AD

TECHNICAL REPORT

73-52-PR

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

by

Laurence G. Branch

and

Herbert L. Meiselman

Approved for public release; distribution unlimited.

May, 1973

UNITED STATES ARMY
NATICK LABORATORIES
Natick, Massachusetts 01760

Pioneering Research Laboratory

Each military service, Army, Navy, Air Force, and Marine Corps, has its 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

TECHNICAL REPORT

TR–73–52–PR

THE CONSUMERS' OPINIONS OF THE FOOD SERVICE SYSTEM: THE 1973 TRAVIS AIR FORCE BASE SURVEY

by

Laurence G. Branch

and

Herbert L. Meiselman

May 1973

Pioneering Research Laboratory

ACKNOWLEDGEMENTS

A project of this scope cannot be successfully completed without the cooperation and effort of many individuals. The authors wish to express their appreciation to the staff members of the Behavioral Sciences Division (BSD), Pioneering Research Laboratory (Dr. Harry L. Jacobs, Chief) and others who contributed to this effort.

Specifically, the cooperation of Mr. Gerald Hertweck of the Natick Laboratories Operations Research/Systems Analysis (OR/SA) Office, (Project Manager), 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.

The energies and talents of the survey team who helped the authors (CPT Lawrence Symington, Ph.D., of BSD; 1LT W. Camp of Travis AFB; Miss Day Waterman of BSD; and Miss Shirley Conklin of Air Force Services Office) were tremendously appreciated and these deserve very special credit.

Harry Jacobs, Ph.D., CPT Lawrence Symington, Ph.D., Carol Benzel, Ph.D., Day Waterman; and Judith Westerling, all of BSD, and Gerald Hertweck of the OR/SA Office all helped to improve this report by reviewing earlier drafts, and their thoughtful comments were greatly appreciated.

CPL Marc Taylor of BSD performed outstandingly as our computer specialist in the task of processing the data.

PFC Patrick Gibson of BSD helped considerably by typing revisions of the tables.

TABLE OF CONTENTS

		Page
List of Tables		iii
Introduction		1
Method		3
Results		5
Meal Patterns		5
Food Preferences		5
Evaluation and Importance of Fourteen Food Service Factors		9
Part I:	Quality of Food	12
Part II:	Variety of Weekend Food	12
Part III:	Variety of Weekday Food	12
Part IV:	Hours of Operation	17
Part V:	Variety of Short Order Food	17
Part VI:	Monotony of the Same Facility	17
Part VII:	Quantity of Food	17
Part VIII:	Service by Dining Facility Personnel	22
Part IX:	General Dining Facility Environment	22
Part X:	Military Atmosphere	32
Part XI:	Convenience of Location	37
Part XII:	Speed of Service	37
Part XIII:	Dining Companions	37
Part XIV:	Expense	41
Commercial Food Service System Attractions		41
Conclusions and Recommendations		47
References		49
Appendix I		50
Appendix II		68
Appendix III		77

LIST OF TABLES

		Page
Table 1	Meal Patterns Before Entering Military; Current Meal Patterns; Meals Obtained from Dining Facilities	6
Table 2	Number of Meals per Week Consumed Before Entering Military	7
Table 3	Number of Meals per Week Consumed Currently	7
Table 4	Number of Meals per Week Consumed in Dining Facilities	7
Table 5	Food Preferences	8
Table 6	Importance of Fourteen Food Service Factors on Attendance	10
Table 7	Current Evaluation of Fourteen Food Service Factors	11
Table 7.1	Correlation Between Attitudes Toward Air Force and the Fourteen Food Service Factors	13
Table 8	Quality of Raw Food Product	14
Table 9	Quality of Food Preparation	15
Table 10	Consumers' Opinions of the VARIETY of WEEKEND Food	16
Table 11	Consumers' Opinions of the VARIETY of WEEKDAY Food	16
Table 12	Consumers' Opinions of the VARIETY of Food over a Period of a MONTH	18
Table 13	Consumers' Opinions of the HOURS OF OPERATION	19
Table 14	Consumers' Opinions of the VARIETY of SHORT ORDER FOODS	20
Table 15	Consumers Responses to the Question: Other than times of dieting, do you ever leave your dining facility without enough to eat?	20
Table 16	Consumers' Opinions of Amounts per Servings	21
Table 17	Are Second Helpings Permitted?	23
Table 18	Dining Facility Personnel	24

LIST OF TABLES (cont'd)

		Page
Table 19	Food Service Personnel Functions	24
Table 20	Opinions Concerning Self Bussing	25
Table 21	Facility-Personnel Factors	27
Table 22	General Condition of Each Dining Facility	28
Table 23	Conveniences Within Dining Facilities	29
Table 24	Appearance and Atmosphere of Dining Facilities	30
Table 25	Environmental/Engineering Factors	31
Table 26	Tables in the Dining Facilities	33
Table 27	Table Preference	34
Table 28	Music Preferences	35
Table 29	Military Atmosphere	36
Table 30	Opinions Concerning Specific Policies	36
Table 31	Usual Means of Travel	38
Table 32	Walking Time	38
Table 33	Usual Delay at Headcount Station	39
Table 34	Usual Delay in Serving Line	39
Table 35	Usual Delay at Dishwashing Area	39
Table 36	Social Aspects of Dining Facilities	40
Table 37	Opinions Concerning Current Separate Rations System	42
Table 38	Alternative Separates Rations Proposals	43
Table 39	The Importance of 10 Factors in Choosing a NOON MEAL from a Civilian Facility	44

LIST OF TABLES (cont'd)

		Page
Table 40	The Importance of 10 Factors in Choosing an EVENING MEAL from a Civilian Facility	46
Table 41	Sex of Sample	68
Table 42	Race of Sample	68
Table 43	Age of Sample	69
Table 44	Educational Level of Sample	70
Table 45	Time in Service	71
Table 46	Reenlistment Plans	72
Table 47	Reaction to Military Service	73
Table 48	Pay Grade of Sample	74
Table 49	Rural/Urban Background Sample	75
Table 50	Geographical Origins of Sample	76

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.

The basic premise of the 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 general approach is as follows:

1. Perform initial system studies

   a. system evaluation
   b. consumer research
   c. environmental analysis

2. Define improvements to the system and experimentally evaluate each

3. Recommend system improvements to the Air Force.

Travis Air Force Base was selected as the principle study site, having been determined to best represent characteristics of Military Airlift Command (MAC) Air Force Food Service operations.

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 principle 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 of Air Force bases are analyzed in Meiselman, *et al.*, 1973. The Consumer's Opinions Survey indentifies factors which determine and/or influence customer utilization and acceptance of the food service facilities, the topic of the present report. Both surveys have also been administered at Minot AFB and Homestead AFB. 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 installation.

The environmental analysis is 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** will be implemented, insofar as practicable, at Travis AFB for **experimental evaluation.** Limited analyses and evaluations will also be performed at two other Air Force installations--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 the whole Air Force.

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

The present report, then, is one element of the total systems analysis, 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. This 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 Travis AFB between 5–14 December 1972 and 8–9 January 1973 to groups ranging in size from 5–111 respondents. The respondents were seated at tables in a large, well-lighted room and were told the background of the study by one of the 2–5 supervisors present. Each respondent was asked to complete two surveys-the Consumer's Opinions Survey, which took about 40 minutes, and 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 10% of its enlisted strength to one of the 17 testing sessions, yielding a total requested sample size of approximately 850. Due to transfers, leaves, temporary duty, flights, and other such factors, 698 surveys were administered. Eight were discarded because the forms were incorrectly filled out.

The 690 respondents are treated as two sample groups, one containing 289 subsistence-in-kind (SIK) personnel and the other including 401 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.

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

	SIK	BAS
Sex:	Male	Male
Race:	Caucasian	Caucasian
Age:	20.4 years	27.3 years

	SIK	BAS
Educational Level:	High School Graduate	High School Graduate
Time in Service:	1 1/4 years	7 1/2 years
Reenlistment Plans	Probably will not	Undecided to probably will not
Reaction to Military Service	Neutral to disliking a little	Neutral to liking a little
Pay Grade:	Nearly E-3	Nearly E-5
Urban/Rural Background	From a moderate sized city	From a moderate size city
Home State:	California	California

In general the BAS sample is older than the SIK sample, has been in the service longer, has more members desiring to reenlist, generally has a more favorable attitude toward the military, has a higher pay grade, and is from a smaller community than his SIK counterpart. The information on both samples will be presented, but because the primary concern is for the SIK group, the results focus on the opinions of this group.

RESULTS

Meal Patterns. Table 1 presents the meal patterns of the Travis AFB samples, demonstrating clearly that the traditional assumption of 3 meals per day, 21 meals per week as the maximum attendance rate is not valid for the military. Table 1 indicates that 20%–25% of the SIK's stopped eating breakfast after joining the military, 10% no longer ate the evening meal, and 10%–15% stopped after-evening meals. Notice that less than half of the groups currently eat breakfast at all.

On the basis of current meal patterns and the percent obtaining meals from the dining facilities, the greatest increase in attendance of the SIK's can be achieved at the evening meal, less at the noon meal, and a minimal increase at breakfast. Excluding private residences, the category of diners, snack bars, pizza parlors (all off the installation), and the category of installation snack facilities like the bowling alley and BX snack bars are the major competitors for SIK patronage. For the BAS group, increased noon meal attendance can also be realized; while the dining facilities' competition is now the same type of short order facilities as for the SIK's.

Tables 2, 3, and 4 present the meal patterns of the samples in terms of the number of meals per individual rather than the percent eating the meal. In Table 2 notice that both samples indicated a mean of 19 meals per week before entering the military, but the SIK's (remembering to October 1971, on the average) indicated a much more variable pattern, with nearly as many saying that they ate 4 meals a day as 2 meals a day. The BAS's on the other hand (remembering to June 1965, on the average) indicated a pattern more consistent with the traditional assumption of 21 meals per week. The young man of the 1970's appears to have different consumption patterns than the young man of the mid 1960's.

Preferred Foods. Table 5 provides information concerning the type of food on which the respondents were raised (approximately half on general American style and nearly a fourth on Soul and Southern) and the kinds of ethnic or specialty foods that are desired. For both samples, the three most preferred types of specialty foods (excluding general American) are Mexican, Italian, and Seafood, which is the same as obtained from the Army in 1971 (Kiess, *et al.*, 1972). Much more detailed food preference information will be forthcoming in a report by Meiselman, *et al.*, 1973.

Table 1

Meal Patterns Before Entering Military

		Mon	Tues	Wed	Thur	Fri	Sat	Sun
Breakfast:	SIK	65%	62%	63%	62%	63%	65%	66%
	BAS	66%	67%	67%	66%	67%	69%	69%
Mid-Day:	SIK	84%	82%	85%	83%	84%	80%	80%
	BAS	83%	83%	84%	83%	83%	83%	83%
Evening:	SIK	86%	87%	87%	88%	87%	84%	85%
	BAS	96%	95%	95%	95%	94%	92%	91%
After-Evening:	SIK	41%	40%	41%	41%	46%	48%	45%
	BAS	22%	22%	22%	23%	23%	32%	31%

Current Meal Patterns

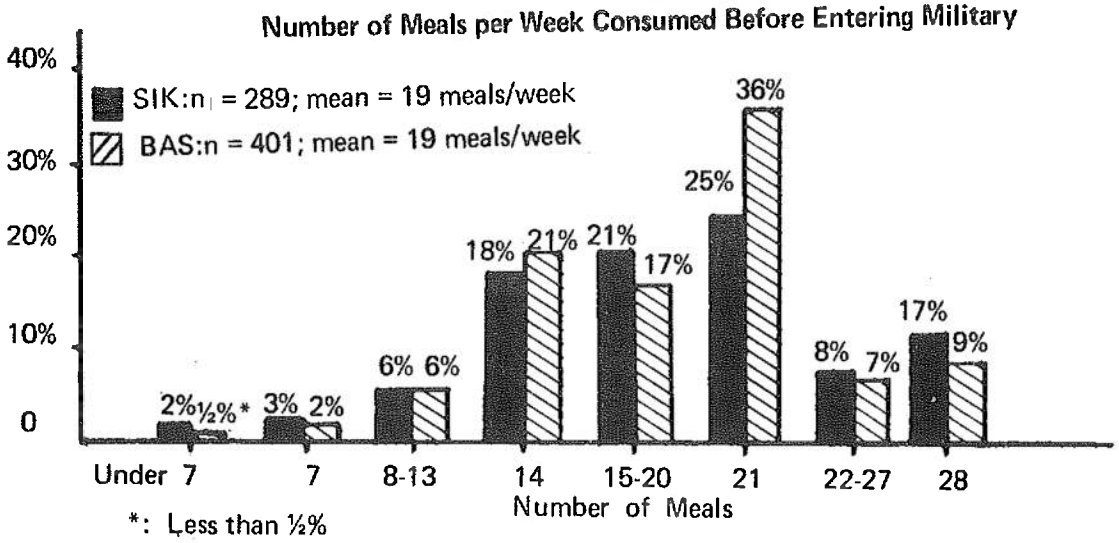
		Mon	Tues	Wed	Thur	Fri	Sat	Sun
Breakfast:	SIK	42%	42%	43%	41%	43%	32%	31%
	BAS	44%	42%	42%	42%	42%	51%	51%
Mid-Day:	SIK	81%	80%	81%	81%	83%	75%	76%
	BAS	68%	68%	67%	69%	70%	69%	69%
Evening:	SIK	71%	71%	70%	70%	70%	62%	60%
	BAS	86%	85%	85%	86%	86%	84%	82%
After-Evening:	SIK	28%	27%	31%	27%	32%	37%	36%
	BAS	27%	27%	29%	27%	27%	35%	33%

Meals Obtained for Dining Facilities

		Mon	Tues	Wed	Thur	Fri	Sat	Sun
Breakfast:	SIK	38%	38%	40%	37%	38%	23%	21%
	BAS	14%	14%	14%	13%	12%	6%	8%
Mid-Day:	SIK	73%	74%	73%	71%	72%	55%	56%
	BAS	20%	20%	20%	22%	19%	13%	12%
Evening:	SIK	59%	58%	59%	61%	56%	40%	37%
	BAS	13%	14%	13%	12%	11%	8%	10%
After-Evening:	SIK	15%	17%	19%	17%	17%	20%	20%
	BAS	4%	4%	4%	3%	3%	3%	4%

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

Table 2
Number of Meals per Week Consumed Before Entering Military



*: Less than ½%

Table 3
Number of Meals per Week Consumed Currently

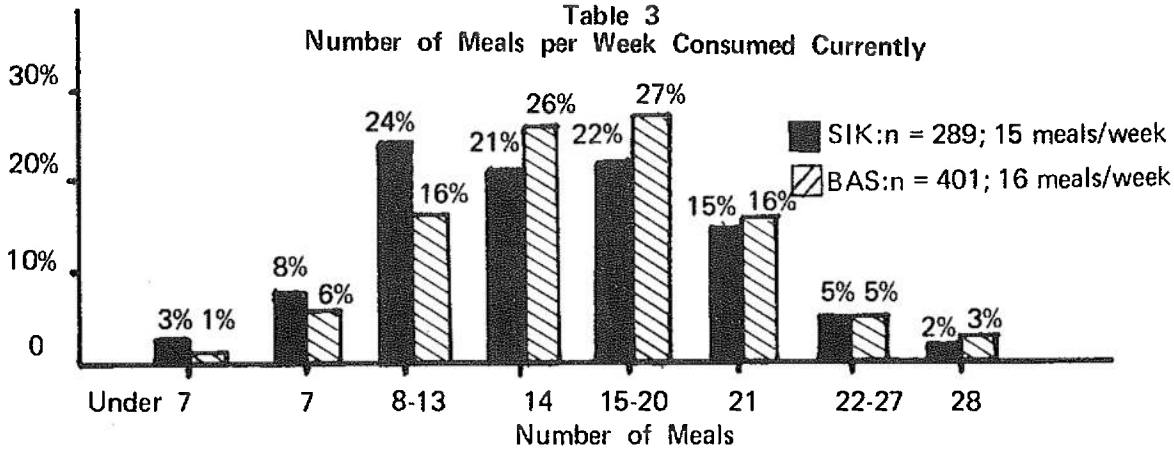
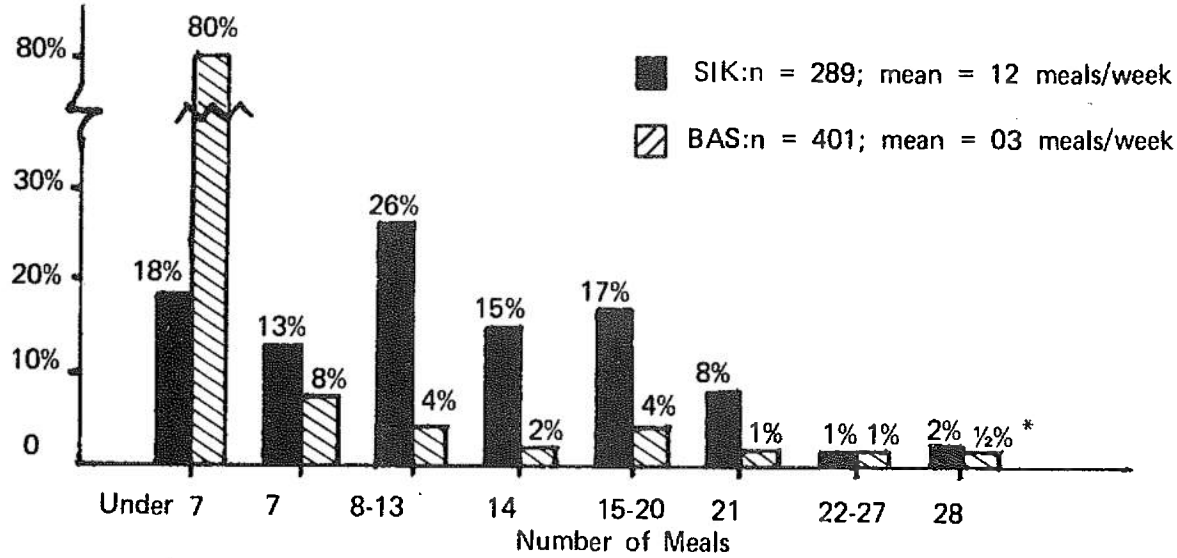


Table 4
Number of Meals per Week Consumed in Dining Facilities



*: Less than ½%

Note: The category of "Under 7 meals per week" includes 5% of RIK's and 55% of BAS's who indicated 0 meals per week.

Table 5

Preferred Foods

TYPE OF COOKING INDIVIDUALS WERE RAISED ON			DESIRED TYPE OF COOKING ONE SPECIALTY FOOD	
SIK	BAS	Cuisine	SIK	BAS
44%	55%	General American	17%	21%
18%	13%	Soul	9%	7%
7%	11%	Southern	6%	9%
5%	5%	Mexican	13%	13%
4%	2%	English	3%	3%
3%	1%	Italian	13%	13%
2%	2%	Polish (& Eastern Europe)	2%	1%
1%	1%	French	4%	2%
1%	1%	German	3%	4%
1%	2%	New England	2%	1%
1%	1%	Spanish (not Mexican)	2%	2%
½%*	1%	Chinese	9%	9%
½%*	½%*	Jewish	1%	½%*
0%	½%*	Greek	1%	½%*
0%	0%	Japanese	2%	4%
a.	a.	Seafood	12%	11%
10%	3%	Other	3%	1%

*: Less than ½%.

a: Not listed as response alternative.

Evaulation and Importance of Fourteen Food Service Factors. Table 6 presents information related to the question of what factors are involved in the non-utilization of the dining facilities. The 14 factors are listed in decreasing magnitude according to the mean scores of the SIK sample.

