improvements from initial to latest 24-hour food recall.

Breads and cereals group. There was no significant relationship between percents of homemakers with adequate intakes from the breads/cereals group on both recalls and whether an adult male was present in a family with dependent children. Among those homemakers where no adult male was present 41 percent had adequate servings. Forty-eight percent of those homemakers where an adult male was present had adequate servings.

On the latest food recall, 59 percent of those homemakers where an adult male was present had adequate servings, and 57 percent of those where no adult male was present had adequate intakes from the breads/cereals group. Both groups of homemakers made a significant improvement from initial to latest food recall.

In summary, there was a very significant relationship between percents of homemakers with adequate milk intakes and whether or not an adult male was present in a family with dependent children. Those

homemakers where no adult male was present tended to have a lower percent of homemakers with adequate diets on both food recalls, than those homemakers where an adult male was present.

Change in Monthly Income

Table XV, page 87, indicates the percents of homemakers with adequate daily servings from the four major food groups based on food recalls and change in monthly income from initial to latest recall. Homemakers were grouped into (1) those whose family incomes had increased, (2) those whose family incomes had decreased, and (3) those whose monthly family incomes had not changed from initial to latest recall.

Milk group. Although not significant, there were differences between the percents of homemakers with adequate servings from the milk group and whether or not there was a change in monthly income from initial to latest 24-hour food recall. Among those homemakers whose incomes changed, 28 percent of those that increased and 27 percent of those that decreased had adequate intakes, while 46 percent of those homemakers whose incomes did not change had sufficient amounts from the milk group.

On the latest food recall there was not such a great difference. Fifty percent of those homemakers whose incomes increased had adequate amounts from the milk group, while 46 percent of those whose incomes decreased and 41 percent of those whose incomes did not change had adequate number of servings.

TABLE XV
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY CHANGE IN MONTHLY INCOME*

Food Group	Change in Monthly Income (N = 397)		
	Increase (N = 179)	Decrease (N = 179)	No Change (N = 39)
-----Percent with Adequate Diet-----			
<u>Initial Food Recall</u>			
Milk	28	27	46
Meat	77	74	72
Vegetables/Fruits	18	19	18
Breads/Cereals	43	41	51
<u>Latest Food Recall</u>			
Milk	50 ^a	46 ^a	41
Meat	78	79	69
Vegetables/Fruits	47 ^a	36 ^a	33
Breads/Cereals	50	60 ^a	64

*See Table II, page 36.

^aSee Table III, page 38.

All groups of homemakers improved very significantly from initial to latest food recall, except those who reported no change in monthly income.

Meat group. On the initial food recall for the meat group, among those homemakers whose family monthly incomes increased there were a higher percent with adequate meat intakes (77 percent), compared with 74 percent of those whose incomes decreased, and 72 percent of those whose incomes did not change.

On the latest food recall, those homemakers whose monthly incomes decreased had only a very slightly higher percent (79 percent) with adequate servings, as compared with 78 percent of those whose incomes had increased. The lowest percent of homemakers with adequate intakes from the meat group was among those whose incomes did not change (69 percent).

None of the homemakers made a significant improvement from initial to latest recall in the percents of homemakers with adequate servings.

Vegetables and fruits group. For the vegetables/fruits group on the initial food recall, there was almost no difference between sufficiency of servings and whether the homemaker's monthly income had increased, decreased, or remained the same. The percents of homemakers with adequate servings ranged from 18 to 19 percent for all homemakers.

On the latest food recall, there were slightly greater differences. Among those homemakers whose incomes had increased a higher percent (47

percent) had adequate intakes of fruits and vegetables, than those whose incomes had decreased (36 percent), or not changed (33 percent).

All groups of homemakers made very significant improvements from initial to latest food recall in the percent of homemakers with adequate servings, except for those homemakers whose incomes did not change.

Breads and cereals group. It appeared from the data in the table that a higher percent of homemakers consumed adequate amounts from the breads/cereals group among those whose incomes had not changed (51 percent). Forty-three percent and 41 percent of those homemakers whose incomes had increased and decreased respectively had sufficient servings from the breads/cereals group on the initial food recall.

On the latest food recall for the breads/cereals group, 64 percent of those homemakers whose incomes had not changed had adequate servings. Sixty percent of those whose monthly incomes had decreased, and 50 percent of those whose incomes had increased had sufficient amounts from the breads/cereals group.

Only those homemakers whose incomes had decreased made significant improvement from initial to latest food recall.

In summary, there appeared to be no significant relationship between adequacy of homemakers diet and change in the family's monthly income. Although not significant, there tended to be a higher percent of homemakers with adequate servings on the latest food recall for the milk and the vegetables/fruits groups among those homemakers whose monthly incomes increased from initial to latest food recall, than among the other groups of homemakers.

III. RELATION OF ADEQUACY OF HOMEMAKERS' DIETS IN EACH
FOOD GROUP AND FACTORS ASSOCIATED WITH
ASSISTANCE TO FAMILIES

Family on Welfare

Table XVI, page 91, shows the percents of homemakers with adequate diets according to the major food groups based on the food recalls, and whether or not the family participated in the welfare program.

Milk group. On the initial 24-hour food recall for the milk group, there was a significant relationship between percents of homemakers who had an adequate number of servings from the milk group, and whether or not the families were on welfare. A higher percent of homemakers not on welfare (33 percent) had adequate milk intake on the initial food recall, than the welfare homemakers (22 percent).

On the latest food recall there was no significant relationship between percent of homemakers with adequate servings from the milk group and whether or not they were on welfare. Both groups of homemakers seem to have approached the same level of percents of homemakers with adequate servings. There was only a 1 percent difference.

Both groups of homemakers made very significant improvements from initial to latest food recall.

Meat group. For both food recalls there appeared to be no significant relationship between percents of homemakers with adequate

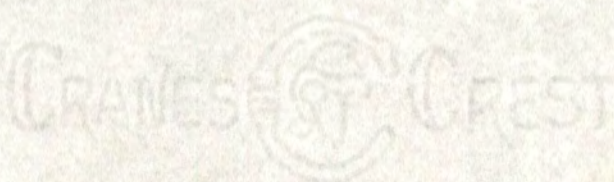
TABLE XVI
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY FAMILY ON WELFARE*

Food Group	Family on Welfare (N = 397)	
	Yes (N = 111)	No (N = 286)
-----Percent with Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk ^d	22	33
Meat	79	74
Vegetables/Fruits ^d	12	21
Breads/Cereals	35	46
<u>Latest Food Recall</u>		
Milk	47 ^a	48 ^a
Meat	78	77
Vegetables/Fruits ^d	32 ^a	44 ^a
Breads/Cereals ^d	47	59 ^a

*See Table II, page 36.

