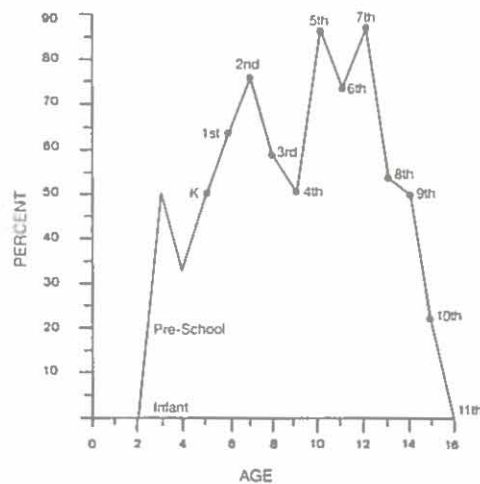


Health Status of the Population of Guam: Dental Needs and Care

Community Development Report No.13
March 1985



A Collaborative Project between Community Development Institute, Cooperative Extension Service and
Guam Health Planning and Development Agency

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DENTAL NEEDS AND CARE

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Volume Two
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FOREWORD

To The Reader:

The Guam Health Planning and Development Agency is pleased to present the results of the Islandwide Health Behavior Survey: Health Status of the Population of Guam. The report is the culmination of a collaborative project between the Guam Health Planning and Development Agency and the Community Development Institute of the University of Guam, and reflects the concern of both parties for the health of the population.

The five volumes of the Health Status of the Population of Guam are:

1. Salient Social and Economic Characteristics
2. Dental Needs and Care
3. Morbidity
4. Health Care Accessibility, Utilization, Satisfaction and Responsibility
5. An Analytical Discussion of Selected Life Style Patterns

It is hoped that the information contained in the five volumes of the report will prove useful to health specialists as well as to the general reader.

TABLE OF CONTENTS

	<u>Page</u>
INDEX.....	i
LIST OF TABLES.....	iv
LIST OF FIGURES.....	v
SECTION 1 - HEALTH BEHAVIOR PATTERNS: A DEMOGRAPHIC OVERVIEW.....	1
1.1 Survey Origin and Goal.....	1
1.2 Sponsorship and Coordination.....	2
1.3 Method and Procedure.....	3
1.3.1 Sample.....	4
1.3.2 Survey Instrument.....	5
1.3.3 Data Collection and Analysis.....	5
1.3.4 Validity and Reliability.....	7
1.4 Disclaimer.....	9
1.5 Form of Report.....	10
1.6 Acknowledgment.....	10
SECTION 2 - DENTAL NEEDS AND CARE.....	12
2.1 Introduction.....	12
2.2 Dental Services.....	12
2.3 Socioeconomic Factors.....	13
2.3.1 Village/Region.....	13
2.3.2 Gender.....	14
2.3.3 Age.....	17
2.3.4 Ethnicity.....	19
2.3.5 Income.....	23
2.4 Dental Conditions.....	26
2.5 Number of Dental Visits.....	28
2.6 Dental Care Facilities.....	28
2.6.1 Total Count Visits.....	28
2.6.2 Children Age 1 and Younger Visits....	32
2.7 Dental Insurance Coverage.....	38
2.7.1 Gender.....	38
2.7.2 Ethnicity.....	39
2.7.3 Income Level.....	40

	Page
2.8 Type of Dental Insurance.....	41
2.8.1 Gender.....	41
2.8.2 Ethnicity.....	42
SECTION 3 - SUMMARY OF FINDINGS.....	46
3.1 Dental Services.....	46
3.2 Socioeconomic Factors.....	46
3.3 Dental Conditions and Related Visits.....	47
3.4 Dental Care Facilities.....	48
3.5 Dental Insurance Coverage.....	48
3.6 Type of Insurance.....	49
APPENDICES.....	51
APPENDIX A - DEMOGRAPHIC TERMS, DEFINITIONS AND EXPLANATIONS.....	52
Demographic Terms, Definitions and Explanations.....	53
Disease Classifications.....	55
Insurance Groupings.....	56
Island Districts.....	57
Geographical Regions (Figure 4).....	58
Village-to-Village Mileage Chart (Figure 5).....	59
APPENDIX B - SAMPLE AND METHODOLOGY.....	60
Determining Sample Size.....	61
Confidence Limits for Sample Proportions (Table 24).....	63
Detailed Methodology.....	64
--Sample Design.....	64
--Sample Unit.....	66
--Sample Frame: Guam (Table 25).....	68
--Election Districts (MCD's), Places (CDP's) and Sample (Figure 6).....	70
--Sample Unit: Grid-Block Cluster of Households (Figure 7).....	71
--GHPDA-UOG Interagency Agreement W32100001.....	74
--Coding, Data Entry and Analysis.....	75
--Interviewer's Narrative Report and Coder's Comments.....	76
--Questions Run List.....	78

Figure	Page
1	The Distribution of Those Who Received Care at the DPHSS Dental Clinic by Age and Corresponding Grade in School..... 34
2	Percentage Distribution of Those Who Had Received Dental Care by Age and Estimated Corresponding Grade in School and Proportions Served by Private and Public Clinics..... 36
3	Received Dental Care: Children Age 16 and Younger..... 37
4	Geographical Regions..... 58
5	Village-to-Village Mileage Chart..... 59
6	Election Districts (MCD's), Places (CDP's) and Sample Distribution..... 70
7	Sample Units: Grid-Block Cluster of Households..... 71

SECTION ONE

HEALTH BEHAVIOR PATTERNS: A DEMOGRAPHIC OVERVIEW

1.1 Survey Origin and Goal

The Islandwide Health Behavior Patterns Survey came about following acceptance by the Guam Health Planning and Development Agency (GHPDA) of an application prepared by the Community Development Institute (CDI), College of Agriculture and Life Sciences (CALS) and submitted by the University of Guam (UOG). An Interagency Agreement was affirmed in late September 1983.

