AD

TECHNICAL REPORT
TR-75-3-FSL

THE CONSUMER'S OPINIONS OF THE FOOD SERVICE SYSTEM: THE 1973 HOMESTEAD AIR FORCE BASE SURVEY

by

Laurence G. Branch

Survey Research Program
University of Massachusetts-Boston
Boston, Massachusetts 02116

and

Judith Westerling
Herbert Meiselman
Lawrence Symington

Pioneering Research Laboratory

Contract Number DAAK03-C-0098

July 1974

Approved for public release;
distribution unlimited.

UNITED STATES ARMY
NATICK LABORATORIES
Natick, Massachusetts 01760

U.S. ARMY TROOP SUPPORT COMMAND

Food Sciences Laboratory

Approved for public release; distribution unlimited.

Citation of trade names in this report does not constitute an official indorsement or approval of the use of such items.

Destroy this report when no longer needed. Do not return it to the originator.

THE CONSUMER'S OPINIONS OF THE FOOD SERVICE SYSTEM: THE 1973 HOMESTEAD AIR FORCE BASE SURVEY

by

Laurence G. Branch

Survey Research Program
University of Massachusetts-Boston
Boston, Massachusetts 02116

and

Judith Westerling
Herbert Meiselman
Lawrence Symington

Pioneering Research Laboratory

Contract Number DAAK03-C-0098

JULY 1974

Each military service, Army, Navy, Air Force, and Marine Corps, has a representative at the Natick Laboratories. Inquiries concerning this report, or other matters in the Department of Defense Food RDT&E Program, should be directed to the appropriate Service Representative, as for example:

Air Force Representative
DOD Food Program
U.S. Army Natick Laboratories
Natick, Massachusetts 01760

ACKNOWLEDGEMENTS

The authors wish to express their appreciation to the staff members of Behavioral Sciences Division (BSD), Pioneering Research Laboratory (Dr. Harry L. Jacobs, Chief), who contributed to this effort. Specifically, CPL Marc Taylor is recognized for his work as computer specialist in the task of processing data and CPL Charles L. Greeley is recognized for his help in drafting the many tables of this report.

The cooperation of Mr. Gerald Hertweck of the Natick Laboratories Operations Research/Systems Analysis (OR/SA) Office, (Project Manager), Mr. John Wetmiller of OR/SA, Mr. Roger Merwin of the Air Force Services Office (Chief, Food Service), and LTC Robert Pope, the Air Force Representative of the Natick Laboratories Joint Technical Staff, DOD Food RDT&E Program is gratefully acknowledged for facilitating and directing the project from the status of a paper requirement to the field.

Also, Harry Jacobs, Ph.D. and CPT James Siebold, of BSD, and Gerald Hertweck, of OR/SA, are acknowledged for their help to improve this report by reviewing and commenting on earlier drafts.

TABLE OF CONTENTS

		Page
List of Tables		iii
Introduction		1
Method		3
Results		5
Meal Patterns		5
Food Preferences		8
Evaluation and Importance of Fourteen Food Service Factors		8
Part I:	Quality of Food	14
Part II:	Variety of Weekend Food	14
Part III:	Variety of Weekday Food	14
Part IV:	Quantity of Food	18
Part V:	Variety of Short Order Food	21
Part VI:	Monotony of the Same Facility	21
Part VII:	Speed of Service	21
Part VIII:	Military Atmosphere	21
Part IX:	Hours of Operation	25
Part X:	Service by Dining Facility Personnel	25
Part XI:	General Dining Facility Environment	25
Part XII:	Dining Companions	37
Part XIII:	Convenience of Location	37
Part XIV:	Expense	37
Commercial Food Service System Attractions		42
Conclusions and Recommendations		46
References		47
Appendix I		48
Appendix II		66
Appendix III		76

LIST OF TABLES

			Page
Table	1	Reported Meal Patterns Before Entering Military: Reported Current Meal Patterns: Meals Reported Obtained from Dining Facilities	6
Table	2	Number of Meals per Week Reportedly Consumed Before Entering Military	7
Table	3	Number of Meals per Week Reportedly Consumed Currently	7
Table	4	Number of Meals per Week Reportedly Consumed in Dining Facilities	7
Table	5	Food Preferences	9
Table	6	Importance of Fourteen Food Service Factors on Attendance	10
Table	7	Current Evaluation of Fourteen Food Service Factors	12
Table	8	Correlation Between Attitudes Toward Air Force and the Fourteen Food Service Factors	13
Table	9	Quality of Raw Food Product	15
Table	10	Quality of Food Preparation	16
Table	11	Consumers' Opinions of the VARIETY of WEEKEND Food	17
Table	12	Consumers' Opinions of the VARIETY of WEEKDAY Food	17
Table	13	Consumers' Opinions of the VARIETY of Food over a Period of a MONTH	19
Table	14	Consumers Responses to the Question: Other than times of dieting, do you ever leave your dining facility without enough to eat?	20
Table	15	Consumers' Opinions of Amounts per Servings	20
Table	16	Are Second Helpings Permitted?	22
Table	17	Consumers' Opinions of the VARIETY of SHORT ORDER FOODS	22
Table	18	Usual Delay at Headcount Station	23
Table	19	Usual Delay in Serving Line	23
Table	20	Military Atmosphere	24
Table	21	Opinions Concerning Specific Policies	24

LIST OF TABLES (cont'd)

		Page
Table 22	Consumers' Opinions of the HOURS OF OPERATION	26
Table 23	Dining Facility Personnel	27
Table 24	Food Service Personnel Functions	27
Table 25	Opinions Concerning Self Bussing	28
Table 26	Facility-Personnel Factors	30
Table 27	General Condition of Each Dining Facility	31
Table 28	Conveniences Within Dining Facilities	32
Table 29	Appearance and Atmosphere of Dining Facilities	33
Table 30	Environmental/Engineering Factors	34
Table 31	Tables in the Dining Facilities	35
Table 32	Table Preferences	36
Table 33	Music Preferences	38
Table 34	Social Aspects of Dining Facilities	39
Table 35	Usual Means of Travel	40
Table 36	Walking Time	40
Table 37	Opinions Concerning Current Separate Rations System	41
Table 38	Alternative Separates Rations Proposals	43
Table 39	The Importance of 10 Factors in Choosing a NOON MEAL from a Civilian Facility	44
Table 40	The Importance of 10 Factors in Choosing an EVENING MEAL from a Civilian Facility	45
Table 41	Sex of Sample	67
Table 42	Race of Sample	67
Table 43	Age of Sample	68
Table 44	Educational Level of Sample	69
Table 45	Time in Service	70
Table 46	Reenlistment Plans	71
Table 47	Reaction to Military Service	72
Table 48	Pay Grade of Sample	73
Table 49	Rural/Urban Background Sample	74
Table 50	Geographical Origins of Sample	75

INTRODUCTION

During FY 1973-74, U.S. Army Natick Laboratories (NLABS) is conducting an investigation of Air Force Food Service under Task 03, Project Number 1J662713AJ45, Analysis and Design of Military Feeding Systems, and Task 03, Project Number 1J662713A034, Military Food Service and Subsistence Technology. Travis Air Force Base was selected as the principal study site, having been determined to best represent characteristics of Military Airlift Command (MAC) Air Force Food Service operations. Minot Air Force Base, North Dakota, was selected as one ancillary study site, representing both the characteristics of Strategic Air Command (SAC) Food Service operation and a different climatic environment. The consumers' opinions of the Travis AFB Food Service System and the Minot AFB Food Service System are available as separate reports.[1,2] Homestead Air Force Base, Florida, (TAC) was selected as the third study site. The consumers' opinions of the Homestead AFB Food Service System are the subject of the present report. A comparison of the similarities and differences of the opinions across the Air Force Bases surveyed will be the topic of a subsequent report.

One basic premise of the total project is that food service must be oriented toward and responsive to the consumer. The objectives, stated very simply, are to improve existing system performance, increase its effectiveness, and identify possible cost reductions.

The overall approach employed for this project is as follows:

1. Perform initial system studies
   a. system evaluation
   b. consumer research (all three installations)
   c. environmental analysis
2. Define possible improvements to the system and experimentally evaluate each.
3. Recommend system improvements.

The system evaluation is intended to define and characterize the current system in terms of concept, configuration and operations; and to establish the objectives, requirements, and constraints under which the system operates. Data are being collected and analyzed on the various

elements of the total system, e.g., facilities, equipment, personnel, operations, consumers, and products. Performance and effectiveness are being assessed to identify existing deficiencies and inefficiencies in the system, to determine possible alternative improvements, and to derive their impact in terms of cost and benefits.

The initial consumer research has two principal components, a Consumer's Opinions of Food Service Systems Survey and Food Preference Survey. The latter establishes food preference patterns and determines the monthly frequency with which the consumers want the foods offered. This information then becomes the basis for improved menu developments to increase acceptance of the system. The Food Preference Survey data of the three Air Force bases have been analyzed.[3] The Consumer's Opinions Survey identifies factors which determine and/or influence customer utilization and acceptance of the food service facilities. These data will enable a comparative analysis to be performed determining variations in consumer opinion as a function of demographic characteristics, locations, missions, size, and so forth; thereby establishing the limits of application of the Travis AFB results to other Air Force installations.

The environmental analysis consists of examining the dining facility environment to define the necessary improvements for increasing consumer satisfaction, with minimum change and cost.

Subsequent to the completion of these initial efforts, the resulting proposed changes have been implemented, insofar as practicable, at Travis AFB for experimental evaluation. Limited analyses have also been performed at both Minot AFB, North Dakota, and Homestead AFB, Florida, during the course of the system analysis project for the purpose of verifying the findings and conclusions and assessing their potential for application to Air Force Food Service as a whole.

The final phase consists of recommending changes to the Air Force to improve performance, increase effectiveness, and reduce cost of base food service operations. Plans for their implementation will also be provided.

The present report is one element of the total systems analysis effort, the element which basically determines who our population is and what problem areas exist in the present food service system.

METHOD

A copy of the Consumer's Opinions Survey is contained in Appendix I. The questionnaire was developed by the Pioneering Research Laboratory on the basis of previous responses to military food service system surveys and on the basis of informal interviews with Air Force consumers. This format was used to permit automated scoring by mark sense techniques.

The survey was administered at Homestead AFB between 28 January and 2 February 1973 to groups ranging in size from 15-68 respondents. The respondents were seated at long tables in a vacant dining facility and were told the background of the study by one of the four supervisors present. Each respondent was first asked to complete the Consumer's Opinions Survey, which took about 40 minutes, and then a Food Preference Survey, which took about 60 minutes.

Because valid probability samples were not feasible (refer to Appendix III), each organizational unit was requested to send approximately 6% of its enlisted strength to one of the 10 testing sessions, yielding a total requested sample size of approximately 750. Due to transfers, leaves, temporary duty, flights, and other such factors, 509 surveys were administered. Twenty-one were discarded because the forms contained excessive blanks due to some men not having used the Homestead dining facilities frequently enough to respond.

The 488 respondents are treated as two sample groups, one containing 237 subsistence-in-kind (SIK) personnel and the other including 251 personnel receiving a basic-allowance-for-subsistence (BAS). Any discrepancies from these numbers in particular tables reflect those respondents who left the specific item unanswered. Furthermore, 47 of the respondents indicated that they primarily patronized the hospital dining facility, and their responses are separated out in certain sections.

Appendix II contains Tables 41 to 50, which present detailed descriptive information on the demographic background characteristics of the samples. The background profiles of the "typical" SIK and BAS respondents are:

	SIK	BAS
Sex:	Male	Male
Race:	Caucasian	Caucasian
Age:	20.2 years	27.9 years
Educational Level:	High school graduate	High school graduate or some college
Time in Service:	1 1/3 years	8 1/2 years
Reenlistment Plans:	Probably will not	Undecided
Reaction to Military Service:	Neutral to disliking a little	Nearly liking a little
Pay Grade:	Nearly E-3	Nearly E-5
Urban/Rural Background:	From a moderate size city	From a moderate size city
Home State:	Florida	Florida

In general the SIK personnel are about 7 1/2 years younger than the BAS personnel, have been in the service 7 years less, are more negative toward reenlistment, generally have a less favorable attitude toward the military, are about two pay grades lower, and are from a slightly larger community than their BAS counterparts. The sample represents a proportional cross-section of the population with the exception of an overrepresentation of Floridians and an underrepresentation of Californians. The information on both samples will be presented in this report, but the results will focus on the opinions of the SIK group as the primary consumers of the food service system.

RESULTS

Meal Patterns. Table 1 presents the reported meal patterns of the Homestead AFB samples before they entered the military, their current reported patterns at the time of testing and their reported dining facility patterns. As was the case at Travis AFB,[1] at Minot AFB,[2] and at Ft. Lee, Virginia,[4] the young men currently in service do not report meal patterns consistent with the traditional assumption of 3 meals a day, 21 meals a week. For the SIK's, half of those who reported eating breakfast prior to entering military service subsequently stopped, leaving only one man in three currently reporting eating breakfast from any source. The noon meal patterns showed basically the same percentage consuming that meal both before and after joining the service. The categories of evening meals and after evening both showed a decrement of about 10% after joining the service.

On the basis of current reported meal patterns and the percent reporting to eat meals in dining facilities, the greatest increase in attendance for SIK's can be achieved at the evening meal, less at the noon meal, and a minimal increase at breakfast. Excluding private residences, the major competitors for SIK patronage as reported in the survey (see p.52 of this report) are included under the category of diners, snack bars, pizza parlors (all off the installation).

Tables 2, 3, and 4 present the reported meal patterns of the samples in terms of the total number of meals per week per individual rather than the percent of the sample eating a specific meal on a specific day of the week. In Table 2 notice that although the mean number of meals reportedly consumed before entering the military by the SIK group as a whole was 21, the SIK's (remembering to October 1971 on the average) nevertheless reported the now expected[1,2,4] highly variable meal pattern. As indicated in Table 2, less than 1/5 reported eating 21 meals a week, as many reported a rate of between 2 and 3 meals a day as reported a rate of between 3 and 4, while the largest single reported category was a rate of 4 meals a day. The BAS group (remembering to August 1964 on the average) also indicated variable meal patterns before entering the military, with only slightly more than 1/3 indicating a pattern in accordance with the 21 meal a week assumption.

TABLE 1

Reported Meal Patterns

Meal Patterns Before Entering Military

		Mon	Tues	Wed	Thur	Fri	Sat	Sun	Weekday Mean	Weekend Mean
Breakfast:	SIK	68%	69%	68%	68%	69%	69%	70%	68%	70%
	BAS	65%	65%	65%	66%	64%	70%	72%	65%	71%
Mid-Day:	SIK	87%	89%	89%	89%	89%	86%	86%	89%	86%
	BAS	90%	89%	88%	89%	89%	86%	84%	89%	85%
Evening:	SIK	92%	92%	93%	92%	92%	90%	90%	92%	90%
	BAS	95%	95%	94%	95%	94%	94%	95%	95%	94%
After-Evening:	SIK	47%	48%	48%	48%	56%	61%	56%	49%	58%
	BAS	28%	26%	28%	27%	33%	36%	34%	28%	35%

Current Meal Patterns

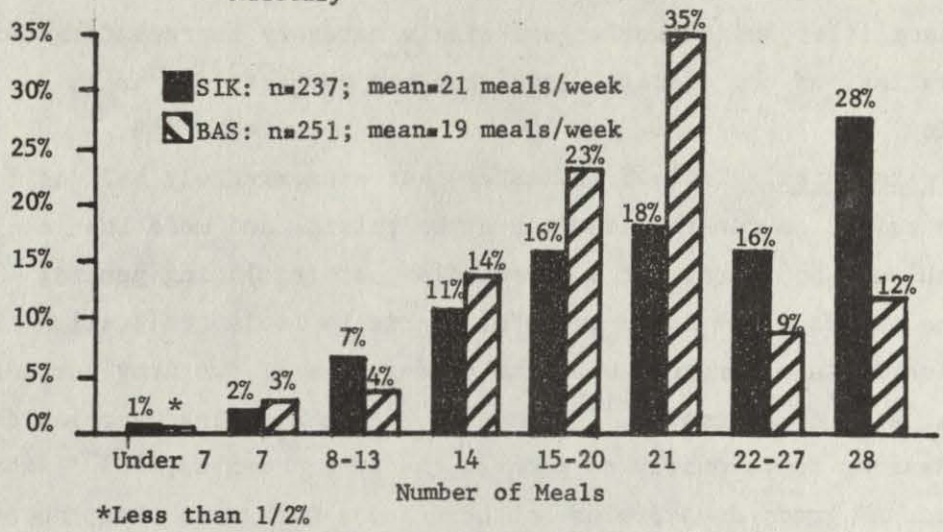
		Mon	Tues	Wed	Thur	Fri	Sat	Sun	Weekday Mean	Weekend Mean
Breakfast:	SIK	34%	36%	36%	37%	35%	26%	26%	36%	26%
	BAS	32%	34%	34%	34%	32%	56%	57%	33%	56%
Mid-Day:	SIK	86%	84%	85%	84%	84%	80%	80%	85%	80%
	BAS	77%	77%	79%	76%	78%	75%	74%	77%	74%
Evening:	SIK	80%	80%	80%	80%	80%	80%	83%	80%	82%
	BAS	86%	88%	88%	88%	85%	85%	85%	87%	85%
After-Evening:	SIK	34%	33%	35%	30%	39%	44%	45%	34%	44%
	BAS	22%	21%	22%	22%	27%	35%	32%	23%	34%

Meals Obtained From Dining Facilities

		Mon	Tues	Wed	Thur	Fri	Sat	Sun	Weekday Mean	Weekend Mean
Breakfast:	SIK	29%	28%	30%	29%	30%	12%	13%	29%	12%
	BAS	11%	10%	10%	10%	10%	7%	4%	10%	6%
Mid-Day:	SIK	71%	67%	70%	68%	71%	50%	51%	69%	50%
	BAS	29%	29%	31%	30%	29%	14%	15%	30%	14%
Evening:	SIK	62%	58%	61%	58%	59%	45%	49%	60%	47%
	BAS	15%	14%	15%	15%	15%	12%	12%	15%	12%
After-Evening:	SIK	16%	14%	17%	15%	18%	17%	18%	16%	18%
	BAS	4%	3%	4%	3%	5%	3%	5%	4%	4%

Note: Numbers in the cells indicate the percent usually eating the meal.

TABLE 2: Number of Meals per Week Reportedly Consumed before Entering Military



*Less than 1/2%

TABLE 3: Number of Meals per Week Reportedly Consumed Currently

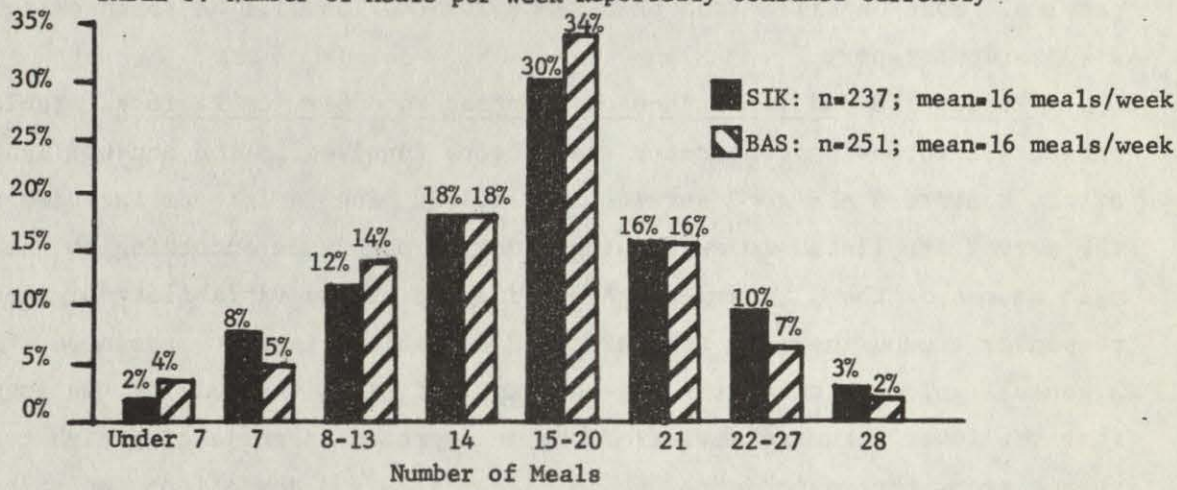
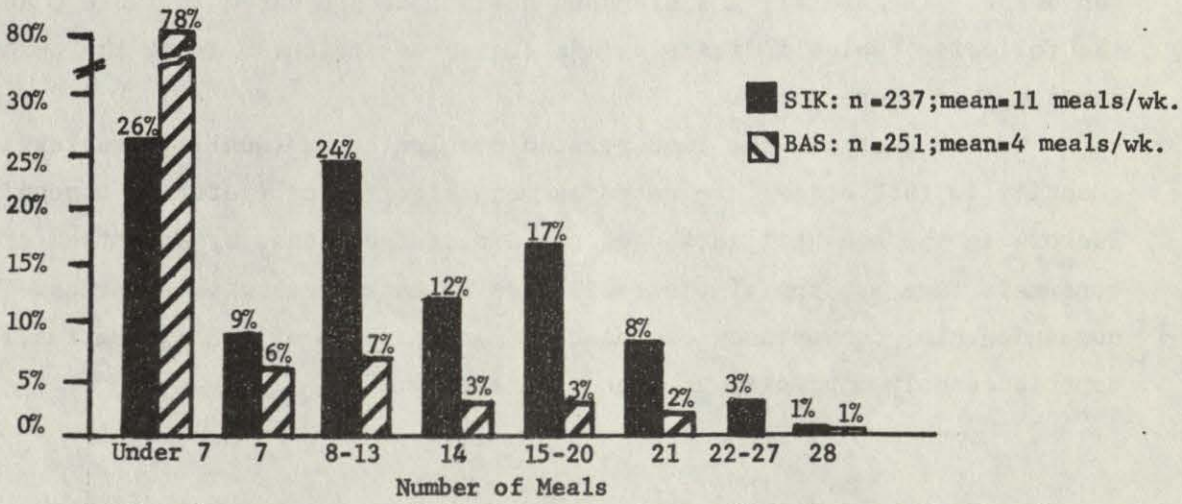


TABLE 4: Number of Meals per Week Reportedly Consumed in the Dining Halls



NOTE: The category of "under 7 meals per week" includes 11% of SIK's and 53% of BAS's who indicated 0 meals per week.

Table 3 highlights the fact that 3-5 meals a week have reportedly been dropped since the Airmen have entered service. Table 4 demonstrates that only a small percentage of SIK consumers are regularly patronizing the dining facilities, with the largest single category representing those who report eating, on the average, less than one meal per day in an Air Force facility.

Food Preferences. Table 5 indicates that approximately half of both samples were raised on general American style cuisine and more than a fourth on Soul and Southern. It also reveals that (excluding general American) the two most preferred types of specialty foods are Italian and Seafood, which is in accordance with the preferences of two Army samples[4,5] and two other Air Force samples.[1,2] However, these Homestead samples do not prefer Mexican foods nearly as much as the other samples,[1,2,4,5] while the Homestead BAS group does prefer Southern foods much more than the other samples. More detailed food preference information will be forthcoming in a subsequent report.[3]

Evaluation and Importance of Fourteen Food Service Factors. Table 6 presents information concerning the factors involved in the non-utilization of the Homestead AFB food service facilities. The 14 factors included in the survey are listed in decreasing order of magnitude according to the mean scores of the SIK sample. An indication of the variability of the responses around the mean (the standard deviation) is also presented. As a general guide to understanding the implication of variability, we suggest that the lower standard deviations be interpreted as reflecting high consensus among the respondents, while higher standard deviations imply less consensus. In general, the standard deviations presented in Table 6 and the following tables indicate a fair degree of consensus among the respondents except where noted.