^aSee Table III, page 38.

^dSee Table V, page 47.



servings from the meat group, and whether or not the families of the homemakers were on welfare. On the initial food recall, 79 percent of those homemakers on welfare had adequate servings from the meat group, and 74 percent of those homemakers whose families were not on welfare had adequate servings.

On the latest food recall there was only a very slight difference between the two groups of homemakers. Among the welfare homemakers, 78 percent had adequate servings, and among the nonwelfare homemakers 77 percent had adequate servings of meat. For the meat group, none of the homemakers made a significant improvement from initial to latest food recall in the percents of homemakers with adequate intakes.

Vegetables and fruits group. Whether or not a family was on welfare did appear to influence the percent of homemakers with sufficient number of servings from the vegetables/fruits group on the initial food recall. Only 12 percent of the homemakers from families on welfare had adequate servings, compared with 21 percent of the homemakers from families not on welfare.

According to the data in Table XVI, page 91, there was also a significant difference on the latest food recall between the percents of homemakers with adequate servings of vegetables and fruits, and whether or not the family participated in the welfare program. Forty-four percent of the nonwelfare homemakers had adequate number of servings, while 32 percent of the welfare homemakers had an adequate number of servings.

Both groups of homemakers made very significant improvements in the percent of homemakers with adequate servings of fruits and vegetables from the initial to the latest food recall.

Breads and cereals group. From the data in the table on the initial food recall, a higher percent of homemakers whose families were not on welfare (46 percent) had adequate intakes from the breads/cereals group, than the welfare homemakers (35 percent).

On the latest food recall for the breads/cereals group, there was a significant relationship between percents of homemakers with adequate servings and whether or not the family was on welfare. Forty-seven percent of the welfare homemakers had adequate number of servings, while 59 percent of the nonwelfare homemakers had adequate servings.

Only those homemakers not on welfare made very significant improvements from initial to latest food recall.

In summary, there was a significant relationship between whether a family was or was not participating in the welfare program, and the percents of homemakers with adequate number of servings on the initial food recall for the milk and the vegetables/fruits groups and for the vegetables/fruits and breads/cereals groups on the latest food recall. Except for the meat group, the percent of homemakers with adequate diets was lowest on both food recalls, however there was a tendency for the welfare homemakers to make the most improvement from initial to latest food recall.

Food Assistance on a Regular Basis

Table XVII, page 95, gives the percents of homemakers with adequate servings from the four major food groups based on the food recalls, and whether or not the family received food assistance on a regular basis.

Milk group. For the milk group on the initial food recall, although not significant, it appeared that the families who did not receive food assistance on a regular basis had a higher percent of homemakers with adequate intakes from the milk group (30 percent), than the homemakers who received food assistance (25 percent).

On the latest food recall this trend was reversed. The homemakers from families who received food assistance on a regular basis had a higher percent with adequate intakes (53 percent), than those homemakers who did not receive food assistance (47 percent).

Both groups of homemakers made significant improvements in the percents of homemakers with adequate servings from initial to latest food recall. There was a very significant improvement for those homemakers who did not receive food assistance.

Meat group. For the meat group, although not significant, on the initial food recall the percent of homemakers with adequate servings from the meat group was higher among families who received food assistance on a regular basis (84 percent), than among homemakers whose families did not receive food assistance (75 percent).

On the latest food recall there was a slightly higher percent of homemakers with adequate servings among those who did not receive

TABLE XVII
ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY FOOD ASSISTANCE ON A REGULAR BASIS*

Food Group	Family Receiving Food Assistance (N = 397)	
	Yes (N = 32)	No (N = 365)
-----Percent with Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk	25	30
Meat	84	75
Vegetables/Fruits	22	18
Breads/Cereals	47	43
<u>Latest Food Recall</u>		
Milk	53 ^c	47 ^a
Meat	75	78
Vegetables/Fruits	38	41 ^a
Breads/Cereals	59	55 ^a

*See Table II, page 36.

^aSee Table III, page 38.

^cSee Table IV, page 42.

food assistance (78 percent), than among those who did receive food assistance on a regular basis (75 percent).

Neither group of homemakers made a significant increase in the percent of homemakers with adequate intakes from the meat group from the initial to the latest food recall.

Vegetables and fruits group. For the vegetables/fruits group, there was no significant relationship between percents of homemakers with adequate servings and whether the family received food assistance on a regular basis. As was true for the meat group, the families who did receive food assistance tended to have a higher percent of homemakers with adequate servings on the initial food recall, and a lower percent on the latest food recall, than those families who did not receive food assistance on a regular basis. On the initial food recall 18 percent of those homemakers from families who did not receive food assistance had adequate servings, while 22 percent of those who did receive food assistance had adequate diets. On the latest food recall, 41 percent of those who did not and 38 percent of those who did receive food assistance had adequate intakes from the vegetables/fruits group.

Only those homemakers whose families did not receive food assistance made a very significant improvement in the percent of homemakers with adequate servings of vegetables and fruits from the initial to the latest food recall.

Breads and cereals group. For the breads/cereals group there also appeared to be no significant relationship between percents of

homemakers with adequate intakes and whether or not the family received food assistance. It seemed that among families who did receive food assistance the percent of homemakers with adequate servings was higher on both recalls, than among those families who did not receive food assistance. Among those families who did receive food assistance, 47 percent of the homemakers had adequate servings on the initial food recall, and 43 percent had adequate servings among those families who did not receive food assistance. On the latest food recall, 59 percent of those who did receive food assistance and 55 percent of those who did not receive food assistance had adequate servings.

Both groups made very significant improvements in the percents of homemakers with adequate servings from the breads/cereals group from initial to latest food recall.

In summary, there was no significant relationship between percents of homemakers with adequate diets and whether or not the family received food assistance on a regular basis. In general, it appeared that the homemakers from families who did not receive food assistance, except for the meat group, tended to have poorer diets than those homemakers who did receive food assistance.