The Agreement called for an islandwide survey to determine the health behavior patterns of the civilian population of Guam. In 1980 CDI completed a Health Needs Assessment of the northern part of the island (1). The study concentrated on 400 families in the village districts of Yigo, Dededo and Tamuning. At that time discussions by the Guam Health Coordinating Council centered on the need for a similar health assessment of the entire island population. The findings from such a study could provide relatively current information for reviewing and revising the Guam Health Plan as needed. Before this, selected health data had been obtained from an islandwide CDI survey of households having at least one child in the 18- to 36-month-old age range (2). The purpose of the Department of Public Health and Social Services (DPHSS) sponsored study was to establish immunization levels for children under 10 years of age. The analysis involved 2,727 children from 1,237 households.

This report is the second publication of findings from the Islandwide Health Behavior Patterns Survey. As such, it is the culmination of nearly one and one-half years of research effort

instrument, the interviewing and data analysis processes to the writing and actual publication.

This publication represents one of five volumes intended as a means of feedback to GHPDA following the initial general analysis of survey findings. The focus of this volume is on dental care and factors that may be related to the type of services received.

1.2 Sponsorship and Coordination

The islandwide health behavior study was made possible through coordination and collaborative efforts of several significant groups. Administrative and professional staff of the Guam Health Planning and Development Agency along with the Community Development Institute team jointly met during early phases of the project. Regular work sessions were held until such time that the design and development of a data collection instrument were completed. Intermittent written reports were submitted and small group meetings concerning the progress and status of the study were held involving GHPDA and CDI. Some changes in key personnel occurred during the study, and at times others were off-island. However, replacement personnel were not unfamiliar with GHPDA/CDI and/or the health status survey. As a result, therefore, work on this health status

study progressed, although we were not able to move ahead as rapidly as originally conceived.

Unlimited funding from GHPDA and the nature and scope of the project was also of interest to the Cooperative Service (CES) at the University of Guam. To this end, CES provided Smith-Lever Act direct funding and professional personnel, thus joining the GHPDA in implementing the islandwide health behavior study. By combining resources of both GHPDA and CES a more comprehensive study was made possible.

The University of Guam Computer Center also played a very significant role in the project. Due to the extreme volume of survey data produced, major adjustments to operating schedules of the Computer Center staff (as well as intensive and extensive work sessions) were required to develop a means whereby the massive data set of approximately 36,632 record lines could be entered and analyzed. The large amount of information was generated as a result of treating every individual in the household as a research subject--in contrast to using only the head of the household. In effect, this design generated at least five times as much additional information. This in turn resulted in complicated situations that were not anticipated during the formation of the study.

1.3 Method and Procedure

A general overview of the method and procedure of this islandwide health survey follows. A more detailed explanation of the sample design and sample unit is included in Appendix B.

1.3.1 Sample

The health behavior study sample was drawn so that all 19 village districts would be proportionately represented in

the 1980 Federal Census of Guam (3). The proportionate representation took into account the more densely populated census designated places (CDP's) as well as the lesser populated outlying parts of the village districts. Houses located on land currently held by the federal government were not sampled. In addition, those places that provide quarters for the institutionalized were not included in the population of housing units. Therefore, the 400 households selected for this study involved a geographically stratified two-step proportionate systematic random sampling procedure. The 400 sample units represented a ratio of one-in-fifty-nine or 1.7% of the 23,549 households available. A sample of this magnitude was determined to be of sufficient size to enable generalizing to the total civilian population. Aerial photography maps were utilized to locate housing units for drawing the sample as well as for location guides by the CDI interviewers. Because multiple residential units such as the Alupang Cove complex appeared as one building on aerial maps, families residing in condominium/apartment units were underrepresented in the study. Single houses in those same village districts tended to be somewhat overrepresented. The bias, if any, that this sampling discrepancy may have contributed to the overall study was limited only to the extent families in those two types of dwelling differed.

	<u>Page</u>
APPENDIX C - INTERVIEW SCHEDULE (QUESTIONNAIRE).....	82
Variable Definitions for Answers to Survey..	83
Survey Instrument.....	86
APPENDIX D - FLASH CARDS.....	92
APPENDIX E - REFERENCES CITED.....	100
APPENDIX F - PROJECT PLANNING TEAM.....	102