Notice that all the food related problem areas (quality, variety, and quantity in that order) are rated as more significant (refer to Appendix III) factors in the non-utilization of the dining facilities by Homestead AFB SIK consumers than are any of the facilities or management problem areas. The companionship, convenience of location, and expense of the dining facilities contribute only minimally to non-utilization.

TABLE 5

Preferred Foods

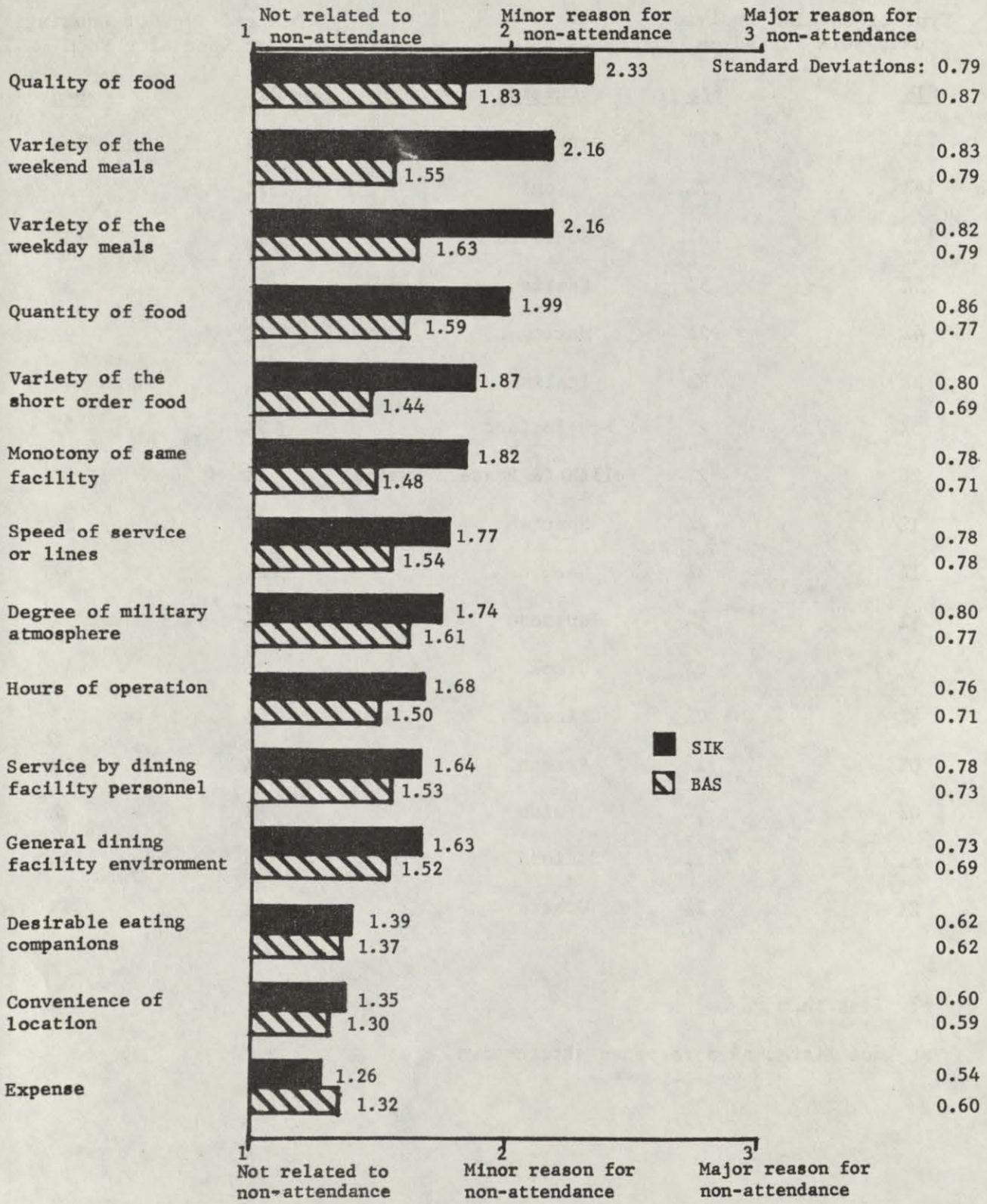
Type of Cooking Individuals Were Raised on			Desired Type of Cooking or Specialty Food	
SIK	BAS	Cuisine	SIK	BAS
51%	47%	General American	19%	19%
14%	7%	Soul	7%	5%
14%	23%	Southern	9%	13%
5%	5%	English	5%	3%
4%	2%	Mexican	7%	9%
3%	3%	Italian	16%	14%
3%	2%	New England	3%	2%
2%	2%	Polish (& Eastern Europe)	2%	2%
1%	2%	Spanish	3%	2%
1%	2%	German	2%	6%
½%*	½%*	Japanese	2%	2%
½%*	0%	Greek	1%	½%*
½%*	0%	Chinese	6%	6%
0%	1%	French	3%	2%
0%	½%*	Jewish	½%*	½%*
a.	a.	Seafood	13%	14%
2%	2%	Others	1%	1%

*: Less than ½%

a: Not listed as a response alternative

TABLE 6

Importance of Fourteen Food Service Factors on Attendance

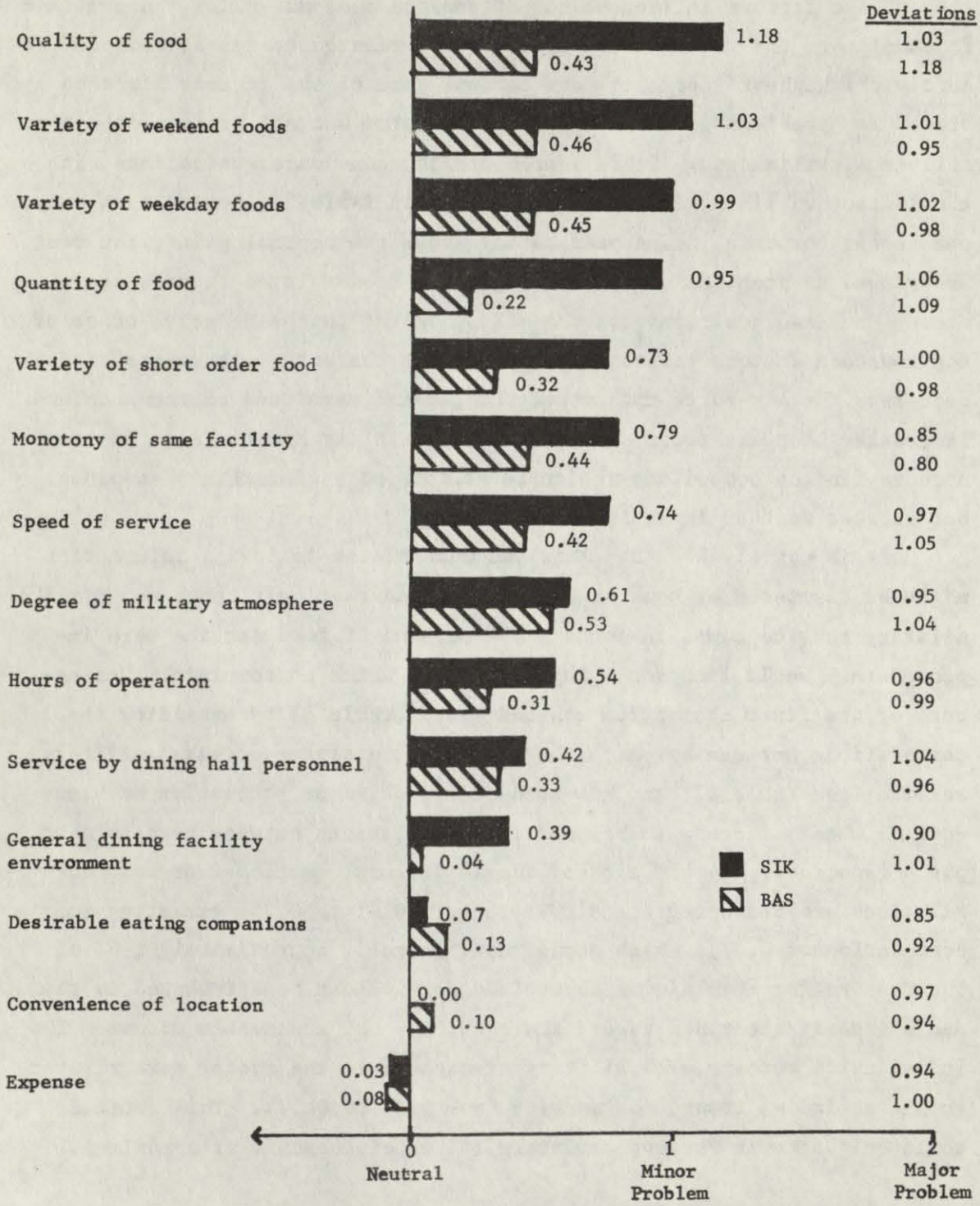


The consumers were also asked to rate whether each of the 14 factors was a major attraction, a minor attraction, neither a problem nor an attraction, a minor problem, or a major problem. The alternate format was used because querying the consumers about the degree to which each of the factors influences non-attendance does not allow the consumer to compliment the food service system ("not related to non-attendance" is hardly the highest accolade), and because some of the factors might be viewed as "problems" of the food service system but not serious enough to influence utilization. Table 7 presents the consumers evaluations with the 14 factors listed in the same order as in Table 6. Notice that only one factor (expense) has a mean rating above the neutral point; the rest are viewed as problems of varying degrees. Food related factors again occupy the lead positions for the SIK's. Although the relative order of the fourteen factors follows a pattern which the authors have come to expect from the Air Force consumers, the general magnitude of the problems is greater than was found at either Travis AFB[1] or Minot AFB.[2] The authors find no compelling rationale at this point for this phenomenon, but suggest further investigation.

It is conceivable that this and much of the following information might be dismissed by some on the assumptions that only those who dislike military service complain about the food, and if food service were improved they would find something else about which to complain. One aspect of the first assumption was addressed (Table 8) by examining the correlations between how much the individual dislikes or likes military service (see Table 47) and how much of a problem or attraction he views each of the 14 factors to be, and the correlations between reenlistment plans (see Table 46) and each of the 14 factors. Notice that most correlations are between 0.1 and 0.2 (range: 0.01 to 0.25, excepting one correlation of 0.37), which means that, overall, approximately 1-6% of the reasons for complaining about food service can be attributed to the man's general attitudes toward the service - not a sizeable amount. The individual's concern with military atmosphere is the factor most related to his attitudes toward the service ($r = 0.12$ to 0.37). This attitude could only account for approximately 14% of his concern at a maximum.

TABLE 7

CURRENT EVALUATION OF FOURTEEN FOOD SERVICE FOODS



NOTE: The scale had equal units to the left or positive of neutral; it is truncated here.

TABLE 8

Correlation Between Attitudes toward Air Force and the Fourteen Food Service Factors

	SIK		BAS	
	Dislike/Like of Air Force	Desire to Reenlist	Dislike/Like of Air Force	Desire to Reenlist
Concern with Quality of Food	0.19	0.13	0.25	0.19
Concern with Variety of Regular Meal Food-Weekends	0.15	0.09	0.19	0.08
Concern with Variety of Regular Meal Food-Weekdays	0.17	0.16	0.22	0.13
Concern with Quantity of Food	0.21	0.21	0.20	0.10
Concern with Variety of Short Order Food	0.15	0.09	0.24	0.13
Concern with Monotony of Same Facility	0.19	0.15	0.20	0.11
Concern with Speed of Service	0.13	0.03	0.22	0.11
Concern with Degree of Military Atmosphere Present	0.37	0.18	0.21	0.12
Concern with Hours of Operation	0.17	0.12	0.17	0.10
Concern with Service by Dining Facility Personnel	0.17	0.07	0.11	0.04
Concern with General Dining Facility Environment	0.20	0.16	0.20	0.14
Concern with Desireable Eating Companions	0.15	0.07	0.04	0.01
Concern with Convenience of Location	0.13	0.04	0.05	0.05
Concern with Expense	0.19	0.13	0.22	0.16

The following discussion will expand on the consumers opinions for each of the 14 factors, detailing which aspects of each factor please and displease the consumers.

Part I: Quality of Food. Table 9 presents the consumers' image of the raw food products procured for dining hall consumption. Notice first that as in Tables 6 and 7 the mean scores of the SIK sample are usually more critical than the BAS's; this pattern continues for nearly every factor covered in the rest of the report. In general, the consumers' perceptions of the quality of the foods are generally favorable (i.e., sometimes over-ripe fruits, sometimes under-ripe; but not often or always). Specifically, the perception of the non-meat items are generally favorable, whereas the raw meat products are viewed as sometimes-to-often having excess fat and more-than-sometimes having gristle or tendon. Other foods are perceived as more-than-sometimes old looking, stringy or stale.

Table 10 presents the consumers' image of the quality of the food preparation. Underseasoning looms as a greater problem than overseasoning. Tasteless, greasy, tough, undercooked, cold, dried out, overcooked, and burned food is found sometimes-to-often. Greasy food was also found to be the biggest problem in Army food service.[4]

Part II: Variety of Weekend Food. The weekend variety data (Table 11) shows that the consumers are most concerned with meat offerings, desiring a few more offerings on weekends. As a matter of fact, consideration of this and subsequent tables leads the authors to suggest that the food in current military food service systems is evaluated by the consumers primarily on the basis of meat items. However, since none of the food types even approach the "choices now enough" or the "fewer choices acceptable" categories, a desire for more variety across the board is indicated. The SIK sample and the BAS sample have approximately the same opinions concerning weekend variety (with the BAS sample generally following the previously noted trend of being less critical).

Part III: Variety of Weekday Food. Table 12 exhibits a similar pattern for weekday food as for weekend food, with the exception of starches. This similarity, along with the nearly equal mean values in Table 6 and Table 7, indicates that weekend variety is not perceived as a more serious problem than weekday as is sometimes anecdotally suggested for military food service systems. The weekday variety of starches is