U.S.D.A. Food Program Available in the County

Table XVIII, page 98, indicates the percents of homemakers with adequate servings from the four major food groups based on food recalls, and U.S.D.A. food program available in the county. Each county in the study had either the Commodity Distribution Program or the Food Stamp

TABLE XVIII

ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY USDA FOOD PROGRAM AVAILABLE IN THE COUNTY*

Food Group	USDA Food Program (N = 397)	
	Donated Food (N = 60)	Food Stamp (N = 337)
-----Percent with Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk	22	31
Meat	75	75
Vegetables/Fruits	17	19
Breads/Cereals ^b	67	39
<u>Latest Food Recall</u>		
Milk	42 ^c	48 ^a
Meat ^d	67	80
Vegetables/Fruits	45 ^a	40 ^a
Breads/Cereals	65	54 ^a

*See Table II, page 36.

^aSee Table III, page 38.

^bSee Table IV, page 42.

^cSee Table IV, page 42.

^dSee Table V, page 47.

Program. There were two counties with the Commodity Distribution Program and eight with the Food Stamp Program.

Milk group. Although the difference was not significant, the respondents where the Food Stamp Program was available tended to have higher percents of homemakers with adequate servings from the milk group on the initial food recall (31 percent) than among those homemakers where the donated food program was available (22 percent).

Among the respondents where the Food Stamp Program was available, 48 percent had adequate servings on the latest recall, while only 42 percent of those homemakers where the donated food program was available had adequate milk intakes.

Both groups of homemakers made a significant improvement from initial to latest food recall in the percents of homemakers with adequate servings. Those where the Food Stamp Program was available made a very significant improvement.

Meat group. On the initial food recall, both groups of homemakers had the same percent (75 percent) with adequate servings from the meat group. On the latest recall there was a very significant difference in the percents of homemakers with adequate intakes and which U.S.D.A. food program was in the county. Only 67 percent of the homemakers from the donated food counties had adequate servings, while 80 percent of the homemakers where food stamps were available had sufficient amounts from the meat group.

Neither group of homemakers made a significant improvement from initial to latest food recall.

Vegetables and fruits group. On the initial food recall for the vegetables/fruits group, there was only a very slight difference between the two groups of homemakers. Seventeen percent of those homemakers where the donated food program was available and 19 percent of those where the Food Stamp Program was available had adequate servings.

On the latest food recall, there was only a slightly greater difference, however in the opposite direction. The homemakers where the donated food program was available tended to have a higher percent (45 percent) with adequate intakes from the vegetables/fruits group, than among those homemakers where food stamps were available (40 percent).

Both groups made very significant improvements from initial to latest food recall in the percents of homemakers with adequate servings from the vegetables and fruits group.

Breads and cereals group. The only very significant relationship for this table occurred for the breads and cereals group on the initial food recall between the percents of homemakers with adequate servings and which U.S.D.A. food program was available in the county. The highest percent of homemakers with adequate servings was among those where the donated food program was available (67 percent). Those where the food stamps were available had only 39 percent of the homemakers with adequate intakes.

Although there was a difference in the same direction on the latest food recall it was not significant. Sixty-five percent of those where the donated food program was available had adequate servings, and

54 percent of those homemakers where food stamps were available had adequate intakes from the breads/cereals group.

Only the homemakers where food stamps were available made a significant improvement in the percents of homemakers with adequate servings from initial to latest 24-hour food recall.

In summary there was a significant relationship between whether the Food Stamp Program or the Commodity Distribution Program was available in the county and the percents of homemakers with adequate servings from the breads/cereals group on the initial recall and the meat group on the latest 24-hour food recall. In general, homemakers where food stamps were available tended to have a higher percent with adequate diets and they seemed to have made more consistent improvement, than those homemakers where the donated food program was available.

Recorded Time in the Program

Table XIX, page 102, shows the percents of homemakers with adequate servings from the food groups based on food recalls and recorded time the family has been in the program. The latest food recalls were taken at six month intervals and depending how long a family has been in the program the recorded time in the program ranged from six months to 30 months.

Milk group. There were no significant relationships between percents of homemakers with adequate intakes from the milk group and length of time the family had been in the program. There also appeared to be no trends with the percents of homemakers with adequate servings

TABLE XIX

ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP
BY RECORDED TIME IN THE PROGRAM*

Food Group	Recorded Time in the Program (N = 397)				
	6 Months (N = 77)	12 Months (N = 76)	18 Months (N = 67)	24 Months (N = 104)	30 Months (N = 73)
-----Percent with Adequate Diet-----					
<u>Initial Food Recall</u>					
Milk	30	29	37	23	32
Meat	66	79	82	76	74
Vegetables/Fruits	13	21	25	14	21
Breads/Cereals	44	43	36	44	47
<u>Latest Food Recall</u>					
Milk	43	45 ^c	52	43 ^a	56 ^a
Meat	74	82	84	73	78
Vegetables/Fruits	35 ^a	40 ^a	43 ^c	45 ^a	38 ^c
Breads/Cereals	56	49	54 ^c	57	63 ^c

*See Table II, page 36.

^aSee Table III, page 38.

^cSee Table IV, page 42.

ranging from 23 percent for those families who had been in the program for 24 months to 37 percent for those whose families had been in the program for 18 months.

On the latest food recall there were also no significant differences or definite trends. The percents of homemakers with adequate servings ranged from 43 percent for each of those groups of homemakers who had been in the program for six months and 24 months to 56 percent of those homemakers who had been in the program for 30 months. Only those homemakers in the program for 24 and 30 months made a very significant improvement from initial to latest food recall in the percents of homemakers with adequate servings of milk. There was a significant improvement among those in the program for 12 months.

Meat group. For the meat group there were no significant relationships on either food recalls between the percents of homemakers with adequate servings and the length of time the family has been in the program. On the initial food recall, the percents of homemakers with adequate servings ranged from 66 percent for those in the program only six months to 82 percent for those who had been in the program for 18 months.

On the latest food recall, those with the lowest percent of homemakers with adequate servings was among those homemakers who had been in the program for 24 months (73 percent). The highest percent was among those who had been in the program for 18 months. None of the groups of homemakers made a significant improvement from initial to latest food recall for the meat group.

Vegetables and fruits group. Again, there appeared to be no significant relationship between percents of homemakers with adequate intakes from the vegetables and fruits group and length of time in the program. On the initial food recall 13 percent of those homemakers who had been in the program only for six months had adequate servings. Those in the program for 18 months had the highest percent of homemakers with adequate servings (25 percent).