LIST OF TABLES

<u>Table</u>	<u>Page</u>
Residence (Region).....	16
3 Utilization of Dental Services by Gender.....	17
4 Distribution of Dental Services Recipients by Gender.....	17
5 Utilization of Dental Services by Age Level.....	18
6 Utilization of Dental Services by Ethnic Identity...	20
7 Distribution of Recipients of Dental Services by Ethnic Categories.....	21
8 Comparison of Ethnicity of Dental Services Recipients with the Total Study Population.....	22
9 Utilization of Dental Services by Income Level.....	23
10 Distribution of Recipients of Dental Services by Income Level.....	24
11 Comparison of Proportion of Dental Services Recipients Age 16 and Older of Various Income Levels with Corresponding Subpopulations in the Sample.....	25
12 Actual and Expected Frequencies of Lower and Higher Income Recipients from Among Those Who Had Received Dental Care.....	26
13 Distribution of Individuals by Number of Dental Conditions Treated One or More Times.....	26
14 Reasons for Seeking Dental Care.....	27
15 Dental Visits.....	29
16 Dental Care Facilities and Frequency of Visits.....	31
17 Utilization Pattern of DPHSS Dental Clinic by Dental Care Recipients Under 17 Years of Age.....	33
18 Gender and Dental Insurance (Dental Services Recipients).....	38
19 Relationship Between Receiving Dental Services and Having Dental Insurance by Ethnicity.....	39
20 Relationship Between Receiving Dental Services and Having Dental Insurance by Income Level.....	40
21 Gender of Dental Services Recipients with Dental Insurance by Type of Insurance Program.....	41
22 Ethnicity of Dental Services Recipients with Dental Insurance by the Type of Insurance Program.....	43
23 Income Level of Dental Services Recipients with Dental Insurance by Type of Insurance Program.....	45
24 Confidence Limits for Sample Proportions.....	63
25 Sample Frame: Guam.....	68

All the apartments within a major housing complex were counted as individual households during the 1980 Federal Census

the total number of household units within the fore, for a village district such as Tamuning, single dwelling residential homes were proportionately overrepresented in the study to the extent that multiple apartment units and condominiums were undersampled. This sampling concern was recognized and discussed in advance of the study by the GHPDA/CDI project planning team but was not considered to be of such a nature as to require altering or redesigning of the sample design for the study.

1.3.2 Survey Instrument

The GHPDA/CDI health study project team developed the personal interview schedule during a series of intensive work sessions which often involved extensive discussions of particular items to be included. Generally, questions were included that paralleled a prior national health study while keeping in mind the specific health questions and concerns of GHPDA.

As usual, questions were dropped, redesigned or rewritten following several field pre-tests. A copy of the survey instrument used in the study is included in the appendices.

1.3.3 Data Collection and Analysis

Interviewers having prior successful field interviewing experience with CDI were called upon to do the bulk of the data gathering for this Islandwide Health Behavior Patterns Survey. Those who were new to this type of work were given very intensive training.

A problem was encountered during the fieldwork phase when a new public law concerning dual employment was enforced. In particular, public school teachers and clerical personnel were

was to be done during late afternoon, early evening or weekend hours.

The majority of the 400 interviews were completed from late February to early May of 1984. The greatest difficulties encountered were locating the designated sample households, (especially in the less populated areas away from the village centers) and interviewer fatigue. With few exceptions most individuals found it very difficult to continue field interview work beyond 10 to 20 completed interviews. This held true even with an incentive-based pay rate that increased after every nth interview successfully completed. A total of 18 interviewers were utilized. Women in the 35 to 50 age range seemed to be more productive interviewers. Their ethnicity did not appear to be a factor related to successful work.

Generally, excellent cooperation was received from the interviewees, and little difficulty in the gathering of the field data was experienced. The extremely low rate of non-responses to personal questions such as income earned tends to support this claim.

In order to ensure the validity of information received, follow-up contacts were made by the CDI team with subjects who had been interviewed. Approximately 10% of all interviewees were contacted to determine the accuracy of the information

obtained during the interviews. In addition, this follow-up strategy provided an excellent check on the manner in which the interviewers had presented themselves and, in general, if they were professional in their assignment.

Because of the volume of data generated in this study several additional computer science students at the university were employed to assist with the coding and data entry which was begun and continued simultaneously with the field interview process. As previously noted, the 1,928 subjects from the 400 households were treated as individual sample cases when coding interview information for analysis by the university mainframe computer. This generated an extremely large data set of approximately 36,632 record lines. Unfortunately, the size of the data file members that can be utilized by the Interactive Computer Control Facility (ICCF) of the University's Computer Center is limited to 5,000 record lines. A more detailed discussion of this technical data analysis problem encountered and its eventual solution is included in the appendices.

Staff initially planned to use the Statistical Package for the Social Sciences (SPSS) to analyze data, but the Statistical Analysis System (SAS) was used due to uncertainty of the University's ability to maintain rental on the SPSS program. Analysis of data was still halted for about a week when the rental of the SAS program expired.

1.3.4 Validity and Reliability

The findings of the health survey are believed to be both valid and reliable within acceptable limits. As noted earlier,

interviewee follow-ups were made by phone and in person with approximately 10% of the households. The feedback was most positive. In addition, throughout the report various findings

Federal Census of Guam and other CDI studies and are used as measures of accuracy.

When considering the very adequate sample size, in addition to the above observations, it is believed that the results reported in the following chapters can be viewed as very good estimates of the true situations as they existed in the civilian population of the island at the time data were collected.* Caution needs to be taken, however, when interpreting data on a village-by-village basis in view of the smaller number of households sampled in lesser populated village districts. Even though the sampling was proportionate to the total number of households on a village-by-village basis, the statistical chance of less accuracy obviously occurs when the raw sample size is small, for example, the village of Umatac. To help reduce that type of potential sampling error, the data in the following sections of this report have been analyzed on a geographical regional basis.

The possible bias of oversampling single dwelling houses and underrepresenting condominium and large apartment complex dwellings, especially in Tamuning, should also be considered when reviewing the findings. For example, if those who reside in the apartment units and condominiums are more homogeneous

*See Appendix B

in regard to certain characteristics such as ethnicity, age, length of stay on the island, level of income, number per household, and so forth then those characteristics would be affected when reported for the entire village or island. Apartment dwellers on Guam have generally been younger individuals than those residing in single family homes. Therefore, the type of over/undersampling mentioned here could result in a slightly higher percentage of older individuals being included in the study.