TABLE 9

Quality of Raw Food Product

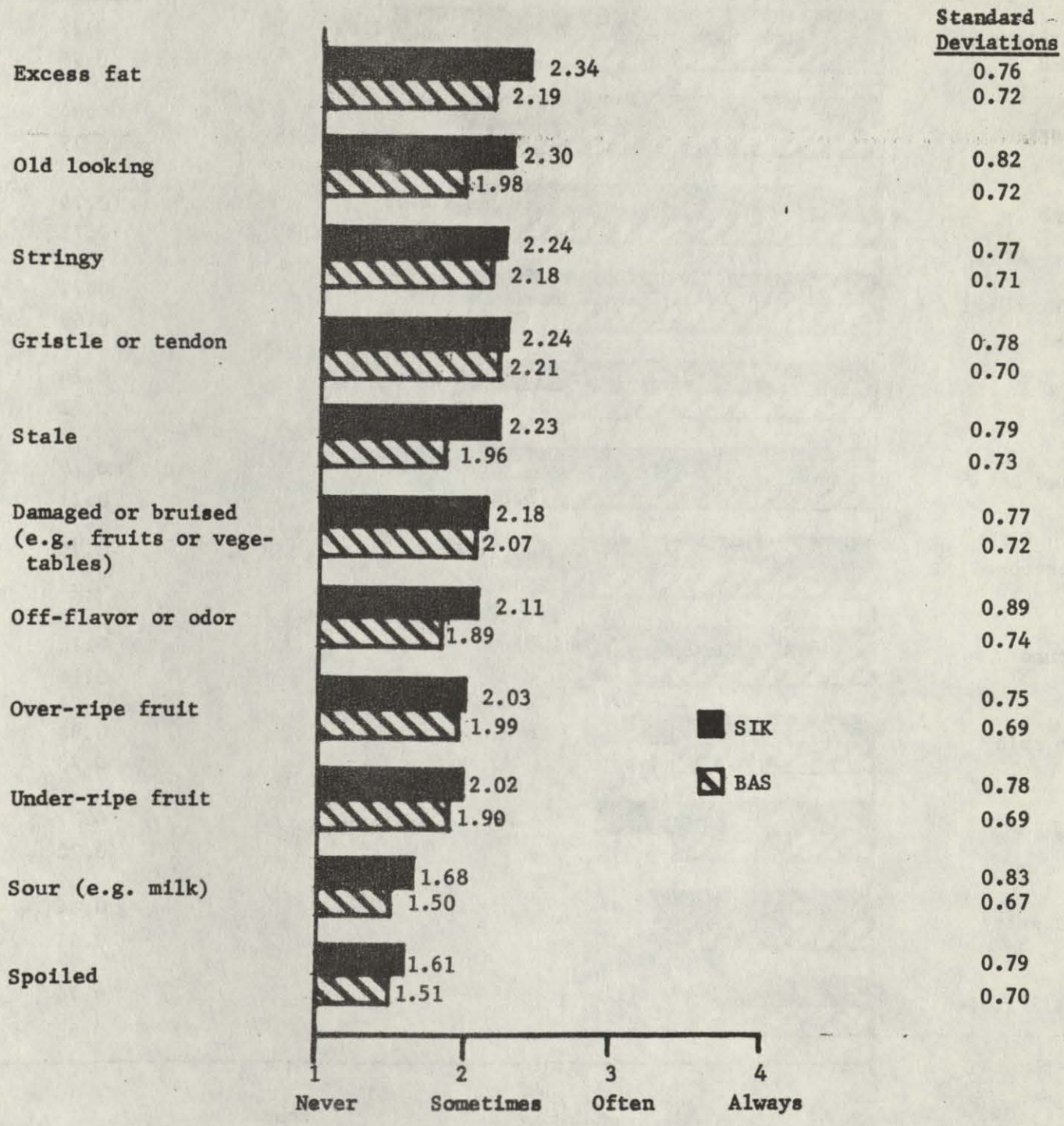


TABLE 10

Quality of Food Preparation

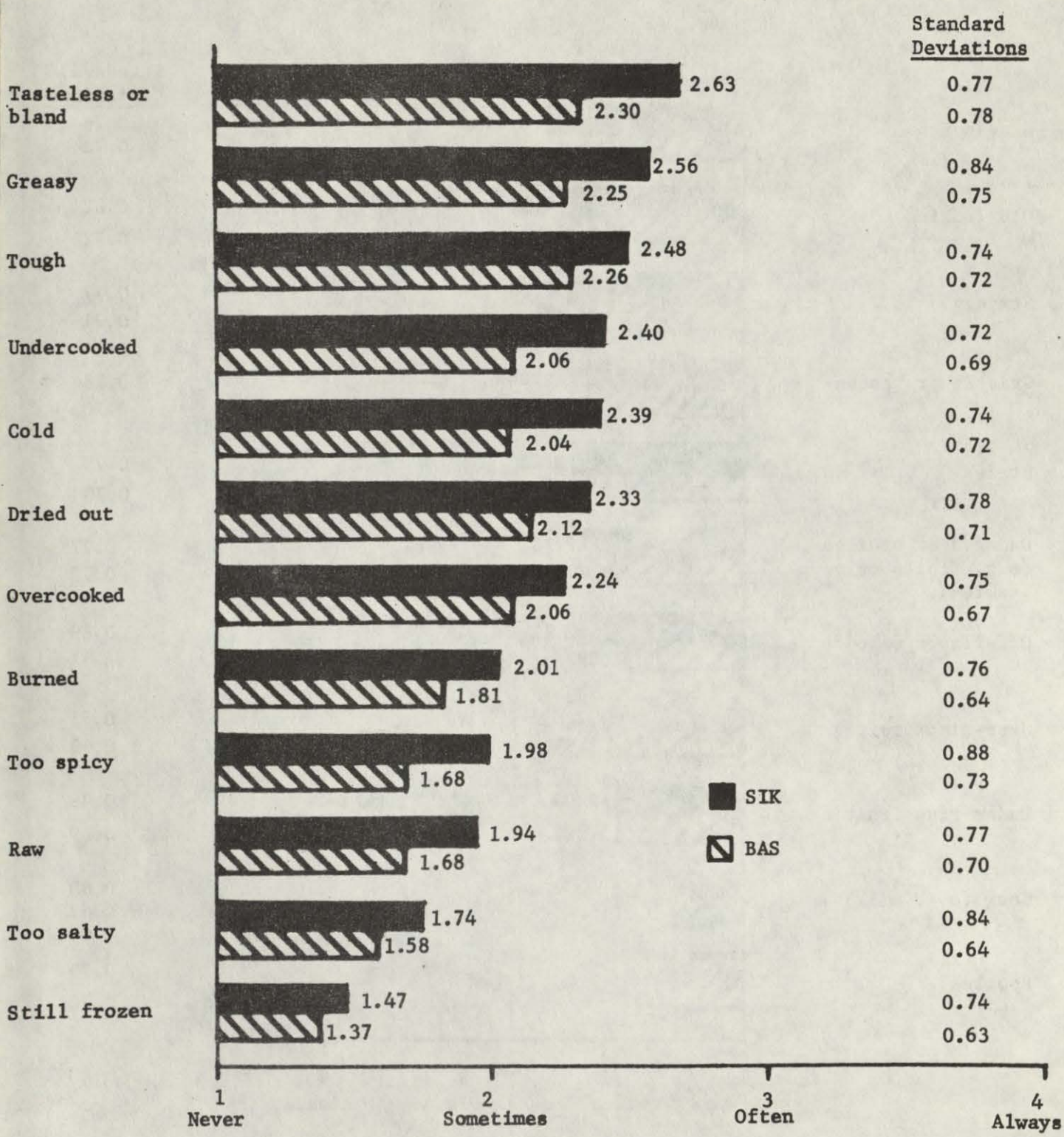


TABLE 11

Consumers' Opinions of the VARIETY of WEEKEND Food

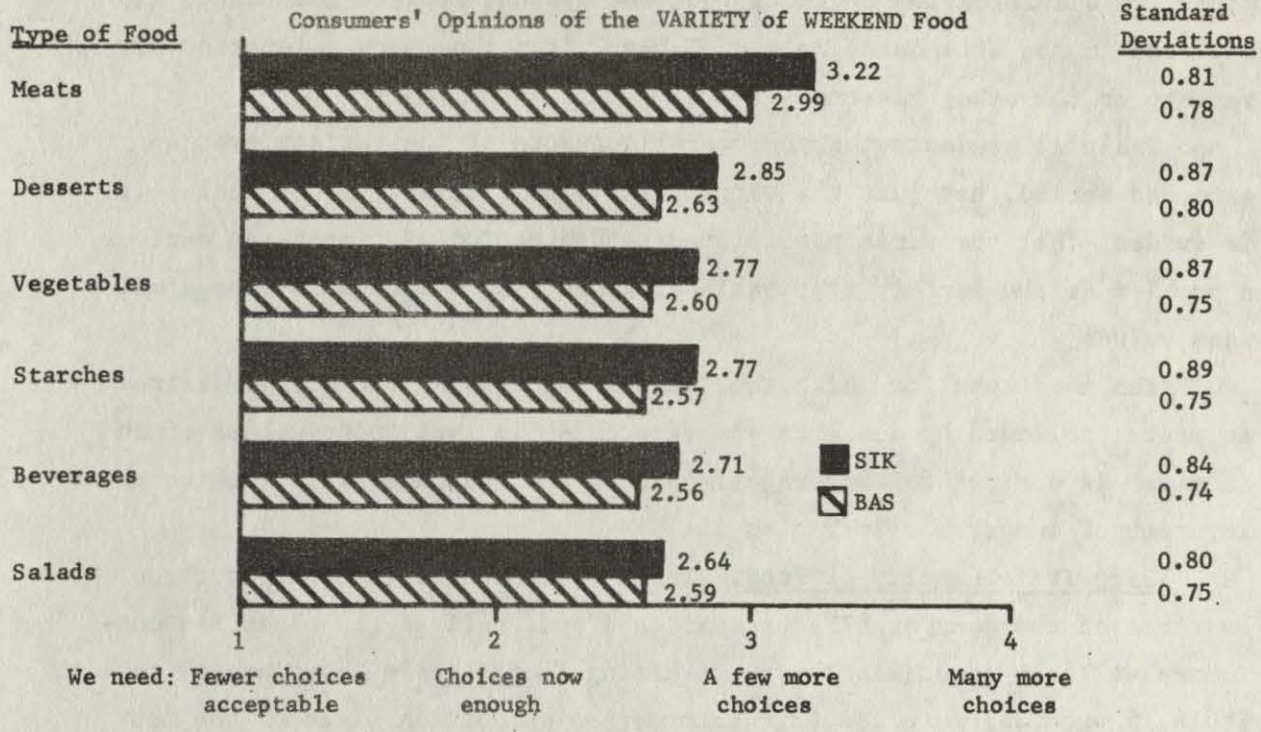
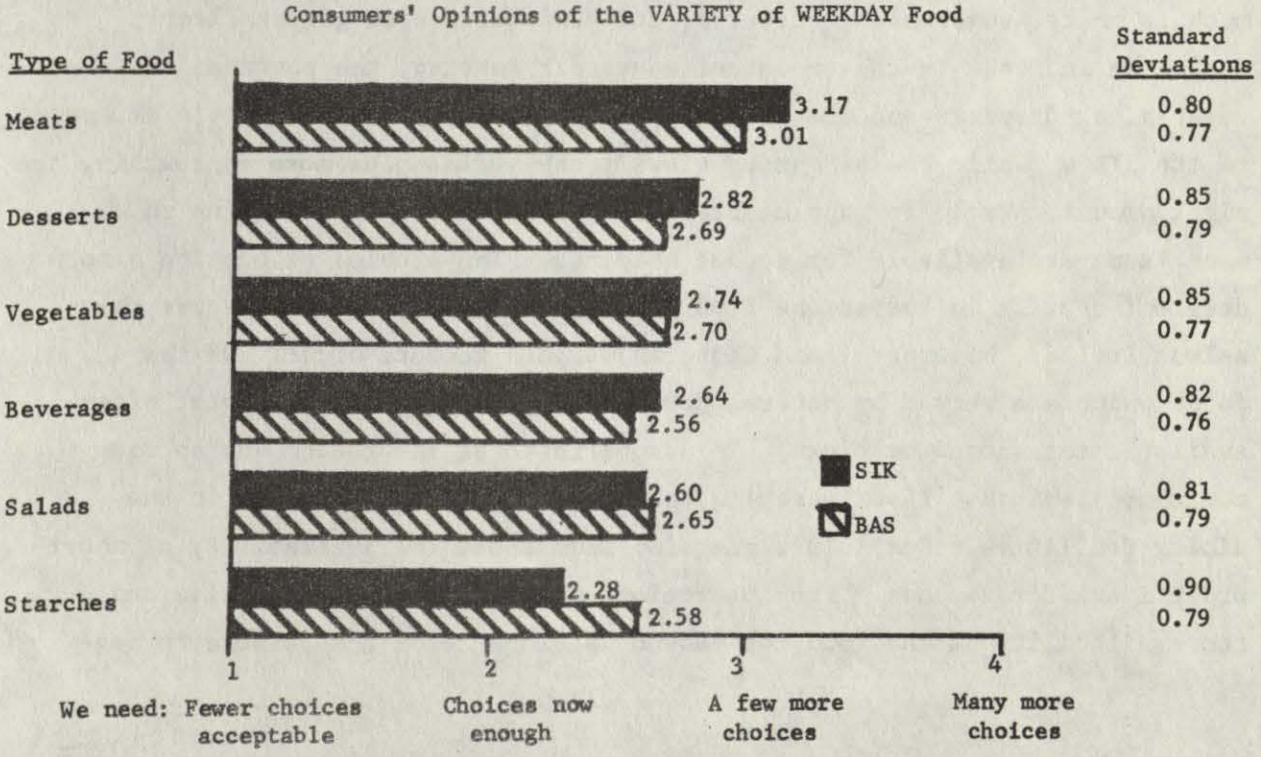


TABLE 12

Consumers' Opinions of the VARIETY of WEEKDAY Food



nearly sufficient for the SIK group, but the BAS group is positioned between accepting the present offerings as acceptable and desiring a few more. This information suggests that the typical weekend attendance dip reported in the attendance data of Table 1 is not so much a function of variety as for other reasons.

Table 13 presents the consumers' opinions of the variety over an extended period, not just the variety for a particular type of meal. It is evident that the variety over an extended period of time is as serious a problem as the variety of a particular meal, as evidenced by the similar mean values.

The food type for which the largest increase in variety is desired is meats, followed by desserts and vegetables in that order. Less of an increase is desired for beverages, salads, and starches, all of which shift in order of importance in Tables 11-13.

Part IV: Quantity of Food. Table 14 indicates that nearly three quarters of the younger SIK customers and over half of the older BAS customers at least sometimes leave the dining facilities without enough to eat. Table 15 provides more specific information on portion sizes of the menu components in an attempt to understand what causes this phenomenon to occur. For both sample groups, the order of portion size from too little to too much is meats, vegetables, desserts, and starches. Both groups clearly desire an increase in the amount of meats per serving; the portions of vegetables, desserts and the starches are viewed as perhaps a little skimpy to the SIK's, while the BAS group views these portions as more approaching the right amount. Table 16 supplements this information by identifying which menu items are available for second helpings. The problem of portion size does not usually influence the food classes which the consumers serve themselves (salads, beverages, and desserts) unless runouts occur. Of the foods which are served by others, however, note that meats are least often available for second helpings. This appears to be the reason why so many consumers feel justified in saying they do not get enough to eat in the dining facilities. Complaints are also made about the availability of short order items for seconds. The interrelationship between portion size and the availability of the food for second helpings leads the authors to sug-

TABLE 13

Consumers' Opinions of the VARIETY of food over a period of a MONTH

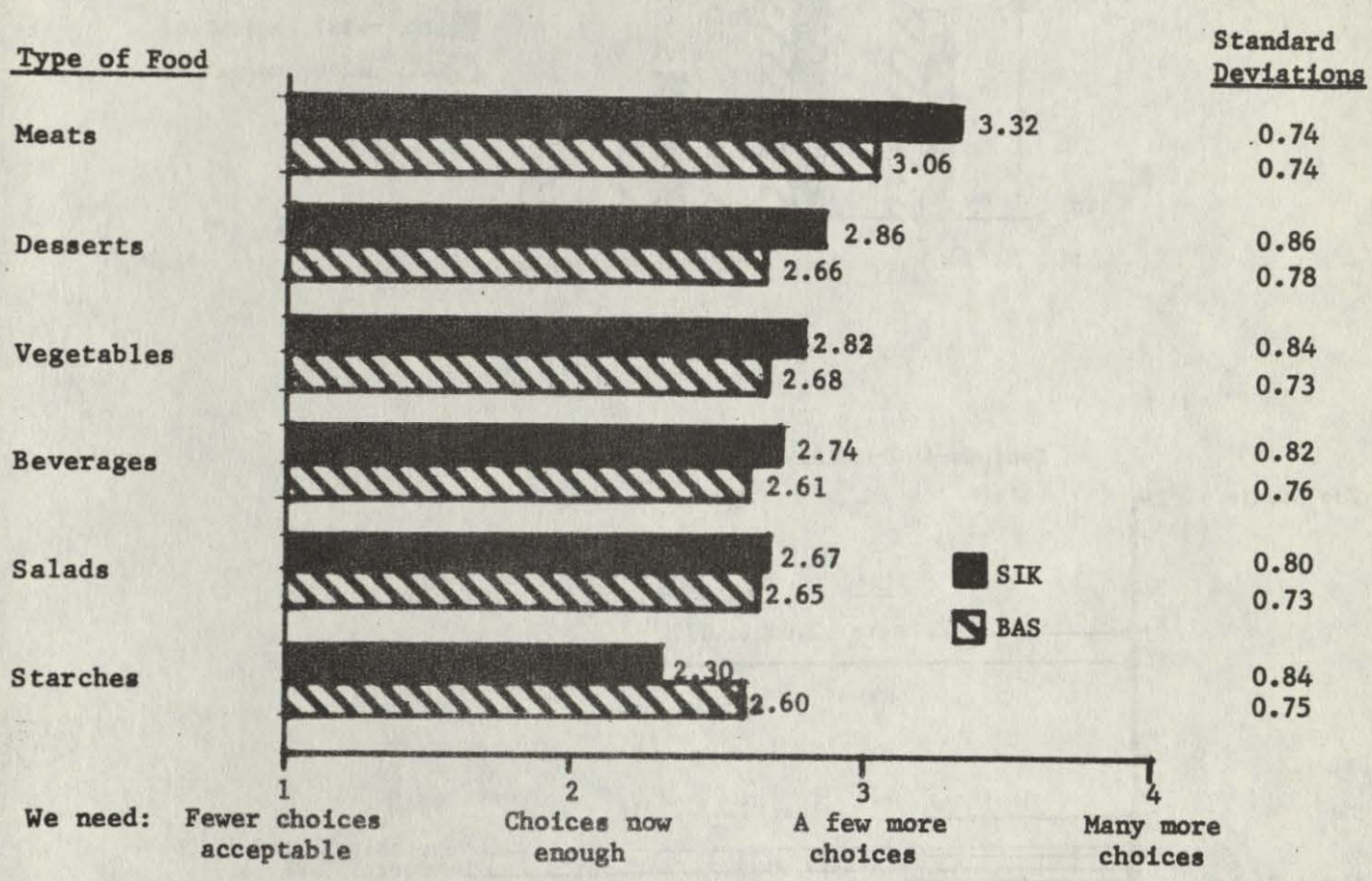


TABLE 14

Consumers' Responses to the Question: Other than times of dieting, do you ever leave your dining facility without enough to eat?

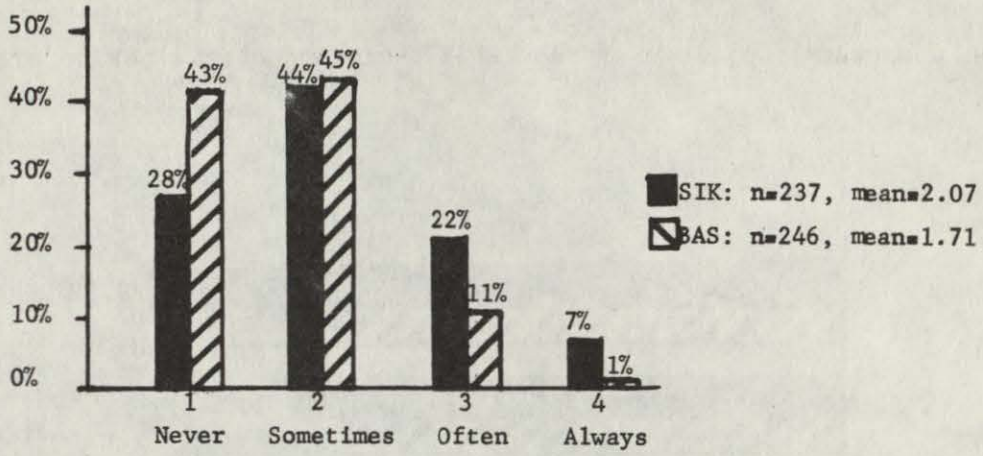
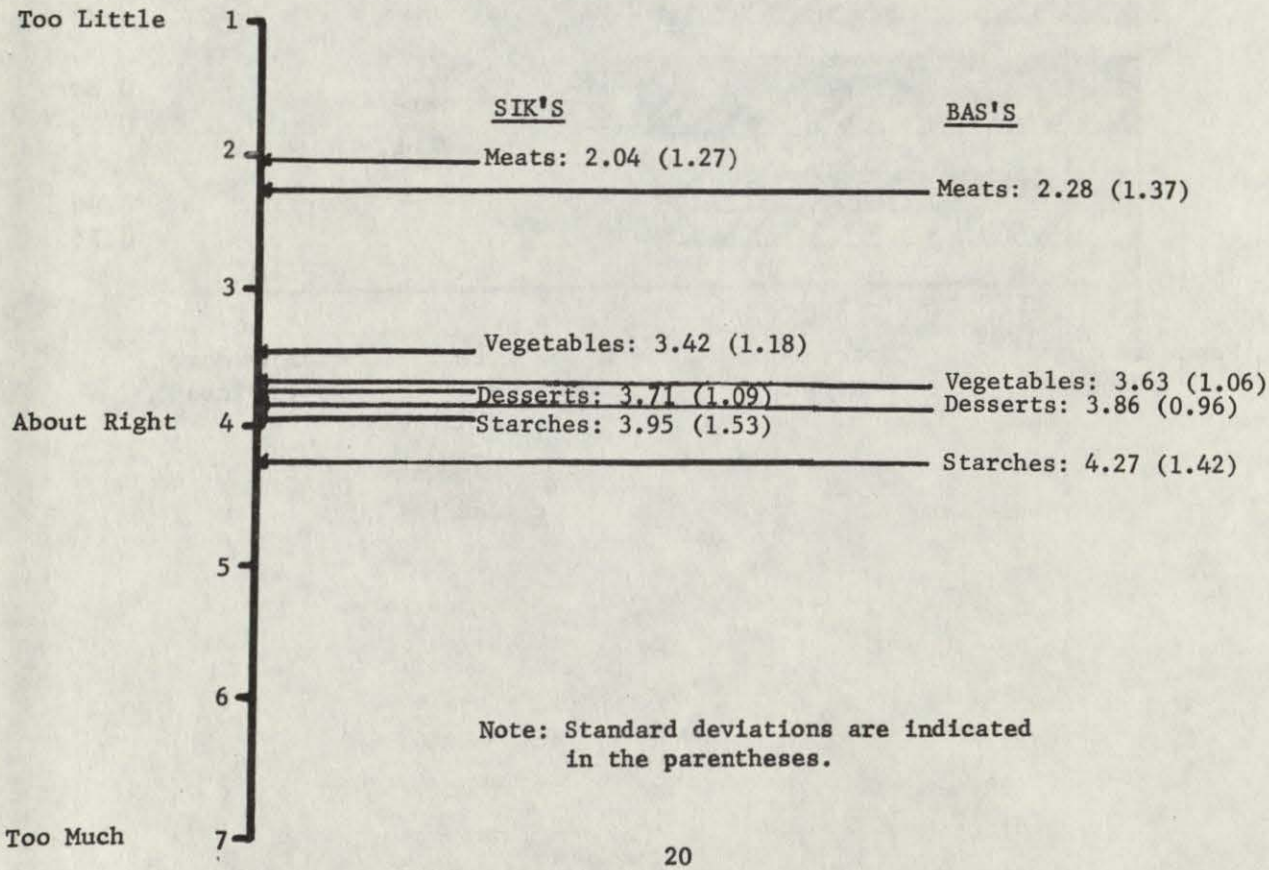


TABLE 15

Consumers' Opinions of Amounts per Servings



Note: Standard deviations are indicated in the parentheses.

gest that, overall, the quantity of meats and short order items is insufficent; while the quantity of the other food classes is sufficient.

Part V: Variety of Short Order Food. As indicated in Table 17, the consumers are in general agreement that at least a few more choices are desirable for the short order service over the period of a menu cycle, on weekends, and during the week. It should again be emphasized at this point that the food service system planners have to return to the basics - quality, variety, and quantity of the food.

Part VI: Monotony of the Same Facility. Although this factor does influence attendance to a considerable degree (more than any other non-food factor; see Table 6), no further information was asked of the respondents because this would have required too great an addition to the survey length.

Part VII: Speed of Service. Table 18 indicates that one in three to one in four consumers perceive their delay at the headcount station to be in excess of five minutes, with the average at 4 to 4½ minutes. Table 19 demonstrates that an additional four to five minute delay is perceived in the serving line. This would seem to explain why the existing speed of service contributes to some degree to the non-utilization of the dining facilities.

Part VIII: Military Atmosphere. Table 20 demonstrates that nearly three out of every four SIK consumers and over half of the BAS consumers would prefer either a little or a lot less military atmosphere in their dining facilities. Table 21 supplements this information by indicating whether or not the men realize what standards of behavior are expected of them, and by indicating which rules they want enforced or instituted and which they do not. The Homestead AFB consumers appear to know what standards or policies are operative for them, except for the policies concerning the admittance of civilian guests into the facilities (the SIK's are nearly evenly split concerning whether guests are allowed or not; three out of four BAS's think civilian guests are not allowed). Only a small minority of the SIK's want any of the possible rules listed in Table 21 enforced or instituted; the majority of SIK's want the dress regulations abolished; most SIK's expressed no opinion. The BAS consumers on the other hand lean

TABLE 16

Are Second Helpings Permitted?

SERVED BY OTHERS	Never		Sometimes		Always	
	SIK	BAS	SIK	BAS	SIK	BAS
Short order items	2%	6%	33%	54%	65%	40%
Meat items	22%	19%	58%	72%	20%	9%
Starches	5%	5%	39%	49%	56%	46%
Vegetables	3%	4%	33%	44%	64%	51%

SELF-SERVICE	Never		Sometimes		Always	
	SIK	BAS	SIK	BAS	SIK	BAS
Salads	1%	4%	11%	22%	88%	74%
Beverages	2%	4%	8%	17%	91%	79%
Desserts	2%	6%	16%	35%	82%	59%

TABLE 17

Consumers' Opinions of the VARIETY of SHORT ORDER FOODS

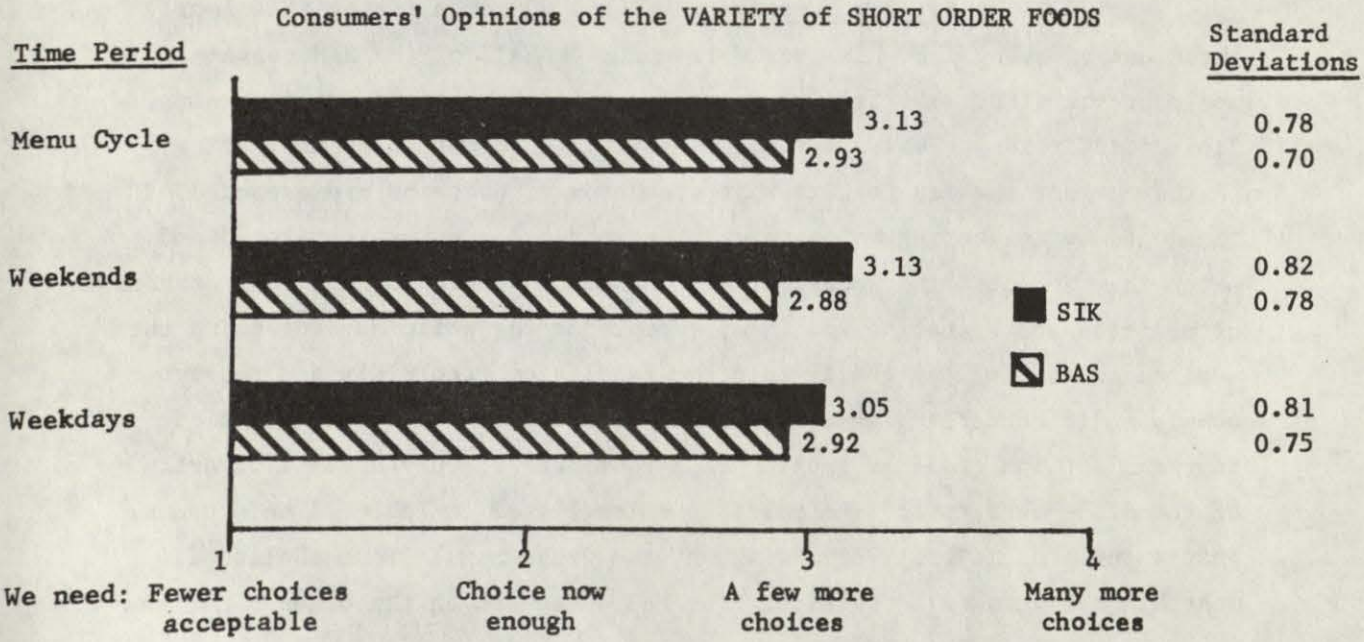


TABLE 18

Usual Delay at Headcount Station

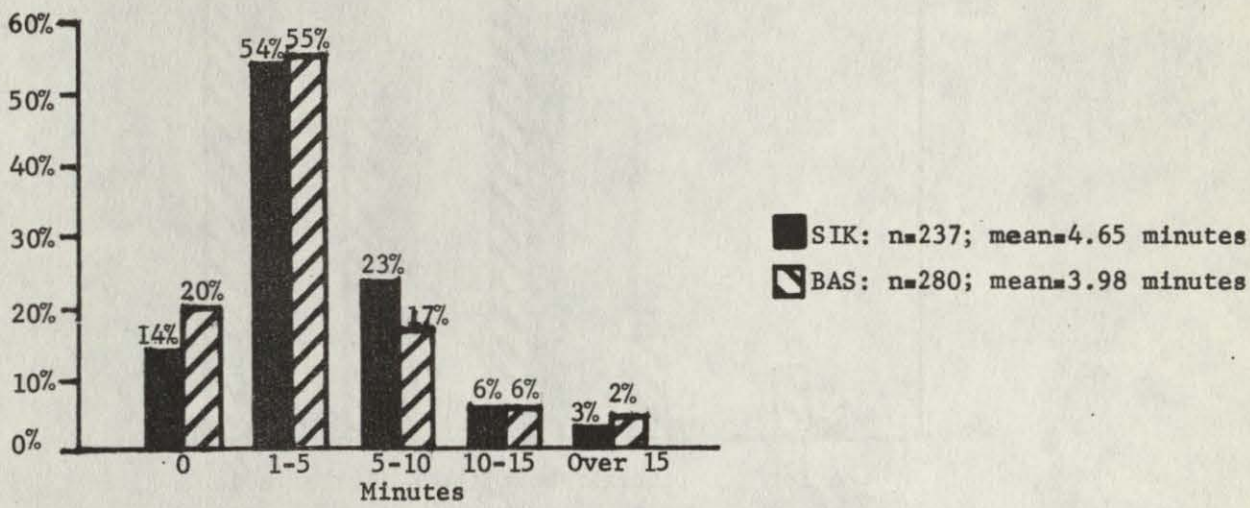
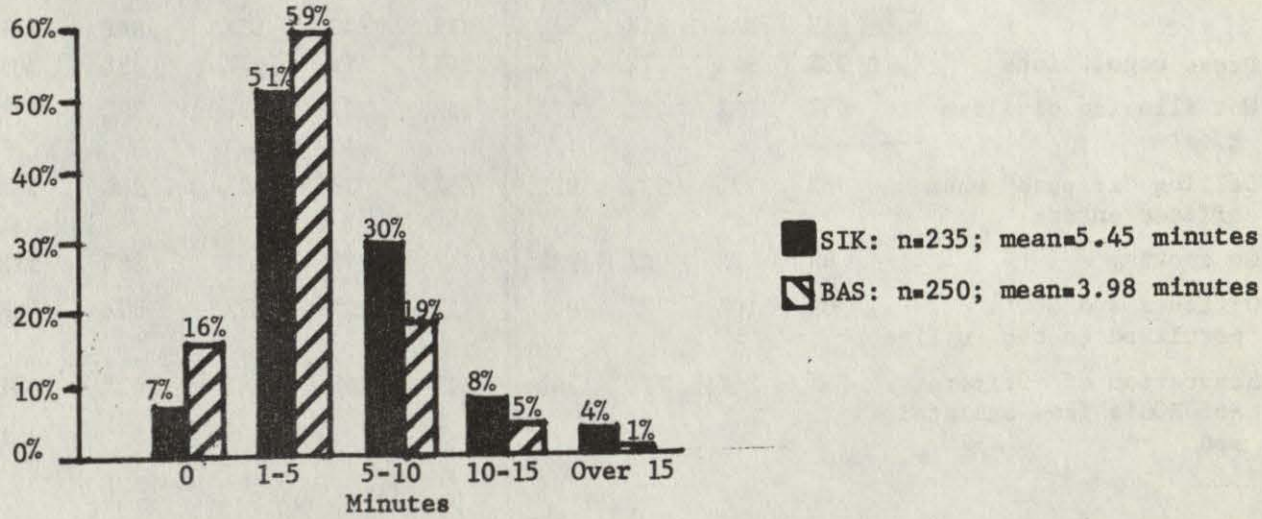