On the latest food recall, those homemakers who had been in the program for 24 months had the highest percent with adequate servings, while those in for only six months had the lowest (35 percent). All groups of homemakers made very significant improvement from initial to latest food recall in the percents of homemakers with adequate servings, except for those who had been in for 18 and 30 months. They made a significant improvement.

Breads and cereals group. There were no significant relationships between percents of homemakers with adequate intakes from the breads/cereals group on either food recall and length of time the family had been in the program. On the initial food recall, those homemakers who had been in the program for 18 months had the lowest percent of homemakers with adequate servings, and those in the program for 30 months had the highest percent with adequate servings.

On the latest food recall, those in the program for 30 months continued to be the group of homemakers with the highest percent of homemakers with adequate intakes from the breads/cereals group. Those homemakers in the program for 12 months had the lowest percent of

homemakers with adequate servings. Only those homemakers who had been in the program for 18 and 30 months made a significant improvement from initial to latest food recall in the percents of homemakers with adequate intakes.

In summary, there were no significant relationships between percents of homemakers with adequate diets and length of time in the program.

Number of Program Assistants Who Had Worked with a Family

Table XX, page 106, indicates the percents of homemakers with adequate diets according to food groups based on food recalls, and the number of program assistants who had worked with a family. For the purpose of this study families were divided into two groups; those who have only had one program assistant and those who had had more than one program assistant.

Milk group. On the initial food recall there was only a 1 percent difference between the two groups of homemakers in the percents of homemakers with adequate servings from the milk group and whether the family had only one or more than one program assistant. Among those who had had only one program assistant 30 percent of the homemakers had adequate servings, and 29 percent of those who had had more than one program assistant had adequate milk intake.

On the latest food recall, there was a greater difference, however not significant. Fifty-one percent of those with only one program assistant had adequate servings, while only 39 percent of those with more than one program assistant had sufficient intakes.

TABLE XX

ADEQUACY OF HOMEMAKERS' DIETS IN EACH FOOD GROUP BY NUMBER
OF PROGRAM ASSISTANTS WHO HAD WORKED WITH A FAMILY*

Food Group	Number of Program Assistants (N = 397)	
	More Than One (N = 108)	Only One (N = 289)
-----Percent with Adequate Diet-----		
<u>Initial Food Recall</u>		
Milk	29	30
Meat	77	75
Vegetables/Fruits	19	18
Breads/Cereals	43	43
<u>Latest Food Recall</u>		
Milk	39	51 ^a
Meat	79	77
Vegetables/Fruits ^b	30	45 ^a
Breads/Cereals	56	56 ^a

*See Table II, page 36.

^aSee Table III, page 38.

^bSee Table IV, page 42.

Only those homemakers who had had only one program assistant made a very significant improvement from initial to latest 24-hour food recall in the percents of homemakers with adequate milk intake.

Meat group. There were no significant relationships for the meat group on either food recall. Seventy-seven percent of those homemakers who had had more than one program assistant had adequate servings on the initial food recall, and 75 percent of those homemakers who had only had one program assistant had adequate intakes from the meat group.

On the latest food recall, 79 percent of those homemakers whose families had had more than one program assistant and 77 percent of those who have only had one had adequate servings from the meat group. Neither group of homemakers made significant improvements from initial to latest food recall.

Vegetables and fruits group. On the initial food recall, there was only a difference of 1 percent between the two groups of homemakers. Among those whose families had had more than one program assistant, 19 percent had adequate servings; and 18 percent of the homemakers from families who had only had one program assistant had sufficient daily intakes of fruits and vegetables.

On the latest food recall there was a very significant relationship between percents of homemakers with adequate servings from the vegetables/fruits group and whether the family has had only one or more than one program assistant. Forty-five percent of those who have had only one program assistant had adequate servings, while only 30

percent of those with more than one program assistant had sufficient intakes.

Only among those homemakers who had only had one program assistant was there a significant improvement from initial to latest food recall.

Breads and cereals group. Both groups of homemakers had the same percents of homemakers with adequate servings on the initial (43 percent) and the latest (56 percent) food recalls, however, only those homemakers who had only had one program assistant made a very significant improvement in the percents of homemakers with adequate servings from initial to latest food recall.

In summary, there was a very significant relationship between percents of homemakers with adequate servings from the vegetables/fruits group on the latest food recall and whether the family has had only one or more than one program assistant. Although only the vegetables/fruits group showed a significant difference, there was a trend for a higher percent of homemakers with adequate diets among those families who had had only one program assistant.

CHAPTER V

SUMMARY OF MAJOR FINDINGS, IMPLICATIONS, AND RECOMMENDATIONS

I. PURPOSE AND SPECIFIC OBJECTIVES

The purpose of this study was to determine the relation between adequacy of homemakers' diets in each of the four major food groups and homemaker's personal characteristics, family characteristics, and type of assistance received by the families. This study was also designed to determine improvement in the percent of homemakers with adequate diets from initial to latest food recall for all of the independent variables considered in this study for each food group.

Specific Objectives

1. To determine the relation between percent of homemakers with adequate servings from each of the food groups and age of the homemaker and number of years of school completed by the homemaker.

2. To determine the relation between the percents of homemakers with adequate servings from each of the food groups and place of residence, number of family members, number of dependent children, whether or not there were family members over 64 years of age present in the household, whether or not it was a fatherless family, home ownership status, level of living index of the family, ethnic background, yearly family income, and whether or not there had been a change in monthly income from initial to latest food recall.

3. To determine the relation between the percents of homemakers with adequate servings from each of the food groups and whether or not family was receiving food assistance on a regular basis, whether or not family had a home garden, USDA food program available in the county, recorded time in the program, and whether or not the family had only one or more than one program assistant.

4. To determine the change in the proportion of homemakers with adequate servings from initial to latest food recall for each food group for each independent variable.

II. METHOD OF INVESTIGATION

The population of this study included all homemakers from the 10 original Tennessee counties who had been participants in Extension's Expanded Food and Nutrition Program for at least six months when the data were collected. The sample included 397 participant families, which represented a 5 percent random sample from each of the 10 original counties.

III. METHOD OF ANALYSIS

Data from county family record forms were coded, recorded, and punched on data cards. Most computations were made at the University of Tennessee Computing Center; some were necessarily done by hand.

A contingency table analysis program was used to determine the relation between adequacy of homemaker's diet for each food group and each of the independent variables. The program computed two-way tables

consisting of column, row, and table percentages and frequencies, and chi-square with degrees of freedom. Although not stated there was an assumed null hypothesis for each independent variable. Significance for chi-square was determined at the .05 and the .01 levels of probability.