1.4 Disclaimer

One factor which is always a concern of any survey of a sample of the population is the representativeness of subjects contacted. In addition, the time frame required to complete a study--from the initial team discussions until the published report is delivered--is most always longer than anticipated. In an atmosphere of considerable dynamic change that can and does occur on an island such as Guam, information is often outdated or somewhat less relevant, in part, by changes in the social environment and system studied before the final presentation is made. The users of such information, therefore, need to interpret that information accordingly--in light of known changes that have taken place. New information utilized in this manner should be very useful for decision making and planning purposes.

Finally, the views and interpretations presented in this report are those of the writer and do not necessarily represent the view of the Guam Health Planning and Development Agency.

1.5 Form of Report

This report is presented in three sections, or chapters. Section One introduces the study origin and general objectives.

in collecting and analyzing the survey information. A brief overview of the validity and reliability of the data is also included in the initial section of this report. Section Two presents information pertaining to the dental needs and care. Various socioeconomic factors are considered to determine their relationship, if any, with the utilization of dental services. Also reviewed in this section of the report are the dental conditions that were treated, dental care facilities and means by which dental care was financed. A brief summary of this study's findings is presented in Section Three, the final section.

In an attempt to avoid duplication of material, and yet retain relevant information, considerable detailed information such as the sample design and sample unit selection procedure, the interview schedule, and flash cards are included in the appendices. For ease in preparing and reading this report, references cited also appear in the appendices along with definitions of key words and terms.

Percentage totals in the various data tables may exceed or be less than 100 by a decimal fraction of 0.1, due to mathematical rounding of numbers.

1.6 Acknowledgment

The CDI team would like to extend its appreciation for the outstanding support, understanding, and cooperation of all m GHPDA, the CES, CALS and UOG administration, ter Center, the work crew of faithful interviewers and dedicated data analysts. Last, but certainly not least, a heartfelt Si Yuus Maase to the clerical and office support staff for the numerous routine responsibilities performed--in particular, typing of this report.

Although too numerous to list here, appreciation and gratitude is extended to the 400 household representatives who volunteered approximately an hour of their precious time providing the basic information for the study. Obviously, without their excellent cooperation and honesty, this study would not have been possible.

SECTION TWO

DENTAL NEEDS AND CARE

2.1 Introduction

Information concerning the dental needs and care of the 1,928 individuals studied was obtained from the 400 household interviewees. The information provided was based on their recall of the immediate preceding 12 months for each member of their respective households. The data, therefore, could represent an underestimate since the person who was interviewed may not have been aware of all dental visits made by all household members. Further, individuals may have been able to recall that visits were made by household members. However, they in all honesty may not have been aware of the specific dental condition treated or the name of the dentist or clinic visited.

These findings certainly provide a general overview of the dental needs and care of the civilian population. The degree to which these data are valid and reliable is shown by means of comparisons with the findings from the 1980 Northern Area Health Needs Assessment (1).

2.2 Dental Services

Nearly one-fourth (23.1%) or 445 of the total survey count of 1,928 individuals were reported to have made a total of 995 dental visits during the year. This averaged 2.24 trips to the dentist per person who made a visit (or about one every five months, eleven days). The number of times the 445 individuals

went to a dentist for services related to a given condition was from one to nine.

~~These findings were somewhat less than those reported in~~
~~of all individuals in the Lamuning, Degebo, and Igo districts~~
 had received dental care and had averaged three and one-third visits to their dentists. The range in the number of visits to the dentist was also found to be smaller in the present study.

Other than questioning the validity and/or reliability of data reported in either of the two studies--or the difference between the two--these findings indicate dental care visits have decreased over the past five years. The causes for this change could be due to a variety of reasons which were not intended to be established by the current study. It has been observed that the cost of medical services has increased over recent years, as has the cost of living in general. Therefore, possible "negative" causes for such reductions in utilization of dental services could include a decrease in available household income to spend on preventive dental care. "Positive" reasons, we speculate, might include successful dental care education programs or preventive tooth decay programs for youth implemented by the Department of Public Health and Social Services in cooperation with the island public school system.

2.3 Socioeconomic Factors

2.3.1 Village/Region

In an attempt to determine whether one's geographical place of residence was related in some way to his utilization

of professional dental services, the nineteen village districts were compared. As shown in Table 1, considerable variation existed among the villages. Two Southern villages represented
 Only two individuals (4.1%) out of 49 studied in
 reported to have been to a dentist for care during the prior year, whereas 6 out of 12 persons (50.0%) of the subjects from Umatac had been cared for by a dentist. These two extremes deviated from the all-island percentage of 23.1 already mentioned.

Such extreme percentage figures could be true values or the result of small samples. To minimize the factor, therefore, the data were regrouped by geographical regions (Table 2). Considerable differences in the percentages of dental service recipients from the five subregions and three regions also existed. As Table 2 indicates, the largest percentage of users (26.5%) lived in the Central with 24.8% residing in the South and 20.4% in the North Regions. When expressed in ratios these percentages are approximately: Central, 1:3.8; South, 1:4; and North 1:5.

2.3.2 Gender

Out of all males and females studied, no marked difference was found to exist between the proportion of males and females studied, respectively, who had availed themselves of dental care during the 12-month period prior to the survey (Table 3). The difference was only 1.4% and in "favor" of the females. While 23.8% of the females utilized the various dental services, 22.4% of the males had also gone to a dentist for care.