TABLE 19

Usual Delay in Serving Line



Military Atmosphere

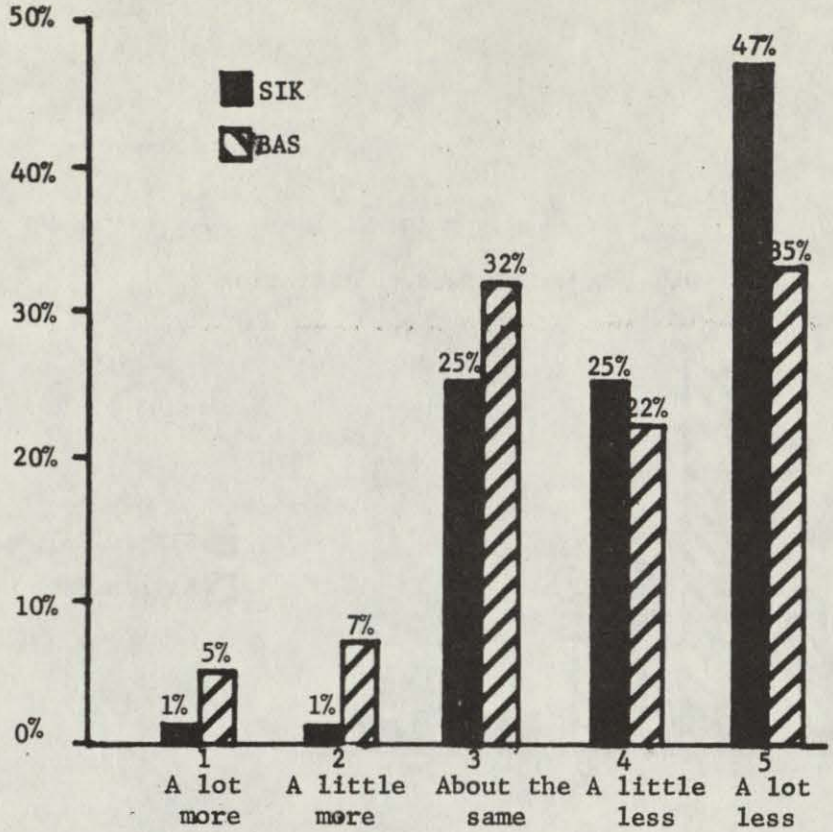


TABLE 21

Opinions Concerning Specific Policies

	Does Rule Exist				Feeling About Rules					
	Yes		No		Enforce or institute		Abolish or not institute		No opinion	
	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS
Dress regulations	93%	96%	7%	4%	14%	42%	57%	35%	30%	23%
Not allowing civilian guests	55%	73%	45%	27%	15%	26%	38%	39%	47%	34%
Calling "at ease" when officer enters	8%	7%	92%	93%	3%	7%	42%	50%	56%	45%
No smoking	8%	7%	92%	93%	14%	17%	33%	38%	52%	45%
Officers and NCO's permitted to cut in line	8%	10%	92%	90%	11%	12%	47%	53%	42%	35%
Separation of officers and NCO's from enlisted men	23%	26%	77%	74%	11%	16%	44%	42%	45%	42%

towards desiring the enforcement of the dress regulations. There is a discrepancy of consumer opinion concerning this issue at Homestead AFB. For the remaining issues, however, no strong sentiment is expressed.

Part IX: Hours of Operation. The data presented in Table 22 indicates a curious pattern; most of the dissatisfaction with the hours for both weekday and weekend meals reflects a minority opinion (albeit, a fairly large minority opinion) desiring very much extended hours, and principally an extension to later closing times at each meal. Even adjusting the hours by 30 minutes each way to exceed the mean response will not satisfy the largest dissatisfied groups, who want the facilities open an hour or more earlier or later.

Part X: Service by Dining Facility Personnel. Table 23 shows that the abilities and attitudes of the cooks and the workers are rated somewhat poorly by both groups of consumers. While the SIK's and BAS's agree on the level of the workers' attitudes, a discrepancy concerning the ability of the cooks exists. The SIK's maintain that the cooks at Homestead AFB have less ability than the BAS's maintain. Table 24 indicates how often the consumers report being subject to inferior personnel practices (e.g., not putting out enough silverware and condiments; ordering too little food; ordering too much food and hence contributing to leftovers). The task of ordering correct quantities is a more serious problem than the others. Both leftovers and runouts occur sometimes to often. The fact that leftovers are as serious a problem for the consumers as Table 24 indicates suggests the possibility that this factor interacts with the previously discussed problem of insufficient meat quantities.

In addition to these problems, the consumers were also asked how they would feel about bussing their own trays to the dishwashing area. As Table 25 indicates, institution of this procedure at the main dining facility of Homestead AFB would not be well received by a majority of SIK and BAS personnel.

Part XI: General Dining Facility Environment. This section is considerably more detailed than the preceding and following sections because the concept of "environment" has so many dimensions.

TABLE 22

Consumers' Opinions of the HOURS of OPERATION

Weekdays: Monday to Friday

	Breakfast		Mid-Day Meal		Evening Meal	
	SIK	BAS	SIK	BAS	SIK	BAS
From:						
1 hr. or more earlier	12%	16%	12%	14%	9%	13%
30 min. earlier	7%	8%	12%	12%	12%	8%
15 min. earlier	1%	1%	5%	2%	3%	3%
Sufficient as it is	80%	76%	72%	72%	77%	76%
MEAN IN MINUTES:	10	12	11	12	9	11
To:						
1 hr. or more later	25%	23%	24%	21%	35%	28%
30 min. later	12%	11%	18%	13%	15%	10%
15 min. later	3%	2%	2%	2%	3%	1%
Sufficient as it is	59%	65%	57%	64%	47%	61%
MEAN IN MINUTES:	19	17	18	17	26	20

Weekends: Saturday and Sunday

	Breakfast		Mid-Day Meal		Evening Meal	
	SIK	BAS	SIK	BAS	SIK	BAS
From:						
1 hr. or more earlier	12%	13%	13%	13%	12%	14%
30 min. earlier	5%	6%	9%	9%	8%	8%
15 min. earlier	3%	1%	4%	2%	4%	2%
Sufficient as it is	81%	80%	75%	76%	76%	77%
MEAN IN MINUTES:	9	10	11	11	10	11
To:						
1 hr. or more later	37%	27%	28%	25%	37%	27%
30 min. later	6%	10%	14%	10%	8%	8%
15 min. later	3%	1%	3%	2%	4%	1%
Sufficient as it is	54%	62%	55%	64%	52%	63%
MEAN IN MINUTES:	24	19	21	18	25	19

TABLE 23

Dining Facility Personnel

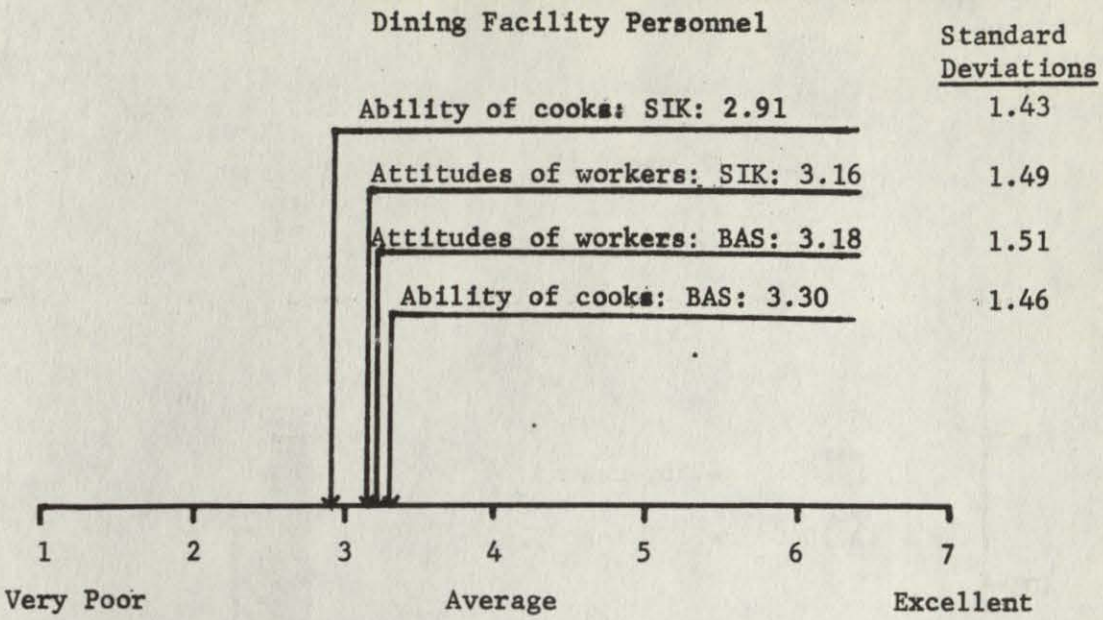


TABLE 24

Food Service Personnel Functions

How often do you find:	1 Never		2 Sometimes		3 Often		4 Always		MEAN	
	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS
Inappropriate or missing silverware	15%	21%	55%	57%	24%	18%	7%	4%	2.22	2.06
Not enough condiments	13%	24%	44%	51%	32%	19%	11%	5%	2.41	2.06
Serving line has run out of items	5%	14%	41%	47%	35%	29%	18%	10%	2.65	2.34
Leftovers served day after day	9%	30%	33%	44%	35%	18%	23%	8%	2.72	2.04

TABLE 25

Opinions Concerning Self Bussing

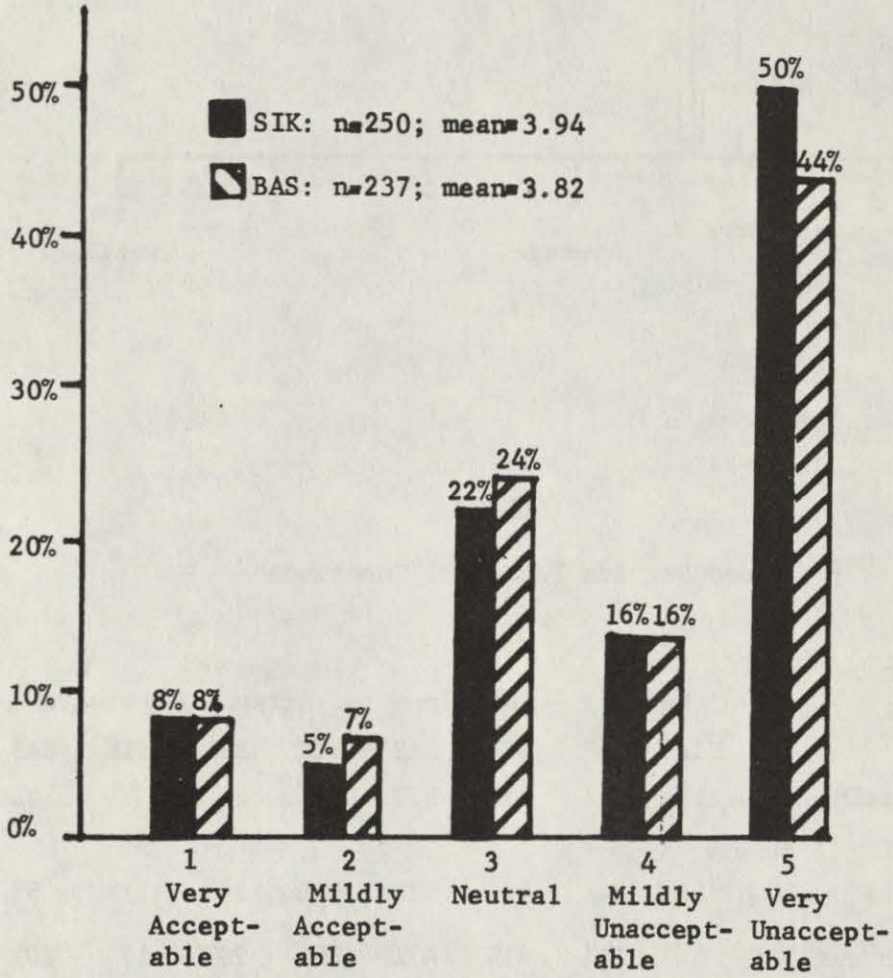


Table 26 presents the consumer evaluation of various facility-personnel factors (e.g., do the personnel keep the serving counters clean or dirty) for both the main Homestead AFB dining facility and the Hospital facility. Although the survey questionnaires required the consumers to respond on a scale marked 1 to 5 with the items balanced (the positive descriptor on the left half the time and on the right half the time), for simplicity and order the tables in this report have the positive dimension always on the left and the scale marked from +2 to -2, as indicated by the schemata. Therefore, a value of -0.4, for example, indicates that the mean score for the specific group in the specific facility was nearly half way between neutral and moderately negative. In Table 26 notice that the SIK's indicate that the silverware, glasses and dishes could be a cleaner, but in general everything else is rated more clean than dirty.

Table 27 presents the consumer view of the general condition of the dining facilities. Rodents and insects are not reported as problems, and the consumers are not critical of safety hazards. Both facilities however are viewed as crowded, cramped, and noisy in their present state, and this would reasonably be aggravated by any increase in utilization without the necessary physical alterations.

Table 28 presents the consumer view of the convenience features of the dining facilities, indicating that the main facility does not have washroom facilities conveniently close.

Table 29 summarizes the consumers' opinion of the appearance and atmosphere of the dining facilities, which is basically neutral except for a few factors. The main facility again is viewed as slightly crowded.

Table 30 indicates that the consumers generally perceive the facilities to be fairly well engineered for environmental comfort. The temperature controls keep the facilities slightly more often too cold than too warm; odors and stuffiness are slight problems in the main facility.

Table 31 presents the consumers' generally uniformly negative opinions concerning the tables. In distinction to the Travis AFB and Minot AFB consumers, the Homestead AFB consumers do not even perceive their tables as sturdy. Table 32 demonstrates that the dimensions of four person or square tables are not problems per se, as over 2/3 of these Air Force consumers

TABLE 26

Facility - Personnel Factors

CLEAN	Extremely +2	Moderately +1	Neutral 0	Moderately -1	Extremely -2	DIRTY

	Dining Facilities				
	#1		Hospital		
	SIK	BAS	SIK	BAS	
Clean serving counters	0.4	0.5	0.5	0.5	Dirty Serving Counters
Clean trays	0.4	0.3	0.2	0.3	Dirty trays
Clean kitchen area	0.3	0.5	0.3	0.4	Dirty kitchen area
Clean floors	0.3	0.3	0.6	0.1	Dirty floors
Clean dispensing devices	0.2	0.2	0.1	0.4	Dirty dispensing devices
Clean tables and chairs	0.2	0.1	0.4	0.1	Dirty tables and chairs
Clean dishes and glasses	-0.1	0.1	-0.3	0.2	Dirty dishes and glasses
Clean silverware	-0.1	0.0	-0.5	0.1	Dirty silverware
MEAN:	0.2	0.2	0.2	0.3	
Number per cell:[a]	190	162	29	18	

a: These figures represent the maximum numbers per cell, for this and the following tables in this format; the number of cases for any specific mean might be diminished by the small percentage who inadvertently left the item blank on their questionnaire.

TABLE 27

General Condition of Each Dining Facility

POSITIVE	Extremely +2	Moderately +1	Neutral 0	Moderately -1	Extremely -2	NEGATIVE

	Dining Facilities				
	#1		Hospital		
	SIK	BAS	SIK	BAS	
Rodent free	0.5	0.4	0.7	0.8	Rodent infested
Low number of safety hazards	0.3	0.4	0.3	0.2	High number of safety hazards
Insect free	0.2	0.3	0.5	0.7	Insect infested
Pleasant interior appearance	0.1	0.3	-0.2	0.1	Unpleasant interior appearance
Brightly lighted	0.0	0.1	0.4	0.6	Dimly lighted
Well designed	-0.1	0.0	-0.5	-0.3	Poorly designed
Sunny	-0.2	0.0	-1.0	-0.4	Lacking in sunlight
Pleasant exterior appearance	-0.2	0.2	-0.2	-0.1	Unpleasant exterior appearance
Quiet	-0.4	-0.5	-0.2	-0.6	Noisy
Pleasant view	-0.5	-0.5	-1.1	-0.7	Unpleasant view
Roomy	-0.5	-0.4	-0.4	-0.1	Cramped
Uncrowded	-0.9	-0.5	-0.3	-0.7	Crowded
MEAN:	-0.1	0.0	-0.2	0.0	

TABLE 28

Conveniences Within Dining Facilities

POSITIVE	Extremely +2	Moderately +1	Neutral 0	Moderately -1	Extremely -2	NEGATIVE

	Dining Facilities				
	#1		Hospital		
	SIK	BAS	SIK	BAS	
Convenient to enter and leave	0.4	0.2	1.0	0.8	Inconvenient to enter and leave
Adequate table size	-0.4	-0.3	-0.3	-0.2	Inadequate table size
Large space between tables	-0.4	-0.4	-0.6	-0.3	Small space between tables
Close to washroom	-0.8	-0.7	-0.3	-0.3	Far from washroom
MEAN:	-0.3	-0.3	-0.1	0.0	

TABLE 29

Appearance and Atmosphere of Dining Facilities

POSITIVE	Extremely +2	Moderately +1	Neutral 0	Moderately -1	Extremely -2	NEGATIVE

	Dining Facilities				
	#1		Hospital		
	SIK	BAS	SIK	BAS	
Sociable	0.1	-0.1	0.5	0.3	Unsociable
Uncluttered	-0.1	0.0	-0.2	0.0	Cluttered
Relaxed	-0.1	0.0	0.0	-0.2	Unrelaxed
Colorful	-0.1	0.2	-0.2	-0.3	Drab
Cheerful	-0.3	-0.1	-0.3	-0.2	Dreary
Beautiful	-0.3	0.0	-0.6	-0.2	Ugly
Uncrowded	-0.7	-0.5	-0.3	-0.1	Crowded
MEAN:	-0.2	-0.1	-0.2	-0.1	

TABLE 30

Environmental/Engineering Factors

Never 1	Sometimes 2	Often 3	Always 4

	Dining Facilities			
	#1		Hospital	
	SIK	BAS	SIK	BAS
Is your dining facility ever:				
Full of steam	1.4	1.4	1.2	1.4
Smoky	1.6	1.6	1.4	1.4
Too warm	1.7	1.7	1.8	1.6
Full of unpleasant odors	1.8	1.7	1.6	1.9
Stuffy	1.9	1.8	1.7	1.9
Too cold	1.9	1.7	1.9	2.3

TABLE 31

Tables in Dining Facilities

POSITIVE	Extremely +2	Moderately +1	Neutral 0	Moderately -1	Extremely -2	NEGATIVE

	Dining Facilities				
	#1		Hospital		
	SIK	BAS	SIK	BAS	
Sturdy	-0.2	-0.2	0.1	-0.2	Easy to damage
Colorful	-0.3	-0.3	-0.2	-0.4	Drab
Beautiful	-0.3	-0.3	-0.6	-0.3	Ugly
Roomy	-0.6	-0.5	-0.6	-0.5	Cramped
Wide variety	-0.8	-0.7	-1.0	-0.7	Limited variety
MEAN:	-0.4	-0.4	-0.5	-0.4	

TABLE 32

Table Preferences

	Dining Facilities				
	#1		Hospital		
SIZE	SIK	BAS	SIK	BAS	MEAN
2 person	8%	10%	0%	6%	8%
4 person	65%	74%	48%	61%	68%
6 person	22%	14%	35%	17%	19%
8 person	2%	1%	14%	11%	3%
More than 8 person	3%	1%	3%	6%	2%
SHAPE					
Round	28%	27%	41%	6%	28%
Square or rectangular	72%	70%	59%	94%	71%

choose these features. A variety of table sizes and shapes, in accordance with the percentages of the stated preferences, would probably please these consumers.

If music were to be offered on a regular basis, Table 33 indicates that the base would have a problem trying to please both SIK's and BAS's. A variety of the three most preferred types of music for the SIK's would yield a combination of hard rock, Soul, and popular; while one in five BAS consumers preferred instrumental music.

Part XII: Dining Companions. Table 34 presents another interesting pattern. Recall that the BAS group desired slightly smaller sized tables than the SIK group (Table 32), and now notice that the BAS group is consistently rating each of these social factors less positively. Though not surprising because the BAS group is much more heterogenous in background characteristics (Appendix II), it is nevertheless interesting that the SIK group apparently finds more of their social needs met in the dining facilities than the BAS group.

Part XIII: Convenience of Location. Table 35 indicates that the majority of the BAS group drives wherever they are going. For the SIK's, the dining facilities are close enough to the living areas for 2/3 of the men to walk, but apparently the job sites are far enough removed that the percentage who drove increased considerably. Table 36 indicates the same phenomenon, specifying how many minutes it would take to walk from place to place. Half of the SIK'S can walk from the living area to the dining facility in under five minutes, 3/4 in under ten minutes; but only 1/4 can walk to the job site from the living area in under five minutes. The reader should bear in mind however that five minutes walking at Homestead AFB in January might well be undertaken more readily than five minutes walking at Minot AFB in January. Hence, the distance in feet between the facilities does not totally determine walk-ability or secondarily the "convenience of location."