Notice that food related problems (quality, variety, and quantity in that order) are more significant[1] factors in the non-utilization of the dining facilities by Travis AFB consumers than are facilities or management problems. The hours of operation and the monotony of the same facility are nevertheless important factors in non-utilization, followed by the service of the personnel, the general environment, and a military atmosphere; whereas expense contributes only minimally to non-utilization.

It was expected that the inconvenience of the locations of the dining facilities would be a more important factor in non-utilization. Perhaps a man does not yearn for what he has not experienced. Also the relative unimportance of the existing speed of service in relation to utilization represents a considerable departure from the Army consumer (Kiess, *et al.*, 1972; Branch and Meiselman, 1972). However, you will notice on the next table that speed of service is nevertheless a slight problem.

The consumers were also asked to rate whether each of the 14 factors was a major attraction, a minor attraction, neutral, 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 nonattendance" 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; the 14 factors are listed in the same order as Table 6. Notice that only one factor (expense) has a mean rating above the neutral point; the rest are viewed as problems of varying degress. Food related factors again occupy the lead positions.

We are concerned at this point however that this and all the following information might be dismissed by some on the assumption that only those who dislike military service complain about the food and if food service were improved they would find something else to complain about. This assumption was specifically addressed by examining

[1] A note concerning statistical significance in the context of this report is in order at this point; please refer to Appendix III.

Table 6

Importance of Fourteen Food Service Factors on Attendance

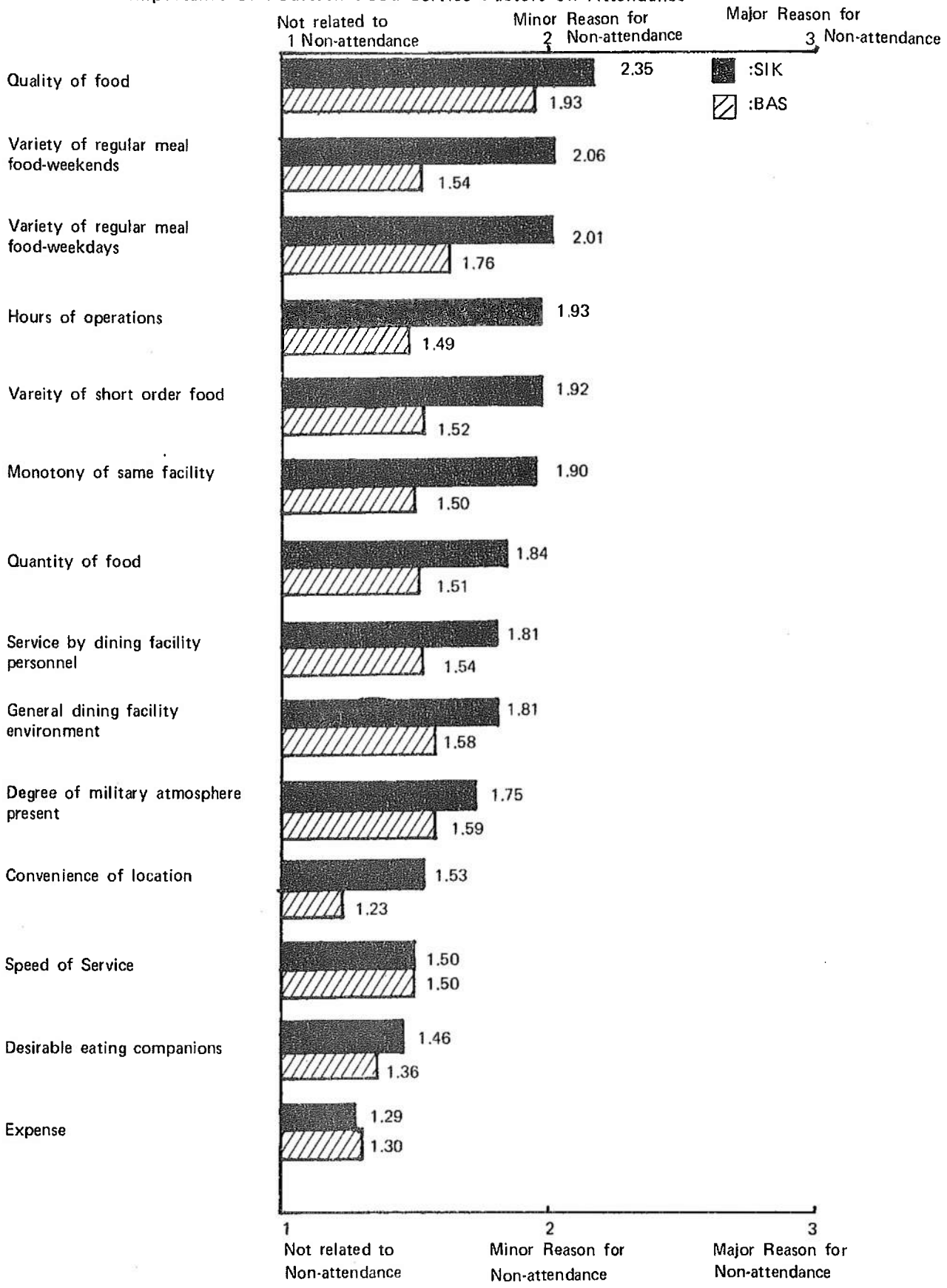
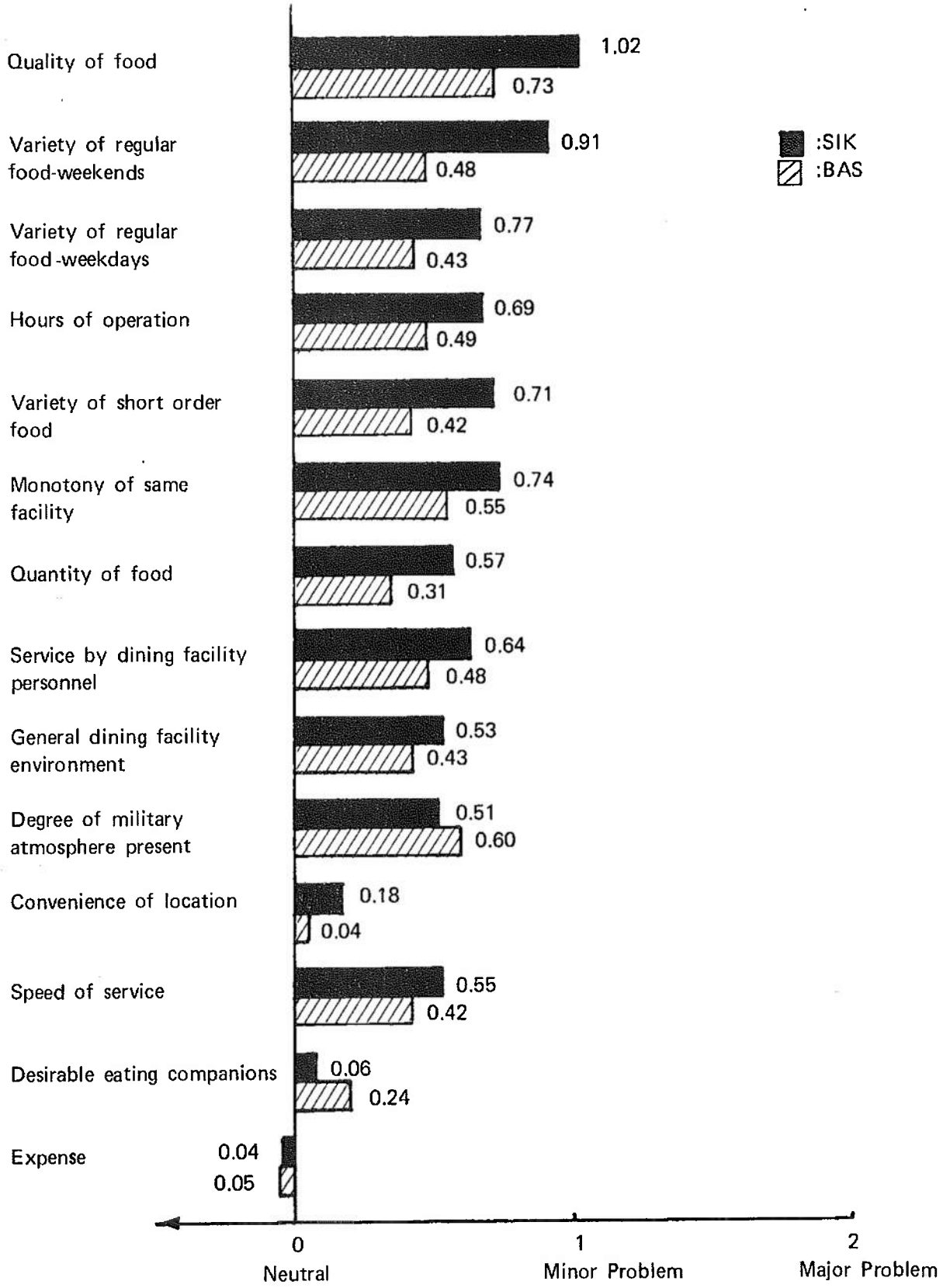


Table 7

Current Evaluation of Fourteen Food Service Factors



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

(Table 7.1) 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, 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: 0.00 to 0.28), which means that approximately 1-4% of the reasons for complaining about food service can be attributed to the man's general attitudes toward the service – not a sizable amount.

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

Part I: Quality of Food. Table 8 presents the consumers' image of the raw food products procured for dining hall consumption. Notice first that the mean scores of the BAS sample are usually less critical than the SIK's; this pattern continues for nearly every category. The consumer's perceptions of the quality of the foods are generally favorable (sometimes over-ripe fruits, sometimes under-ripe; but not often or always). The raw meat products, however, are viewed as sometimes-to-often having excess fat; more-than-sometimes having gristle or tendon. Other foods are sometimes perceived as stale or old looking.

Table 9 presents the consumers' image of the quality of the food preparation. Underseasoning looms as a greater problem than overseasoning; greasy foods is the single most serious problem; tough, undercooked, overcooked, dried out, cold food is found sometimes-to-often.

Part II: Variety of Weekend Food. Table 10 indicates that the consumers are most concerned with meat offerings, desiring at least a few more offerings on weekends. It appears that the current military food service systems are evaluated by the consumers primarily on the basis of meat items. None of the food types even approach the "choices now enough" or the "fewer choices acceptable" categories, indicating that more variety across the board is desired. The SIK sample and the BAS sample have approximately the same opinions concerning weekend variety (with the BAS sample following the previously noted trend of being less critical). However, Table 6 indicated that the BAS's attendance was considerably less influenced by weekend variety than the SIK sample. It appears that the BAS sample recognizes the problem as does the SIK sample, but the problem does not influence the attendance of the BAS group because they eat elsewhere on weekends when not on duty.

Part III: Variety of Weekday Food. Table 11 exhibits a remarkably similar pattern for weekday food as for weekend food. This similarity probably indicates that weekend food does not reflect a decrease in the services offered as is sometimes the case in military food service systems. This information, when coupled with the attendance information of Table 1, indicates that the typical weekend attendance dip is not so much a function of poor service as for other reasons.

Table 7.1

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	0.16	0.13	0.26	0.16
Concern with Variety of Regular Meal Food-Weekends	0.22	0.22	0.27	0.16
Concern with Variety of Regular Meal Food-Weekdays	0.24	0.19	0.28	0.14
Concern with Hours of Operation	0.16	0.06	0.19	0.13
Concern with Variety of Short Order Food	0.11	0.08	0.25	0.12
Concern with Monotony of Same Facility	0.14	0.12	0.23	0.15
Concern with Quantity of Food	0.06	0.02	0.19	0.11
Concern with Service by Dining Facility Personnel	0.12	0.14	0.18	0.09
Concern with General Dining Facility Environment	0.16	0.17	0.15	0.01
Concern with Degree of Military Atmosphere Present	0.26	0.22	0.26	0.15
Concern with Convenience of Location	0.18	0.10	0.04	0.09
Concern with Speed of Service	0.18	0.16	0.22	0.11
Concern with Desirable Eating Companions	0.06	0.02	0.15	0.00
Concern with Expense	0.05	0.02	0.17	0.06