TABLE 1. Utilization of Dental Services by Place of Residence (Village)

	Total	Received		
Agana	27	9	33.3	5
Agana Heights	81	24	29.6	5
Agat	66	14	21.2	14
Asan/Maina	31	9	29.0	6
Barrigada	119	23	19.3	17
Chalan Pago/Ordot	61	15	24.6	10
Dededo	378	89	23.5	11
Inarajan	37	8	21.6	13
Mangilao	173	47	27.2	9
Merizo	51	14	27.5	7
Mongmong/Toto/Maite	101	20	19.8	16
Piti	39	14	35.9	2
Santa Rita	73	20	27.4	8
Sinajana	49	11	22.5	12
Talofofo	49	2	4.1	19
Tamuning	347	60	17.3	18
Umatac	12	6	50.0	1
Yigo	131	27	20.6	15
Yona	103	33	32.0	4
TOTAL	1,928	445		

Median % = 24.6

Range = 50.0%(Umatac) to 4.1% (Talofofo)

TABLE 2. Utilization of Dental Services by Place of Residence (Region)

	Subregion			Region			Rank
	Total			Total			Order
	Count	f	%	Count	f	%	(Highest % = 1)
NORTH	509	116	22.8				
Dededo							
Yigo				975	199	20.4	3
NORTH CENTRAL	466	83	17.8				
Tamuning							
Barrigada							
CENTRAL	562	149	26.5	562	149	26.5	1
Asan/Maina							
Agana							
Agana Heights							
Sinajana							
Chalan Pago/Ordot							
Mangilao							
Mongmong/Toto/Maite							
Piti							
SOUTH CENTRAL	291	69	23.7				
Agat							
Santa Rita							
Talofofo				391	97	24.8	2
Yona							
SOUTH	100	28	28.0				
Inarajan							
Merizo							
Umatac							
TOTAL	1,928	445		1,928	445		

dental care varied considerably. The proportion that had received dental care at least once during the year increased from 5.6% for those who were two years old to 54.8% for those who

This percentage was found to be slightly less than the average (16.9%) for all persons ages 17 or older. As may be noted, 16-year-old youths had a dental services rate about equal to those in the 55 to 64 age bracket and only 4.2% greater than the senior citizens ages 65 or older.

According to the findings, only about one-half of the 9-, 10- and 11-year-old youths went to a dentist over a 12-month period, while on the average, even fewer of the children and the adults had received dental care annually. Overall, 28.6% of the children age 16 and under had gone to the dentist during the year and 16.9% of all other persons age 17 or older had gone. For the entire study group of 1,928 individuals, the figure was 23.1% or about one out of every four.

2.3.4 Ethnicity

The dental services utilization data were also analyzed to determine if one's ethnicity was related to his record of dental care. As reported in Table 6, those who were identified as Caucasians were found to be more likely to have gone to a dentist over the span of a year than those of any other ethnic group. Half of all Caucasians surveyed had gone to a dentist at least once. This proportion was more than twice the all-island figure of 23.1%. Conversely, a smaller than average

TABLE 6. Utilization of Dental Services by Ethnic Identity

Ethnicity *	Total Count	Received Dental Services	
	f	f	%
	1,117	256	22.9
Filipino	542	109	20.1
Caucasian	68	34	50.0
Other Islanders	58	14	24.1
Asians	35	6	17.1
Other Single Ethnic Groups	26	2	7.7
Chamorro/Filipino	28	6	21.4
Other Combination	<u>54</u>	<u>18</u>	<u>33.3</u>
TOTAL	1,928	445	23.1

* See Appendix A, Definition of Terms, for a description of ethnic categories.

proportion of Asians (17.1%) had received dental care. The percentage figures for Chamorros (22.9) and Other Islanders (24.1) were very similar to the figure of 23.1% for the total study count of 1,928 persons. Those who were identified as Filipinos fell slightly below the all-island average with a percentage figure of 20.1.

This analysis of dental services utilization data did not attempt to explain differences found among the various major ethnic categories. Once again, it is seriously questioned whether one's ethnicity was the causative factor in determining if a person sought dental care. Caucasians were found to have

the highest percentage of income recipients (5) and the highest median income level of all ethnic groups. In addition, the

other ethnic groups. Other factors such as level of education, value placed on appearance, use and care of teeth, prior dental care education, employment, or income that makes dental insurance possible, teeth treatment while teeth were forming during childhood, and so forth, may be among the reasons for the differences found among the ethnic categories.

TABLE 7. Distribution of Recipients of Dental Services by Ethnic Categories

Ethnicity	Dental Services Recipients	
	f	%
Chamorro	256	57.5
Filipino	109	24.5
Caucasians	34	7.6
Other Islanders	14	3.2
Asians	6	1.4
Other Single Ethnic Group	2	0.5
Chamorro/Filipino	6	1.4
Other Combination	<u>18</u>	<u>4.0</u>
TOTAL	445	100.1

Presented in Table 7 is a frequency distribution of individuals from various ethnic groups who had gone to a dentist

and the proportion each represented of the total 445. In spite of the findings reported above and in Table 6, over half (57.5%) of the 445 persons who had received dental care were Chamorro. Table 8 includes a comparison of the ethnicity of dental services recipients and the total sample of individuals studied. As may be observed, Chamorros were proportionately represented as recipients of dental services (57.5% as compared with 57.9% in the total sample), Filipinos slightly underrepresented and Caucasians more than doubly overrepresented (7.6% to 3.5%). The Other Islanders were proportionately represented.