Part XIV: Expense. Although expense has no substantial effect on attendance (Table 6), this opportunity was used to gauge consumer opinions concerning the separate rations system. Table 37 presents consumer reaction to the policies governing the current system, indicating that the BAS group

TABLE 33

Music Preferences

TYPE	SIK	BAS
A variety of the following	32%	32%
Hard rock	14%	7%
Soul	11%	6%
Popular	11%	8%
Rock and roll	7%	2%
Any type is fine	6%	10%
Instrumental	6%	20%
Country western	4%	6%
Other	3%	2%
Classical	3%	6%
Jazz	2%	1%
Do not want music	0%	1%

TABLE 34

Social Aspects of Dining Facilities

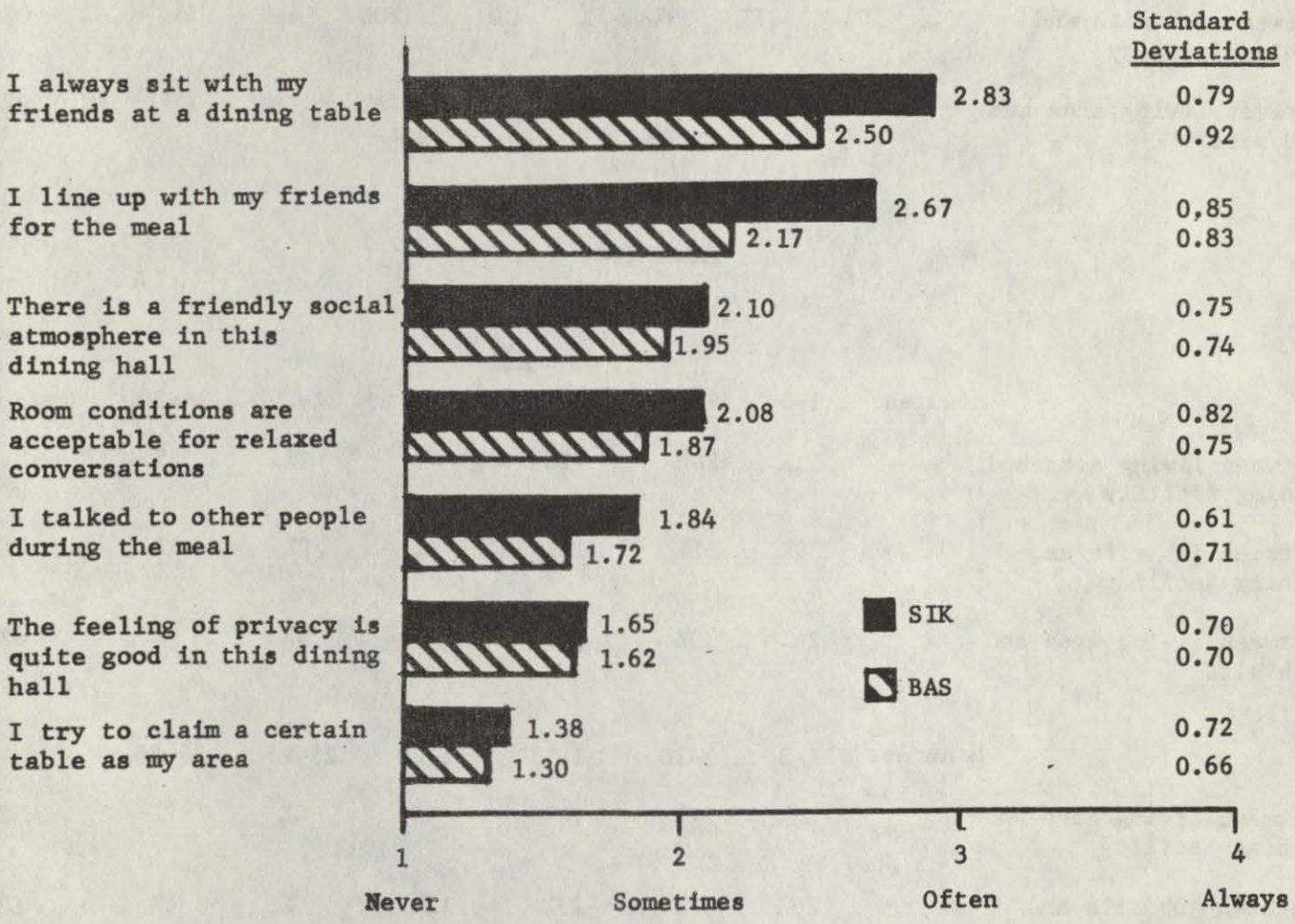


TABLE 35

Usual Means of Travel

	SIK					BAS				
	Walk	Drive	Ride	Bus	Other	Walk	Drive	Ride	Bus	Other
Between living area and dining facility	66%	28%	3%	3%	0%	20%	66%	5%	10%	0%
Between job site and dining facility	50%	37%	9%	5%	0%	20%	69%	4%	6%	0%
Between living area and job site	42%	45%	11%	0%	2%	10%	83%	6%	0%	2%

TABLE 36

Walking Time

SIK

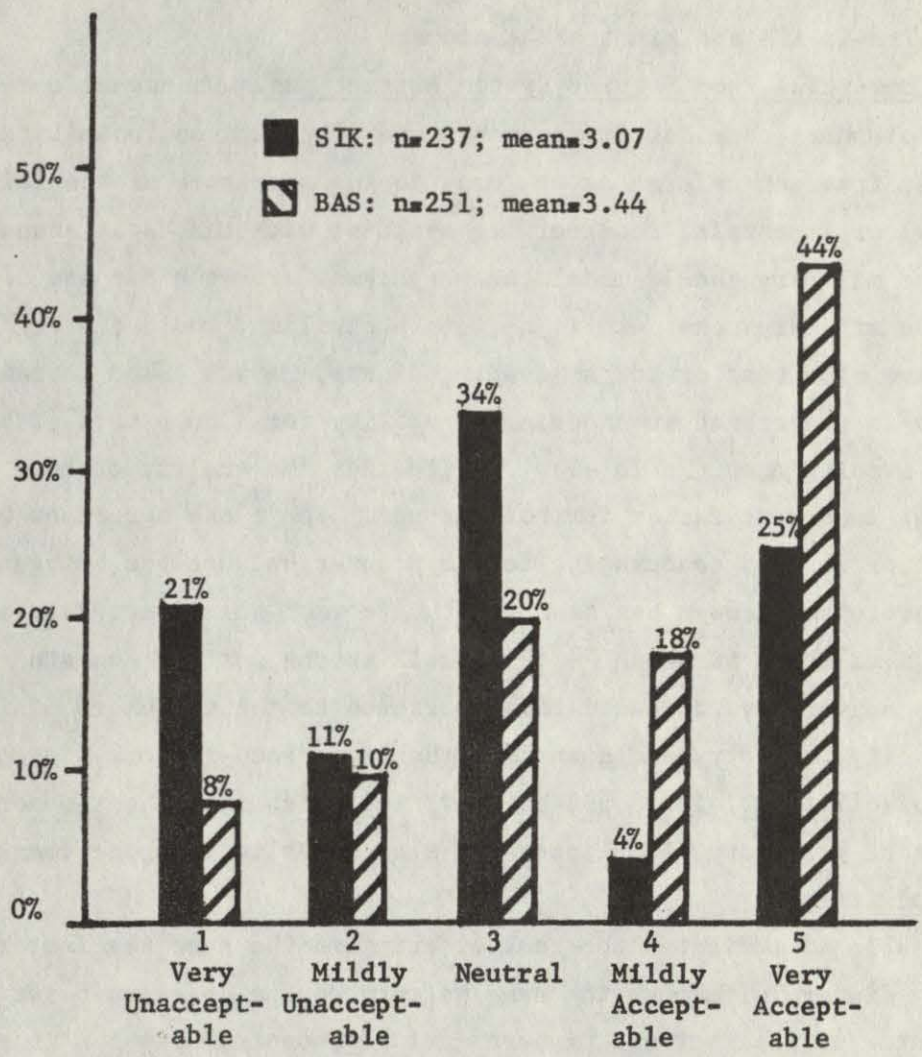
Minutes:	1-5	6-10	11-15	16-20	21-25	26-30	Over 30
Between living area and dining facility	51%	24%	11%	4%	1%	1%	8%
Between job site and dining facility	39%	31%	16%	9%	2%	1%	1%
Between living area and job site	26%	30%	23%	9%	3%	2%	8%

BAS

Minutes:	1-5	6-10	11-15	16-20	21-25	26-30	Over 30
Between living area and dining facility	22%	7%	10%	9%	4%	2%	45%
Between job site and dining facility	20%	27%	27%	12%	3%	2%	8%
Between living area and job site	7%	10%	12%	13%	3%	6%	49%

TABLE 37

Opinions Concerning Current Separate Rations System



views them as quite acceptable, while the SIK group is essentially neutral with a minority viewpoint at each extreme. Table 38 presents the consumers reactions to three alternative separate ration proposals. Proposal 2, separate rations with item pricing, is rated lowest; the current system (proposal 3) is rated neutral on the average; and the concept of putting everyone on separate ration status and charging on a meal by meal basis (proposal 1) was rated the most facorable of the alternatives presented. The order of favorability of the proposals exactly parallels the opinions of the Travis AFB and Minot AFB consumers.

Commercial Food Service System Attractions. Whenever food service system planners consider improvements and alternatives for military food service, frequent references are made to the successes of specific institutional or industrial food service systems, with the tacit assumption that the military should model these systems. For the purpose of knowing what the military consumer, if he were a civilian, would desire for an inexpensive noon meal or for an evening dinner, he was asked to rank order 10 factors in importance in choosing a facility for a noon meal (Table 39) or for an evening meal (Table 40). Notice that the quality of food is clearly the most important factor for both groups. The close agreement between the two groups is also encouraging to the planner because the homogeneous desires of heterogenous groups can be met with a common solution. Results from previous military surveys[1,2,4,6] as well as the current Homestead AFB food service survey have stressed the importance to the consumers of improving the quality, variety, and quantity (the basic food-factors) in the military dining facilities. Table 39, however, indicates that the two non-food factors of price and cleanliness are also as salient to the consumers as the food factors.

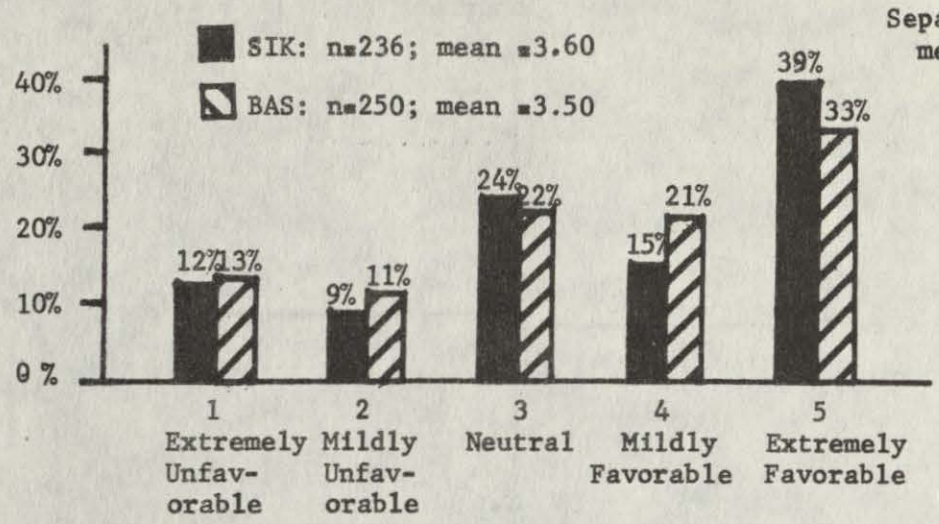
Table 40 indicates the rank ordering of the same ten factors for an evening dinner, with much the same pattern as for an inexpensive noon meal. The factor of pleasantness of personnel is conspicuously low in both tables.

TABLE 38

Alternative Separate Rations Proposals

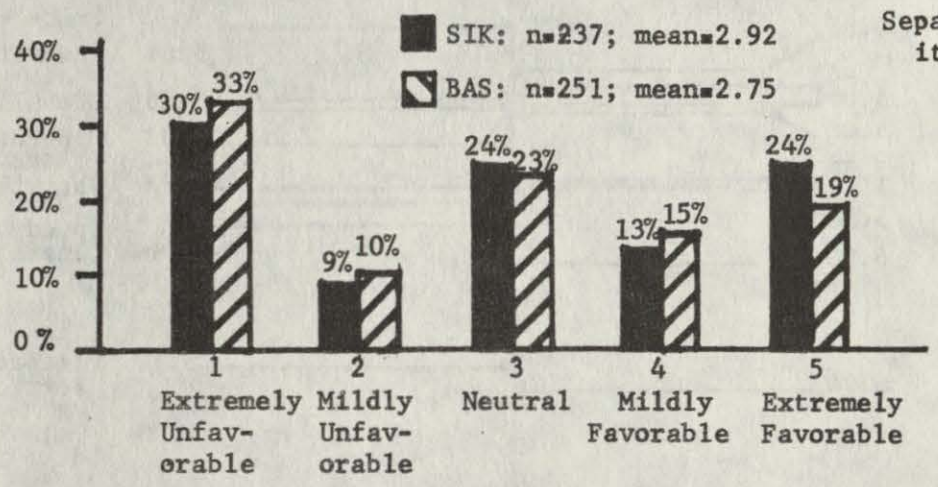
Proposal 1:

Separate rations; meal pricing



Proposal 2:

Separate rations; item pricing



Proposal 3:

Current System

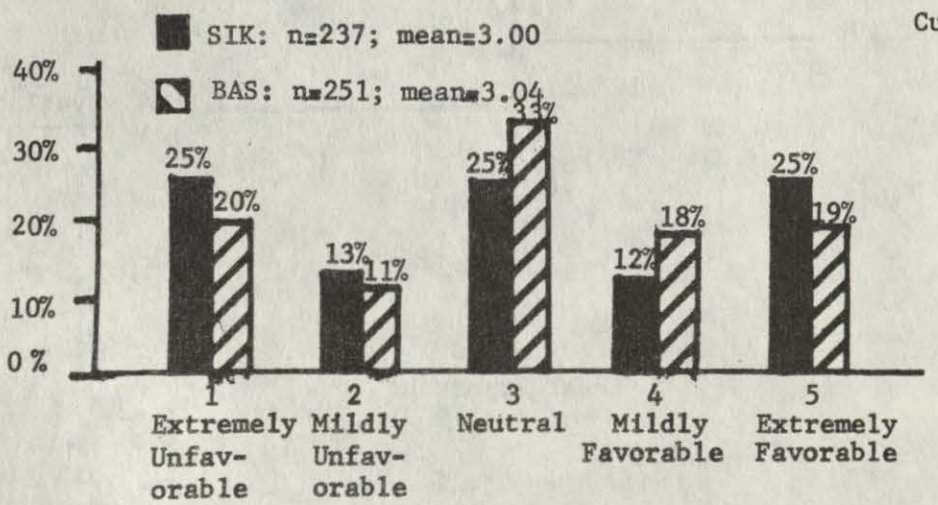


TABLE 39

The Importance of 10 Factors in Choosing a NOON MEAL from a Civilian Facility

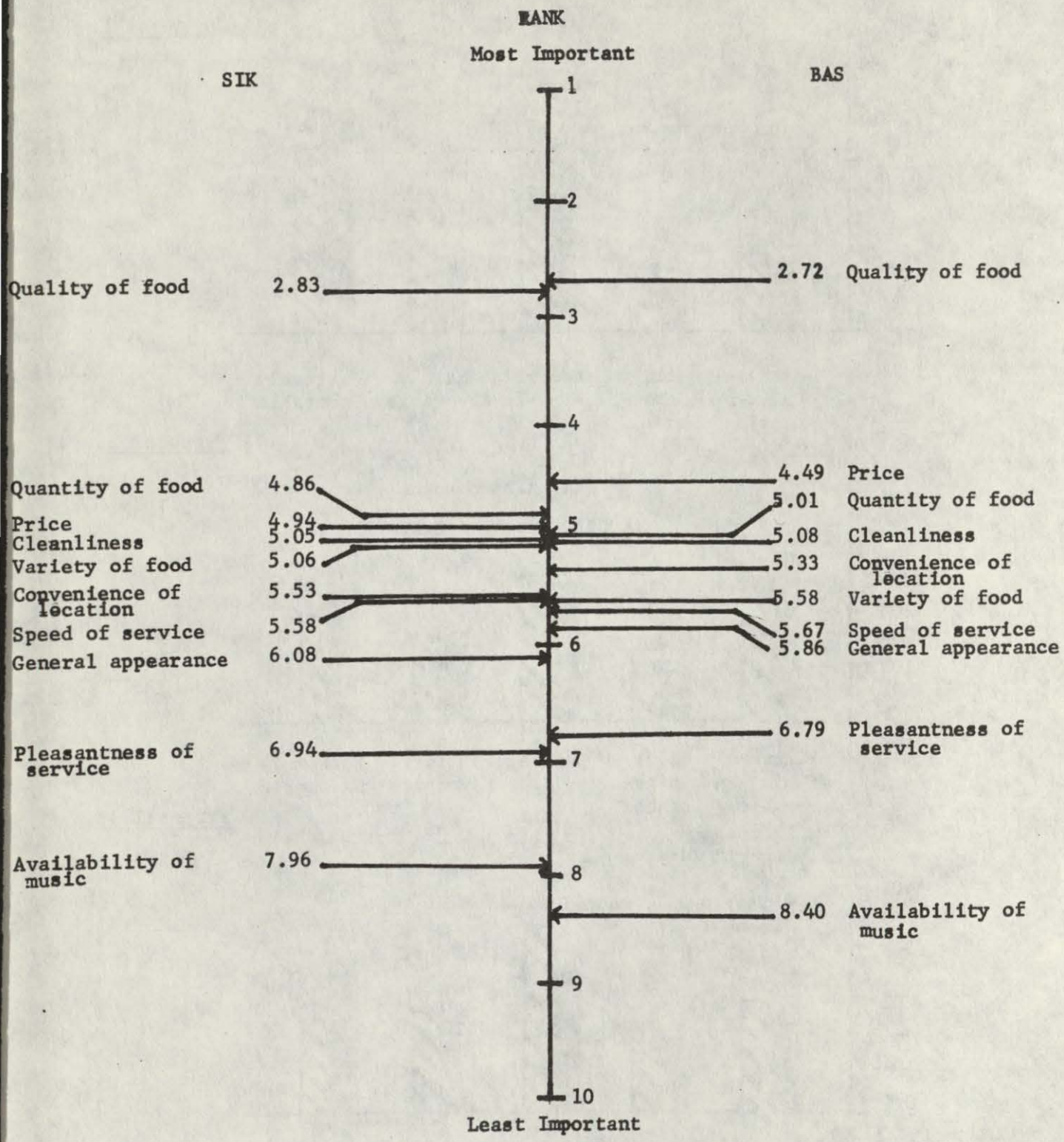
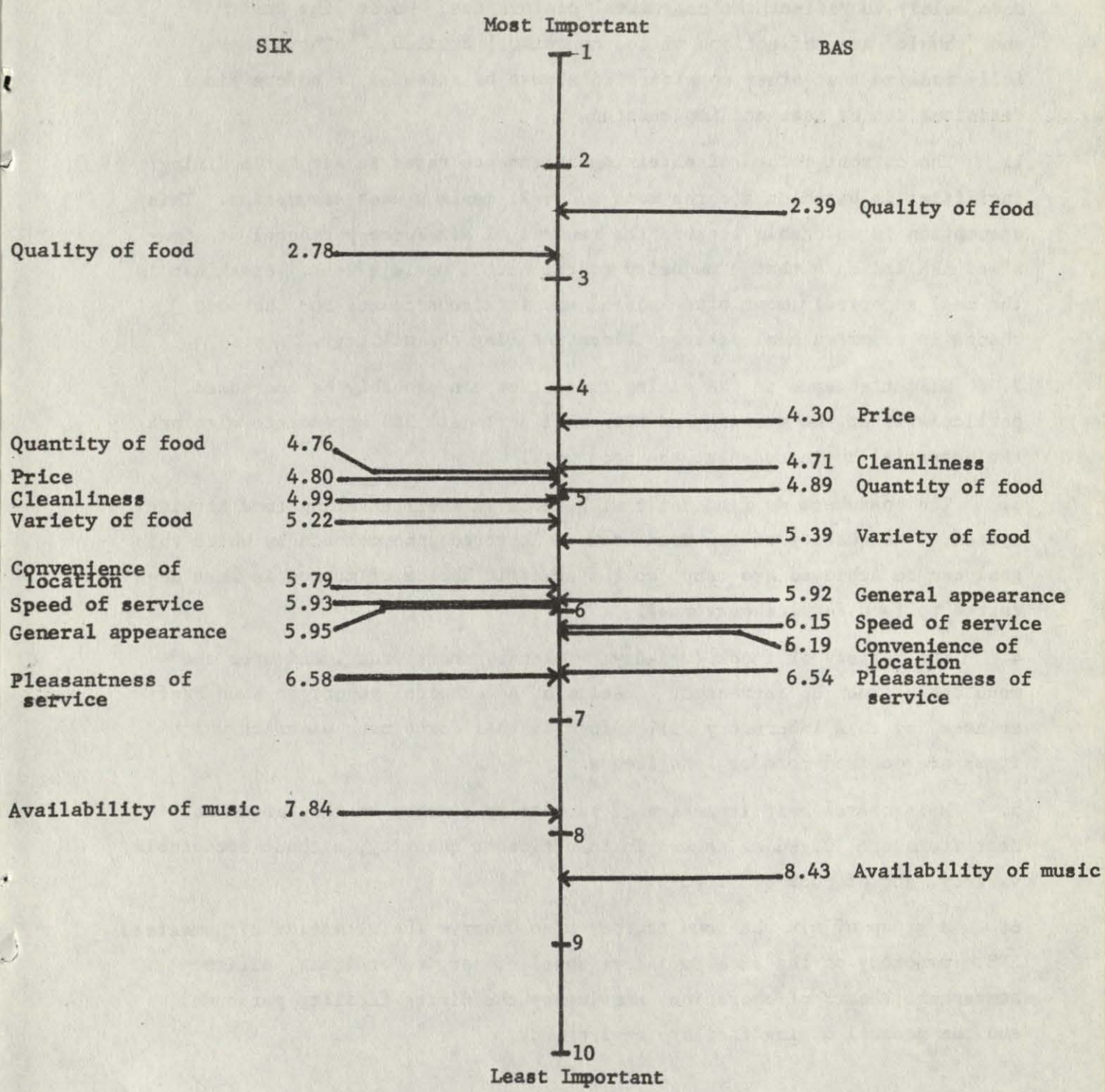


TABLE 40

The Importance of 10 Factors in Choosing an EVENING MEAL from a Civilian Facility



CONCLUSIONS AND RECOMMENDATIONS

The reader should bear in mind that the following statements are made soley to reflect the consumers' preferences. Words like "must" and "should" are reflections of the consumers' attitudes. The authors fully realize that other considerations must be attended to before final decisions can be made and implemented.

1. The current method of obtaining attendance rates in Air Force dining facilities is based on a three meal a day/21 meals a week assumption. This assumption is untenable because the reports of Air Force personnel at Homestead AFB indicate that a majority do not eat 21 meals a week. Breakfast is the meal reportedly most often missed and it also accounts for the most change in reported meal patterns since entering the military.

2. SIK attendance in the dining facilities can probably be increased, particularly at the evening and noon meal periods. BAS attendance also has the potential to increase at the noon meal.

3. The consumers do find fault with foods in their existing food service system. The quality of the food must be improved; the methods by which this goal can be achieved are many, so the specific choice of method is best deferred to food service personnel.

4. The variety of foods (weekday, weekends, short order, and over the menu cycle) must be increased. Results of a technical report on Food Preferences[3] by this laboratory will inform the Air Force menu planners which items are desired more or less frequently.

5. Main course meat items are of particular concern to the consumers. Meat items are judged as served in insufficient quantity, without acceptable variety, and of poor quality.

6. A group of six non-food factors also deserve the attention of Homestead AFB: monotony of the same facility; speed of service or lines; military atmosphere; hours of operation; service by the dining facility personnel; and the general dining facility environment.

REFERENCES

1. Branch, L.G. and H.L. Meiselman. The consumers' opinions of the food service system: The 1973 Travis Air Force Base survey. United States Army Natick Laboratories Technical Report 73-52-PR, 1973.

2. Branch, L.G., L.E. Symington, and H.L. Meiselman. The consumers' opinions of the food service system: The 1973 Minot Air Force Base survey. United States Army Natick Laboratories Technical Report 74-7-PR, 1973.

3. Meiselman, H.L., L.G. Branch, D. Waterman, T. Reed, and M. Taylor. Armed Forces Food preferences. United States Army Natick Laboratories Technical Report, in press.

4. Branch, L.G., D. Waterman, L.E. Symington, and H.L. Meiselman. The consumers' opinions of the food service system: The 1973 Fort Lee, Virginia, survey. United States Army Natick Laboratories Technical Report, in press.

5. Kiess, H.O., J.B. Swanson, and R.F.Q. Johnson. Fort Lewis dining facilities consumer survey. United States Army Natick Laboratories Technical Report 72-44-PR, 1972.

6. Branch, L.G. and H.L. Meiselman. Consumer reaction to the Fort Lewis CAFe system. United States Army Natick Laboratories Technical Report 72-64-PR, 1972.