The t-test was calculated by hand to determine if there had been a significant improvement in the percents of homemakers with adequate servings from each food group from initial to latest food recall for each independent variable. Again, although not stated, there were assumed null hypotheses. Significance was determined for the t-test at the .05 and the .01 confidence level.

IV. MAJOR FINDINGS

The data study indicated that there were very significant increases in the percents of homemakers with adequate servings from all food groups, except from the meat group, from initial to latest food recall. On both food recalls there were a lower percent of homemakers with adequate servings from the milk and the vegetables/fruits groups, than from the meat and breads/cereals groups. The major findings of this study will be presented under the headings of the independent variables.

Relation of Adequacy of Homemakers' Diets in Each Food Group and Personal Homemaker Characteristics

Education of the homemaker. According to the years of education categories used in this study, there was no significant relationship

between the number of years of formal education completed by the homemaker and adequacy of homemakers' diets on either the initial or the latest food recall. However, there was a tendency for those homemakers with eight or more years of school to have a lower percent of homemakers with adequate servings from the milk and the vegetables/fruits groups on the initial food recall.

There were very significant improvements from initial to latest food recall for all food groups, except for the meat group for those homemakers with eight or more years of education and the meat and breads/cereals groups for those homemakers with less than eight years of school.

Age of the homemaker. Age of the homemaker was very significantly related to percents of homemakers with sufficient milk intake on the initial food recall and adequate servings of meat on the latest food recall. On the initial food recall there was a tendency for the younger homemakers to have a lower percent with adequate servings of milk. On the latest food recall it appeared that the percents of homemakers with adequate intakes of meat was inversely related to age.

For the milk group there were very significant improvements in the percents of homemakers with adequate servings from initial to latest recall for those homemakers under 25 and from 35 to 64 years of age. None of the groups of homemakers made significant improvements for the meat group from initial to latest food recall. All homemakers, except those over 64 years of age, made very significant improvements for the vegetables/fruits. For the breads/cereals group, only among those

homemakers between 35 and 64 years of age was there a significant improvement from initial to latest food recall in the percents of homemakers with adequate servings.

Relation of Adequacy of Homemakers' Diets in Each Food Group and Family Characteristics

Place of residence. There was a significant relationship between percents of homemakers with adequate servings of vegetables and fruits on the initial food recall and adequate servings of breads and cereals on the latest food recall and place of residence. There were very significant relationships between percents of homemakers with adequate servings from the milk and the breads/cereals group on the initial recall and the vegetables/fruits on the latest food recall and place of residence. For all food groups where a significant relationship existed, farm families had the highest percent of homemakers with adequate servings and urban families had the lowest percent with adequate intakes.

From the initial to the latest food recall, the urban homemakers made a very significant improvement in all of the food groups, except for the meat group, in the percents of homemakers with adequate daily servings. The rural nonfarm homemakers made a very significant improvement in the vegetables/fruits group and a significant improvement in the milk group. Among the farm homemakers there was only a significant improvement for the vegetables/fruits group.

Home garden. There were significant relationships between the percents of homemakers with adequate intakes of milk on the initial food recall and breads and cereals on the latest food recall and whether or not the family had a home garden. A very significant relationship existed between the percents of homemakers with adequate amounts of vegetables and fruits and breads and cereals on the initial recall and the vegetables and fruits on the latest recall. For all food groups where a significant relationship existed, those families who had a home garden had a higher percent of homemakers with adequate daily servings, than those without home gardens.

Those homemakers who did not have a garden made very significant improvements in the percents of homemakers with adequate servings from initial to latest recall in all food groups, except the meat group. Among those who did have gardens, there was a very significant improvement in the vegetables/fruits group and a significant improvement in the milk group.

Home ownership status. There was a significant relationship between whether a family owned or rented their home and the percents of homemakers who reported adequate servings from the milk and breads/cereals group on the initial food recall and the milk group on the latest food recall. A very significant relationship existed between the percents of homemakers with adequate servings of vegetables and fruits on both food recalls and whether the family rented or owned their home. For all food groups where a significant difference existed,

the homemakers from families who owned their own homes had a higher percent with adequate servings, than the renters.

Among those homemakers who rented their homes, there was a very significant improvement in the percents of homemakers with adequate servings from initial to latest food recall in all food groups, except the meat group. Those homemakers who owned their homes made very significant improvements in the milk and vegetables/fruits groups.

Level of living index score. There was no significant relation between the percents of homemakers who reported adequate servings and the number of selected household items used in the index score.

Those homemakers with four or five of the selected items made very significant improvements in the percents with adequate servings from the vegetables/fruits and breads/cereals groups from initial to latest food recall. Those with three items made very significant improvements in the milk and vegetables/fruits groups and those with only one or two of the items made a significant improvement in the vegetables/fruits group.

Yearly family income. According to the income groupings used in this study, there was a significant relation between level of families' yearly income and percents of homemakers with adequate servings from the breads/cereals group on the initial food recall. Although not significant, except for the breads/cereals group on the initial food recall, those homemakers who came from families with \$3,000 or more yearly income tended to have higher percents of homemakers with adequate servings, except for the milk group on the latest food recall.

Those homemakers with yearly incomes under \$3,000 made very significant improvements in the percents of homemakers with sufficient amounts from initial to latest food recall in all food groups, except the meat group. Those homemakers with family incomes of \$3,000 or more made a significant improvement in the milk group and a very significant improvement in the vegetables/fruits group.

Ethnic background. There were significant relationships between whether the homemaker came from a white or black family and the percents of homemakers with adequate intakes of meat and breads and cereals on the initial food recall and vegetables and fruits on the latest food recall. There was a very significant difference for the milk group on the initial food recall. In all instances, except for the meat group, among the white homemakers there were a higher percent with an adequate number of servings than among the black homemakers.

The black homemakers made a very significant improvement in the percents with adequate servings from the initial to the latest food recall in all food groups, except for the meat group. The white homemakers made a very significant improvement in the vegetables/fruits group and a significant improvement in the milk group.

Number of family members. According to the family size groupings used in this study the only significant relationship existed for the breads/cereals group on the initial food recall. Homemakers from families with over five members had the highest percent with adequate consumption and the households where the homemaker lived alone had the

lowest percent with adequate servings. For the milk group and the vegetables/fruits group, although not significant, those homemakers living alone and those from families with more than five members tended to have higher percents with adequate servings on the initial food recall. The reverse tended to be true for the vegetables/fruits group on the latest food recall.