Table 8

Quality of Raw Food Product

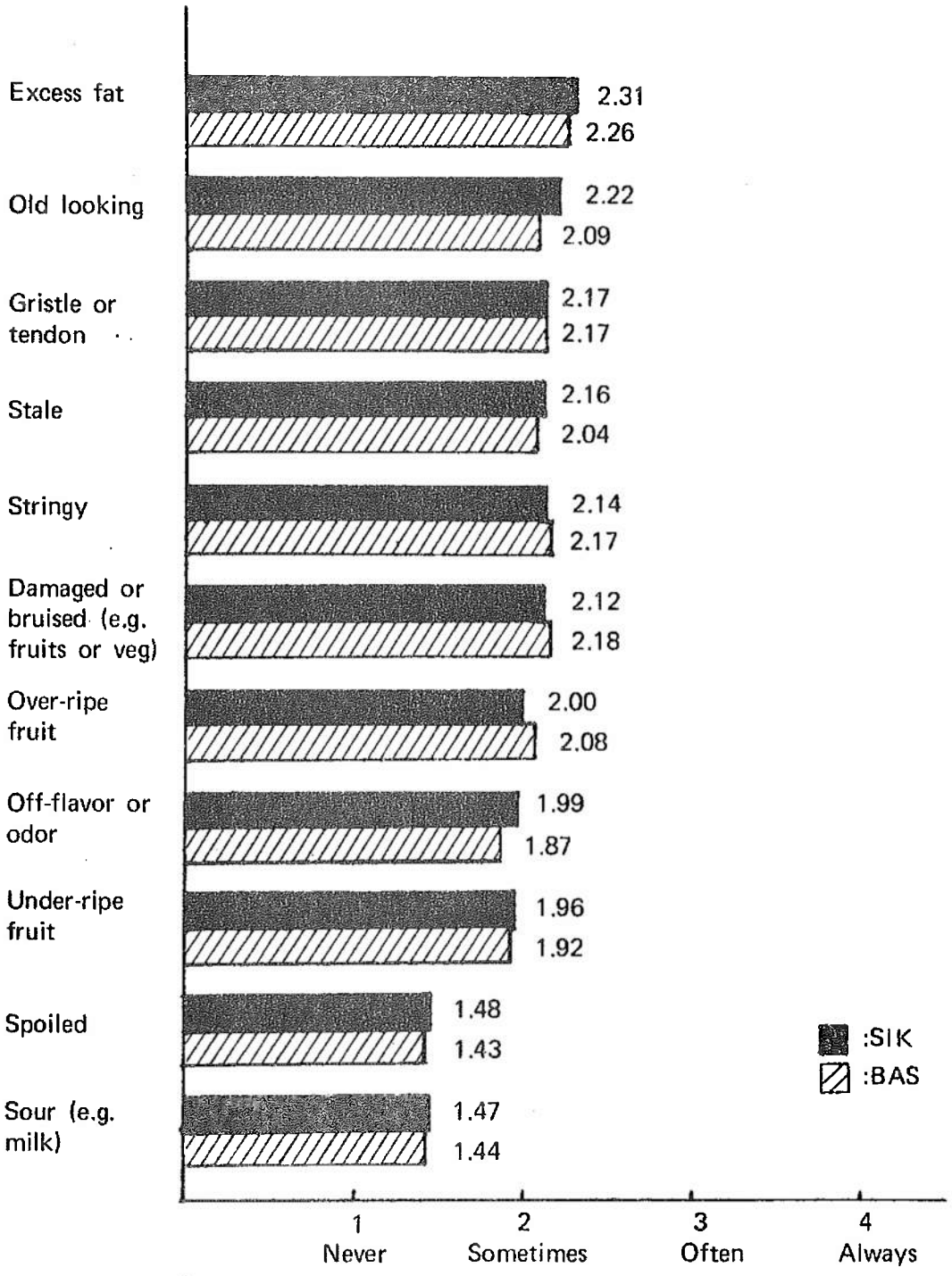


Table 9

Quality of Food Preparation

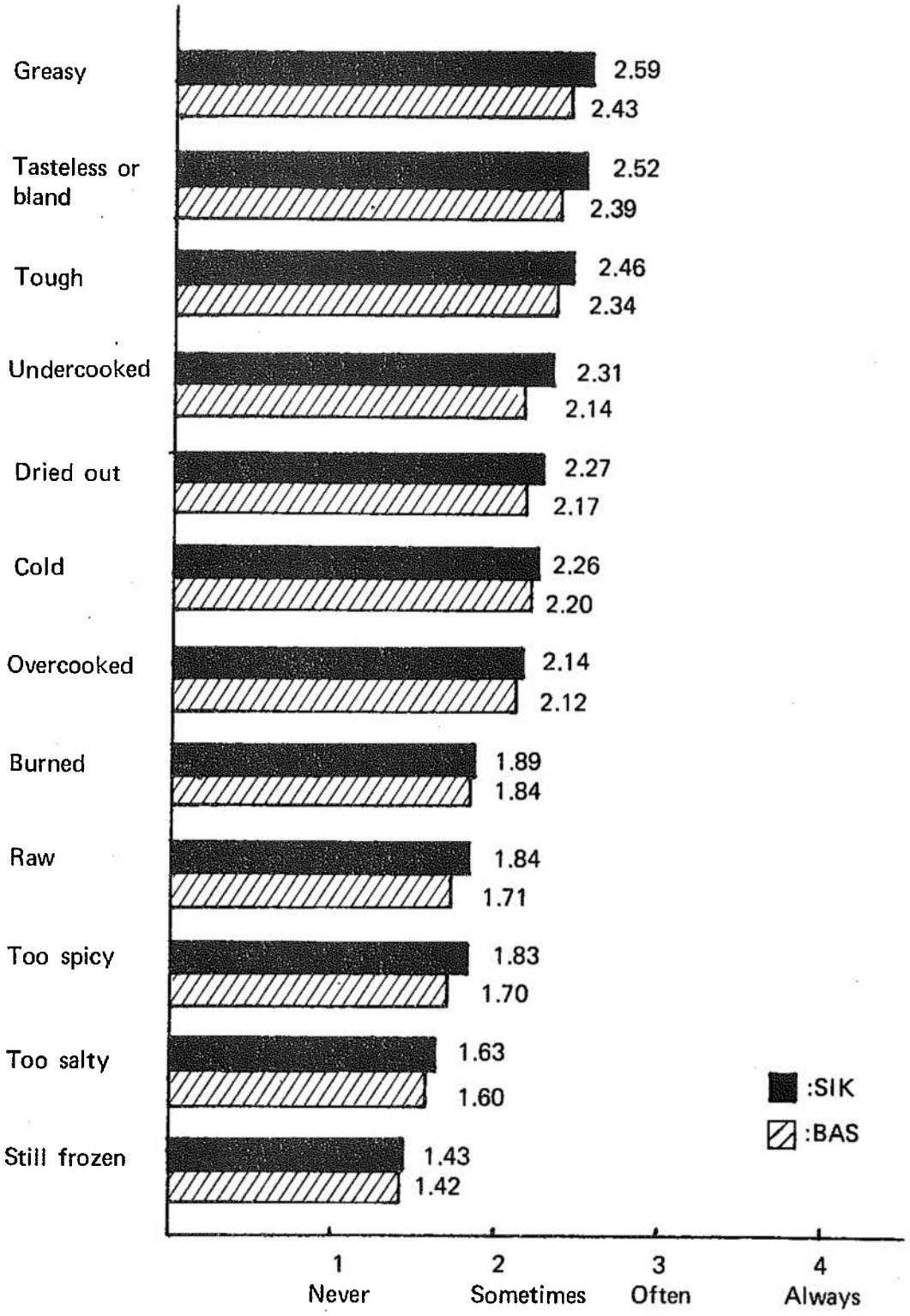


Table 10

Consumer's Opinions of the VARIETY of WEEKEND Food

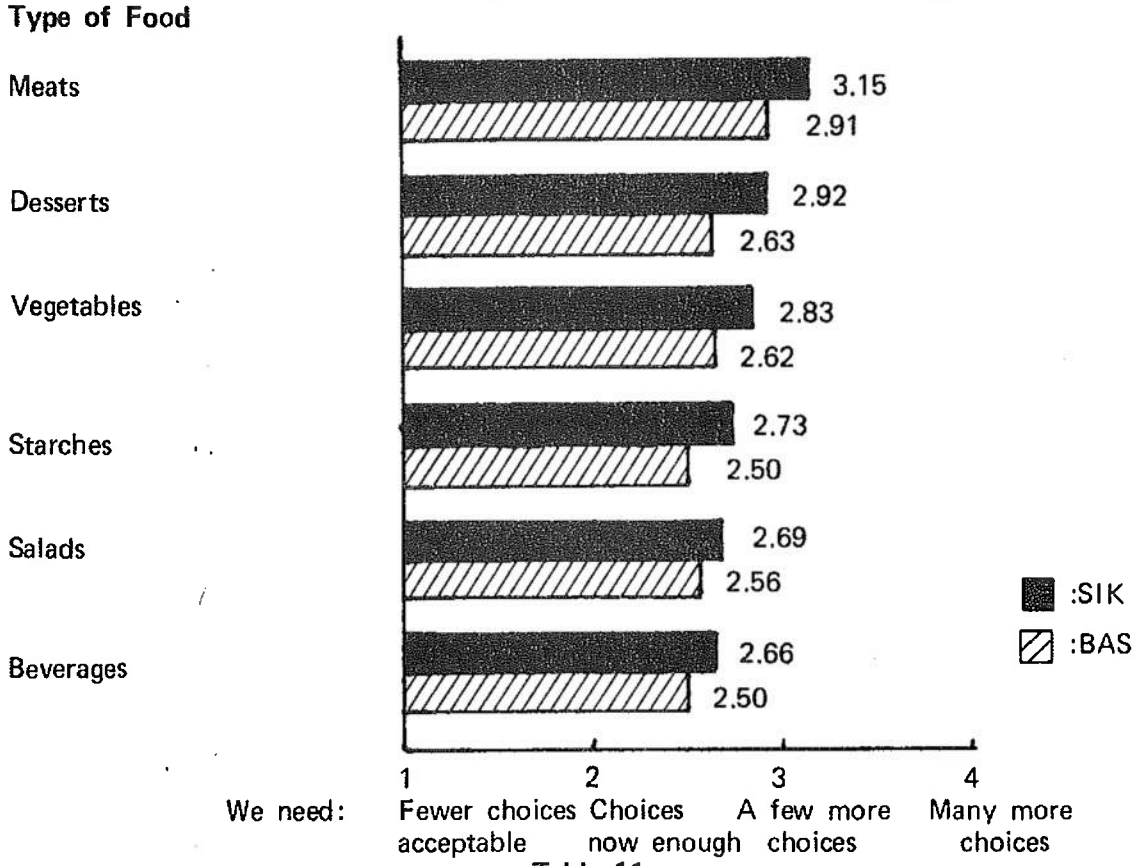


Table 11

Consumers' Opinions of the VARIETY of WEEKDAY Food

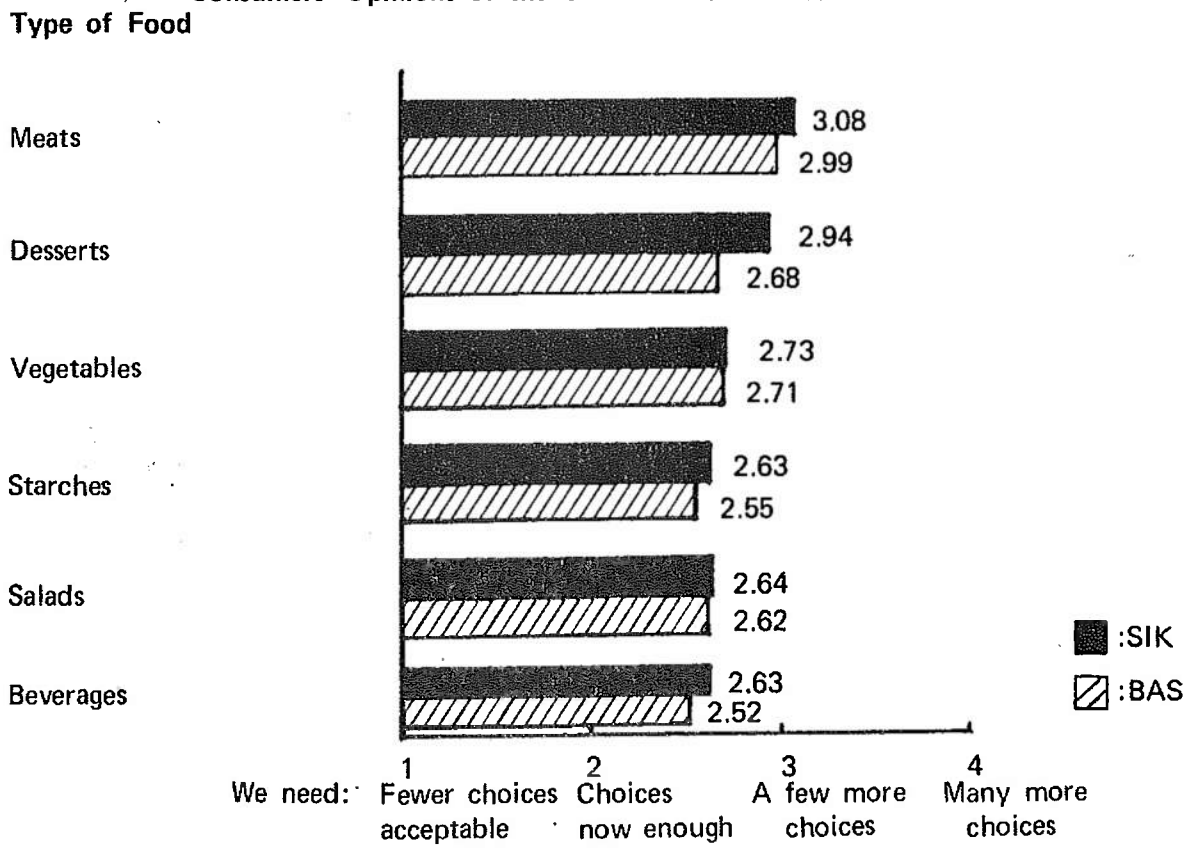


Table 12 presents the consumers' opinions of the variety over an extended period, not just the variety for a particular meal. It is evident that the variety over a cycle is a more serious problem than the variety of a particular meal as evidence by the higher mean values. However, the exact same pattern across food types exists again: meats, desserts, vegetables, starches, salads, and beverages, in that order.

Part IV: Hours of Operation. The data presented in Table 13 indicates a curious pattern; most of the dissatisfaction with the hours reflects a minority opinion (albeit, a fairly large minority opinion) desiring very much extended hours, and principally an extension to a later closing time. 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 V: Variety of Short Order Food. As indicated in Table 14, the consumers are in general agreement that at least a few more choices are desirable for the short order service during the week, on weekends, and over the period of a menu cycle. It should again be emphasized at this point that the food service system planners have a difficult task in interpreting this information. For example, the consumers definitely want more choices of short order foods (Table 14) than of weekday foods (Table 11), but nevertheless it appears that a lesser increase of weekday variety can yield greater attendance than a greater increase in short order variety (Table 6). This picture is complicated, however, if the concept is accepted that meat items represent a lead indicator of the quality of a military food service system. In this latter case, the consumers desire approximately the same increase in variety of both weekday meats and short order foods, so the same amount of increase in variety would then result in differing increments in attendence.

Part VI: Monotony of the Same Facility. Although this factor does influence attendance to a considerable degree, no further information was asked of the respondents because this would have required too great an addition to the survey length.

Part VII: Quantity of Food. Table 15 indicates that a large percentage (over half) of customers at least sometimes leave the dining facilities without enough to eat. Table 16 provides more specific information on portion sizes of menu components. For both sample

Table 12

Consumers' Opinions of the VARIETY of Food Over a Period of a MONTH

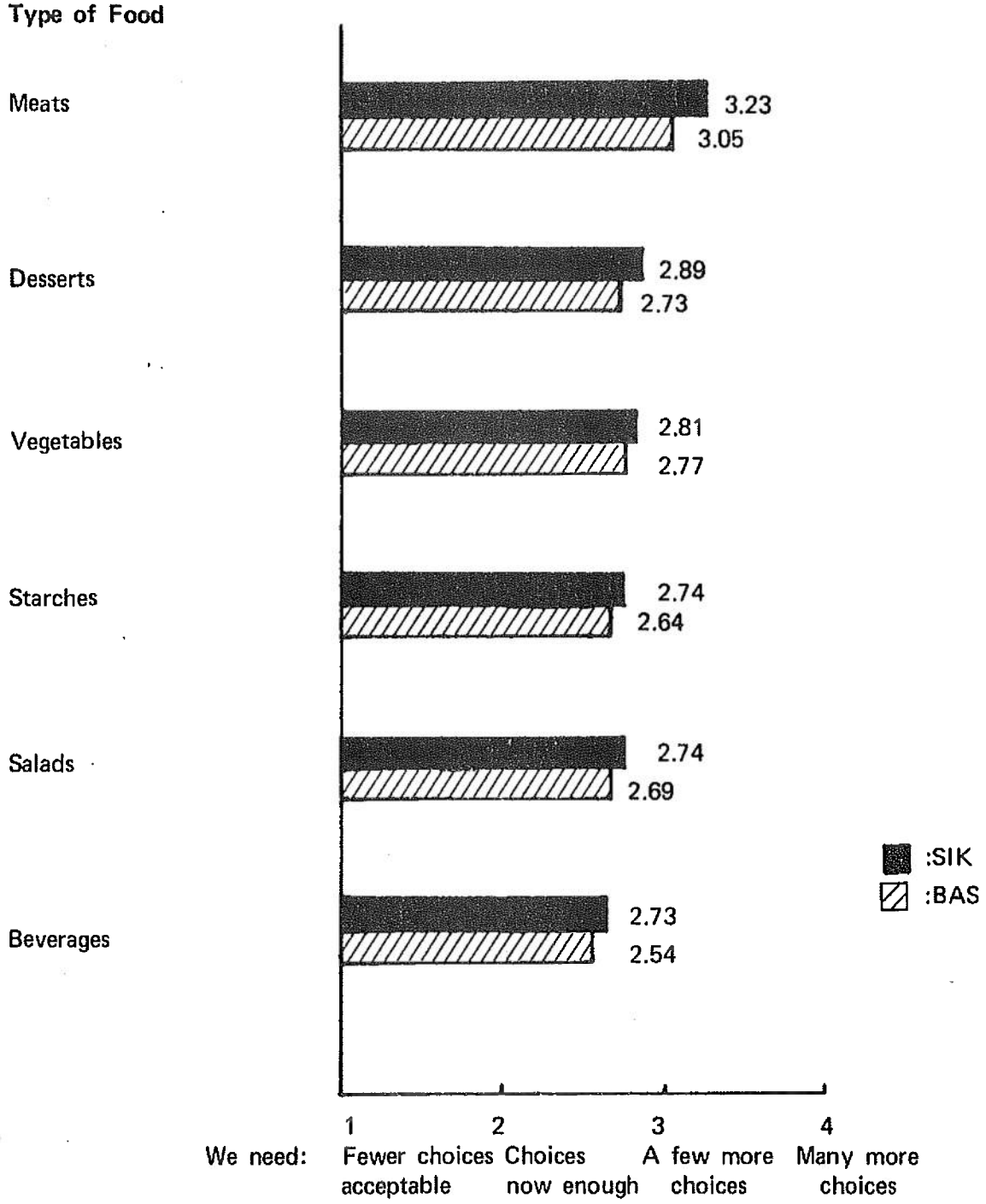


Table 13

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	14%	19%	12%	14%	15%	16%
30 min earlier	6%	12%	9%	15%	7%	9%
15 min earlier	3%	1%	3%	3%	4%	2%
Sufficient as it is	77%	69%	76%	68%	73%	72%
MEAN IN MINUTES:	11	15	10	13	12	13
To:						
1 hr or more later	31%	28%	21%	24%	36%	28%
30 min later	9%	10%	18%	13%	15%	10%
15 min later	2%	2%	1%	3%	2%	4%
Sufficient as it is	57%	61%	60%	60%	47%	58%
MEAN IN MINUTES:	22	20	18	19	27	21

Weekends: Saturday and Sunday

	Breakfast		Mid-Day Meal		Evening Meal	
	SIK	BAS	SIK	BAS	SIK	BAS
From:						
1 hr or more earlier	18%	19%	15%	14%	21%	17%
30 min earlier	5%	6%	10%	10%	8%	7%
15 min earlier	1%	2%	1%	2%	4%	3%
Sufficient as it is	75%	73%	74%	74%	67%	73%
MEAN IN MINUTES:	13	13	12	12	16	13
To:						
1 hr or more later	35%	29%	30%	24%	40%	28%
30 min later	5%	7%	11%	9%	8%	8%
15 min later	1%	2%	1%	3%	2%	3%
Sufficient as it is	59%	62%	58%	64%	51%	61%
MEAN IN MINUTES:	23	20	21	17	26	19

Table 14

Consumers' Opinions of the VARIETY of SHORT ORDER FOODS

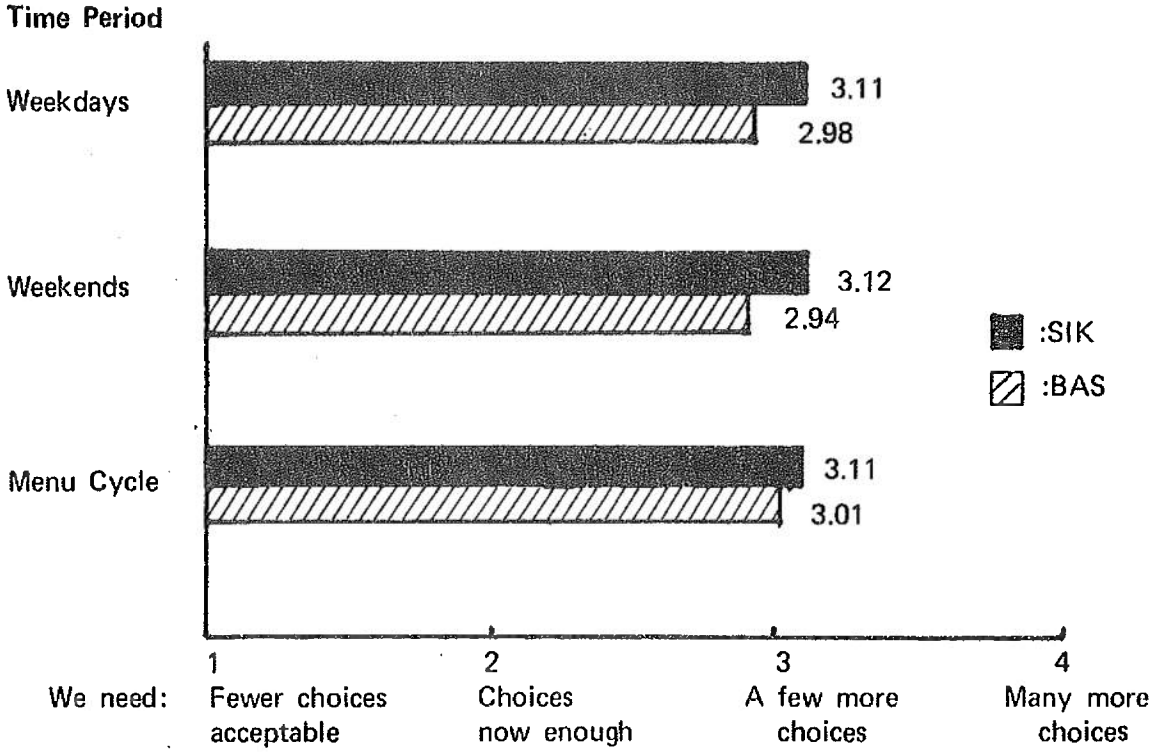


Table 15

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

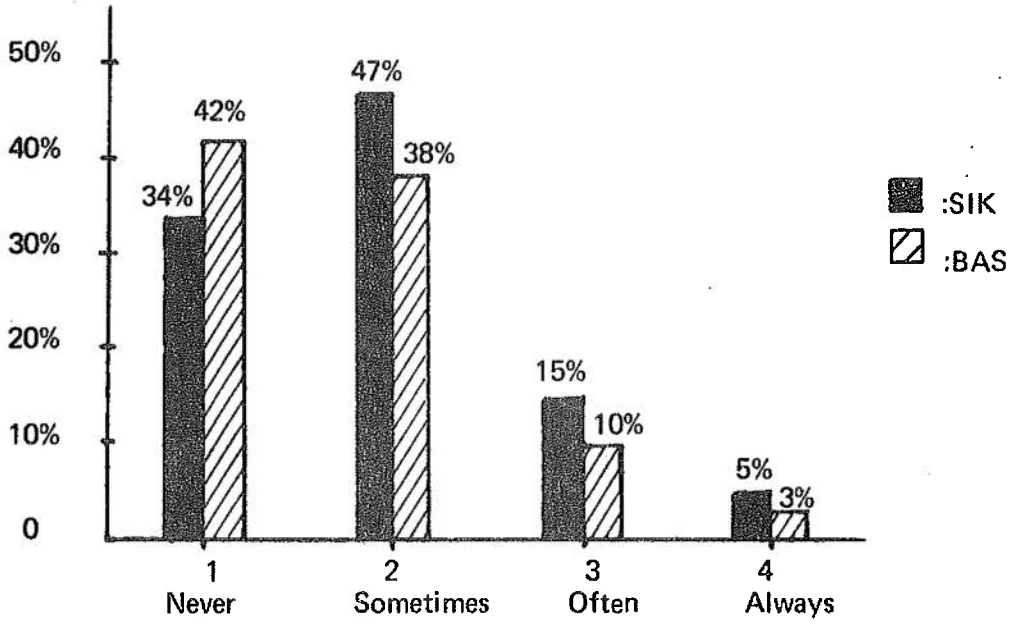
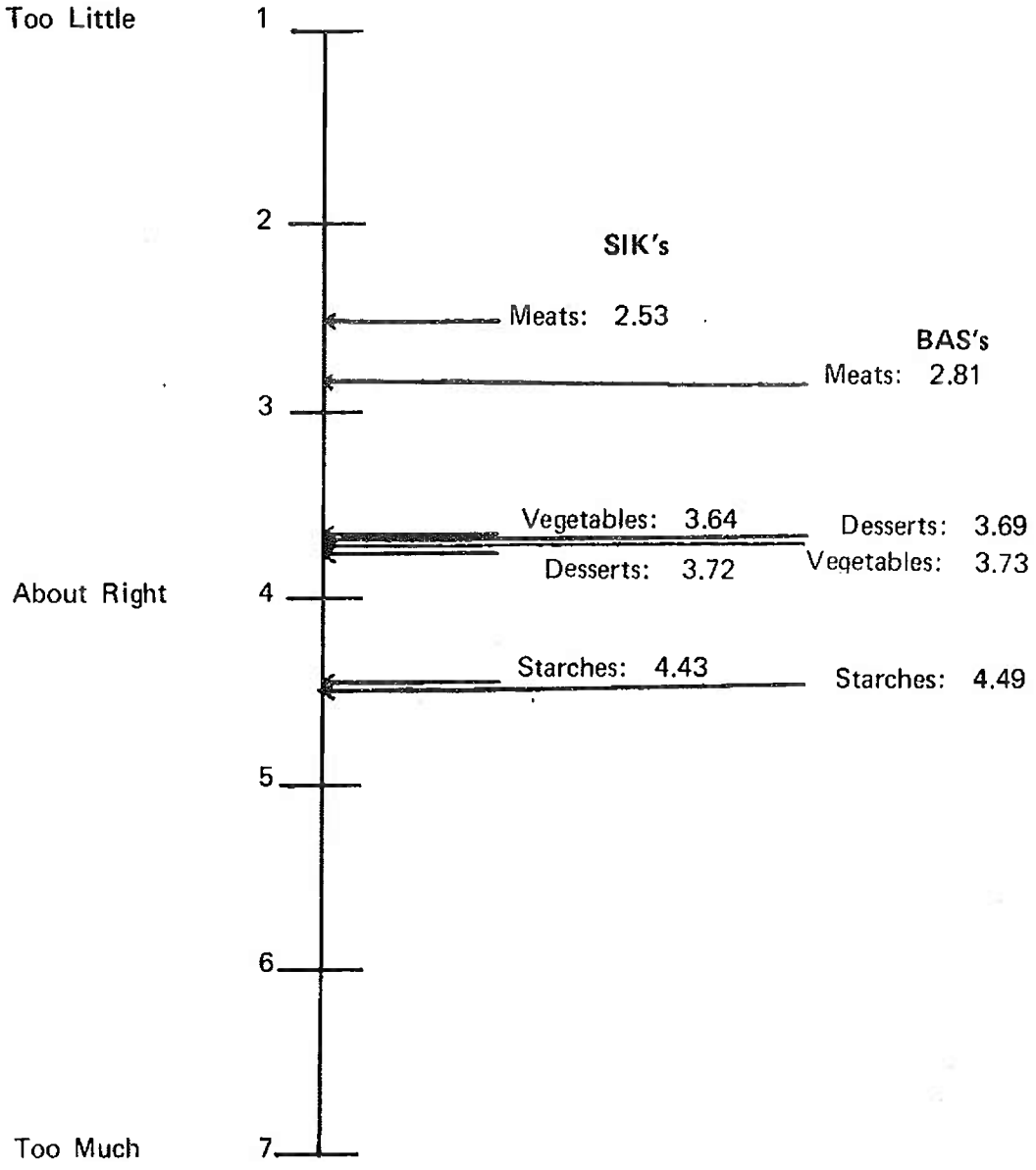


Table 16

Consumers' Opinions of Amounts per Servings



groups, the portion size of meat items is viewed as insufficient and should therefore be increased. Vegetables, desserts, and starches are first offered in portions which are viewed as nearly "about right". Table 17 supplements this information by identifying which menu items have second helpings available. 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, both groups again complain that meats (which are served in insufficient quantity to begin with) are only sometimes available for second helpings. The short order items, starches, and vegetables are generally available for seconds according to the SIK group, but only sometimes available according to the BAS group.