CONSUMER'S OPINIONS OF FOOD SERVICE SYSTEMS

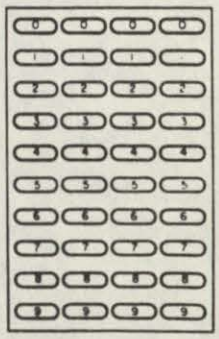
APPENDIX I

U. S. ARMY NATICK LABORATORIES

NOVEMBER 1972

Booklet Serial Number

In the grid to your right, please fill in the ovals corresponding with the Booklet Serial Number that is stamped directly above the numeric grid.



Instructions for all questions: For each question completely darken the circle around the number of your answer. Certain questions have specific instructions associated with them. Please read these instructions carefully.

INSTALLATION CODE (To be supplied by testers.)

⓪①②③④⑤⑥⑦⑧⑨

DINING FACILITY CODE (To be supplied by testers.)

⓪①②③④⑤⑥⑦⑧⑨

Darken the appropriate circles which indicate your AGE at last birthday.

1st digit ⓪①②③④⑤⑥⑦⑧⑨

2nd digit ⓪①②③④⑤⑥⑦⑧⑨

Darken the circle which indicates your RACE.

- ○ Caucasian
- ○ Negro
- ○ Oriental
- ○ Other (specify _____)

Darken the circle which indicates your SEX.

- ○ Male
- ○ Female

Darken the circle which indicates your HIGHEST LEVEL OF EDUCATION.

- ○ Some Grade School
- ○ Finished Grade School
- ○ Some High School
- ○ High School Graduate (includes GED)
- ○ Skilled Job Training
- ○ Some College
- ○ College Graduate
- ○ Beyond College

How long have you been IN MILITARY SERVICE? Darken one circle in each line.

years 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
○○○○○○○○○○○○○○○○○○○○○

and months 0 1 2 3 4 5 6 7 8 9 10 11
○○○○○○○○○○○○

Do you plan to REENLIST when your present enlistment ends? Darken the appropriate circle.

- ① Definitely yes
- ② Probably yes
- ③ Undecided
- ④ Probably no
- ⑤ Definitely no

How much do you LIKE MILITARY SERVICE? Darken the appropriate circle.

Dislike very much	Dislike moderately	Dislike a little	Neutral	Like a little	Like moderately	Like very much
①	②	③	④	⑤	⑥	⑦

Where were you raised? Darken the appropriate circle.

① In the country
② In a town with less than 2,500 people
③ In a town or small city with more than 2,500, but less than 25,000 people
④ In a city with more than 25,000, but less than 100,000 people
⑤ In a large city with more than 100,000, but less than one million people
⑥ In a very large city with over one million people
⑦ In a suburb of a large or very large city

In what STATE were you raised? Darken the appropriate circle.

○ 01	Alabama	○ 28	Nevada
○ 02	Alaska	○ 29	New Hampshire
○ 03	Arizona	○ 30	New Jersey
○ 04	Arkansas	○ 31	New Mexico
○ 05	California	○ 32	New York
○ 06	Colorado	○ 33	North Carolina
○ 07	Connecticut	○ 34	North Dakota
○ 08	Delaware	○ 35	Ohio
○ 09	Florida	○ 36	Oklahoma
○ 10	Georgia	○ 37	Oregon
○ 11	Hawaii	○ 38	Pennsylvania
○ 12	Idaho	○ 39	Rhode Island
○ 13	Illinois	○ 40	South Carolina
○ 14	Indiana	○ 41	South Dakota
○ 15	Iowa	○ 42	Tennessee
○ 16	Kansas	○ 43	Texas
○ 17	Kentucky	○ 44	Utah
○ 18	Louisiana	○ 45	Vermont
○ 19	Maine	○ 46	Virginia
○ 20	Maryland	○ 47	Washington
○ 21	Massachusetts	○ 48	West Virginia
○ 22	Michigan	○ 49	Wisconsin
○ 23	Minnesota	○ 50	Wyoming
○ 24	Mississippi	○ 51	Other U.S. territories or possessions (For example, Puerto Rico or Virgin Islands.)
○ 25	Missouri		
○ 26	Montana	○ 52	Outside the U.S. or U.S. Territories or possessions.
○ 27	Nebraska		

Darken the circle which indicates your PRESENT GRADE.

① E-1
② E-2
③ E-3
④ E-4
⑤ E-5
⑥ E-6
⑦ E-7
⑧ E-8
⑨ E-9

Do you receive a SEPARATE RATIONS ALLOWANCE (money instead of free meals)? Darken the appropriate circle.

① Yes
② No

What ONE TYPE OF COOKING were you raised on? Darken the appropriate circle.

○ 01	Chinese	○ 09	Jewish
○ 02	English	○ 10	Mexican
○ 03	French	○ 11	New England
○ 04	General American Style	○ 12	Polish (& Eastern Europe)
○ 05	German	○ 13	Soul
○ 06	Greek	○ 14	Southern
○ 07	Italian	○ 15	Spanish (not Mexican)
○ 08	Japanese	○ 16	Other (please specify_____)

What TYPE OF COOKING OR SPECIALTY FOODS do you like best? Please darken the circles of your TOP THREE CHOICES.

○ 01	Chinese	○ 09	Jewish
○ 02	English	○ 10	Mexican
○ 03	French	○ 11	New England
○ 04	General American Style	○ 12	Polish (& Eastern Europe)
○ 05	German	○ 13	Soul
○ 06	Greek	○ 14	Southern
○ 07	Italian	○ 15	Spanish (not Mexican)
○ 08	Japanese	○ 16	Seafood
		○ 17	Other (please specify_____)

WHICH MEALS DO YOU EAT DURING A TYPICAL WEEK, REGARDLESS OF WHERE YOU EAT THEM? If you have "brunch" on Saturdays or Sundays, consider it to be a mid-day meal. Be sure to mark each block.

	Mon.		Tues.		Wed.		Thurs.		Fri.		Sat.		Sun.	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Breakfast	①	②	①	②	①	②	①	②	①	②	①	②	①	②
Mid-day Meal	①	②	①	②	①	②	①	②	①	②	①	②	①	②
Evening Meal	①	②	①	②	①	②	①	②	①	②	①	②	①	②
After Evening	①	②	①	②	①	②	①	②	①	②	①	②	①	②

WHICH MEALS DO YOU EAT DURING A TYPICAL WEEK AT YOUR DINING FACILITY? If you have "brunch" on Saturdays or Sundays, consider it to be a mid-day meal. Be sure to mark each block.

	Mon.		Tues.		Wed.		Thurs.		Fri.		Sat.		Sun.	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Breakfast	①	②	①	②	①	②	①	②	①	②	①	②	①	②
Mid-day Meal	①	②	①	②	①	②	①	②	①	②	①	②	①	②
Evening Meal	①	②	①	②	①	②	①	②	①	②	①	②	①	②
After Evening	①	②	①	②	①	②	①	②	①	②	①	②	①	②

BEFORE YOU ENTERED THE MILITARY, WHICH MEALS DID YOU USUALLY EAT?
If you ate "brunch" on Saturdays or Sundays, consider it to be a mid-day meal. Be sure to mark each block.

	Mon.		Tues.		Wed.		Thurs.		Fri.		Sat.		Sun.	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Breakfast	①	②	①	②	①	②	①	②	①	②	①	②	①	②
Mid-day Meal	①	②	①	②	①	②	①	②	①	②	①	②	①	②
Evening Meal	①	②	①	②	①	②	①	②	①	②	①	②	①	②
After Evening	①	②	①	②	①	②	①	②	①	②	①	②	①	②

WHERE DO YOU EAT when you do not eat in the military dining facility? Indicate how often by filling in one circle in each line.

		Never	Less than once a week	1-3 times a week	4-7 times a week	8-14 times a week	15 or more times a week
a.	Private residence (girlfriend's house, friend's or relative's house, your home, your barracks, bringing your food, etc.)	○	○	○	○	○	○
b.	An installation snack facility (the bowling alley, the exchange, etc.)	○	○	○	○	○	○
c.	An installation NCO club, EM or Airmen Club, or service club	○	○	○	○	○	○
d.	Diner, snack bar, pizza parlor, or drive-in off the installation (or having it delivered)	○	○	○	○	○	○
e.	Quality restaurant off the installation	○	○	○	○	○	○
f.	Bar or tavern (with alcoholic beverages) off the installation	○	○	○	○	○	○
g.	From vending machines	○	○	○	○	○	○
h.	From mobile snack or lunch trucks	○	○	○	○	○	○
i.	Other (write it below and indicate how often)	○	○	○	○	○	○

_____

Listed below are 14 GENERAL AREAS OF CONCERN. For each topic or area, indicate whether it is a significant problem, a minor problem, neither a problem nor an attraction, a minor attraction, or a significant attraction for your dining facility in your opinion.

	Area or topic	Significant Problem	Minor Problem	Neither Problem Nor Attraction	Minor Attraction	Significant Attraction
a.	Convenience of location	①	②	③	④	⑤
b.	General dining facility environment	①	②	③	④	⑤
c.	Degree of military atmosphere present	①	②	③	④	⑤
d.	Desirable eating companions	①	②	③	④	⑤
e.	Expense	①	②	③	④	⑤
f.	Hours of operation	①	②	③	④	⑤
g.	Monotony of same facility	①	②	③	④	⑤
h.	Quality of food	①	②	③	④	⑤
i.	Quantity of food	①	②	③	④	⑤
j.	Service by dining facility personnel	①	②	③	④	⑤
k.	Variety of the regular meal food (weekday only)	①	②	③	④	⑤
l.	Variety of the regular meal food (weekend only)	①	②	③	④	⑤
m.	Variety of the short order food	①	②	③	④	⑤
n.	Speed of service or lines	①	②	③	④	⑤

For each of the same 14 general areas, indicate whether it is a major reason for your degree of NON-ATTENDANCE at the dining facility, a minor reason for your degree of non-attendance, or not related to your degree of non-attendance.

	Area or topic	Major reason for non-attendance	Minor reason for non-attendance	Not related to non-attendance
a.	Convenience of location	①	②	③
b.	General dining facility environment	①	②	③
c.	Degree of military atmosphere present	①	②	③
d.	Desirable eating companions	①	②	③
e.	Expense	①	②	③
f.	Hours of operation	①	②	③
g.	Monotony of same facility	①	②	③
h.	Quality of food	①	②	③
i.	Quantity of food	①	②	③
j.	Service by dining facility personnel	①	②	③
k.	Variety of the regular meal food (weekday only)	①	②	③
l.	Variety of the regular meal food (weekend only)	①	②	③
m.	Variety of the short order food	①	②	③
n.	Speed of service or lines	①	②	③

If you have a REGULARLY SCHEDULED ACTIVITY which keeps you from attending the dining facility at certain times, indicate how many meals per week you do not attend because of this activity. (Indicate "zero meals not attended" if you have no such activity.)

Meals not attended:	0	1	2-4	5	6-7	8-10	More than 10
	○	○	○	○	○	○	○

Concerning the degree of MILITARY ATMOSPHERE which you feel exists in your dining facility at the present time, indicate whether you feel there should be MORE or LESS military atmosphere in the future.

A Lot More	A Little More	About the Same	A Little Less	A Lot Less
①	②	③	④	⑤

Indicate how you usually travel between each of the following locations:

		Walk	Drive	Ride	Bus	Other (specify)
a.	Living area to your job site	①	②	③	④	⑤ _____
b.	Job site to dining facility	①	②	③	④	⑤ _____
c.	Living area to dining facility	①	②	③	④	⑤ _____

Indicate approximately how many minutes it takes you to travel by the means you indicated in the previous questions from your:

		1-5 min	6-10 min	11-15 min	16-20 min	21-25 min	26-30 min	Over 30 min
a.	Living area to your job site	○	○	○	○	○	○	○
b.	Job site to dining facility	○	○	○	○	○	○	○
c.	Living area to dining facility	○	○	○	○	○	○	○

Indicate approximately how many MINUTES it would take to WALK from your:

		1-5 min	6-10 min	11-15 min	16-20 min	21-25 min	26-30 min	Over 30 min
a.	Living area to your job site	○	○	○	○	○	○	○
b.	Job site to dining facility	○	○	○	○	○	○	○
c.	Living area to dining facility	○	○	○	○	○	○	○

Is your dining facility ever:

		Never	Sometimes	Often	Always
a.	Too cold	①	②	③	④
b.	Too warm	①	②	③	④
c.	Stuffy	①	②	③	④
d.	Smoky	①	②	③	④
e.	Full of steam	①	②	③	④
f.	Full of unpleasant food odors	①	②	③	④

How often do you find:

		Never	Sometimes	Often	Always
a.	Inappropriate or missing silverware	①	②	③	④
b.	Not enough condiments (ketchup, etc.)	①	②	③	④
c.	Left-overs being served day after day	①	②	③	④
d.	Serving line has run out of items	①	②	③	④

For each pair of items below, please indicate your opinion of THE GENERAL CONDITION OF YOUR DINING FACILITY by darkening the circle which comes closest to describing your feelings.

		Extremely	Moderately	Neutral	Moderately	Extremely	
a.	Clean kitchen area	①	②	③	④	⑤	Dirty kitchen area
b.	Insect infested	①	②	③	④	⑤	Insect free
c.	Rodent infested	①	②	③	④	⑤	Rodent free
d.	Clean serving counters	①	②	③	④	⑤	Dirty serving counters
e.	Dirty dispensing devices	①	②	③	④	⑤	Clean dispensing devices
f.	Dirty silverware	①	②	③	④	⑤	Clean silverware
g.	Clean trays	①	②	③	④	⑤	Dirty trays
h.	Clean dishes and glasses	①	②	③	④	⑤	Dirty dishes and glasses
i.	Dirty floors	①	②	③	④	⑤	Clean floors
j.	Dirty tables and chairs	①	②	③	④	⑤	Clean tables and chairs
k.	Brightly lighted	①	②	③	④	⑤	Dimly lighted
l.	Sunny	①	②	③	④	⑤	Lacking in sunlight
m.	Quiet	①	②	③	④	⑤	Noisy
n.	Crowded	①	②	③	④	⑤	Uncrowded
o.	Roomy	①	②	③	④	⑤	Cramped
p.	Poorly designed	①	②	③	④	⑤	Well designed
q.	Pleasant view	①	②	③	④	⑤	Unpleasant view
r.	Low number of safety hazards	①	②	③	④	⑤	High number of safety hazards
s.	Unpleasant exterior appearance	①	②	③	④	⑤	Pleasant exterior appearance
t.	Unpleasant interior appearance	①	②	③	④	⑤	Pleasant interior appearance

Indicate your opinions about CONVENIENCES WITHIN YOUR DINING FACILITY:

		Extremely	Moderately	Neutral	Moderately	Extremely	
a.	Convenient to enter & leave	①	②	③	④	⑤	Inconvenient to enter & leave
b.	Far from washroom	①	②	③	④	⑤	Close to washroom
c.	Large space between tables allows easy passage	①	②	③	④	⑤	Small space between tables forbids easy passage
d.	Inadequate table size for size of trays	①	②	③	④	⑤	Adequate table size for trays

Is the overall APPEARANCE OR ATMOSPHERE of your dining facility:

a.	Colorful	①	②	③	④	⑤	Drab
b.	Cheerful	①	②	③	④	⑤	Dreary
c.	Cluttered	①	②	③	④	⑤	Uncluttered
d.	Beautiful	①	②	③	④	⑤	Ugly
e.	Relaxed	①	②	③	④	⑤	Tense
f.	Sociable	①	②	③	④	⑤	Unsociable
g.	Crowded	①	②	③	④	⑤	Uncrowded

Are the TABLES in your dining facility:

a.	Colorful	①	②	③	④	⑤	Drab
b.	Beautiful	①	②	③	④	⑤	Ugly
c.	Wide variety	①	②	③	④	⑤	Limited variety
d.	Sturdy	①	②	③	④	⑤	Easy to damage
e.	Roomy	①	②	③	④	⑤	Cramped

Indicate the TABLE SIZE you prefer:

2 persons	4 persons	6 persons	8 persons	More than 8 persons
○	○	○	○	○

Indicate the TABLE SHAPE you prefer:

○ Round
○ Square or Rectangular

Indicate how often each of the following statements about SOCIAL aspects of your dining facility applies to you.

	Never	Sometimes	Often	Always
I line up with my friends for the meal	①	②	③	④
I always sit with my friends at a dining table	①	②	③	④
I always try to claim a certain table as my area	①	②	③	④
The feeling of privacy is quite good in this dining hall	①	②	③	④
I talk to people at other tables during the meal	①	②	③	④
Room conditions are acceptable for relaxed conversation	①	②	③	④
There is a friendly social atmosphere in this dining hall	①	②	③	④

Do you have MUSIC in your dining facility now?	Yes	No
	①	②

What is your reaction to having MUSIC in the dining facilities:

Very Acceptable	Mildly Acceptable	Neutral	Mildly Unacceptable	Very Unacceptable
①	②	③	④	⑤

Indicate the one type of music you would most prefer in the dining facilities:

- ○ Any type is fine
- ○ Hard rock
- ○ Soul
- ○ Popular
- ○ Rock and roll
- ○ Jazz
- ○ Instrumental
- ○ Classical
- ○ Country western
- ○ A variety of the above
- ○ Other (write it here) _____
- ○ Do not want music

Does your dining facility use a SELF BUSSING system in which each person carries his own tray to the dishwashing area?

Yes	No
①	②

Indicate how you do or would feel about having SELF BUSSING in the dining facilities:

Very Acceptable	Mildly Acceptable	Neutral	Mildly Unacceptable	Very Unacceptable
①	②	③	④	⑤

Indicate your opinion about the policies concerning the SEPARATE RATIONS SYSTEMS:

Very Acceptable	Mildly Acceptable	Neutral	Mildly Unacceptable	Very Unacceptable
①	②	③	④	⑤

Indicate your opinion of the following proposals:

a. In CONUS, everyone should receive the separate rations allowance. Each individual should then pay for the meals he eats in a military dining facility (breakfast: 35 cents; mid-day meal: 80 cents; evening meal: 60 cents).

Extremely Unfavorable	Mildly Unfavorable	Neutral	Mildly Favorable	Extremely Favorable
①	②	③	④	⑤

b. In CONUS, everyone should receive the separate rations allowance. Each individual should then pay for the specific items he takes from the serving line (2 eggs: 15 cents; hamburger: 20 cents; french fries: 10 cents; chicken: 45 cents).

Extremely Unfavorable	Mildly Unfavorable	Neutral	Mildly Favorable	Extremely Favorable
①	②	③	④	⑤

c. The current system gives some people a separate rations allowance and requires them to pay for each meal they eat in the dining facility. The others who do not receive that allowance are authorized to eat in the dining facilities without charge. This system should be retained.

Extremely Unfavorable	Mildly Unfavorable	Neutral	Mildly Favorable	Extremely Favorable
①	②	③	④	⑤

What hours would you like the dining facility to be open for your convenience?

Weekdays: Monday to Friday

	Breakfast	Mid-Day Meal	Evening Meal
From:			
1 hr or more earlier	①	①	①
30 min earlier	②	②	②
15 min earlier	③	③	③
Sufficient as it is	④	④	④
To:			
1 hr or more later	①	①	①
30 min later	②	②	②
15 min later	③	③	③
Sufficient as it is	④	④	④

Weekends: Saturday and Sunday

	Breakfast	Mid-Day Meal	Evening Meal
From:			
1 hr or more earlier	①	①	①
30 min earlier	②	②	②
15 min earlier	③	③	③
Sufficient as it is	④	④	④
To:			
1 hr or more later	①	①	①
30 min later	②	②	②
15 min later	③	③	③
Sufficient as it is	④	④	④

Is the food in your mess hall ever:

		Never	Sometimes	Often	Always
a.	Overcooked	①	②	③	④
b.	Undercooked	①	②	③	④
c.	Cold	①	②	③	④
d.	Tasteless or bland	①	②	③	④
e.	Burned	①	②	③	④
f.	Dried out	①	②	③	④
g.	Greasy	①	②	③	④
h.	Tough	①	②	③	④
i.	Too spicy	①	②	③	④
j.	Raw	①	②	③	④
k.	Still frozen	①	②	③	④
l.	Too salty	①	②	③	④

Do you ever find that the food in your dining facility is, or has:

		Never	Sometimes	Often	Always
a.	Gristle or tendon	①	②	③	④
b.	Excess fat	①	②	③	④
c.	Stringy	①	②	③	④
d.	Damaged or bruised (e.g., fruit or vegetables)	①	②	③	④
e.	Over-ripe fruit	①	②	③	④
f.	Under-ripe fruit	①	②	③	④
g.	Stale	①	②	③	④
h.	Old looking	①	②	③	④
i.	Sour (e.g., milk)	①	②	③	④
j.	Spoiled	①	②	③	④
k.	Off-flavor or odor	①	②	③	④

Other than times of dieting, do you ever LEAVE your dining facility WITHOUT ENOUGH TO EAT?

NEVER	SOMETIMES	OFTEN	ALWAYS
①	②	③	④

Do you serve yourself or do the dining facility personnel serve you the following items:

		SELF-SERVICE	SERVED BY OTHERS
a.	Short order items	①	②
b.	Meat items	①	②
c.	Starches (i.e. potatoes)	①	②
d.	Vegetables	①	②
e.	Salads	①	②
f.	Beverages	①	②
g.	Desserts	①	②

Are SECOND HELPINGS PERMITTED for the following items?

		Always	Sometimes	Never
a.	Short order items	①	②	③
b.	Meat items	①	②	③
c.	Starches (i.e. potatoes)	①	②	③
d.	Vegetables	①	②	③
e.	Salads	①	②	③
f.	Beverages	①	②	③
g.	Desserts	①	②	③

Indicate your opinion of the VARIETY of offerings at any particular WEEKEND meal.

We need:	Many More Choices	A Few More Choices	Choices Now Enough	Fewer Choices Acceptable
a. For short order foods:	①	②	③	④
b. For meats:	①	②	③	④
c. For starches:	①	②	③	④
d. For vegetables:	①	②	③	④
e. For salads:	①	②	③	④
f. For beverages:	①	②	③	④
g. For desserts:	①	②	③	④

Indicate your opinion of the VARIETY of foods offered in the menu during the course of a month or so.

We need:	Many More Items	A Few More Items	Items Now Enough	Fewer Items Acceptable
a. For short order:	①	②	③	④
b. For meats:	①	②	③	④
c. For starches:	①	②	③	④
d. For vegetables:	①	②	③	④
e. For salads:	①	②	③	④
f. For beverages:	①	②	③	④
g. For desserts:	①	②	③	④

Is CARRY OUT SERVICE available in your dining facility? (Disregard any flight feeding programs in this and the following two questions.)

Yes ① No ②

Indicate how you do or would feel about CARRY OUT SERVICE being available from the dining facilities.

Extremely opposed			Neutral			Extremely Enthusiastic
①	②	③	④	⑤	⑥	⑦

If such a CARRY OUT SERVICE were available, how do you feel it would influence your attendance in the military dining facilities?

① No influence.
② I would eat a FEW MORE meals per week.
③ I would eat MANY MORE meals per week.

How long do you USUALLY have to WAIT in line at the headcount station TO GET ADMITTED for a meal:

① I never have to wait in line.
② I wait between one and five minutes.
③ I wait between five and ten minutes.
④ I wait between ten and fifteen minutes.
⑤ I wait longer than fifteen minutes.

Answer the following questions for the regular meal only. Exclude the short order meal. Indicate "Not Appropriate" (8) if you have self-service and/or second helpings permitted.

a. What is your opinion about the amount of meat per serving:

Too Little			About Right			Too Much	NA
①	②	③	④	⑤	⑥	⑦	⑧

b. What is your opinion about the amount of starches per serving:

Too Little			About Right			Too Much	NA
①	②	③	④	⑤	⑥	⑦	⑧

c. What is your opinion about the amount of vegetables per serving:

Too Little			About Right			Too Much	NA
①	②	③	④	⑤	⑥	⑦	⑧

d. What is your opinion about the amount of dessert per serving:

Too Little			About Right			Too Much	NA
①	②	③	④	⑤	⑥	⑦	⑧

Indicate your opinion about the ABILITY of the COOKS to prepare high quality meals in your dining facilities.