Among those homemakers who lived alone there were no significant improvements in dietary adequacy from initial to latest food recall. Among those with over 5 members there was a very significant improvement for the vegetables/fruits group. Of those with from two to three members there were very significant improvements in the milk and vegetables/fruits groups and a significant improvement in the breads/cereals group. For those homemakers with either four or five family members there were very significant improvements in all food groups, except the meat group.

Number of dependent children. According to the groupings used in this study, there was no significant relationship between number of dependent children and adequacy of homemaker's diet.

Among those homemakers with over four children there were no significant improvements in the diets from initial to latest food recall. There were very significant improvements in the milk and vegetables/fruits groups among those homemakers with from three to four children. For those with no dependent children or from one to two dependent children there were very significant improvements in the milk and vegetables/fruits groups and a significant improvement in the breads/cereals group.

Family members over 64 years of age present in the household.

Whether or not there were family members over 64 years of age in the household was significantly related to the percents of homemakers with adequate intakes of milk on the initial food recall. A significantly higher percent of homemakers from families where there were members over 64 years of age had adequate servings of milk, than those without family members over 64. Although not significant, this same trend appeared to exist also for the vegetables/fruits group on the initial food recall. On the second recall there appeared to be almost no difference between the groups of homemakers for the milk and the vegetables/fruits groups.

Among those families where there were no members over 64 years of age; there were very significant improvements in the percents of homemakers with adequate servings from initial to latest food recall in all food groups, except for the meat group. For those families where there were members over 64 years of age, there was a very significant improvement in the vegetables/fruits group and a significant improvement in the breads/cereals group.

Male adult present in household with dependent children. There was a very significant relationship between whether or not a male adult was present in a household with dependent children and the percents of homemakers with adequate servings of milk on the initial food recall. Among the homemakers where a male adult was present, a higher percent reported adequate servings of milk. Although not significant for the other groups, there was a tendency for these homemakers to have more

adequate intakes from all food groups, than those where no male adult was present.

Both groups of homemakers made very significant improvements in the milk and vegetables/fruits groups and a significant improvement in the breads/cereals group.

Change in monthly income. There was no significant relationship between family's change in monthly income and percents of homemakers with adequate intakes from the food groups. Although not significant, the percent of homemakers did tend to be higher for the milk and the vegetables/fruits groups on the latest food recall for those homemakers whose incomes had increased from the time the initial food recall was taken.

Among those homemakers whose income remained the same, there were no significant improvements in adequacy of diets. Among those homemakers whose incomes increased, there were very significant improvements in the milk group and the vegetables/fruits group. Of those whose incomes decreased, there were very significant improvements in all food groups, except for the meat group.

Relation of Adequacy of Homemakers' Diets in Each Food Group and Factors Associated with Assistance to Families

Family on welfare. There were significant relationships between whether or not families participated in the welfare program and percents of homemakers with adequate servings of milk and fruits and vegetables on the initial food recall, and fruits and vegetables and breads and

cereals on the latest food recall. In all instances, those families on welfare had a lower percent of homemakers with adequate servings.

The nonwelfare homemakers, except for the meat group, made very significant improvements from initial to latest food recall in the percents of homemakers with adequate diets. Among the welfare families there were very significant improvements in the milk and the vegetables/fruits groups.

Food assistance on a regular basis. There was no significant relationship between percents of homemakers with adequate servings and whether or not the family received food assistance on a regular basis.

For those families who received food assistance there was a significant increase in the percents of homemakers with adequate servings of milk from initial to latest food recall. Those who did not receive food assistance made very significant increases for the milk, vegetables/fruits and breads/cereals groups.

U.S.D.A. food programs available in the county. For the initial food recall, there was a very significant relationship between percents of homemakers with adequate servings from the breads/cereals group and whether food stamps or donated foods were available in the county. There was a significant relationship for the meat group on the latest food recall. On the initial food recall, those homemakers where the donated food program was available had a significantly higher percent with adequate servings of breads and cereals than where the food stamps were available. On the other hand, where the food stamps were available,

there was a significantly higher percent of homemakers with adequate intakes of meat.

There was a very significant increase from initial to latest food recall in the percents of homemakers with adequate diets, except for the meat group for those where food stamps were available. Among those homemakers where donated foods were available there was a very significant increase for the vegetables/fruits group and a significant increase for the milk group.

Recorded time in the program. There appeared to be no significant relationship between length of time families had been in the program and percents of homemakers with adequate servings from the food groups.

For the milk group, only those homemakers who had been in the program for 24 or 30 months made very significant improvements from initial to latest food recall. Those homemakers in the program for 12 months made a significant improvement in the milk group. None of the groups of homemakers made significant improvements in the meat group. For the vegetables/fruits group, all groups of homemakers made a very significant improvement, except those in the program 18 and 30 months. However they did make significant improvement (at the .05 level). Only the homemakers in the program for 18 and 30 months made significant improvements in the percents of homemakers with adequate servings from the breads/cereals group from initial to latest 24-hour food recall.

Number of program assistants who had worked with a family. There was a very significant relationship between the percents of homemakers

with adequate servings from the vegetables/fruits group on the latest food recall, and whether the family had had only one or more than one program assistant. Those families who had had only one program assistant had a significantly higher percent of homemakers with adequate servings. Although not significant, this tendency appeared to be the same for the milk group on the latest food recall.

Among those homemakers who had had more than one program assistant, there was no significant improvement in the adequacy of diet from initial to latest food recall. For those who had had only one program assistant there were very significant improvements in all food groups, except the meat group.

V. IMPLICATIONS

As stated by one of the national evaluations of the Expanded Food and Nutrition Education Program, there is evidence that the educational objectives are being met, however, there is a need for a more precise allocation of effort (3:3). It goes on to say that because of the program's limited resources, it is essential that effort be applied to families with the greatest need (3:19). These statements would appear to be relevant in light of the findings of this study.

Based on the findings of this study, the following general implications were made as to what characterizes families who show low nutritional adequacy and what factors contribute most to response to the program:

1. There appeared to be no significant relation between percents of homemakers with adequate diets and education of the homemaker; therefore, number of years of education would not seem to be a good indicator of those families with the greatest nutritional needs.

2. Since for the milk group, a significantly lower percent of homemakers under 25 years of age had adequate servings, it would appear that a special effort should be made to enroll the very young homemaker.