TABLE 8. Comparison of Ethnicity of Dental Services Recipients with the Total Study Population

Ethnicity	Proportion of	
	Dental Services Recipients (445)	Total Count (1,928)
Chamorro	57.5	57.9
Filipino	24.5	28.1
Caucasian	7.6	3.5
Other Islanders	3.2	3.0
Asians	1.4	1.8
Other Single Ethnic Group	0.5	1.4
Chamorro/Filipino	1.4	1.5
Other Combination	<u>4.0</u>	<u>2.8</u>
TOTAL	100.1	100.0

2.3.5 Income

Based on the data in Table 9, it would appear that, in general, there was a positive relationship between the amount

for those who had received the least income (\$1-3,000). It should be noted, however, that among lower income recipients there tended to be a greater portion of high school aged youths and young adults who were in the age ranges indicating a higher proportion of individuals who had visited a dentist during the past year than was evident at other income levels.

For those with reported annual income ranging from \$3,001 to \$11,130, only about 15.0% had gone for dental care during

TABLE 9. Utilization of Dental Services by Income

Annual Income \$	Income Recipients	Received Dental Care	
	f	f	%
1 - 3,000	46	11	23.9
3,001 - 7,830	150	22	14.7
7,831 - 11,130	176	26	14.8
11,131 - 14,430	108	29	26.9
14,431 - 17,730	70	15	21.4
17,731 - 25,000	82	20	24.4
25,001 - 35,000	45	15	33.3
35,001 +	<u>24</u>	<u>7</u>	<u>29.2</u>
TOTAL	701	145	20.7

the year. The percentage rose to over 26 for those with incomes in excess of \$11,130.

Distribution of Recipients of Dental Services by
Income Level For Those Age 16 or Older

Income \$	Dental Services Recipients		Cumulative %
	f	%	
None	65	31.0	31.0
1 - 3,000	11	5.2	36.2
3,001 - 7,830	22	10.5	46.7
7,831 - 11,130	26	12.4	59.1
11,131 - 14,430	29	13.8	72.9
14,431 - 17,730	15	7.1	80.0
17,731 - 25,000	20	9.5	89.5
25,001 - 35,000	15	7.1	96.6
35,001 +	<u>7</u>	<u>3.3</u>	99.9
TOTAL	210	99.9	

One may note in reviewing Table 10 that a majority (59.0%) of dental services recipients, among those who were 16 years or older, had received less than \$11,130 in annual income. This included those with no income. Though a figure of 59.0% might appear large, it was considerably lower than the figure of 72.9% which represented all those in the total count of 1,215 who were age 16 or older and had received dental care but did not have annual incomes of more than \$11,130 (Table 11).

TABLE 11. Comparison of Proportion of Dental Services Recipients Age 16 and Older of Various Income Levels With Corresponding Subpopulations in the Sample

	Proportion of		Proportion of	
	f	%	f	%
NONE	51.0	51.0	42.5	42.5
1 - 3,000	5.2	36.2	3.8	46.1
3,001 - 7,830	10.5	46.7	12.3	58.4
7,831 - 11,130	12.4	59.1	14.5	72.9
11,131 - 14,430	13.8	72.9	8.9	81.8
14,431 - 17,730	7.1	80.0	5.8	87.6
17,731 - 25,000	9.5	89.5	6.8	94.4
25,001 - 35,000	7.1	96.6	3.7	98.1
35,001 +	3.3	99.9	2.0	100.1
TOTAL	99.9		100.1	

The chi-square statistical test of association was utilized to determine what impact level of income had on whether dental services were received. The chi-square value of 20.251 was considerably larger than the value needed for significance at the .01 level of probability. Therefore, difference to the extent reported in Table 12 would be expected in less than one percent of random samples of the same size drawn from a population if there were no income bias in receiving dental care. Income level, therefore, does have an impact on whether or not dental service is received.

TABLE 12. Actual and Expected Frequencies of Lower and Higher Income Recipients from Among Those Who had Received Dental Care

	Actual		Expected	
	f	%	f	%
130	124	59.0	153	72.9
\$11,131 - or more	86	41.0	57	27.1
TOTAL	210	100.0	210	100.00

2.4 Dental Conditions

Interviewees were asked to give the reason(s) members of their household had sought dental care during the twelve months prior to the survey. The reasons, or dental conditions, were listed on a flash card* for the respondent's convenience.

Of the 445 individuals who had received dental services, 32 (73.9%) went to the dentist one or more times for treatment of only one condition. An additional 104 (23.4%) had gone for care of a second dental condition and 12 (2.7%) received care for a third condition (Table 13).

TABLE 13. Distribution of Individuals by Number of Dental Conditions Treated One or More Times

Number of Conditions Treated	Individuals	
	f	%
One	329	73.9
Two	104	23.4
Three	12	2.7
TOTAL	445	100.0

*See Flash Card J, Appendix D

TABLE 14. Reasons for Seeking Dental Care

Dental Condition	First Reason		Second Reason		Third Reason	
	f	%	f	%	f	%
Extractions	76	17.1	15	14.4	4	33.3
Tooth/Crown Replacement	8	1.8	14	13.5	4	33.3
Orthodontal	9	2.0	6	5.8	-	-
Gum Disease	2	0.5	-	-	-	-
Root Canal	12	2.7	2	1.9	1	8.3
Other	2	0.5	1	1.0	-	-
TOTAL	445	100.1	104	100.1	12	99.9

Listed in Table 14 are the dental conditions for which care was received. Also reflected in the table are the number and percentage of individuals who had been treated for each of the specific conditions, whether it be the first (or only condition) or if it was the second or third.