Very Poor			Average			Excellent
①	②	③	④	⑤	⑥	⑦

Indicate your opinion about the ATTITUDES of the dining facility WORKERS to make your meal as pleasant as possible.

Very Poor			Average			Excellent
①	②	③	④	⑤	⑥	⑦

Indicate your opinion of the VARIETY of offerings at any particular WEEKDAY meal.

	We need:	Many More Choices	A Few More Choices	Choices Now Enough	Fewer Choices Acceptable
a.	For short order foods:	①	②	③	④
b.	For meats:	①	②	③	④
c.	For starches:	①	②	③	④
d.	For vegetables:	①	②	③	④
e.	For salads:	①	②	③	④
f.	For beverages:	①	②	③	④
g.	For desserts:	①	②	③	④

How long do you USUALLY have to WAIT IN THE SERVING LINE after the headcount before you get your food?

① I never have to wait in line.
② I wait between one and five minutes.
③ I wait between five and ten minutes.
④ I wait between ten and fifteen minutes.
⑤ I wait longer than fifteen minutes.

How long do you USUALLY have to WAIT AT THE DISH WASHING AREA when self-bussing?

① I never have to wait in line.
② I wait between one and five minutes.
③ I wait between five and ten minutes.
④ I wait between ten and fifteen minutes.
⑤ I wait longer than fifteen minutes.
⑥ Not applicable; no self-bussing.

For each of the following RULES FOR BEHAVIOR, first indicate whether or not the rules exist in your dining facility and then indicate whether you feel it should be ENFORCED OR INSTITUTED, whether you feel it should be ABOLISHED OR NOT INSTITUTED, or whether you have NO OPINION about it.

		Does Rule Exist? Yes	No	Enforce or Institute	Abolish or not Institute	No Opinion
a.	Dress regulations	①	②	①	②	③
b.	Not allowing non-military guests	①	②	①	②	③
c.	Calling "at ease" when officer enters	①	②	①	②	③
d.	No smoking	①	②	①	②	③
e.	Officers and NCO's permitted to cut in line	①	②	①	②	③
f.	Separation of officers and NCO's from enlisted men	①	②	①	②	③

Now we would like to have your opinions of food service systems in general. Therefore, answer the following questions as if your circumstances were different and you held a civilian job instead of being in military service.

Suppose you regularly went out to eat your NOON MEAL and had many places to choose from. Indicate the order of IMPORTANCE of each of the following 10 factors in making your CHOICE OF WHERE TO EAT by darkening the circle under "1st" for the most important factor, darkening the circle under "2nd" for the second most important factor, and so on. Each factor then should have one ranking.

		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
a.	Convenience of location	○	○	○	○	○	○	○	○	○	○
b.	General appearance	○	○	○	○	○	○	○	○	○	○
c.	Price	○	○	○	○	○	○	○	○	○	○
d.	Quality of food	○	○	○	○	○	○	○	○	○	○
e.	Quantity of food	○	○	○	○	○	○	○	○	○	○
f.	Variety of food	○	○	○	○	○	○	○	○	○	○
g.	Speed of service	○	○	○	○	○	○	○	○	○	○
h.	Availability of music	○	○	○	○	○	○	○	○	○	○
i.	Pleasantness of service personnel	○	○	○	○	○	○	○	○	○	○
j.	Cleanliness	○	○	○	○	○	○	○	○	○	○

Suppose you regularly went out to eat your EVENING MEAL and had many places to choose from. Indicate the order of IMPORTANCE of each of the following 10 factors in making your CHOICE OF WHERE TO EAT by darkening the one for the most important factor, darkening the two for the second most important factor, and so on. Each factor then should have one ranking.

		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
a.	Convenience of location	○	○	○	○	○	○	○	○	○	○
b.	General appearance	○	○	○	○	○	○	○	○	○	○
c.	Price	○	○	○	○	○	○	○	○	○	○
d.	Quality of food	○	○	○	○	○	○	○	○	○	○
e.	Quantity of food	○	○	○	○	○	○	○	○	○	○
f.	Variety of food	○	○	○	○	○	○	○	○	○	○
g.	Speed of service	○	○	○	○	○	○	○	○	○	○
h.	Availability of music	○	○	○	○	○	○	○	○	○	○
i.	Pleasantness of service personnel	○	○	○	○	○	○	○	○	○	○
j.	Cleanliness	○	○	○	○	○	○	○	○	○	○

Suppose you have decided to have an INEXPENSIVE NOON or EVENING MEAL. Would you prefer a cafeteria, self-service system or a waitress-service system?

	Definitely	Probably	Neutral	Probably	Definitely	
Self-service	○	○	○	○	○	Waitress service

APPENDIX II

TABLE 41

Sex of Sample

	Male	Female	Total
SIK	90% (214)	10% (23)	100% (237)
BAS	98% (245)	2% (6)	100% (251)

Note: The actual numbers are indicated in the parentheses in this and the following table.

TABLE 42

Race of Sample

	Caucasian	Negro	Oriental	Other	Total
SIK	76% (181)	16% (39)	½%[a] (1)	7% (16)	99%[b] (237)
BAS	87% (218)	10% (26)	0% (0)	3% (7)	100% (251)

a. Less than 1/2%

b. Totals might not add up to 100% due to previous rounding.

TABLE 43

Age of Sample

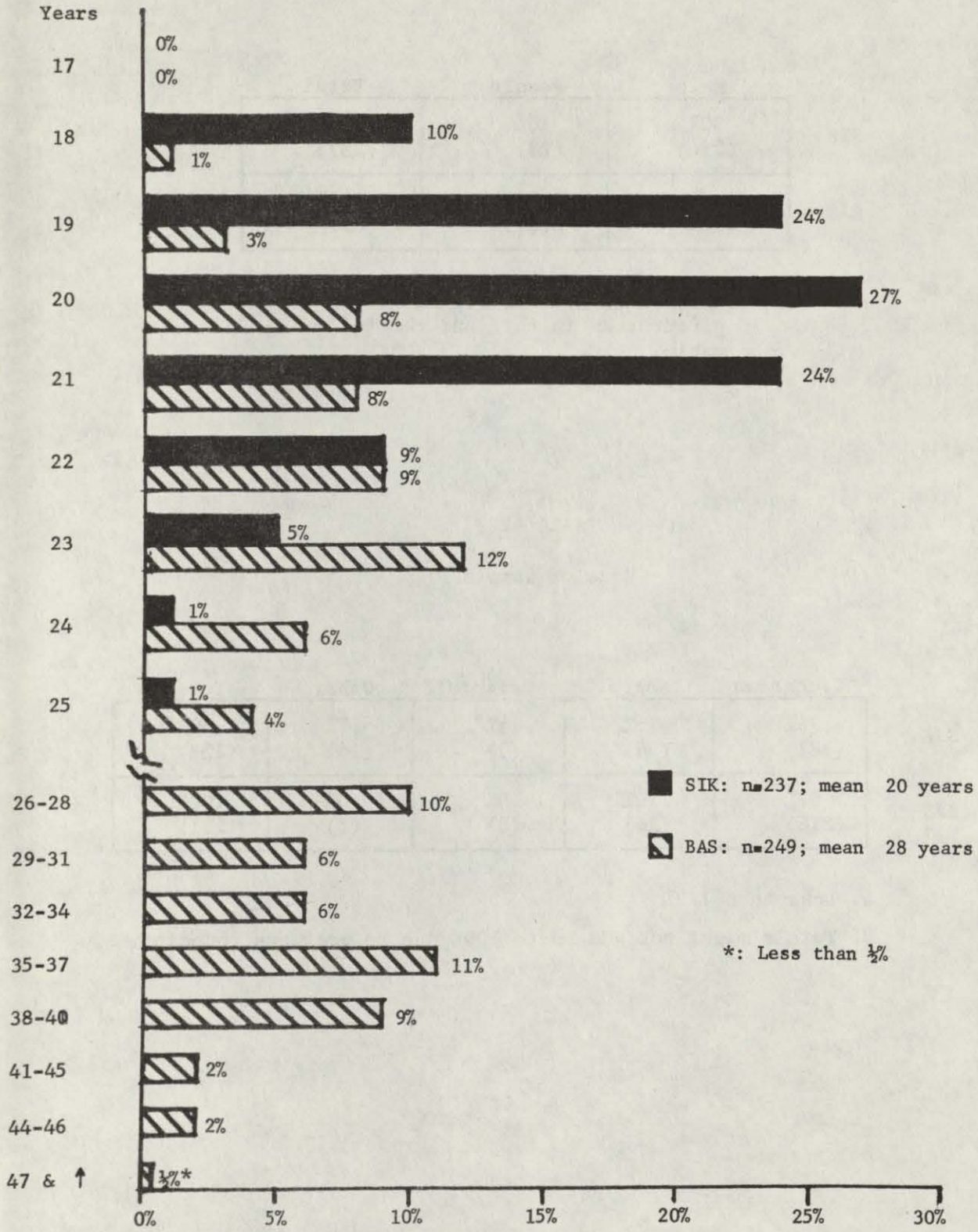
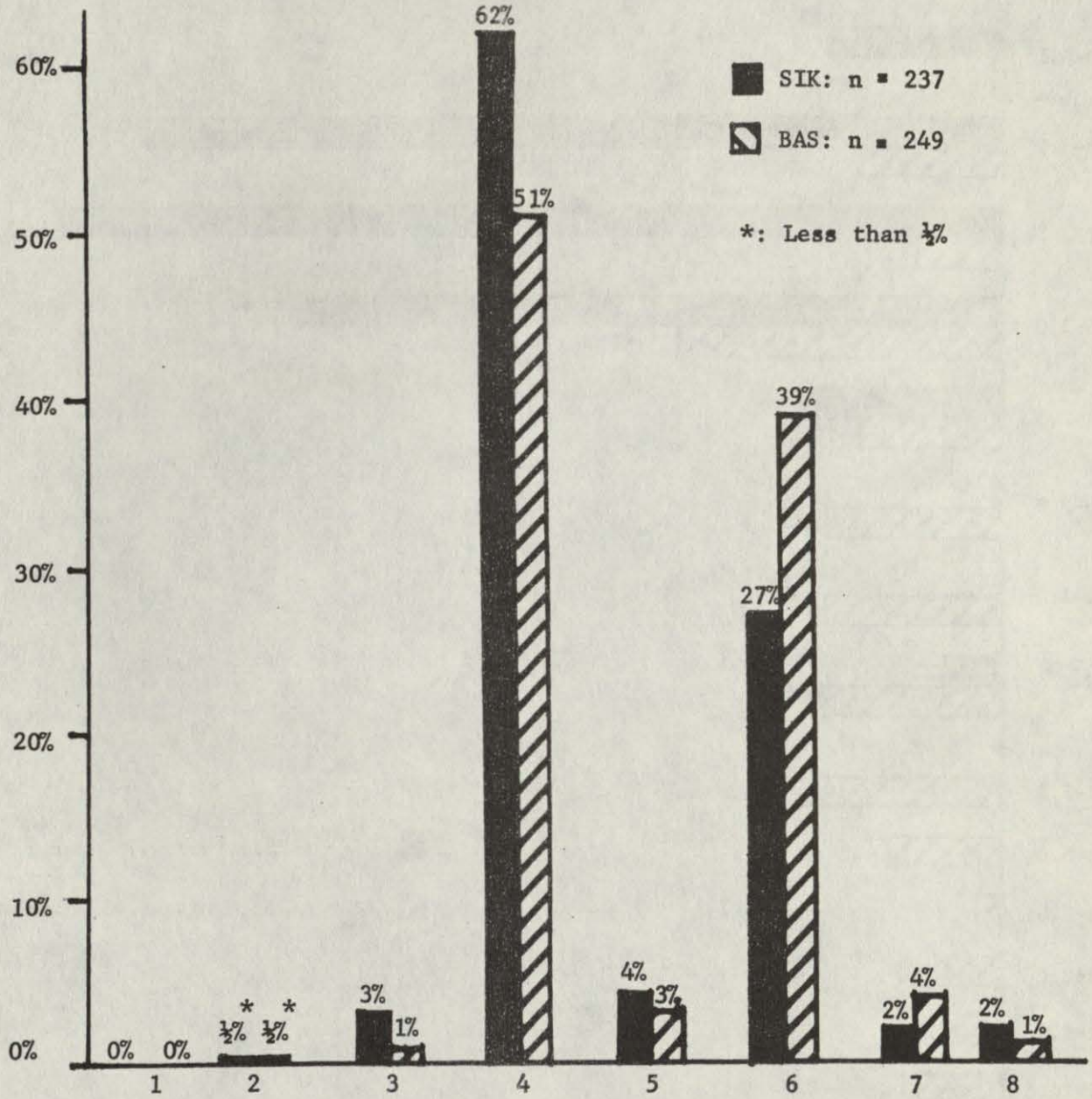


TABLE 44

Educational Level of Sample



Legend:
1. Some grade school
2. Finished grade school
3. Some high school
4. Finished high school (includes GED)
5. Skilled job training
6. Some college
7. College graduate
8. Beyond college