3. Urban families had significantly lower percents of homemakers with adequate servings from several of the food groups, than did rural nonfarm or farm families; therefore, consideration should be given to allocating more resources to urban areas.

4. Since a significantly higher percent of homemakers whose families had home gardens tended to have more adequate diets, program participants should be strongly encouraged to have gardens where possible.

5. Home owners tended to have a higher percent of homemakers with adequate diets; therefore, it would appear that families with low nutritional adequacy would more likely be found among those families who rent their homes.

6. Since there appeared to be no significant relation between the number of selected household items used in this study and the percents of homemakers with adequate diets, the number of such items present in a household does not seem to be a good indicator of families with poor diets.

7. Since only the breads/cereals group showed a significant (positive) relation between income level and percents of homemakers

with adequate servings it appeared that level of income alone would not be a good indicator of those families with the most deficient diets.

8. Except for the meat group, there was a higher percent of homemakers with adequate diets among the white families than the black families; therefore, special consideration should be given to enrolling black homemakers in the program.

9. There was no significant relation between numbers of family members and percents of homemakers with adequate diets; therefore, family size considered alone would not appear to be a reliable indicator of families with deficient diets.

10. Since a significantly lower percent of homemakers with no family members present over 64 years of age in the household had adequate servings of milk on the initial food recall it would appear that the program might better focus on enrolling other, needier families.

11. Since there was a very significant relation between percents of homemakers with adequate servings of milk and their having an adult male present in the household, special need exists and effort should be made to enroll the homemaker where no adult male is present.

12. Since the percents of homemakers with adequate servings for several of the food groups were significantly lower for homemakers whose families were on welfare, it would appear that special attention should be given to enrolling welfare homemakers in the program.

13. Since there appeared to be no significant relation between the receiving of food assistance on a regular basis and percents of homemakers with adequate diets, and no real trends were seen, it would

appear that this would not be a reliable indicator in selecting the needier families.

14. Although there was a significantly higher percent of homemakers from counties where the donated food program was available who had adequate servings from the breads/cereals group on the initial food recall, families where food stamps were available had a significantly higher percent of homemakers with adequate meat intake on the latest recall. In general, there were higher percents of homemakers with adequate servings, excepting the breads/cereals group and the vegetables/fruits group on the latest recall, for those homemakers where the food stamp program was available.

15. There appeared to be no significant relation between percents of homemakers with adequate diets and length of time in the program, which suggests that there was little additional advantage for homemakers to stay in the program for an extended period of time. Encouragement could be given to participate in other activities.

16. A significantly higher percent of homemakers who had known only one program assistant had adequate servings from the vegetables/fruits group on the latest recall, than those who had had more than one program assistant working with them. This suggests that attempts should be made to select and train program assistants who might be expected to stay on the job for a considerable length of time.

VI. RECOMMENDATIONS

The stated purpose of the Expanded Food and Nutrition Education Program is to reach and help those families who have the least

nutritionally adequate diets among the general population. Based on the findings of this study, recommendations were made suggesting what characterizes families who are most likely to have inadequate diets. It must be kept in mind that the determination of characteristics was based on statistical differences and that very needy families are found with other characteristics. Other recommendations were made.

Specific Recommendations

1. Since young families who lived in urban areas, and were black and on welfare had poorer diets than the rest of the population, special consideration should be given to the enrollment of these families without the exclusion of other needy families.

2. Since, after being in the program, families who rented their homes had poorer milk diets than the other families, more educational emphasis is needed to encourage these families to consume more milk and milk products.

3. Since, after being in the program, urban families who rented their homes, and were black and on welfare had poorer diets of vegetables and fruits, more educational emphasis is needed to encourage these families to consume more vegetables and fruits.

4. Since families who had home gardens had better diets, all program families, where possible, should be strongly encouraged to plant gardens.

5. Since there appeared to be no significant difference between the proportion of homemakers with adequate diets who had been in the program for 30 months and those who had been in for only six months,

further consideration should be given to trying to move homemakers who tend to hang on in the program for such a long time into other types of Extension activities.

6. Since those families who had worked with only one program assistant made greater improvements in their diets than those who had more than one, additional efforts should be made to select program assistants who are likely to stay with the program for an extended period of time.

VII. RECOMMENDATIONS FOR FURTHER STUDY

1. A study should be carried out to determine what combined characteristics might be used to identify families eligible for expanded nutrition work having inadequate diets.

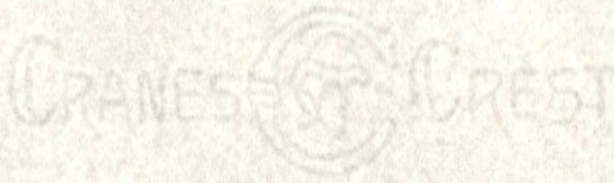
2. A study should be done to determine the characteristics of families not making appreciable improvement from initial to latest food recall.

3. A study should be made to identify characteristics of families where the homemakers make most rapid improvement during the first six months of the program.

4. Case studies should be conducted to characterize families who tend to hang on in the program for extended periods of time.

5. Comparative studies should be done to determine factors that influence program assistant effectiveness.

6. A more detailed study should be conducted to identify the role of the U.S.D.A. food programs in effecting the improvements shown in the Expanded Food and Nutrition Education Program.



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APPENDIX

THE UNIVERSITY OF TENNESSEE
Institute of Agriculture

Agricultural Extension Service
P.O. Box 1071
Knoxville, Tennessee

October 28, 1971

Mr. H. T. Short
Mr. Milburn E. Jones
Mr. William E. Bryan
Mr. Alfred C. Clark
Mr. Jesse E. Francis

Dear Co-worker:

We need your help in gathering information for a study being conducted regarding characteristics of original pilot county participant families in the Expanded Food and Nutrition Education Program.

Please contact the staffs in your District's two original pilot counties and ask them to do the following:

Starting with the 3rd folder in your participant family file, please send us Family Record Forms Part 1 and the first and latest Part 2's for every 15th family thereafter in the file. If the family has participated less than six months or if the records are incomplete, please substitute the next complete folder for the one drawn. If the new one also must be rejected (i.e. due to the family's participation for less than six months or incomplete data), then select the family folder preceding the original one drawn--and so on down and up until an acceptable folder is found representing the 3rd and each 15th place thereafter.

Please send these forms, or have them sent, to this office no later than November 10, 1971. The names of participant families will be kept confidential. Families will not be contacted. Forms will be returned to you immediately after we receive them and record the necessary data.