Part VIII: Service by Dining Facility Personnel. Table 18 presents the consumers' image of the cooks' abilities and the workers' attitudes, all of which are viewed as somewhat poor. Table 19 indicates how often the consumers are subjected to inferior personnel practices (i.e., not putting out enough silverware and condiments; ordering too little food; ordering too much food and hence serving leftovers). The function of ordering correct quantities is a more serious problem than the others. This data also indicates that runouts are a problem with a frequency of sometimes-to-often, a factor which contributes to the problem of insufficient quantities presented in Part VII.

In addition to these problems, the consumers are also slightly opposed to the existing system of bussing their own trays to the dishwashing area, as Table 20 indicates.

Part IX: General Dining Facility Environment. This section is considerably more detailed than the preceding sections because the concept of "environment" has so many dimensions. Furthermore, the tables presented in this section report the consumers' opinions for each facility, in addition to the ration status of the respondents. In general you will notice that the Hospital Cafeteria usually receives the most positive evaluation, followed by the Ranch House (Bldg. No. 861, the self-help facility), then dining hall #1 (Bldg. No. 274, located near the barracks area), and lastly by dining hall #7 (Bldg. No. 1315, located near the North gate).

Table 17

Are Second Helpings Permitted?

SERVED BY OTHERS	Never		Sometimes		Always	
	SIK	BAS	SIK	BAS	SIK	BAS
Short Order items	2%	6%	23%	49%	75%	44%
Meat items	13%	15%	58%	64%	29%	21%
Starches	2%	5%	23%	44%	75%	51%
Vegetables	1%	4%	19%	43%	80%	53%
SELF-SERVICE						
Salads	2%	3%	10%	24%	89%	73%
Beverages	1%	4%	7%	16%	92%	80%
Desserts	1%	4%	11%	26%	87%	70%

Table 18

Dining Facility Personnel

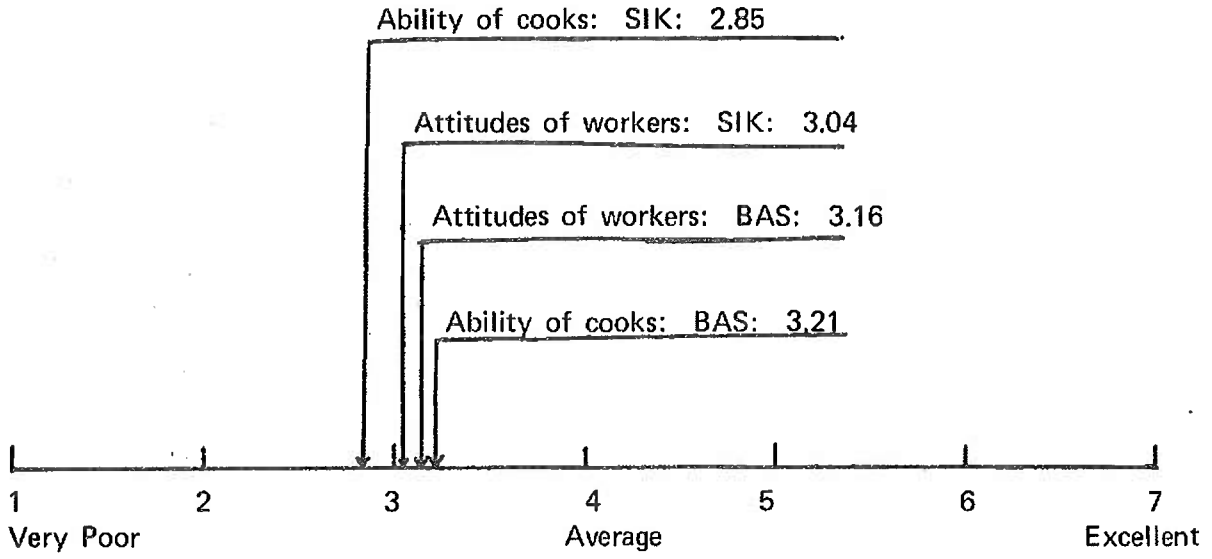


Table 19

Food Service Personnel Functions

How often do you find:

	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS
Inappropriate or missing silverware	26%	27%	49%	53%	19%	17%	5%	4%	2.03	1.98
Not enough condiments (ketchup, etc.)	24%	22%	51%	54%	19%	20%	6%	4%	2.07	2.06
Left-overs being served day after day	16%	27%	43%	45%	26%	22%	15%	7%	2.40	2.10
Serving line has run out of items	15%	17%	41%	47%	31%	29%	13%	8%	2.42	2.28

1 Never — 2 Sometimes — 3 Often — 4 Always — MEAN

Table 20

Opinions Concerning Self Bussing

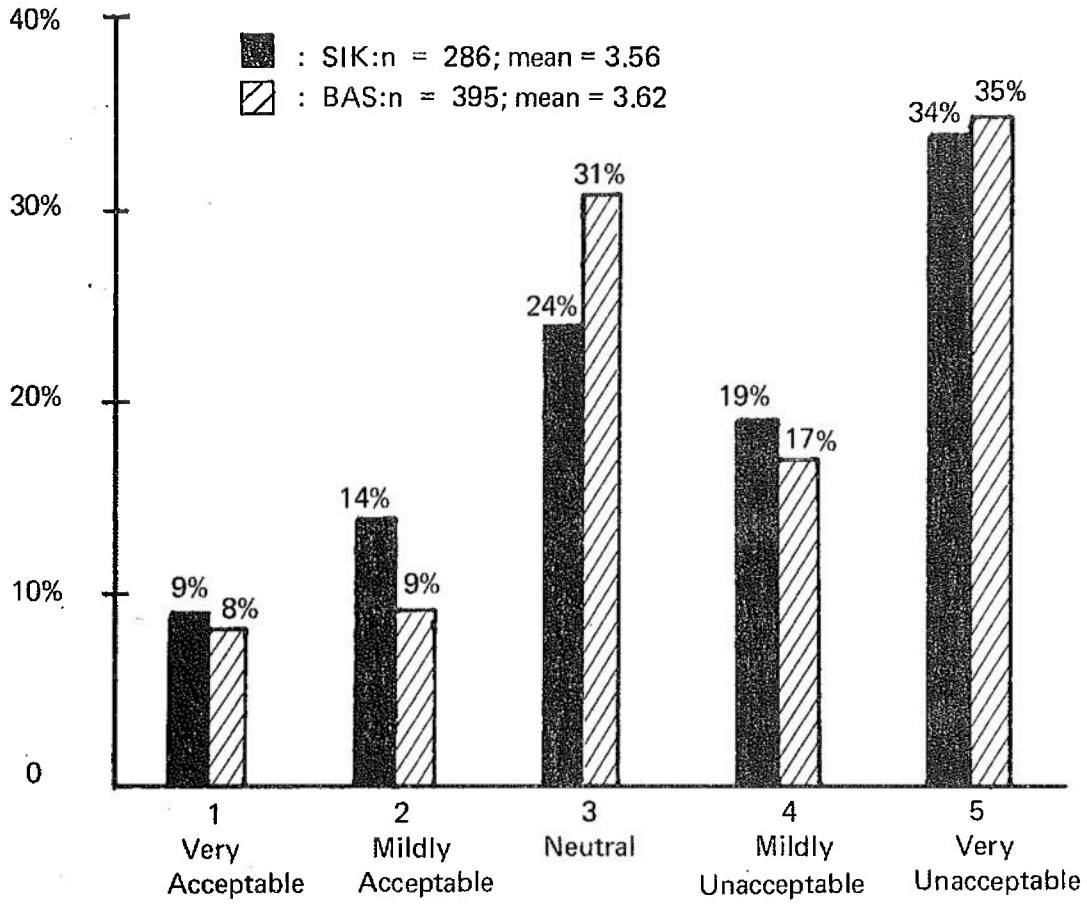


Table 21 presents the consumer evaluation of various facility-personnel factors (i.e. do the personnel keep the serving counters clean or dirty) for each dining facility. Although the survey questionnaires required the consumers to respond on a scale marked 1 to 5 with the items balanced (the positive descriptor on the left half the time and on the right half the time), the table format has 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 21 notice that the evaluations across consumer types and across facilities are not markedly discrepant, generally hovering from neutral to slightly positive. The silverware could be cleaner, and more attention could be paid to the tables and chairs in facility #7. This information should be integrated with the date pertaining to the service of dining facility personnel.

Table 22 presents the consumer view of the general condition of each facility. Insects (supplemental information indicates flys in particular) and rodents are reported as a problem by the SIK's. Noise is a problem for both groups, as is the view from the facilities. The consumers are not critical of safety hazards. It is also interesting to note that the self-help facility (Bldg. #861) consumers rated the interior appearance of their facility much better than the consumers of the other comparable facilities, but nevertheless the rating only reached slightly better than neutral.

Table 23 presents the consumer view of the convenience features of the dining facilities, indicating that the facilities are generally convenient to enter and leave, but too far from washroom facilities.

Table 24 summarizes the consumer opinion of the appearance and atmosphere of the facilities. The facilities are viewed as more dreary than cheerful; #7 is particularly drab and crowded. Crowding is also a problem in the hospital cafeteria.

Table 25 provides information about the environmental/engineering factors of the facilities, demonstrating that the consumers viewed #1 and #7 to a lesser extent as sometimes too cold (bear in mind however that the testing was accomplished in December and January), and all were sometimes too stuffy.

Table 21

Facility-Personnel Factors

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

Dining Facilities

	#1		#3*		#7		Hospital		
	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS	
Clean kitchen area	0.3	0.2	0.5	0.3	0.1	0.3	0.5	0.6	Dirty kitchen area
Clean serving counters	0.4	0.2	0.4	0.5	0.2	0.3	0.3	0.4	Dirty serving counters
Clean dispensing devices	0.2	0.2	0.4	0.3	0.1	0.1	0.1	0.6	Dirty dispensing devices
Clean silverware	0.0	0.1	0.3	0.0	–0.3	–0.1	0.1	0.1	Dirty silverware
Clean trays	0.4	0.2	0.3	0.4	0.0	0.1	0.2	0.3	Dirty trays
Clean dishes and glasses	–0.2	0.0	0.0	0.2	–0.1	0.0	0.3	0.5	Dirty dishes and glasses
Clean floors	0.2	0.1	0.3	0.3	0.0	0.2	0.4	0.2	Dirty floors
Clean tables and chairs	0.1	0.1	0.4	0.2	–0.3	–0.1	0.2	–0.2	Dirty tables and chairs
MEAN:	0.2	0.1	0.3	0.3	0.0	0.1	0.3	0.3	
NUMBER PER CELL [a]:	68	178	86	96	109	75	11	32	

*: Ranch House

a: These 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 inadvertantly left the item blank.

Table 22

General Condition of Each Dining Facility

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

	Dining Facilities								
	#1		#3*		#7		Hospital		
	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS	
Insect free	−0.3	0.2	−0.5	0.5	−0.3	0.4	−0.9	0.5	Insect infested
Rodent free	−0.6	0.3	−0.6	0.6	−0.5	0.7	−0.6	0.7	Rodent infested
Brightly lighted	0.3	0.2	0.4	0.4	0.3	0.4	0.3	0.5	Dimly lighted
Sunny	−0.2	0.0	0.4	0.1	0.0	−0.1	−0.3	−0.6	Lacking in sunlight
Quiet	−0.6	−0.4	−0.3	−0.4	−0.7	−0.6	−0.4	−0.7	Noisy
Uncrowded	−0.3	−0.2	−0.2	−0.2	−0.5	−0.4	−0.4	−0.5	Crowded
Roomy	−0.2	0.1	−0.1	−0.1	−0.5	−0.2	−0.2	−0.6	Cramped
Well designed	−0.4	−0.5	0.1	0.0	−0.8	−0.5	−0.5	−0.5	Poorly designed
Pleasant view	−0.8	−0.6	−0.4	−0.4	−1.1	−0.8	−0.5	−0.9	Unpleasant view
Low number of safety hazards	0.3	0.2	0.4	0.4	0.2	0.1	0.4	0.4	High number safety hazards
Pleasant exterior appearance	−0.5	−0.5	−0.2	−0.4	−0.8	−0.5	0.2	−0.2	Unpleasant exterior appearance
Pleasant interior appearance	−0.6	−0.5	0.1	0.0	−0.8	−0.6	−0.1	−0.1	Unpleasant interior appearance
MEAN:	−0.3	−0.1	−0.1	0.0	−0.5	−0.2	−0.2	−0.2	

*: Ranch House

Table 23

Conveniences Within Dining Facilities

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

Dining Facilities

	#1		#3*		#7		Hospital		
	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS	
Convenient to enter and leave	0.6	0.2	0.6	0.2	0.1	0.5	0.8	0.2	Inconvenient to enter and leave
Close to washroom	−1.0	−0.7	−0.6	−0.7	−1.1	−0.9	−0.5	−0.6	Far from washroom
Large space between tables	−0.2	0.0	−0.5	−0.2	−0.4	−0.2	0.2	−0.7	Small space between tables
Adequate table size	−0.4	−0.2	−0.2	−0.1	−0.4	−0.3	0.2	−0.3	Inadequate table size
MEAN:	−0.2	−0.2	−0.2	−0.2	−0.4	−0.2	0.2	−0.3	

*: Ranch House

Table 24

Appearance and Atmosphere of Dining Facilities

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

Dining Facilities

	#1		#3*		#7		Hospital		
	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS	
Colorful	−1.0	−0.7	−0.1	0.1	−1.1	−0.7	−0.5	−0.4	Drab
Cheerful	−0.9	−0.6	−0.3	−0.1	−0.9	−0.6	−0.3	−0.4	Dreary
Uncluttered	−0.2	−0.1	0.1	0.0	−0.2	−0.2	−0.1	−0.3	Cluttered
Beautiful	−0.8	−0.5	−0.4	−0.3	−1.0	−0.6	−0.2	−0.6	Ugly
Relaxed	−0.3	−0.2	0.0	−0.1	−0.4	−0.2	0.5	−0.2	Tense
Sociable	−0.3	−0.3	0.1	0.0	−0.3	−0.1	0.4	0.1	Unsociable
Uncrowded	−0.2	−0.1	0.0	−0.3	−0.6	−0.5	−0.1	−0.7	Crowded
MEAN:	−0.5	−0.4	−0.1	−0.1	−0.6	−0.4	−0.3	−0.4	

*: Ranch House

Table 25

Environmental/Engineering Factors

Never	Sometimes	Often	Always
1	2	3	4

Dining Facilities

	#1		#3*		#7		Hospital	
	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS
Is your dining facility ever:								
Too cold	2.4	1.9	1.8	1.8	2.0	1.9	1.6	1.8
Too warm	1.6	1.7	1.7	1.8	1.6	1.9	1.6	1.7
Stuffy	1.9	1.8	1.8	1.9	2.0	2.0	1.5	1.7
Smoky	1.5	1.6	1.5	1.7	1.7	1.7	1.5	1.6
Full of steam	1.5	1.4	1.4	1.5	1.8	1.7	1.2	1.4
Full of unpleasant food orders	1.9	1.8	1.8	1.8	1.9	1.9	1.4	1.6

*: Ranch House

Table 26 provides the consumers' opinions of the current tables. The consumers point out the limited variety available in the facilities; and their cramped, drab, and ugly features. Table 27 demonstrates, however, that four man square tables are not the problem per se, as nearly 2/3 of these Air Force consumers choose this alternative. Another interesting point relative to table preferences is the variability of the size preference across facilities (from 46% in the Hospital facility to 68% in the Ranch House), indicating that no simple guidelines for table size can be promulgated; the people in different facilities want different things.

The consumers preferences for music in the dining facilities present an interesting phenomenon. On a 5-point scale (1=very acceptable .. 5=very unacceptable), those currently without music desire it **more** than those with music (without: SIK mean is 1.5, BAS mean is 1.4; with music: SIK mean is 2.1, BAS mean is 1.9). The obverse of this phenomenon was found in an Army sample on a different issue (Branch and Meiselman, 1972, p. 24). The common interpretation of both these phenonmenon, however, is that the consumers' image of a feature may or may not be realized by the actual product. If in fact the actual music system in use in some of the facilities does not meet the consumers' expectations, it might be that the type of music available does not coincide with their preferences. Table 28 provides a listing of these preferences, with a variety of popular, hard rock, and soul meeting the preferences of the greatest percentage of the group.

Part X: Military Atmosphere. Table 29 clearly demonstrates that over 60% of both the SIK group and the BAS group would like to have less military atmosphere in their dining facilities. Table 30 supplements this information by indicating just which rules they want enforced or instituted and which they do not. When asked whether the various rules existed in their dining facilities or not, the only uniform agreement was that smoking was permitted, cutting in line was not, and that calling "at ease" when an officer enters is not required. For the other rules, however, there was considerable disagreement whether the rule existed or not*, but nevertheless there was no disagreement over whether each of the rules should be enforced or instituted-only a small minority want such rules of behavior, with a slightly greater percentage from the BAS group.