A dental check up and/or teeth cleaning was reported for nearly two-thirds (63.4%) of the 445 persons as the reason why they had received dental care. Tooth extractions (17.1%) and fillings (12.1%) were other major reasons for having gone to a dentist. For the 104 (23.4%) who sought dental care for a second condition, tooth fillings ranked first (58.7%), while extractions (14.4%) and tooth/crown replacements (13.5%) were

second and third, respectively. The small number of people who had a third dental condition treated went primarily for a tooth to have a tooth replaced or crowned.

indicates only initial (not repeated) visits for a given dental condition. Initial treatments

comprised 561 of a total 995 dental visits made by 445 persons. There were a total of 434 return or follow-up visits made.

2.5 Number of Dental Visits

After being asked to give reason(s) why they had seen a dentist for care, each subject was asked to recall the number of dental visits made by each member of their household for specific conditions. The number of dental care visits ranged from 1 to 9 for the first condition. For those who also sought treatment of a second condition, dental visits ranged from 1 to 7. The range in visits was from 1 to 6 for the 12 individuals who sought dental care for a third condition (Table 15).

One-third of all dental visits did not involve follow-ups.

This is understandable when considering that 63.4% of the 445 individuals who had received dental attention mentioned dental checkups and/or teeth cleaning as the initial reason for going to the dentist. An additional quarter of all visits were first follow-up visits. Nearly 11% of all dental visits made were for conditions requiring a total of six visits for treatment.

2.6 Dental Care Facilities

2.6.1 Total Count Visits

When asked which dentist they or members of their households had visited over the past year, the 400 interviewees were

TABLE 15. Dental Visits by Order of Condition

Visits f	First Condition		Second Condition		Third Condition		Visits %
	f	%	f	%	f	%	
1	267	60.0	54	57.4	8	66.7	33.1
2	102	22.9	19	20.2	1	8.3	24.5
3	40	9.0	5	5.3	2	16.7	14.2
4	13	2.9	7	7.4	-	-	8.0
5	7	1.6	3	3.2	-	-	5.0
6	12	2.7	5	5.3	1	8.3	10.9
7	-	-	1	1.1	-	-	0.7
8	-	-	-	-	-	-	-
9	4	0.9	-	-	-	-	3.6
TOTAL	445	100.0	94	99.9	12	100.0	100.0
Insufficient Data	-	-	10	-	-	-	-

able to give specific names of dentists or clinics for 380 (85.4%) of the 445 first condition visits (Table 16). Only 7 of the 13 dental care facilities were mentioned for the second none for the third. Apparently, those interviewed certain household members had gone to a dentist and in a majority of cases knew the reason for going, but the specific dentist or clinic visited was simply not known or remembered. This seems reasonable considering the time frame of one year involved for the recall period.

A listing of the 13 locations where the 995 dental care visits were made is shown in Table 16. Upon inspecting the table it may be noted that slightly over one-third (34.1%) of all visits were with dentists at the Department of Public Health and Social Services (DPHSS) Dental Clinic in Mangilao. It should be pointed out that, as prescribed by public law, dental care is to be provided without charge to all children 16 years old or younger. The DPHSS Dental Clinic, therefore, has been charged with this requirement.

The SDA and the FHP Dental Clinics ranked first and second in this study among private clinics visited, with 13.2% and 10.9% of all dental visits, respectively. The two clinics are located in Tamuning. Slightly more than one-fifth (21.4) of all dental visits were made at three other clinics. They were Dr. Reynolds and Associates (7.4%), Ordot Dental Clinic (7.1%), and GIRC Dental Clinic (6.9%). The remaining 20.0% of the dental visits were made at the remaining eight dental care facilities listed in Table 16.

TABLE 16. Dental Care Facilities and Frequency of Visits

	First Location		Second Location		Total	
St. Anthony's Dental Clinic Dr. Yumang	12	3.2	-	-	12	3.1
GTTC Dental Clinic Dr. Labalan	27	7.1	-	-	27	6.9
Guam Poly Dental Clinic Dr. Silos	6	1.6	-	-	6	1.5
Dr. Madarang's Dental Clinic Dr. Madarang	13	3.4	1	7.7	14	3.6
Marianas Dental Clinic Dr. Veloria	18	4.7	1	7.7	19	4.8
Ordot Dental Clinic*	28	7.4	-	-	28	7.1
Orthodontic Clinic*	5	1.3	2	15.4	7	1.8
DPHSS Dental Clinic*	131	34.5	3	23.1	134	34.1
Dr. Reynolds and Associates*	27	7.1	2	15.4	29	7.4
SDA Clinic*	52	13.7	-	-	52	13.2
Dr. Van der Pyle's Clinic	<u>9</u>	<u>2.4</u>	<u>2</u>	<u>15.4</u>	<u>11</u>	<u>2.8</u>
TOTAL	380	100.1	13	100.1	393	100.0

*A listing of dentist by dental clinics appears in Card F, Appendix D.