Our thanks to you, and to the pilot county staffs in advance for the assistance.

Sincerely,

Vernon W. Darter
Dean

cc: Virginia Boswell
Dr. W. D. Bishop
Associate District Supervisors, Home Economics

**Food and Nutrition Education Program
FAMILY RECORD -- PART 1
DESCRIPTION**

- (1) Family ID No. _____
- (a) Name _____
- (b) Street _____
- (c) City _____ (d) State _____
- (e) ☐ Urban ☐ Rural nonfarm ☐ Farm
- (2) (a) Date of first visit: _____
- (b) Date record completed: _____
- (3) Family on welfare (other than donated foods and food stamps): ☐ Yes ☐ No
- (4) Family receiving food assistance on regular basis (other than donated foods and food stamps): ☐ Yes ☐ No
- (5) Family gets some food from home garden: ☐ Yes ☐ No

FAMILY MEMBERS (FIRST NAME) (6)	AGE YRS. (7)	SEX		CHECK IF "YES"	
		MALE (8)	FEMALE (9)	NOW IN SCHOOL (10)	HAD SCHOOL LUNCH LAST WEEK (11)
(NO. OF MEMBERS _____)	TOTALS				

- (12) HIGHEST GRADE IN SCHOOL COMPLETED BY HOMEMAKER: _____
- (13) HOME:
- (a) ☐ OWNER
- (b) ☐ RENTER OR TENANT
- (c) ☐ MONTHLY PAYMENT \$ _____
- (14) INSIDE HOUSE THERE IS:
- (a) ☐ ELECTRICITY
- (b) ☐ RUNNING WATER
- (c) ☐ ICE BOX
- (d) ☐ REFRIGERATOR
- (e) ☐ FREEZER
- (f) ☐ COOK STOVE
- (g) ☐ OVEN
- (h) ☐ HOT PLATE
- (15) BUY MOST OF FOOD AT:
- (a) ☐ SUPERMARKET
- (b) ☐ SMALL LOCAL STORE
- (16) USDA PROGRAM IN AREA:
- (a) ☐ DONATED FOOD
- (b) ☐ FOOD STAMP

FOOD SOURCES	HOW FAR FROM HOME			HOW USUALLY GET THERE			
	LESS THAN 1 MILE (a)	1-5 MILES (b)	MORE THAN 5 MILES (c)	WALK (d)	OWN CAR (e)	BUS OR TAXI (f)	OTHER (g)
(17) STORE (IN 15)							
(18) DONATED FOOD CENTER							
(19) FOOD STAMP ISSUANCE OFFICE							

(20) Check for home maker:

- (a) ☐ White (other than Spanish-American)
(b) ☐ Negro
(c) ☐ Spanish-American
(d) ☐ Oriental
(e) ☐ Indian
(f) ☐ Other

(21) Income last year for all family members. Include income from all sources, such as:

Wages and salaries

Pensions

Social Security

Support from others

Welfare payments

Income after expenses

Insurance payments

from business and farming

Veterans benefits

CHECK ONE:

- (a) ☐ Less than \$1,000 (d) ☐ \$3,000 - 3,999
 (b) ☐ \$1,000 - 1,999 (e) ☐ \$4,000 - 4,999
 (c) ☐ \$2,000 - 2,999 (f) ☐ \$5,000 and over

(22) Aide _____ (23) State No. _____ (24) Unit No. _____
(Name)

(25) Family Record No. _____

(Fill out for each family in unit as soon as possible and yearly thereafter. Keep in family file after review by Trainer-Agent)

Food and Nutrition Education Program

FAMILY RECORD -- PART 2
HOMEMAKER FOOD AND FAMILY INCOME AND FOOD EXPENDITURE RECORD

(1) Family ID No. _____ (2) Date _____ (3) Food Record No. _____

(4) Record for _____
(name)

(5) What did you eat and drink in the last 24 hours?

<u>To be filled by Aide</u> Kind of food and drink <i>(Enter main foods in mixed dishes)</i>	TO BE FILLED BY TRAINER AGENT			
	MILK	MEAT	VEG./ FRUIT	BREAD CEREAL
Morning				
Midmorning				
Noon				
Afternoon				
Evening				
Before Bed				
Total no. of servings:	(12)	(13)	(14)	(15)
Totals at least --	1	1	1	1
(16)	Yes ☐		No ☐	
Totals at least --	2	2	4	4
(17)	Yes ☐		No ☐	

- (6) What food and drink do you think people should have to keep healthy?

		TO BE FILLED BY TRAINER AGENT			
		MILK	MEAT	VEG/ FRUIT	BREAD CEREAL
Total:		(18)	(19)	(20)	(21)
Totals at least - -		1	1	1	1
(22)		Yes ☐ No ☐			

- (7) Total estimated income for family last month: \$ _____
(Include wages and salaries, Social Security, welfare and insurance payments, pensions and cash support from others. If family has income from farming, include one-twelfth of last year's income after expenses.)

- (8) How much did you spend for food last month, including both cash and credit? _____
(Do not include value of foods received under Donated Food or other food assistance programs. If in the Food Stamp Program, include only amount spent to purchase food stamps or coupons).

- (9) Aide _____ (10) State No. _____ (11) Unit No. _____

(Fill out at earliest visit possible for homemaker in each family and every 6 months after. Keep in family file after review by Trainer Agent.)

VITA

Reginald William Seiders, II was born in Washington, D.C. on November 23, 1944. He graduated from Walter Johnson High School at Rockville, Maryland, in June, 1962 and entered the University of Maryland that same year.

While at the University of Maryland, he participated in a cultural exchange tour of the Middle East, North Africa, and Europe with the University of Maryland Madrigal Singers, sponsored by the U.S. State Department. He also became a member of Who's Who in American Colleges and Universities. During his last year of undergraduate study he worked part time as a research helper for the Agricultural Research Service of the U.S. Department of Agriculture at Beltsville, Maryland. In 1967 he received a Bachelor of Science degree in Agriculture with a major in Animal Science.

Upon graduation from the University of Maryland, he entered the Peace Corps. He worked as an agricultural worker for three years in Colombia, South America.

He entered the graduate school at the University of Tennessee in January, 1971 and received a Master of Science degree with a major in Agricultural Extension Education in June, 1972. While at the University of Tennessee he became a member of Gamma Sigma Delta.

He is married to Amalia Cassalins of Colombia, South America and they have a daughter, Molly.