*A breakdown of the consumer responses by facilities did not indicate that specific facilities had some of the rules and others did not, but rather that the men in each facility were divided.

Table 26

Tables in the Dining Facilities

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

Dining Facilities

	#1		#3*		#7		Hospital		
	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS	
Colorful	–0.5	–0.5	–0.1	–0.2	–0.4	–0.2	–0.7	–0.5	Drab
Beautiful	–0.6	–0.5	–0.5	–0.3	–0.7	–0.4	–0.5	–0.6	Ugly
Wide variety	–1.1	–0.7	–0.7	–0.7	–0.9	–0.7	–0.9	–0.9	Limited variety
Sturdy	0.3	0.1	0.1	0.2	0.2	0.1	0.5	0.7	Easy to damage
Roomy	–0.9	–0.4	–0.2	–0.4	–0.6	–0.4	–0.1	–0.5	Cramped
MEAN:	–0.6	–0.4	–0.3	–0.3	–0.5	–0.3	–0.3	–0.4	

*: Ranch House

Table 27

Table Preferences
Dining Facilities

	#1		#3*		#7		Hospital		
SIZE	SIK	BAS	SIK	BAS	SIK	BAS	SIK	BAS	MEAN
2 person	17%	14%	6%	10%	7%	3%	0%	3%	9%
4 person	52%	73%	68%	76%	59%	73%	46%	68%	67%
6 person	24%	11%	23%	14%	22%	20%	46%	26%	19%
8 person	4%	2%	2%	0%	8%	3%	9%	0%	3%
More than 8 person	3%	0%	1%	1%	4%	1%	0%	3%	2%
SHAPE									
Round	33%	31%	30%	19%	30%	35%	36%	28%	30%
Square or rectangular	67%	69%	70%	81%	70%	65%	64%	72%	70%

Table 28

Music Preferences

Type	SIK	BAS
A variety of the following	24%	28%
Popular	18%	9%
Hard rock	12%	4%
Soul	11%	5%
Instrumental	7%	19%
Any type is fine	7%	9%
Rock and roll	5%	4%
Other	5%	5%
Country western	4%	9%
Classical	4%	5%
Jazz	3%	4%
Do not want music	1%	½%*

*: Less than ½%

Table 29

Military Atmosphere

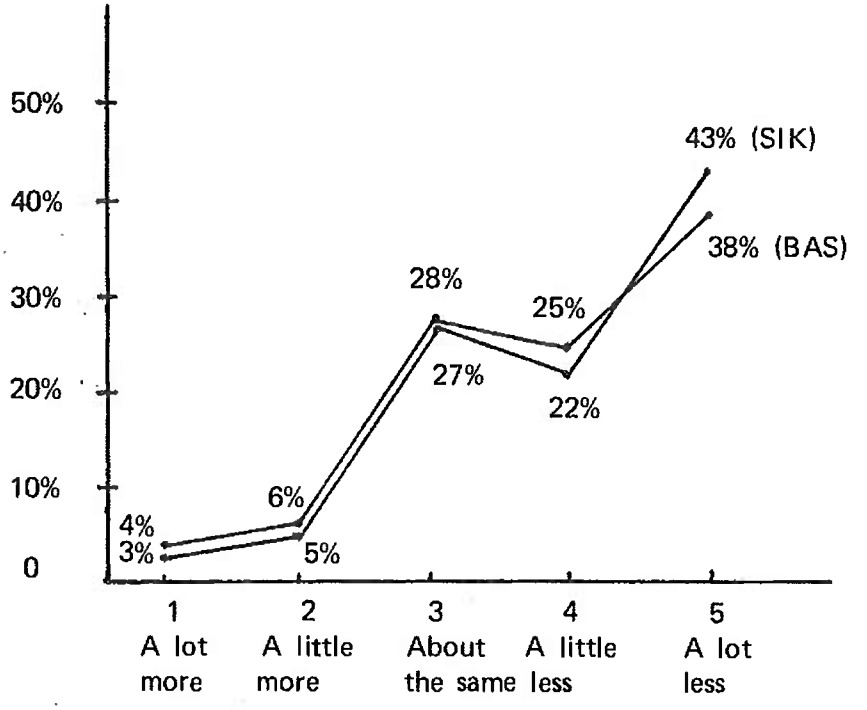


Table 30

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	51%	78%	49%	22%	15%	29%	44%	34%	41%	37%
Not allowing civilian guests	56%	66%	44%	34%	16%	20%	46%	38%	38%	42%
Calling "at ease" when officer enters	7%	7%	93%	93%	6%	6%	49%	50%	44%	44%
No Smoking	7%	7%	93%	93%	12%	15%	36%	38%	52%	47%
Officers and NCO's permitted to cut in line	8%	10%	92%	90%	11%	12%	46%	50%	43%	38%
Seperation of officers and NCO's from enlisted men	13%	26%	87%	74%	10%	12%	47%	49%	43%	40%

Returning to the disagreement over the existence of the rules for a moment, it should be understood that the ambiguous situation is one of the more difficult settings in which to foster behavioral compliance (acting correctly). The dining facilities present an ambiguous situation for the men, and this is damaging for military discipline.

Part XI: Convenience of Location. Table 31 indicates that the BAS group is usually driving whereever they are going, which is not surprising. For the SIK's, the dining facilities are a convenient walk from the living areas, but apparently the job sites are so far removed that the percentage who drive increased considerably. Table 32 indicates the same phenomenon, specifying how many minutes it would take to walk from place to place. Some 58% of the SIK can walk from the living area to the dining facility, but the job sites make walking within reasonable time limits difficult. The phenomenon might well explain the lower noon attendance (Table 1).

Part XII: Speed of Service. Tables 33 and 34 indicate that over 75% of the consumers are processed through the headcount station in under 5 minutes, with the mean delay under 4 minutes; and 75% experience delays of under 5 minutes in the serving lines, with the mean slightly greater than 4 minutes. This degree of speed of service is superior to what was found at Fort Lewis, Washington (Kiess, *et al.*, 1972), but the remaining 25%'s expressed their frustration by rating the speed of service as a slight problem in Table 7. Table 35 demonstrates that the delay at the dishwashing area is also minimal, with over 90% of the SIK's delayed less than 5 minutes (with a mean of slightly greater than 4 minutes). Notice that the mean amount of delay at the dishwashing area and in the serving line are exactly equal, but the individual's delay at the dishwashing area is more uniform while the delay in the serving line is more variable. If delay must exist (and some minimal amount obviously must), it is less frustrating to the consumer to have a uniform delay pattern because his world is more stable and predictable, and stability and predictability of the environment are positively reinforcing to human beings.

Part XIII: Dining Companions. Table 36 presents another interesting pattern. Recall that the BAS group typically desired smaller sized tables than the SIK group (Table 27), and now notice that the BAS group is consistently rating each of these social factors

Table 31

Usual Means of Travel

	SIK					BAS				
	Walk	Drive	Ride	Bus	Other	Walk	Drive	Ride	Bus	Other
Between living area and dining facility	65%	27%	7%	1%	3%	20%	63%	2%	0%	15%
Between job site and dining facility	40%	43%	10%	3%	4%	23%	64%	4%	1%	8%
Between living area and job site	31%	48%	13%	7%	½%*	6%	87%	5%	2%	1%

*Less than ½%.

Table 32

Walking Time

	SIK						
Minutes:	1-5	6-10	11-15	16-20	21-25	26-30	Over 30
Between living area and dining facility	58%	19%	9%	5%	3%	2%	4%
Between job site and dining facility	25%	25%	19%	12%	5%	5%	9%
Between living area and job site	18%	15%	19%	20%	7%	7%	14%

	BAS						
Minutes:	1-5	6-10	11-15	16-20	21-15	26-30	Over 30
Between living area and dining facility	24%	8%	6%	8%	4%	3%	46%
Between job site and dining facility	29%	20%	19%	11%	6%	7%	9%
Between living area and job site	5%	7%	11%	10%	6%	9%	52%

Table 33
Usual Delay at Headcount Station

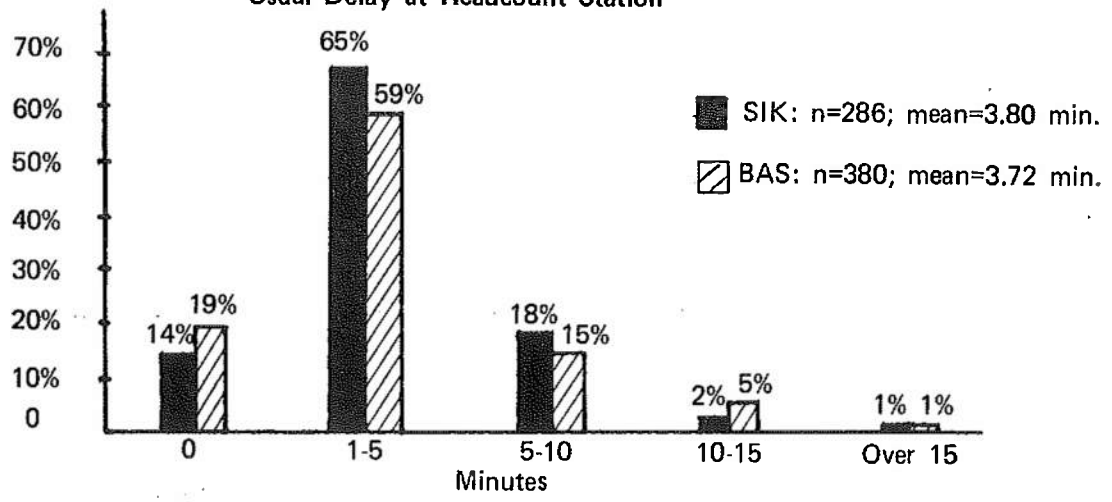


Table 34
Usual Delay in Serving Line

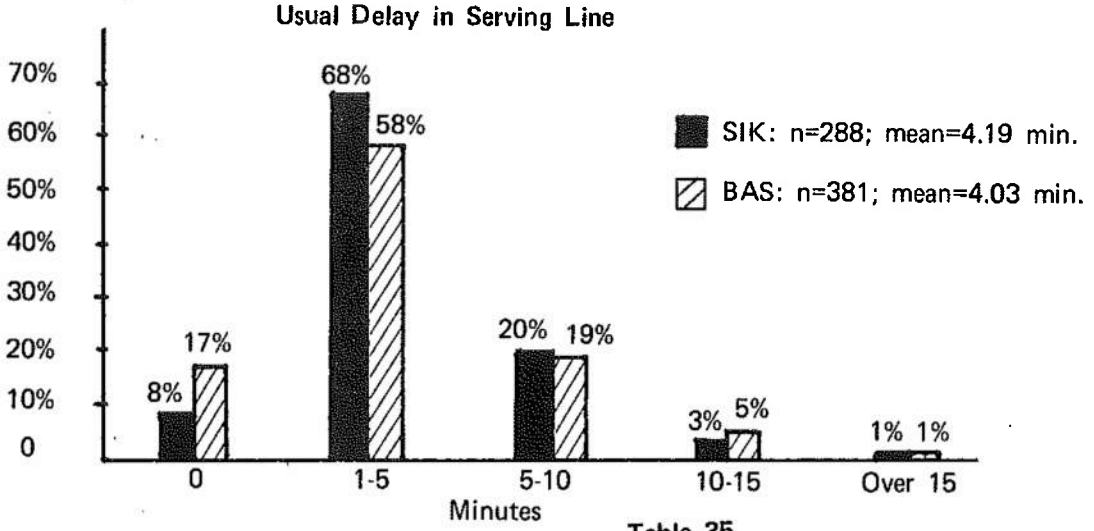
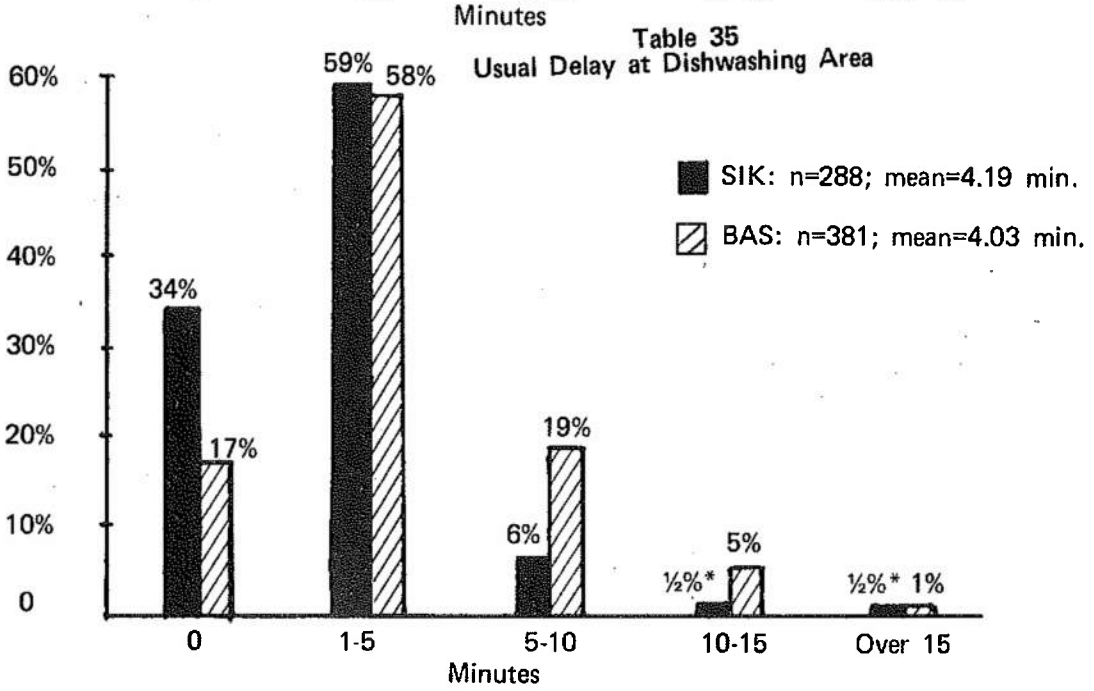


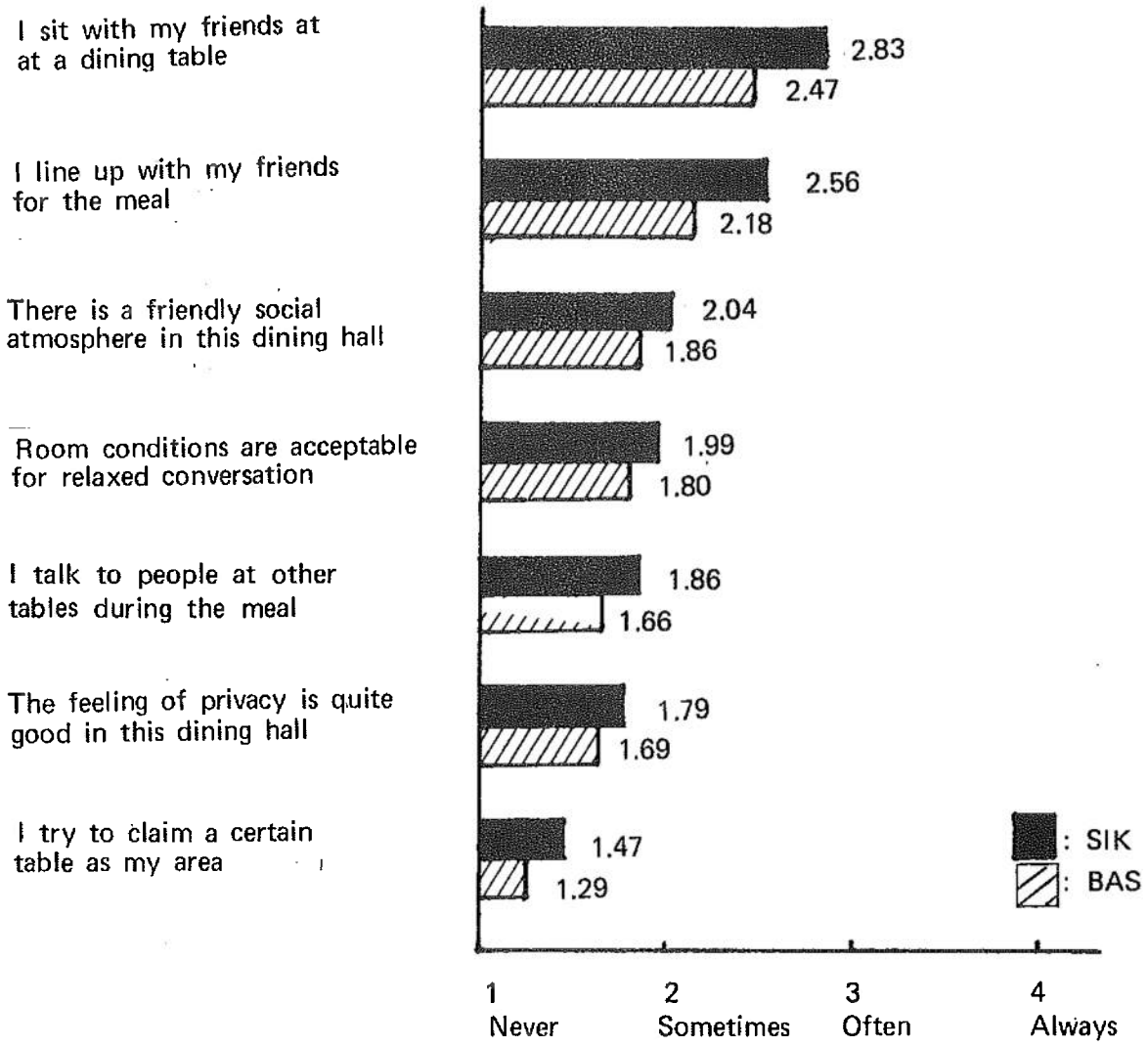
Table 35
Usual Delay at Dishwashing Area



*: Less than ½%

Table 36

Social Aspects of Dining Facilities



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 is more cohesive and finds more of their social needs met in the dining facilities than the BAS group.

Part XIV: Expense. Although expense has no substantive effect on attendance (Table 6), we used this opportunity to gauge consumer opinions concerning the separate rations system. Table 37 presents consumer reaction to the policies governing the current system, indicating an extreme divergence of opinions – one distint group views them as very unacceptable, another is neutral, and a third considers them as very acceptable – the SIK's have strong opinions even though the mean is essentially neutral. The BAS group on the other hand is much move favorably disposed to policies of the system, which again is not unexpected. Table 38 presents the consumers reactions to three alternative separate ration proposals. Proposal 2, which is basically the concept being tested at Shaw AFB, is the least preferred; the current system (proposal 3) is viewed as neutral to slightly favorable; and the concept of putting everyone on separate ration status and charging on a meal by meal basis (proposal 1) was rated the most favorable of the alternatives presented. Please see p. 61 for the exact wording of the proposals.