TABLE 45

Time in Service

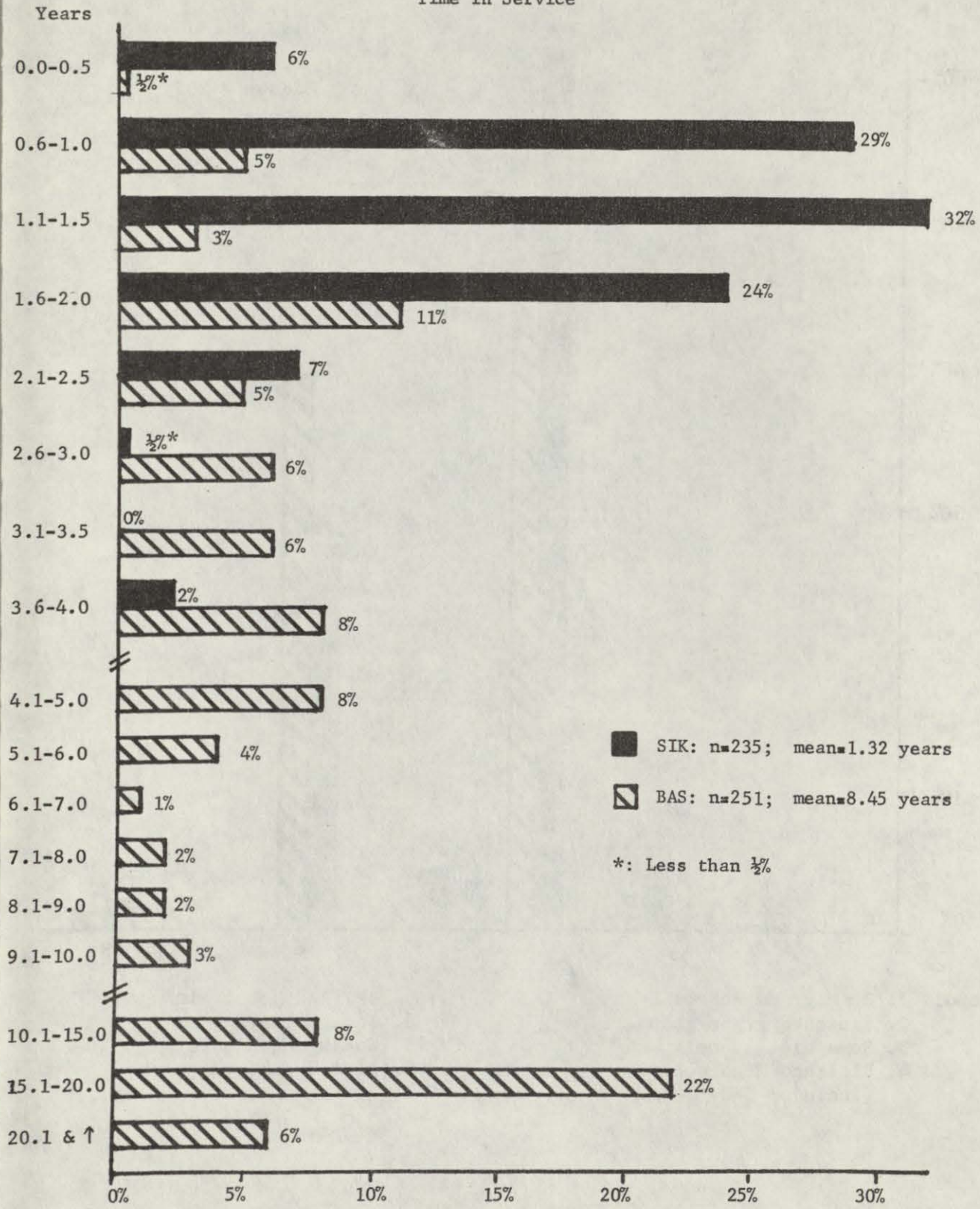


TABLE 46

Reenlistment Plans

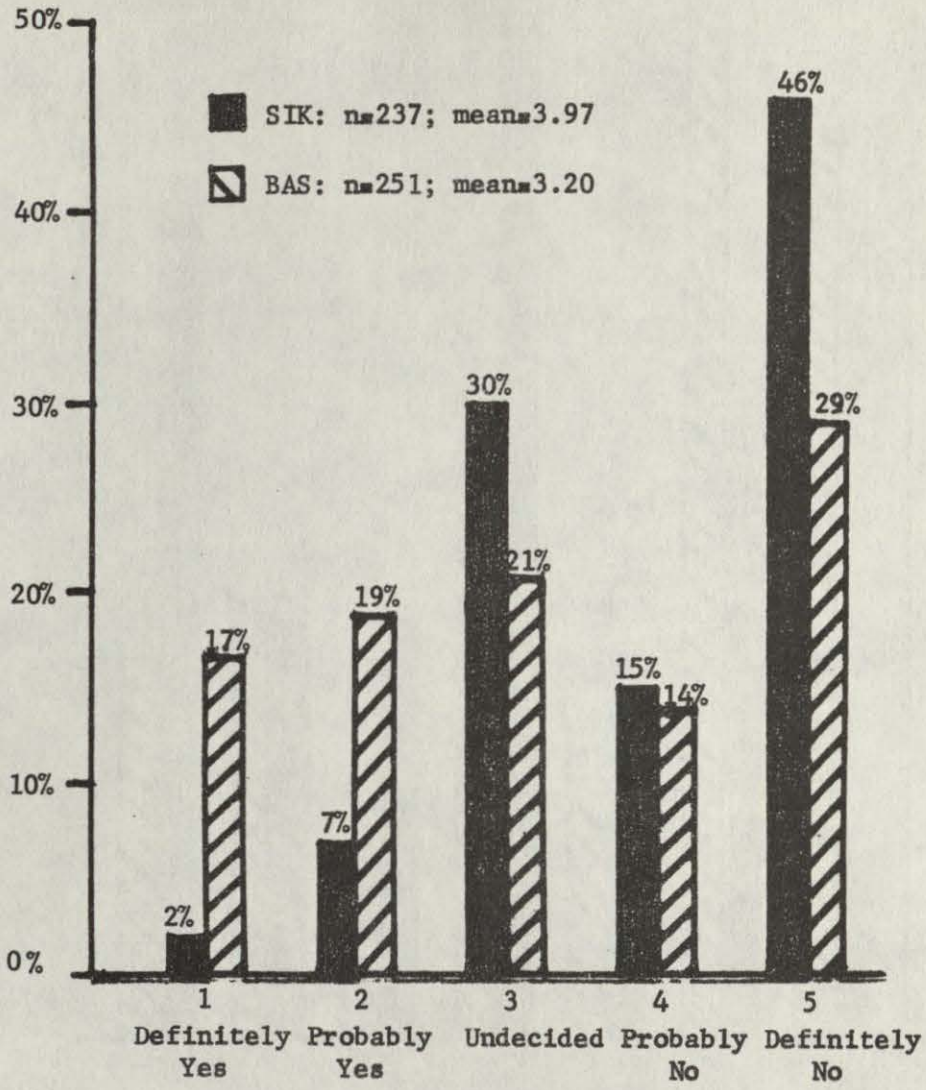


TABLE 47

Reaction to Military Service

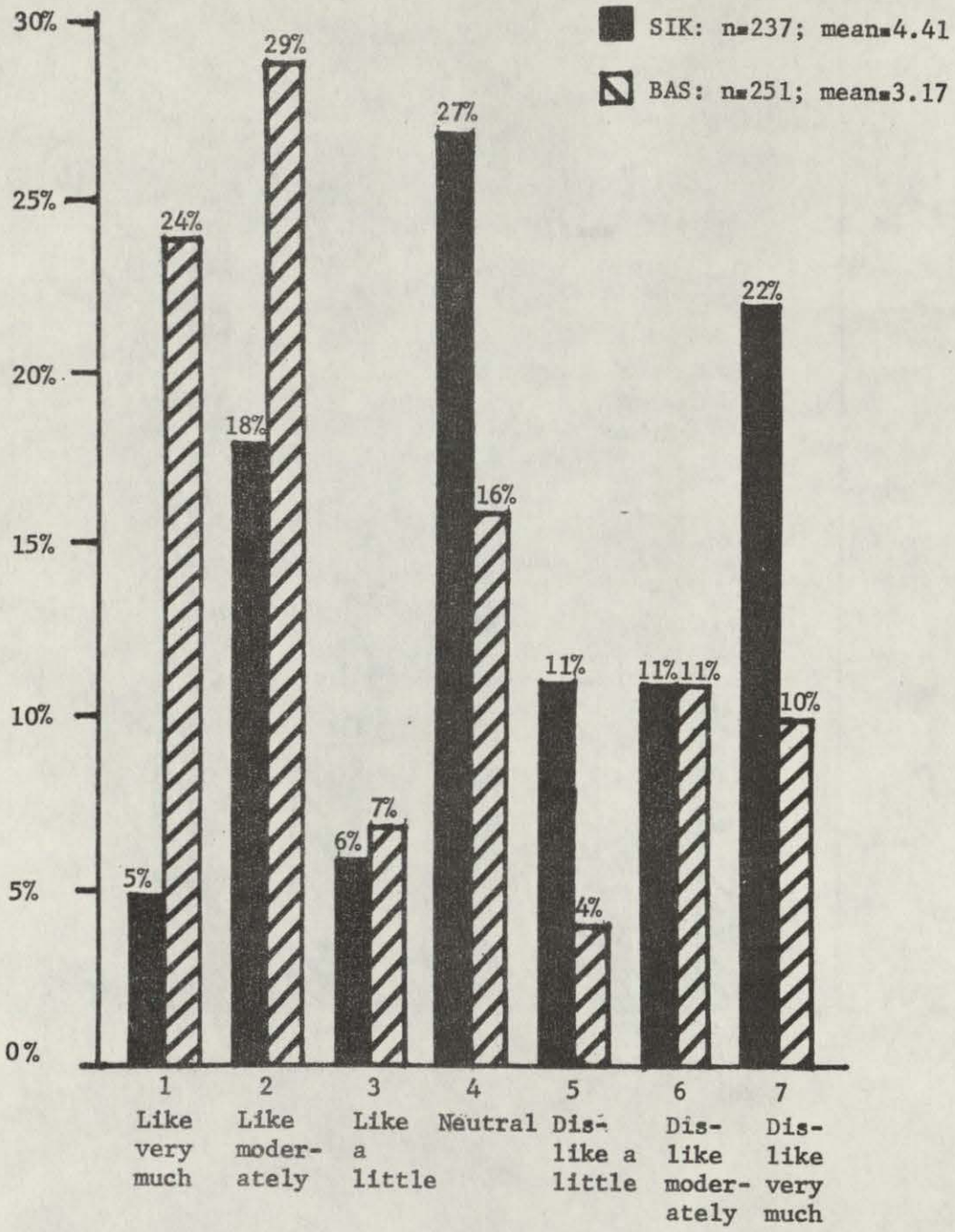
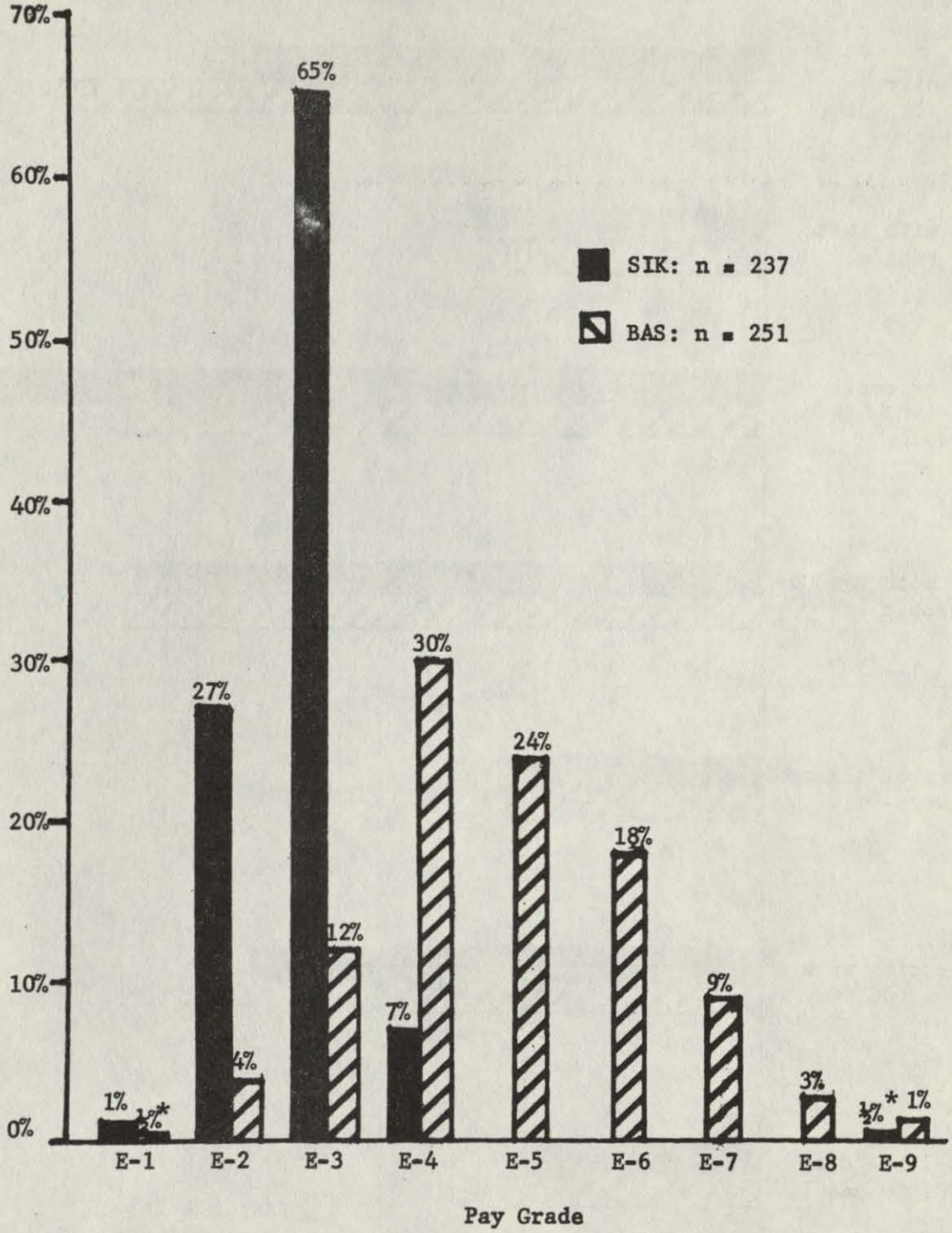


TABLE 48

Pay Grade of Sample



*: Less than ½%

TABLE 49

Rural/Urban Background of Sample

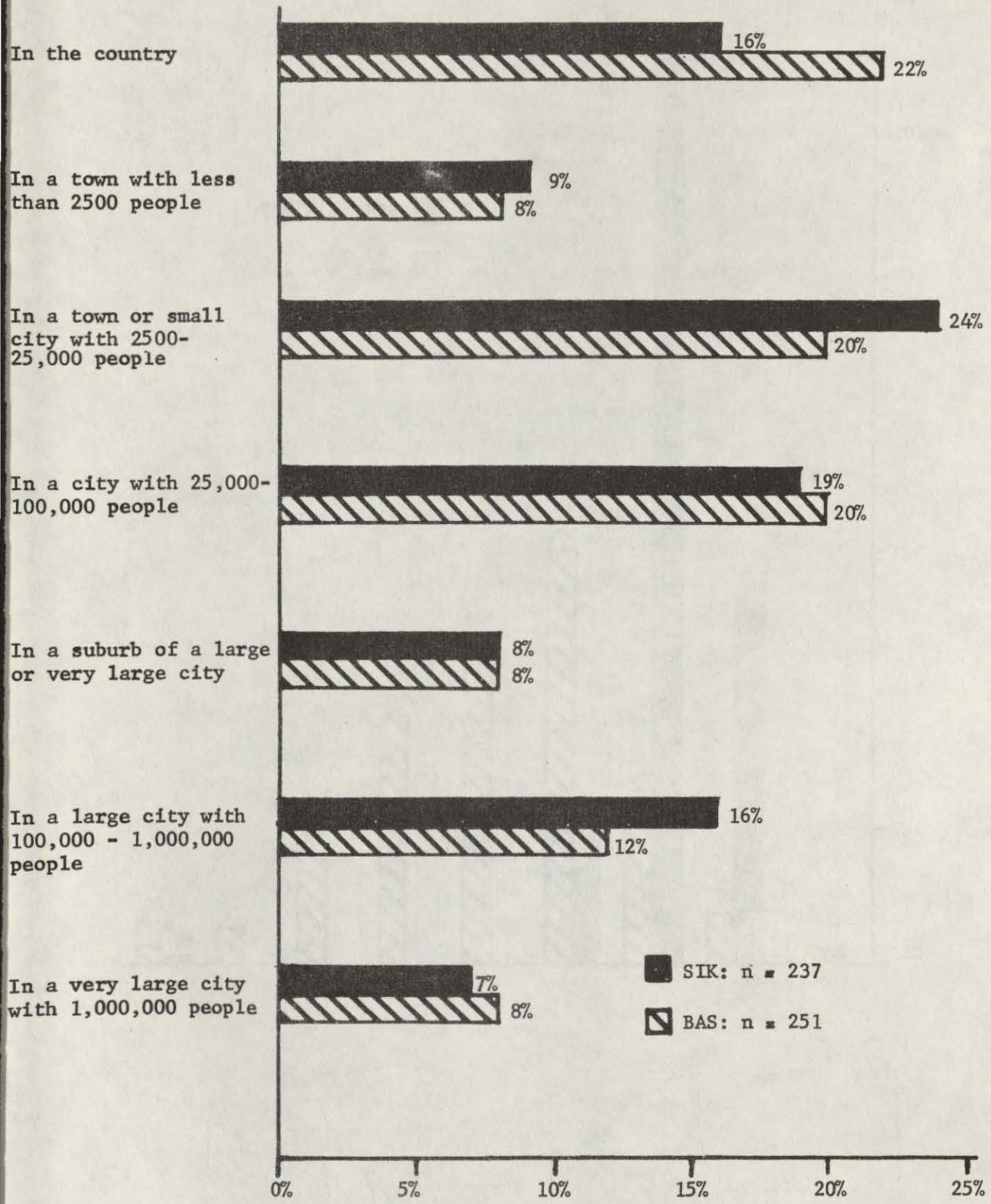
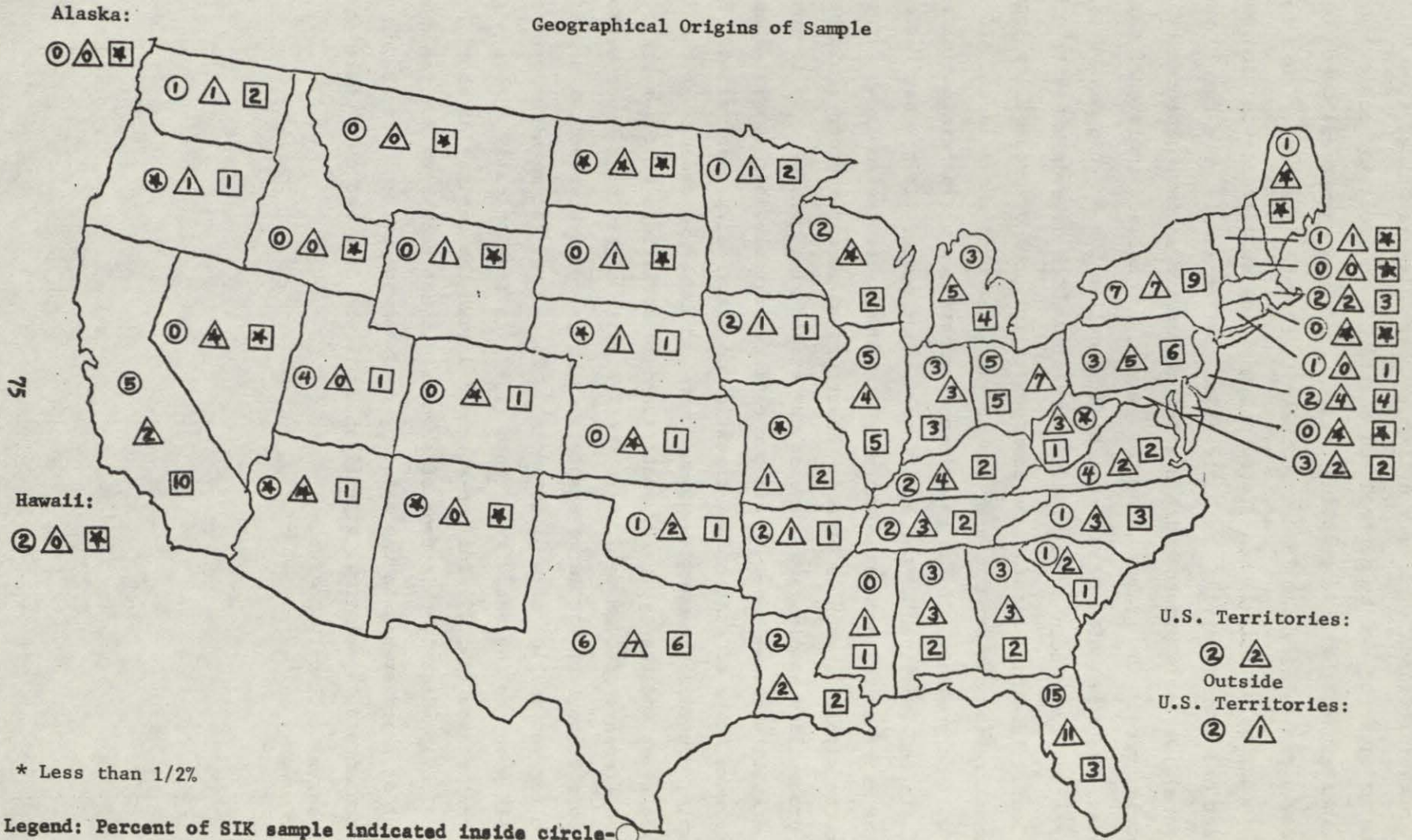


TABLE 50

Geographical Origins of Sample



* Less than 1/2%

Legend: Percent of SIK sample indicated inside circle-○
Percent of BAS sample indicated inside triangle-△
Percent of general population (1970 census figures) indicated inside square-□

APPENDIX III

Survey research typically utilizes probability sampling, from which estimates of error can be derived and confidence in precision achieved. Not withstanding that the sampling frames (the lists or records) upon which to draw a probability sample are woefully inaccurate (the survey team found many instances of individuals listed as receiving subsistence in kind who in fact had been receiving the basic allowance for subsistence for 10 years and more), we could proceed with a straight forward manner. Theoretically we could correct the frames, draw the sample, and collect individual data. However, the time, effort, and cost of data collection by this method can be drastically reduced by group administration which however presents other problems. If Airman First Class John Doe is selected by probability from cleaned frames, the experimenter has no guarantee that the selected AIC John Doe will be present. If the experimenter emphasizes the participation of the selected individuals, the experienced experimenter finds substitutions. If the experimenter emphasized no substitutions, absenteeism is so large that the sample is usually biased. Therefore we accept a group administered, non-probability sample, and increase our sample size considerably to insure the stability of our data. Hence our data is reliable, but the large sample sizes make tests of statistical significance practically meaningless. For example, consider the group means presented in Table 6. Because of the large sample sizes and the typically small standard deviations of the scores, a mean difference of 0.06 to 0.09 is statistically significant (even without the correction term for large samples, which produces statistical significance for yet smaller mean differences). Therefore, the mean response of the SIK group to the quantity of food (1.99) is statistically a more significant reason ($p < .05$) for non-attendance than the variety of short order food (1.87). Clearly this type of argument is not necessary for the development of improvements in the existing food service system. Inclusion of measurements of statistical significance will be inserted only where it will serve to clarify an issue.

DISTRIBUTION LIST

Materiel Management Systems Division
Assistant Secretary of Defense (I&L) SS
The Pentagon, Room 3B724
Washington, DC 21310 2

Commander
US Army Materiel Command
ATTN: AMCRD-J1
5001 Eisenhower Avenue
Alexandria, VA 22333 1

Commander
USA Training and Doctrine Command
ATTN: ATCD-CP
Fort Monroe, VA 23351 1

HQDA (DALO-SMT-F)
WASH DC 20310 1

HQDA (DARD-ARS-L)
WASH DC 20310 1

HQDA
OCRD & A
ATTN: DAMA-CSSD
Washington, DC 20310 1

Commander
US Army Troop Support Command
4300 Goodfellow Blvd.
St. Louis, MO 63120 1

US Army Quartermaster Center & Fort Lee
Directorate of Food Management
Fort Lee, VA 23801 1

Commander
US Army Troop Support Agency
Fort Lee, VA 23801 1

Commander
US Army Troop Support Agency
ATTN: DALO-TAE
Fort Lee, VA 23801 2

Commander
US Army Troop Support Agency
ATTN: DALO-TAD
Fort Lee, VA 23801 2

Commander
US Army Combat Development Command
ATTN: COCQMA-F
Fort Lee, VA 23801 1

Commander
US Army Troop Support Agency
ATTN: DALO-TAF
Fort Lee, VA 23801 2

Commandant
US Army Quartermaster School
ATTN: ATSM-CTD
Fort Lee, VA 23801 2

Commander
US Army Logistics Center
ATTN: ATCL-MS
Fort Lee, VA 23801 3

Commander
US Army Logistics Management Center
ATTN: ATCL-MS
Fort Lee, VA 23801 1

HQDA (DAEN-2A/Mr. Holmes)
Forrestal Bldg.
Washington, DC 20315 1

US Army Medical R&D Command
Forrestal Building
Washington, DC 20315 2

Director
US Army Construction Engineering
Research Laboratory
P.O. Box 4005
Champaign, IL 61820 3

Commanding Officer
Letterman Army Institute of Research
Presidio of San Francisco, CA 94129 1

Commanding Officer
Navy Food Service Systems Office
Bldg. 166
Washington Navy Yard
Washington, DC 20374 6

DISTRIBUTION LIST (cont'd)

Commandant of the Marine Corps
(Code LFS-4)
HQ, US Marine Corps
ATTN: MAJ E. V. Cox
Washington, DC 20380 2

Director
Development Center
Marine Corps Development & Education Center
ATTN: 2LT J. Wetherford, Mobility & Logistics Division
Quantico, VA 22134 1

HQ, US Air Force
ATTN: SGV
Washington, DC 20314 2

HQ, US Air Force
ATTN: LGYUV
Washington, DC 20330 5

Science and Technology Div.
HQ, US Air Force (AF/RDPS)
Washington, DC 20330 1

Commander
HQ, Air Force Logistics Command
ATTN: AFLC/DPSB
Wright Patterson AFB, OH 45433 1

Commander
US Air Force Services Office
ATTN: DPKFF
2800 South 20th Street
Philadelphia, PA 19101 10

HQ, US Air Force
ATTN: AFPREED (Mr. Earl)
Bldg. 626, Room 269
Bolling AFB
Washington, DC 20380 1

HQ, Air Force Systems Command
ATTN: SGB
Andrews AFB, MD 20331 1

Director
Air Force Hospital Food Service
Medical Food Service Division
Malcolm Grow USAF Medical Center
Andrews AFB, MD 20331 1

US Air Force
School of Aerospace Medicine
VNAN, ATTN: Dr. Vanderveen
Brooks AFB, TX 78235 1

HQ, AMD-RD
Brooks Air Force Base
San Antonio, TX 78235 1

60th ABGp/SVF
Travis AFB, CA 94535 1

60th ABGp/SV
Travis AFB, CA 94535 1

Chief of Services
Homestead AFB, FL 33030 1

Food Service Officer
Homestead AFB, FL 33030 1

Chief of Services
Minot AFB, ND 58701 1

Food Service Officer
Minot AFB, ND 58701 1

HQ, MAC/LGSS
Scott AFB, IL 62225 2

HQ, TAC/LGSV
Langley AFB, VA 23365 1

HQ, SAC/LGSV
Offut AFB, NB 68113 1

HQ, ATC
ATTN: LGSV
Randolph AFB, TX 28148 1

Defense Documentation Center
ATTN: DDC-TCA
Cameron Station BG5
Alexandria, VA 22314 12

Frank R. Fisher
Executive Director, ABMPS
National Academy of Sciences
National Research Council
2101 Constitution Avenue
Washington, DC 20418 2

DISTRIBUTION LIST (cont'd)

Lendal H. Kotschevar
Food Consultant
Seeley Lake, MT 59868 1

Donald B. Brout
Director, Operations Research
ITT Continental Baking Company
P.O. Box 731
Rye, NY 10580 1

George M. Mardikian
President
George M. Mardikian Enterprises
240 Stockton Street
San Francisco, CA 94108 1

Richard W. Mather
Manager, Food Services Department
Ford Motor Company
The American Road
Deerborn, MI 48121 1

John C. Herron
President
Hospital Food Management Division
ARA Services
Independence Square W.
Philadelphia, PA 19106 1

George A. Pollak
Head, Foods Division
Consumers Union
256 Washington Street
Mount Vernon, NY 10550 1

Jan A. J. Stolwijk
John B. Pierce Foundation
Associate Professor, Epidemiology
School of Medicine
Yale University
New Haven, CT 06510 1

Daniel Rosenfield
Director, Nutrition Planning
Miles Laboratory, Inc.
1127 Myrtle Street
Elkhart, Indiana 46514 1

Leonard M. Wilson
Economic Consultant
36 Washington Street
Wellesley Hills, MA 02181 1

Julian Turner
Management Consultant
Stay Fresh, Inc.
16105 Sumner-Buckley Highway
P.O. Box 458
Sumner, WA 98390 1

Albert L. Wrisley, Jr.
Associate Professor
Hotel, Restaurant and Travel
Administration
211 Chenoweth Laboratory
University of Massachusetts
Amherst, MA 01002 1

Lloyd M. Beidler
Professor of Biophysics
Department of Biological Science
Florida State University
Tallahassee, FL 32306 1

Jack A. Adams
Professor, Department of Psychology
University of Illinois
Urbana, IL 61801 1

D. Mark Hegsted
Professor of Nutrition
Department of Nutrition
Harvard School of Public Health
Boston, MA 02115 1

Eliot Stellar
Provost
Professor of Physiological Psychology
University of Pennsylvania
Philadelphia, PA 19104 1

Dr. Emil M. Mrak
Chancellor Emeritus
University of California
Davis, California 95616 1

Dr. William L. Brown
President
American Bacteriological and Chemical
Research Corporation
P.O. Box 1557
Gainesville, Florida 32601 1

DISTRIBUTION LIST (Cont'd)

Dr. Delbert M. Doty
(Technical-Director - retired -
Fats & Proteins Research
Foundation, Inc.)
21W237 Grove Street
Itasca, Illinois 60143 1

Dr. Richard A. Greenberg
Vice President
Swift and Company
1919 Swift Drive
Oak Brook, Illinois 60521 1

Mr. J. Harrison Holman
Vice President
Market Forge
Division of Beatrice Foods Company
35 Garvey Street
Everett, Massachusetts 02149 1

Dr. Bruce H. Morgan
Vice President, Research and
Engineering
Lamb-Weston, Inc.
Box 23507
6600 S. W. Hampton Street
Portland, Oregon 97223 1

Dr. John H. Nelson
Vice President, Research and
Development
Director, International Venture
Research Division
Peavey Company
11 Peavey Road
Chaska, Minnesota 55318 1

Dr. Harold S. Olcott
Professor, Marine Food Science
Institute of Marine Resources
Department of Food Science
and Technology
University of California
Davis, California 95616 1

Dr. Hubert O. Ranger
President
Consultants International, Ltd.
1535 E. Goodrich Lane
Milwaukee, Wisconsin 53217 1

Dr. Fredrick J. Stare
Professor of Nutrition
Chairman, Department of Nutrition
Harvard School of Public Health
665 Huntington Avenue
Boston, MA 02115 1

INTERNAL DISTRIBUTION

Commander	1
Technical Director	1
Deputy Technical Director, Food Services Systems Program	1
Deputy Technical Director, Clothing & Equipment Systems Program	1
Commander, US Army Research Institute for Environmental Medicine	1
Director, Aero - Mechanical Engineering Laboratory	1
Director, Clothing, Equipment & Materiels Engineering Laboratory	1
Director, Food Engineering Laboratory	3
Director, Food Sciences Laboratory	3
Special Assistant for DOD Food Program	4
US Army Representative, Joint Technical Staff, DOD Food RDT&Eng. Program	2
US Air Force Representative, Joint Technical Staff, DOD Food RDT&Eng. Program	2
US Marine Corps Representative, Joint Technical Staff, DOD Food RDT&Eng. Program	2
US Navy Representative, Joint Technical Staff, DOD Food RDT&Eng. Program	2
US Air Force Liaison Officer	3
Chief, Engineering Programs Management Office	2
Chief, Technical Data Reference Branch, Technical Documentation Office	2
Chief, Operations Research and Systems Analysis Office	20
Chief, Behavioral Sciences Division, Food Sciences Laboratory	2

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER TR-75-3-FSL	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) The Consumer's Opinions of the Food Service System: The 1973 Homestead Air Force Base Survey		5. TYPE OF REPORT & PERIOD COVERED 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Laurence G. Branch, Judith A. Westerling, Herbert L. Meiselman, and Lawrence E. Symington		8. CONTRACT OR GRANT NUMBER(s) DAAK03-C-0098
9. PERFORMING ORGANIZATION NAME AND ADDRESS Pioneering Research Laboratory US Army Natick Laboratories Natick, Massachusetts 01760		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Natick Laboratories Natick, Massachusetts 01760		12. REPORT DATE July 1974 13. NUMBER OF PAGES 87
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Food Service Systems
Evaluation

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

A Consumer Opinion Survey was administered to 488 enlisted personnel at Homestead Air Force Base to elicit opinions on a wide range of factors thought to determine and/or influence consumer utilization and acceptance of a food service facility. Survey results indicated among other things that the traditional assumption of 21 meals per week is invalid for these groups, that the consumers do find fault with the quality as well as quantity and variety of foods offered (particularly main course meat items) and that many non-food factors deserve attention.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)