Commercial Food Service 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 exactly 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). Notice that the quality of food is far and away the most important factor for both groups. The close agreement between the two groups is also encouraging to the planner because when the desires of heterogenous groups are homogenous with respect to food service facilities, then the planner can indeed plan to provide all things to all men – at least the right things in food service to all men. To the extent that previous military surveys (Branch and Meiselman, 1972) typically indicate that the consumers stress improvement of food quality, variety, and quantity in that order, but Table 39 intersperses cleanliness, price, and convenience of location with those three food factors, it is indicative that the military food service system is

Table 37

Opinions Concerning Current Seperate Rations System

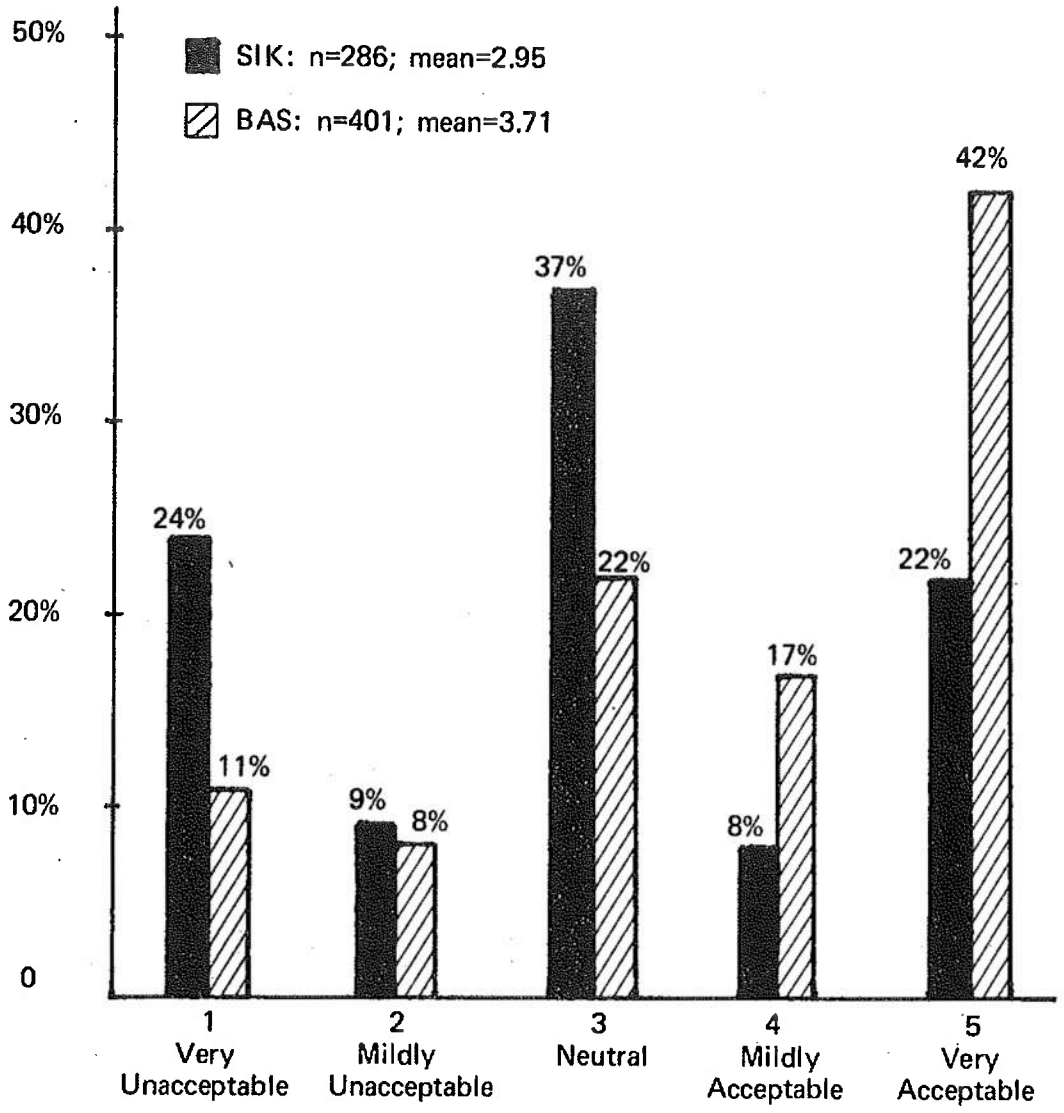
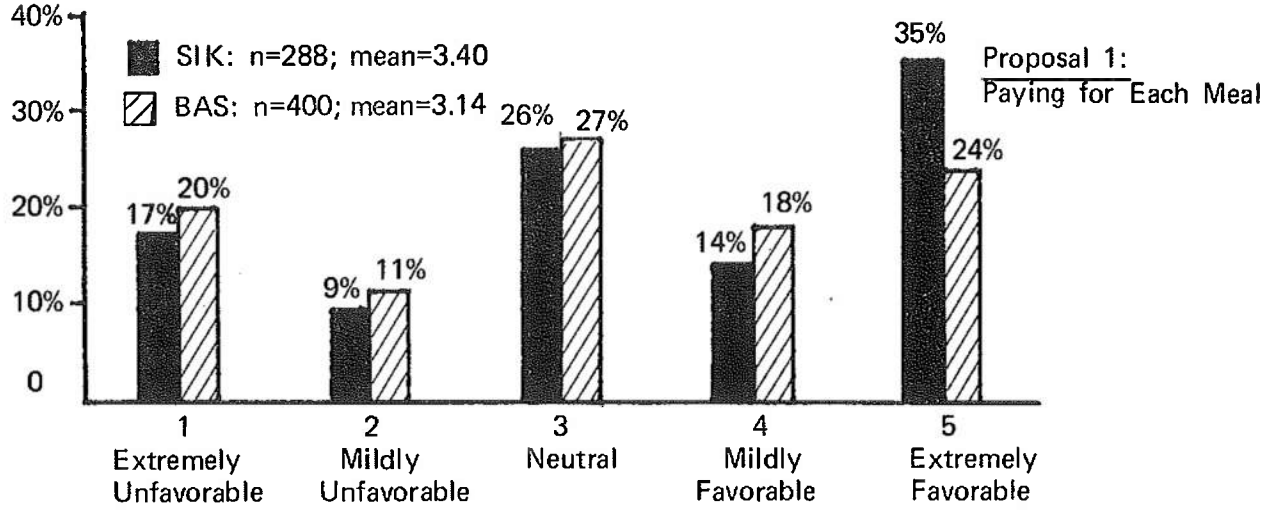
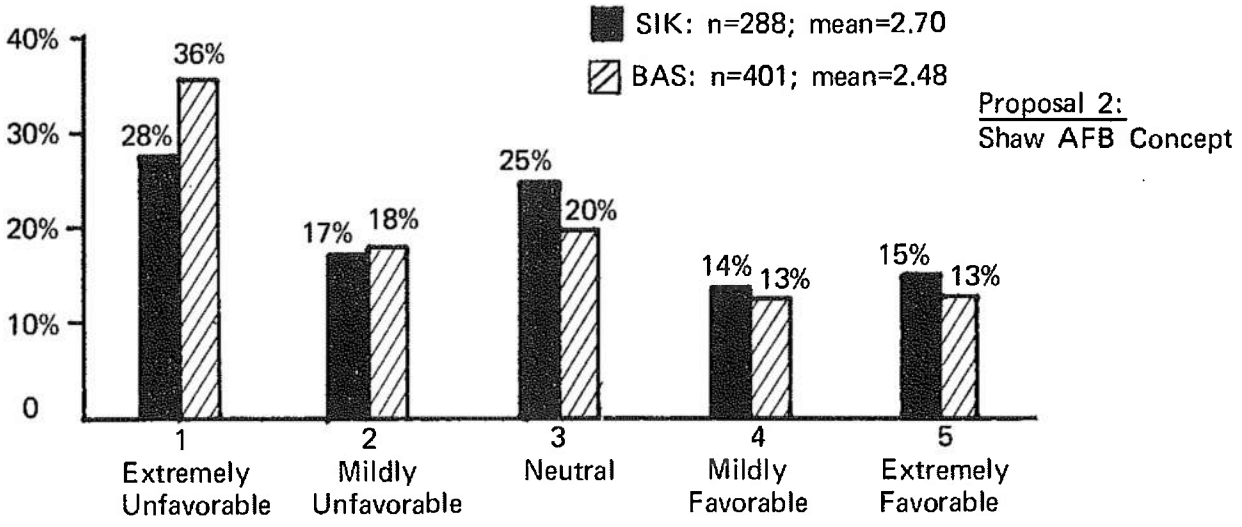


Table 38

Alternative Seperate Rations Proposals





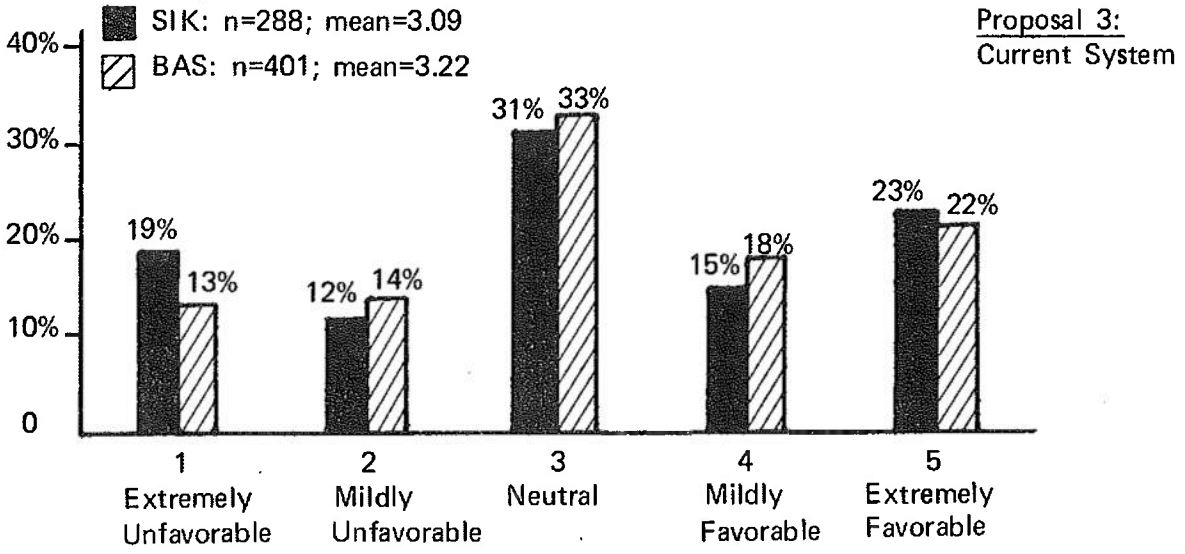
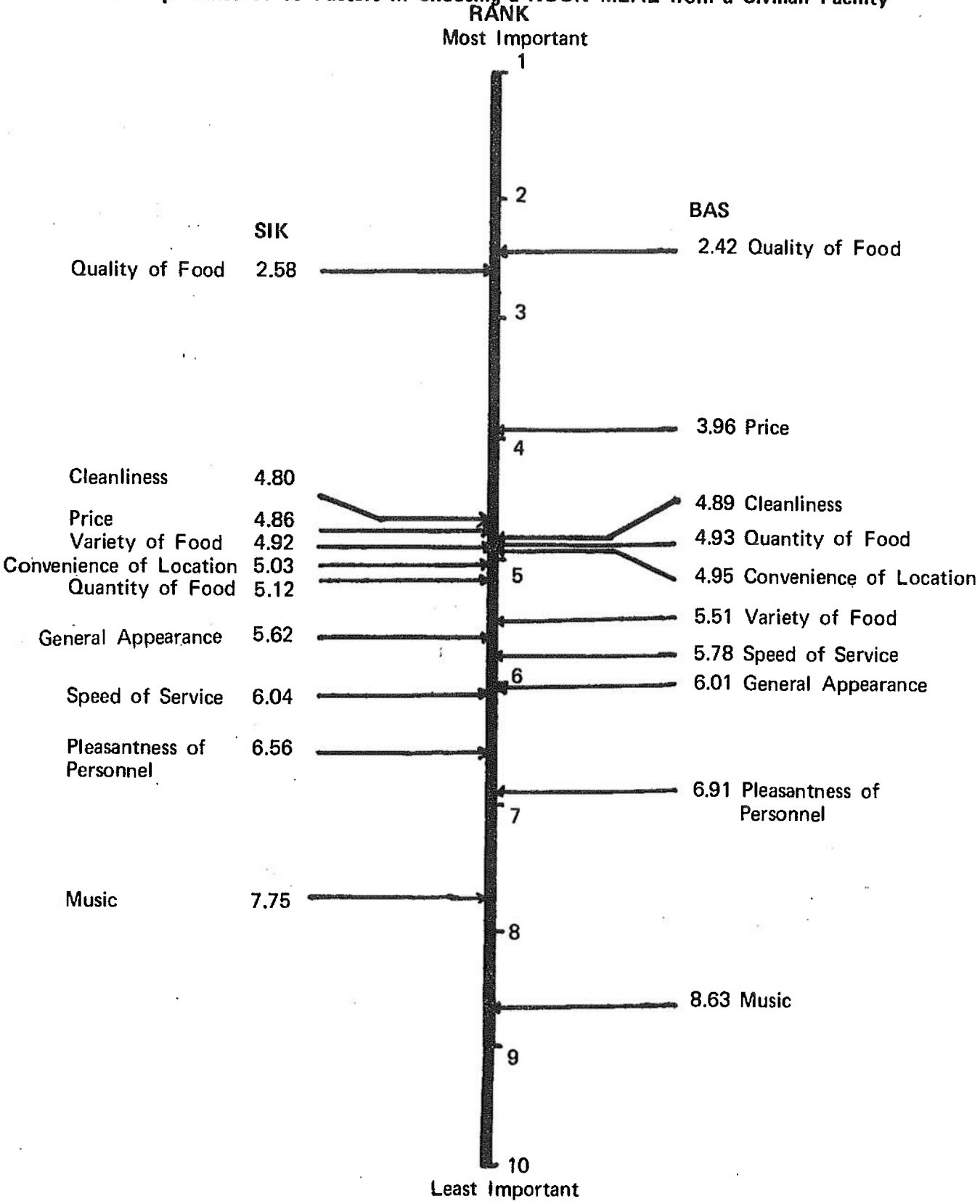


Table 39
The Importance of 10 Factors in Choosing a NOON MEAL from a Civilian Facility

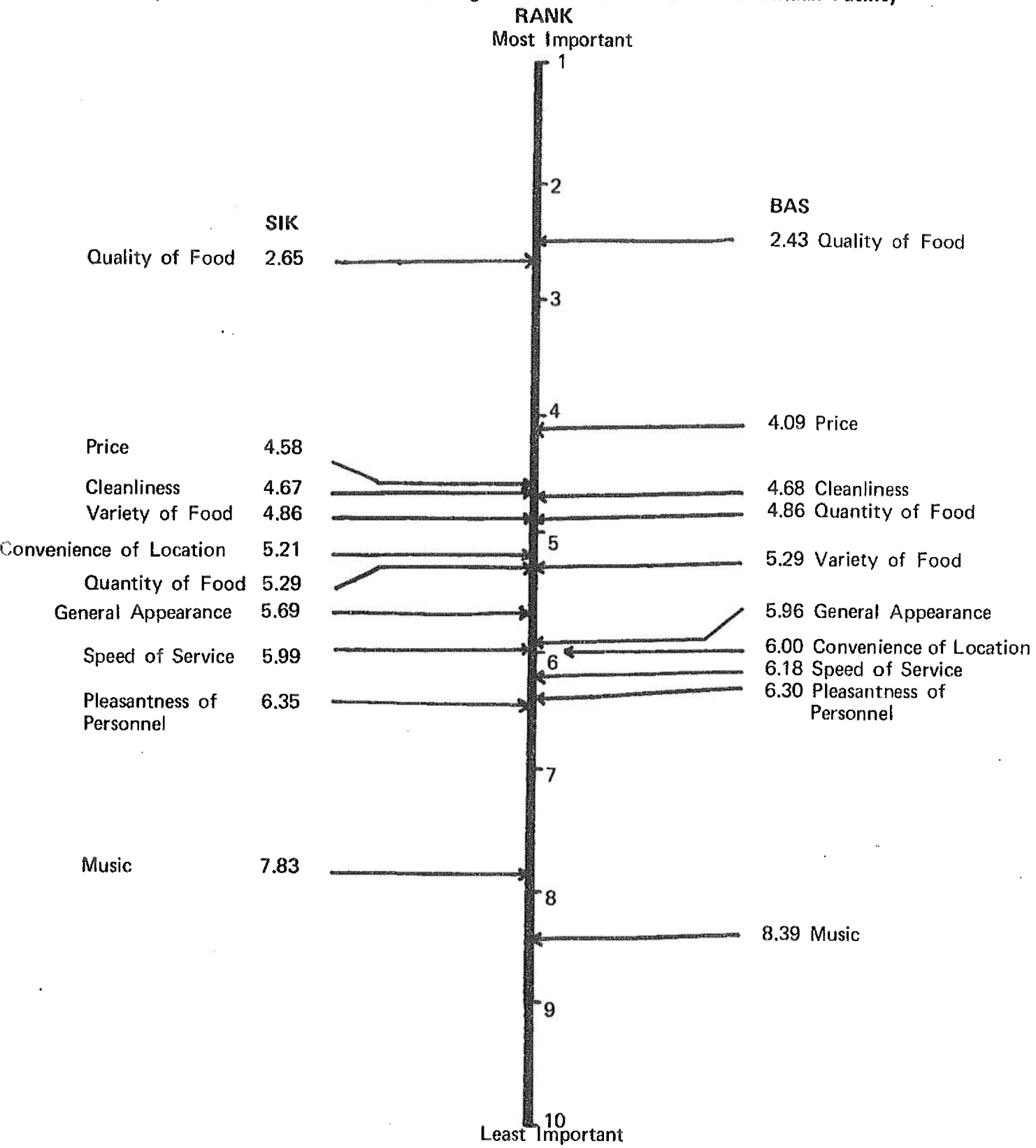


meeting the consumer expectations for cleanliness, price, and convenience of location. Though the price factor is not surprising in military food service and location is not surprising in Army food service, it is very encouraging to have evidence that the cleanliness of military food service meets consumer expectations.

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 except that now price is higher in importance. The factor of pleasantness of personnel has been conspicuously low in both tables, a fact for which we have no compelling explanation.

Table 40

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



CONCLUSIONS AND RECOMMENDATION

The reader should bear in mind that the following statements are made solely to reflect the consumer's 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 indicate that a majority do not eat 21 meals a week. Breakfast is the meal most often missed and it also accounts for the most change in meal patterns after entering the military.

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

3. Although attendance might not move appreciably, this is not to imply that the consumers do not find fault with 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 by this laboratory will inform the Air Force menu planners which items are desired more or less frequently.

5. The two most serious non-food problems of the Travis AFB food service system (hours of operation and monotony of the same facility) must be solved, and the concept of specialty food service facilities as employed at Fort Lewis, Washington, (Bustead, 1972) might remedy these two problems while simultaneously reducing the problem of variety and the lesser problems of general dining facility environment and military atmosphere. Merely increasing the hours of the existing facilities will not satisfy a large percentage of those complaining.

6. Main course meat items are of particular concern to the consumers. Meat items are served in insufficient quantity and without acceptable variety. Increased portion size, self-service, and/or unlimited second helpings would all resolve the quantity problem.

7. The image of the cooks and dining facility personnel is not very good, and self-bussing is not well received.

8. The self-help renovations of dining facility #3 greatly increased the consumer acceptance of the facility, but improvements must still be made here as well as in all the other facilities. Something must be done to control the flys and reduce the noise levels. Although the view is a problem from the consumers' orientation, a feasible remedy might not be possible. Washrooms should be available; temperature control must be solved. If additional procurement of tables and chairs is contemplated, the percentage of tables larger than four-man should reflect the consumers' stated preferences. If a music system is implemented, the type of music should be a variety of popular, hard rock, and soul to conform to consumer preferences.

9. Make the rules of the dining facilities concerning dress regulations and the like explicit so that the consumer knows what standards of behavior are expected of him; reduce the military atmosphere.

10. Data does not support the contention that only those people who dislike the military complain about the food service system.

REFERENCES

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.

Bustead, R. L. (Ed.) CAFe experiment at Fort Lewis, Washington. United States Army Natick Laboratories Technical Report 73-20-OR/SA, 1972.

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.

Meiselman, H. L., L. G. Branch, D. Waterman, M. Taylor. The 1973 food preference survey. United States Army Natick Laboratories Technical Report, in press.

CONSUMER'S OPINIONS OF FOOD SERVICE SYSTEMS

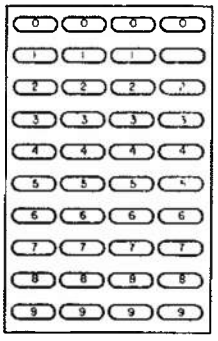
APPENDIX I

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

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

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	No
①	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.

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?		Enforce or	Abolish or	No
		Yes	No	Institute	not Institute	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	①	②	③	④	⑤	Waitress service

APPENDIX II

Table 41

Sex of Sample

	Male	Female	Totals
SIK:	93% (270)	7% (19)	100% (289)
BAS:	96% (385)	4% (16)	100% (401)

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

Table 42

Race of Sample

	Caucasian	Negro	Oriental	Other	Totals
SIK:	66% (188)	21% (61)	4% (10)	9% (27)	100% (286)
BAS:	77% (306)	16% (63)	1% (5)	6% (23)	100% (397)

Table 43
Age of Sample

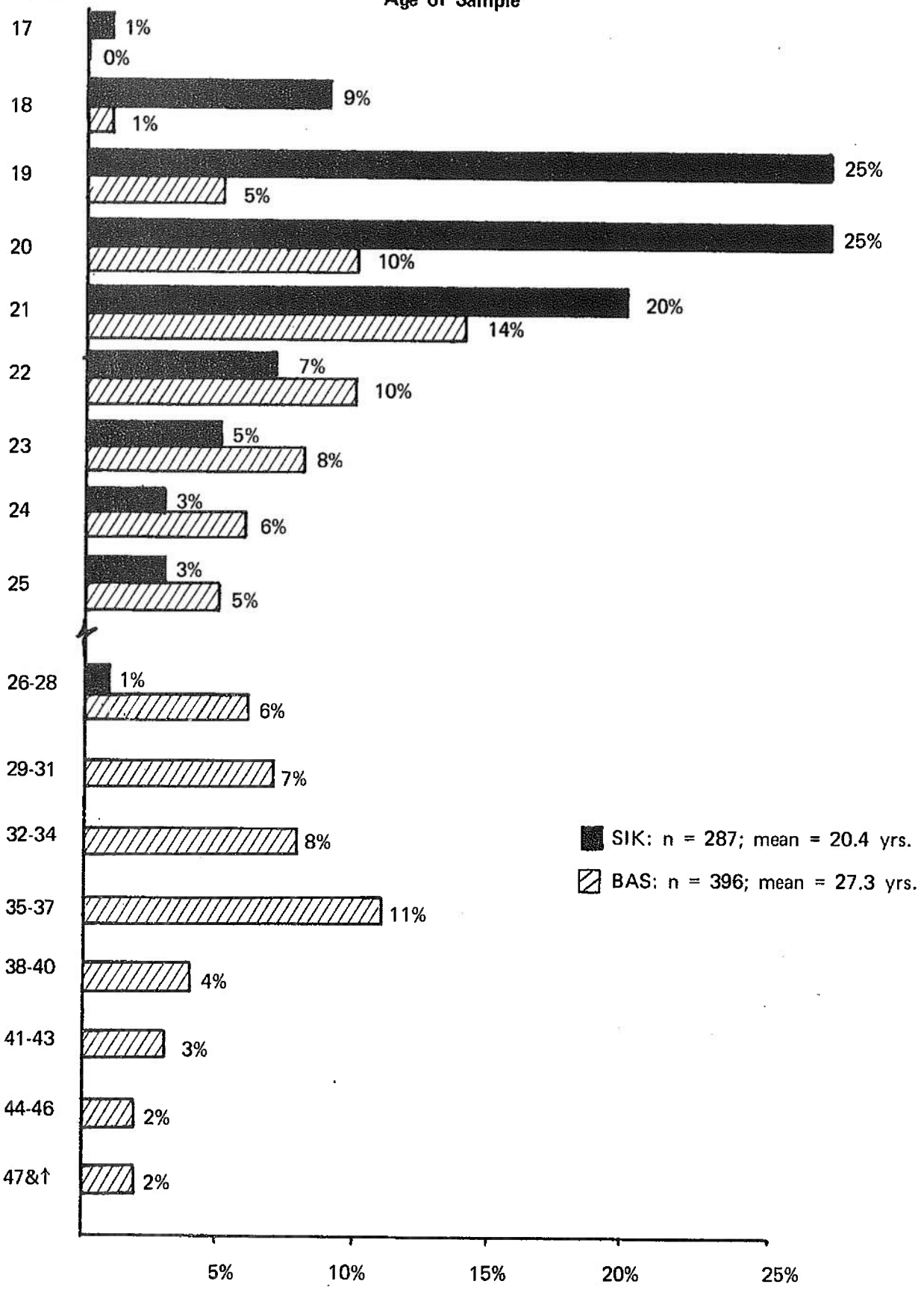
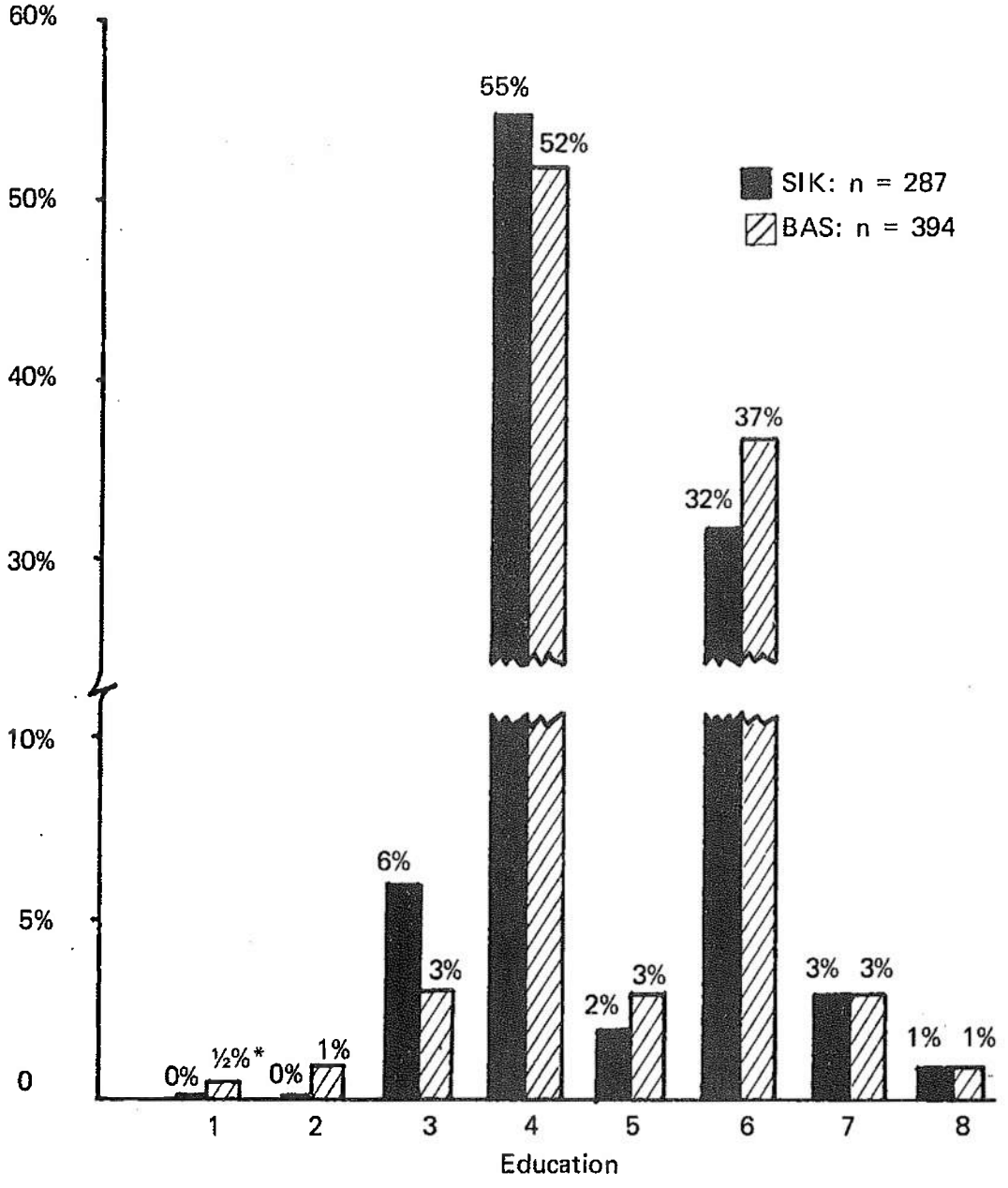


Table 44

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

*: Less than ½%

Table 45
Time in Service

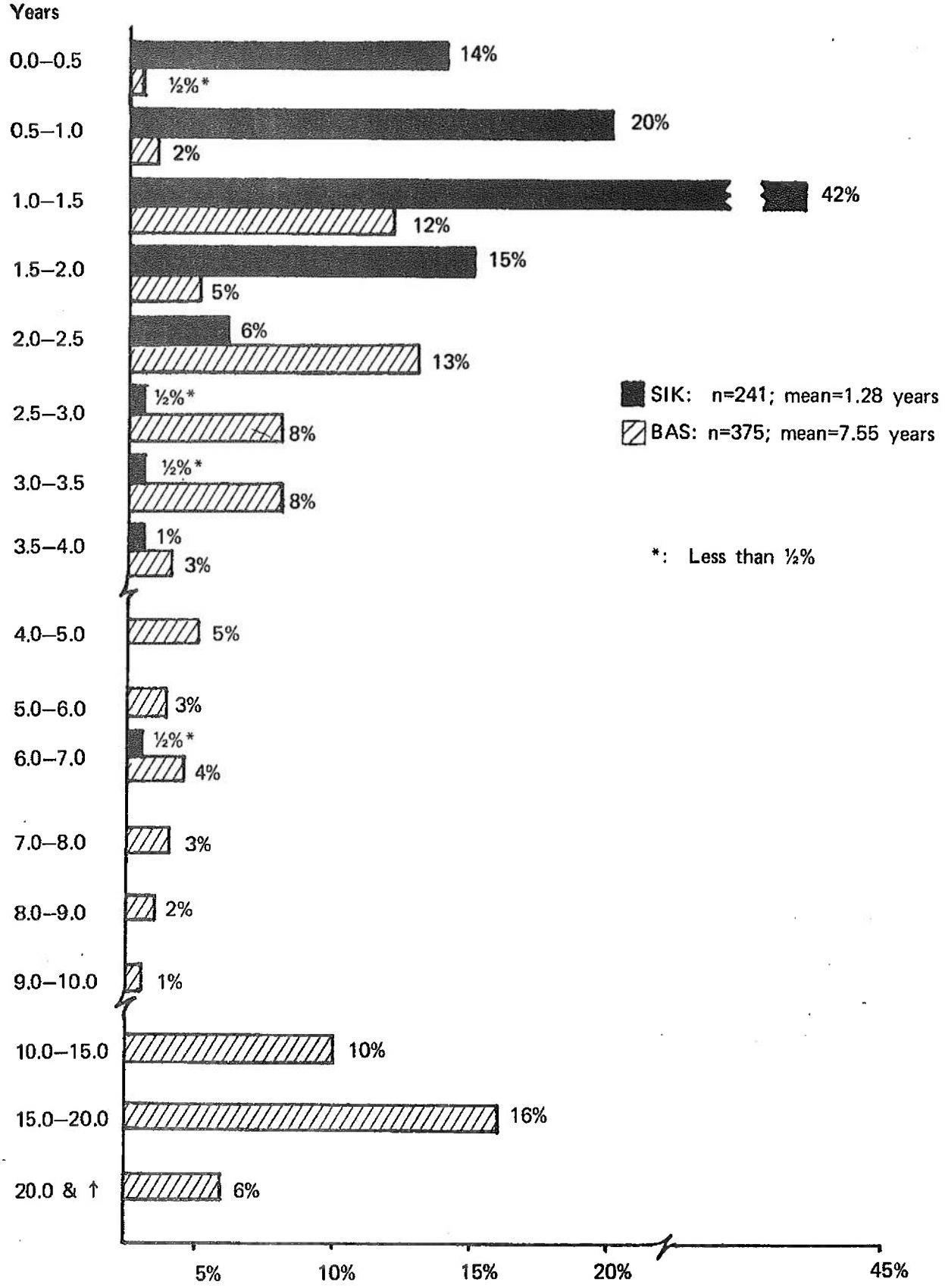


Table 46

Enlistment Plans

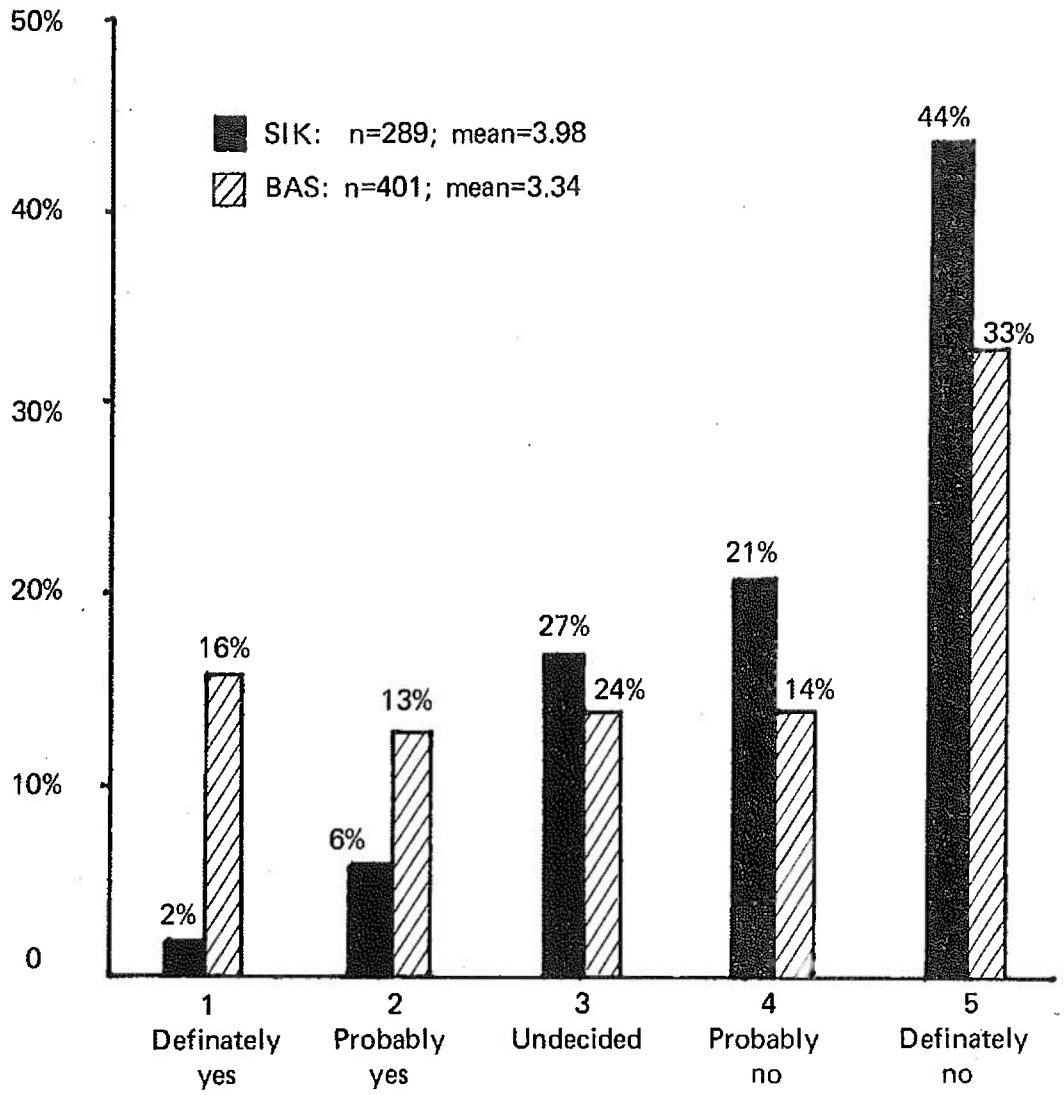


Table 47

Reaction to Military Service

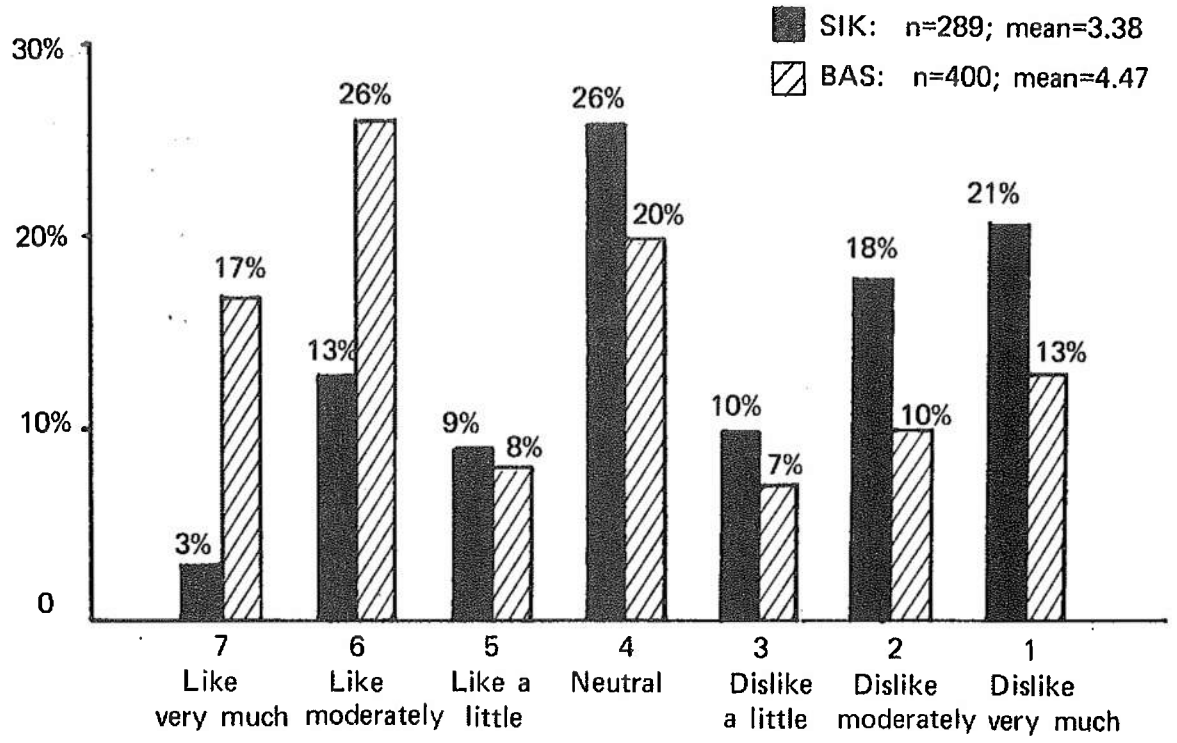
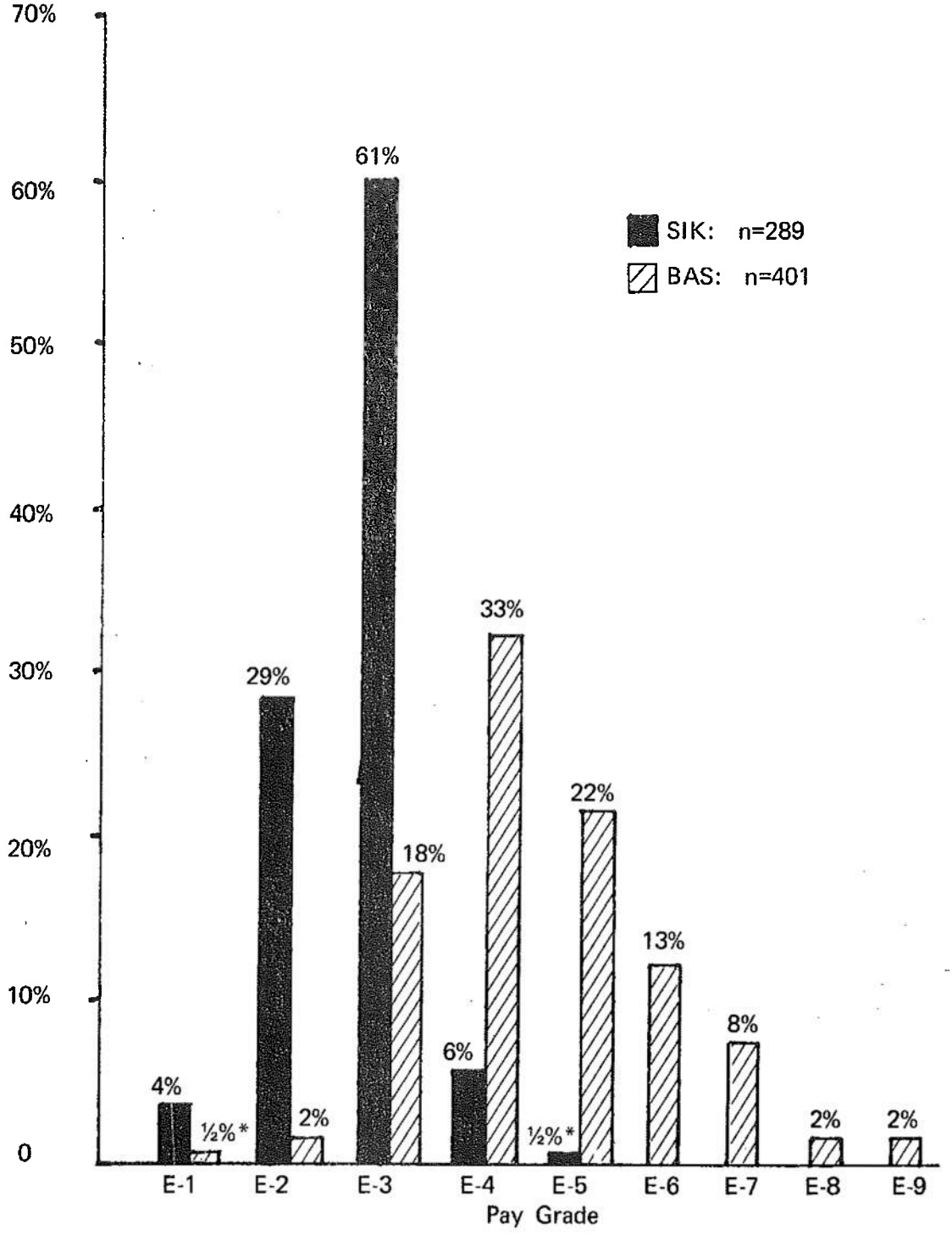


Table 48

Pay Grade of Sample



*: Less than ½%

Table 49

Rural/Urban Background of Sample

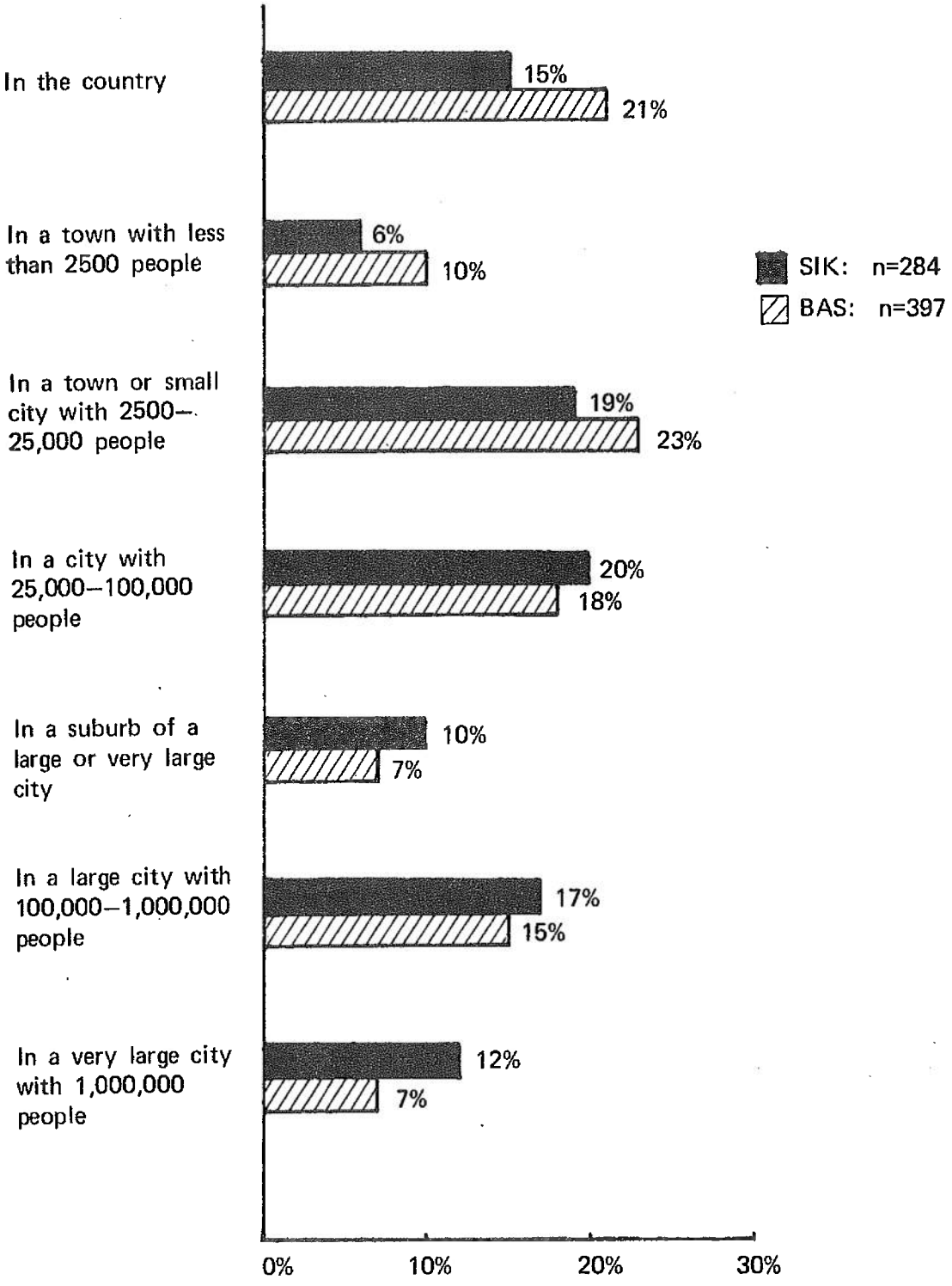
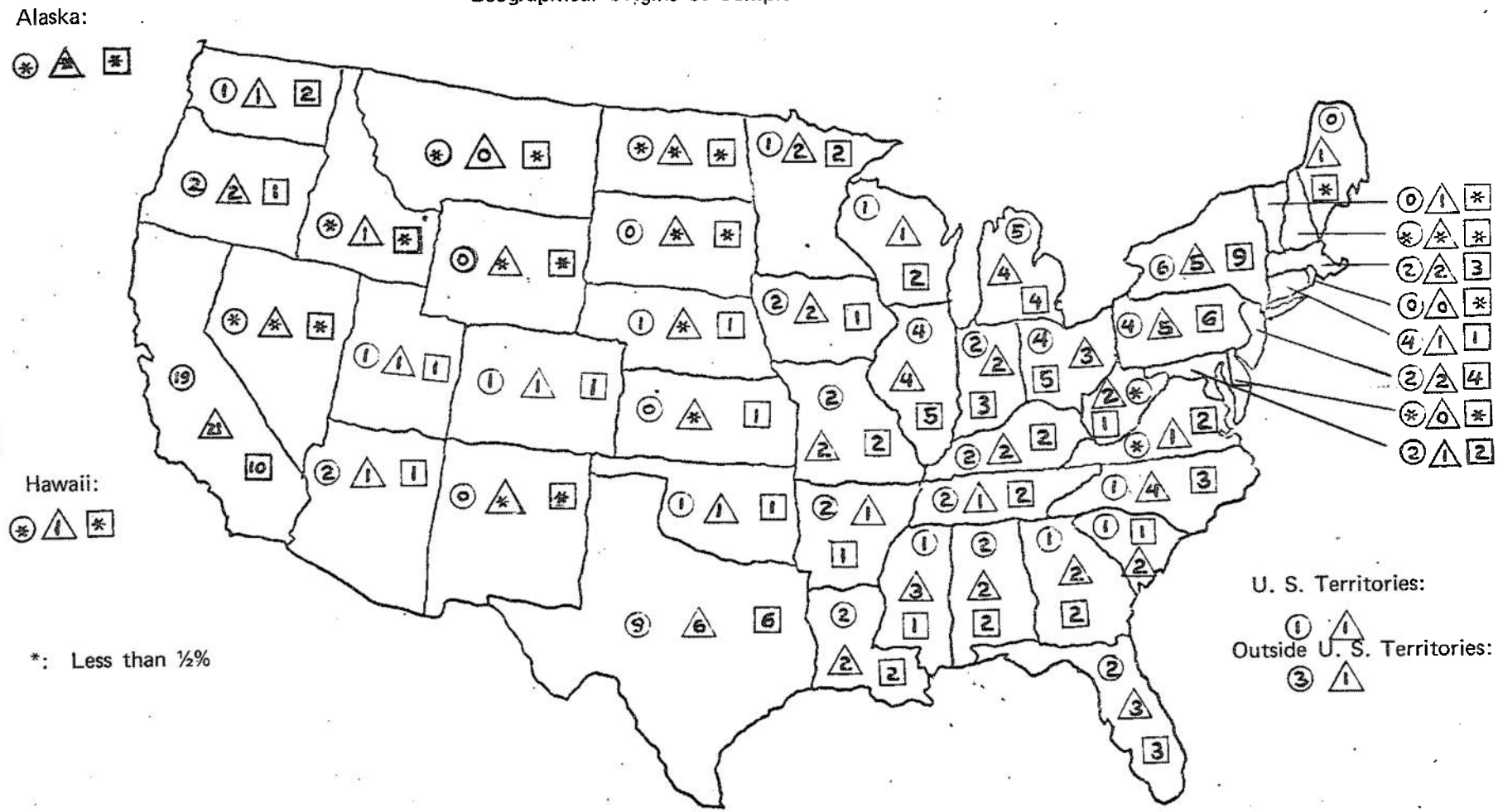


Table 50

Geographical Origins of Sample



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 variety of regular meal foods during the week (2.01) is statistically a more significant ($p<.05$) reason for non-attendance than the hours of operation (1.93). 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

Commander
US Army Materiel Command
ATTN: AMCCG
Washington, DC 20315 1

Commander
US Army Materiel Command
ATTN: AMCMS (Dr. R. P. Uhlig)
Washington, DC 20315 1

Commander
US Army Materiel Command
RD&E Directorate, Indiv. Soldier Div.
ATTN: AMCRD-JI (Mr. C. N. Gardner)
Washington, DC 20315 1

Commander
US Army Materiel Command
ATTN: AMCRD-RL (Research Div.)
R&D Directorate, Bldg. T-7
Washington, DC 20315 1

Defense Director
Technical Information
Office of Director of Defense
Research and Engineering
The Pentagon, Room 3D 1040
Washington, DC 20301 1

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

Cdr. Harold J. Janson, MSC, USN
Head, Food Service Branch
Bureau of Medicine and Surgery
Navy Department
Washington, DC 20390 1

Commandant
Hq., US Marine Corps
Code COE-2 (MAJ E. B. Cox)
Washington, DC 20380 1

Commander
US Army Materiel Command
ATTN: AMCDL (Mr. Normand Klein)
Washington, DC 20315 1

Commander
US Army Materiel Command
Manpower Survey Office
Washington, DC 20315 1

Commander
US Army Materiel Command
ATTN: AMCRD-TC (Mr. Joseph Rivkin)
R&D Directorate
Washington, DC 20315 1

Commander
Office of The Surgeon General
ATTN: DASG-HE
Washington, DC 20315 1

Commander
DDR&E
OAD/E&LS, The Pentagon, Room 3B 129
Military Assistant for Medical and
Life Sciences
ATTN: COL William S. Augerson MC USA
Washington, DC 20301 1

The Army Library
ATTN: Procurement Section
The Pentagon, Room 1A552
Washington, DC 20301 1

Director
US Naval Research Laboratory
ATTN: Code 6140
Washington, DC 20390 1

Commander
Navy Subsistence Office
Washington Navy Yard – Bldg. 166
Washington, DC 20390 1

DISTRIBUTION LIST (cont'd)

Commandant
Hq., US Marine Corps
Code COE-2 (Miss Joan C. Niland)
Washington, DC 20380 1

Directorate for Subs. Mgmt. Policy
Office Ass't. Sec. of Def. (I&L)
ATTN: LTC J. L. Welbourn
The Pentagon, Room 2B 323
Washington, DC 20310 1

HQDA (DALO-TSS)
WASH DC 20310 1

HQDA (DALO-ZA)
WASH DC 20310 1

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

Chairman
Subsistence Operations
Review Board
Fort Lee, VA 23801 1

Commandant
US Army Logistics Management Center
Fort Lee, VA 23801 1

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

Commander
US Navy Subsistence Office
ATTN: Mr. James Martin
Bldg. 166
Navy Yard Annex
Washington, DC 20390

Commander
Naval Facilities Engineering Command
Y-D Annex
ATTN: Mr. Jesse Rocha
Room 2-C-370
Washington, DC 20390 1

Commander
US Air Force Services Office
ATTN: DPKFF
2800 South 20th Street
Philadelphia, PA 19101 1

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

Director
US Army Advanced Concepts Agency
Washington, DC 20315 1

Commander
US Army Test and Evaluation Command
ATTN: AMSTE-TAA
Aberdeen Proving Grounds
Maryland 21005 2

Assistant Secretary of Defense (I&L)
ATTN: Mr. M. Marshall
The Pentagon, Room 3D767
Department of Defense
Washington, DC 20301 1

Commander
Hq., Air Force Logistics Command
ATTN: AFLC/DPSS
Wright Patterson AFB, OH 45433 1

DISTRIBUTION LIST (cont'd)

Commander
Hq., Medical Field Service Library
Brooke Army Medical Center
Fort Sam Houston, TX 78234 1

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

Chief, Programs and Policy Office
Directorate of Technical Operations
Defense Personnel Support Center
2800 South 20th Street
Philadelphia, PA 19145 1

Commander
US Army Research Office-Durham
ATTN: CRD-AA-IP
Box CM, Duke Station
Durham, NC 27706 1

US General Accounting Office
ATTN: Mr. Robert G. Rockwell
Defense Div., Room 6470
4416 Street NW
Washington, DC 20548 1

Defense Personnel Support Center
ATTN: Mr. Armand Paci
US Army NLABS Representative
2800 South 20th Street
Philadelphia, PA 19101 1

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

U. S. Air Force
School of Aerospace Medicine
SME: ATTN: Dr. Vanderveen
Brooks AFB, Texas 78235 1

Commander
US Army Materiel Command
Installation & Services Agency
ATTN: Mr. Floyd Cone
Food Services & Non-Appropriated Funds
Rock Island, Illinois 61201 1

Headquarters, USAF
ATTN: LGSKB
Washington, DC 20330 1

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

Chief, Effectiveness Analysis
Division
US Army Advanced Materiel Concepts
Agency
ATTN: AMXAM-DA (Mr. T. S. Trybul)
2461 Eisenhower Avenue
Alexandria, VA 22314 1

Director
Bare Base Equipment SPO
ATTN: ASD/SMB
Wright Patterson AFB, OH 45433 1

Hq., Air Force Systems Command
ATTN: DLH
Andrews AFB, MD 20331 1

DISTRIBUTION LIST (cont'd)

Commander
US Army Medical Research and
Nutrition Laboratory
Fitzsimons General Hospital
Denver, CO 80240 1

Mr. Roger Merwin
Department of Air Force
Air Force Services Office (AFLC)
2800 South 20th Street
Philadelphia, Pa. 19101 2

Food Service Officer
Travis Air Force Base
Fairfield, California 94533 1

Services Officer
Travis Air Force Base
Fairfield, California 94533 1

Commander
U. S. Army Troop Support Command
St. Louis, Missouri 63120 1

HQ, MAC/LGSS
Scott Air Force Base,
Illinois 62225 1

INTERNAL DISTRIBUTION

Commanding General	1
Technical Director	1
Deputy Technical Director for Engineering	1
Commander, US Army Research Institute for Environmental Medicine	1
Director, Airdrop Engineering Laboratory	1
Director, Clothing and Personal Life Support Equipment Laboratory	1
Director, Food Laboratory	3
Director, General Equipment and Packaging Laboratory	3
Director, Pioneering Research Laboratory	3
Special Assistant for DOD Food Program	4
US Army Representative, Joint Technical Staff, for DOD Food RD&Eng Program	2
US Air Force Representative, Joint Technical Staff, for DOD Food RD&Eng Program	2
US Marine Corps Representative	2
US Navy Representative, Joint Technical Staff, for DOD Food RD&Eng Program	2
US Air Force Liaison Officer	3
Chief, Quality Assurance and Engineering Office	2
Chief, Technical Library	2
Headquarters Company Library	2
RDT&E Advisor, Food Service Facility and Equipment Planning Board, GEPL	1
Chief, Operations Research and Systems Analysis Office	20

Unclassified
Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY *(Corporate author)*

US Army Natick Laboratories
Natick, Massachusetts 01760

2a. REPORT SECURITY CLASSIFICATION

Unclassified

2b. GROUP

3. REPORT TITLE

The Consumers' Opinions of the Food Service System: The 1973 Travis Air Force Base Survey

4. DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

5. AUTHOR(S) *(First name, middle initial, last name)*

Laurence G. Branch and Herbert L. Meiselman

6. REPORT DATE

May 1973

7a. TOTAL NO. OF PAGES

7b. NO. OF REFS

8a. CONTRACT OR GRANT NO.

b. PROJECT NO.

c.

d.

9a. ORIGINATOR'S REPORT NUMBER(S)

9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)*

10. DISTRIBUTION STATEMENT

Approved for public release; distribution unlimited.

11. SUPPLEMENTARY NOTES

12. SPONSORING MILITARY ACTIVITY

Pioneering Research Laboratory
US Army Natick Laboratories
Natick, Massachusetts 01760

13. ABSTRACT

Opinions were elicited from 690 enlisted personnel at Travis AFB to determine many elements related to food service, including the backgroup characteristics of the samples, their meal patterns, which factors are influencing non-utilization of the dining facilities, their evaluation of the quality of food, the quantity, the variety, and several other non-food features. The results indicated among other things that the traditional assumption of 21 meals per week is invalid, implying that another method of determining utilization rates must be adopted. Eight additional recommendations for the Travis AFB Food Service System are presented in the text.

DD FORM 1 NOV 65 1473 REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

Unclassified
Security Classification

Unclassified
Security Classification

14. KEY WORDS	LINK A ROLE	LINK A WT	LINK B ROLE	LINK B WT	LINK C ROLE	LINK C WT
Food Service System						
Consumers' Opinions						
Travis Air Force Base						
1973 Consumer's Opinions Survey						
Attendance Rates						
Utilization Rates						
Dining Facilities						
Food						
Survey						

Unclassified
Security Classification