2.6.2 Visits by Children Age 16 and Younger

The dental visits made by the children and youths under age 16 were specifically addressed to determine the extent to which the dental services without charge were meeting the needs of the younger individuals. To this end the focus in Table 17 and Figure 1 is on children and whether they received their dental care from the Department of Public Health and Social Services (DPHSS) Dental Clinic. Information was available for 204 children who were 16 or younger. Of these, 123 (60.3%) had gone to the DPHSS Dental Clinic for care during the year. Data revealed at least a 50.0% utilization rate of Guam's government-supported dental clinic by children of all ages, excluding 4-, 15-, 16-year-olds and babies. The highest rate of participation (87.0%) at this clinic was among the 10- and 12-year-old youths.

As pointed out earlier, the 15- and 16-year-old youths did not obtain dental care to the extent that the younger children had. However, those who had gone to a dentist tended not to go to the DPHSS Dental Clinic. Only 22.2% of those age 15 at the time of the study were reported to have gone to the public clinic during the 12 months immediately preceding the survey, and none of those age 16 had gone there. The typical grades in school for these youths would be the 10th and 11th grades. These variations in the age-specific utilization rates of the government-operated dental clinic are presented in Figure 2.

Graphically presented in Figure 2 are the age-specific rates of annual dental care, and the proportions of those

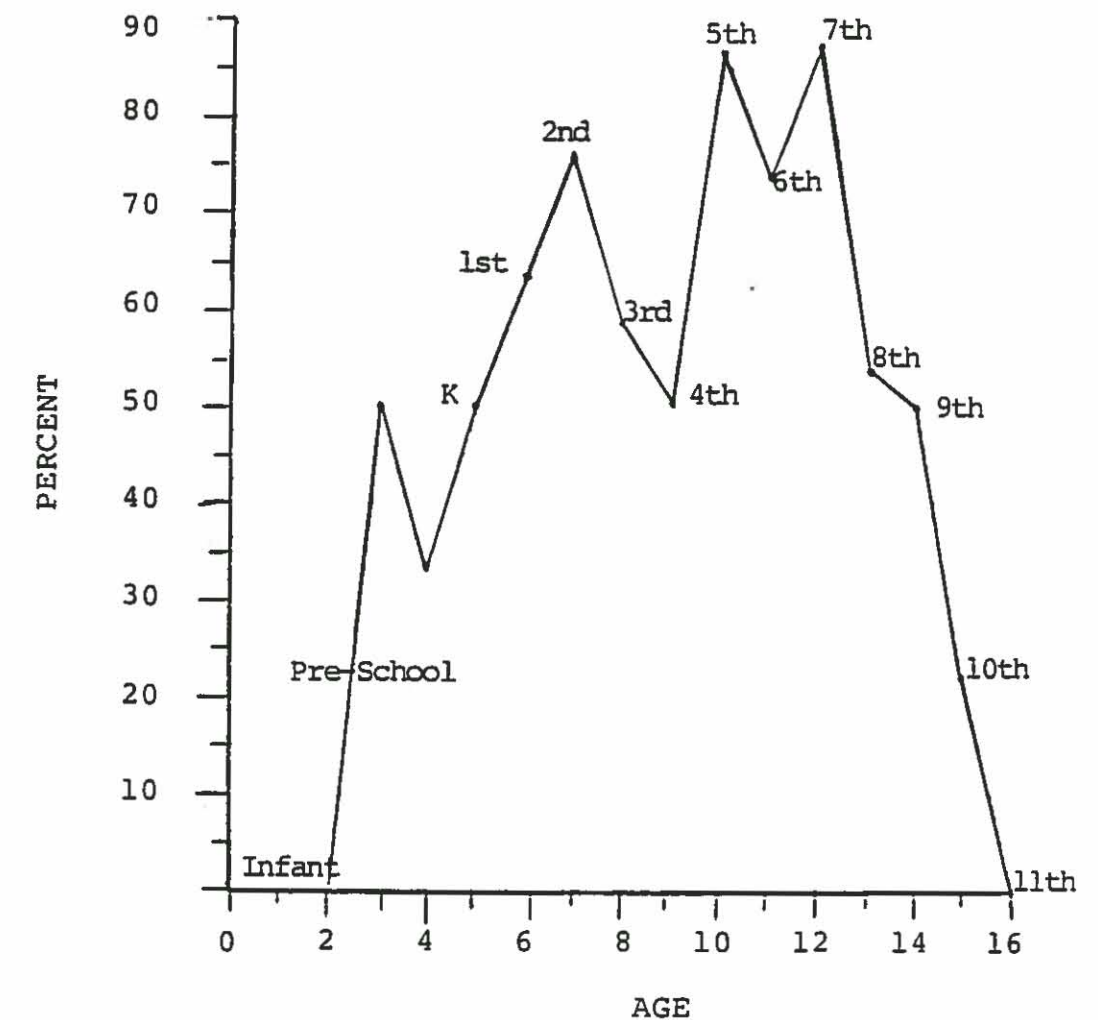
TABLE 17. Utilization Pattern of DPHSS Dental Clinic by Dental Care Recipients Under 17 Years of Age

Received Dental Care*			
2	2	-	-
3	6	3	50.0
4	6	2	33.3
5	16	8	50.0
6	19	12	63.2
7	17	13	76.5
8	14	8	57.1
9	18	9	50.0
10	23	20	87.0
11	27	20	74.1
12	15	13	87.0
13	15	8	53.3
14	10	5	50.0
15	9	2	22.2
16	7	-	-
TOTAL	204	123	60.3

*Does not include individuals who received dental care for whom the specific dentist's name and/or clinic was not remembered.

**Percent of age group.

Percentage Distribution of Those Who Received Dental Care at the DPHSS Dental Clinic by Age and Corresponding Grade in School

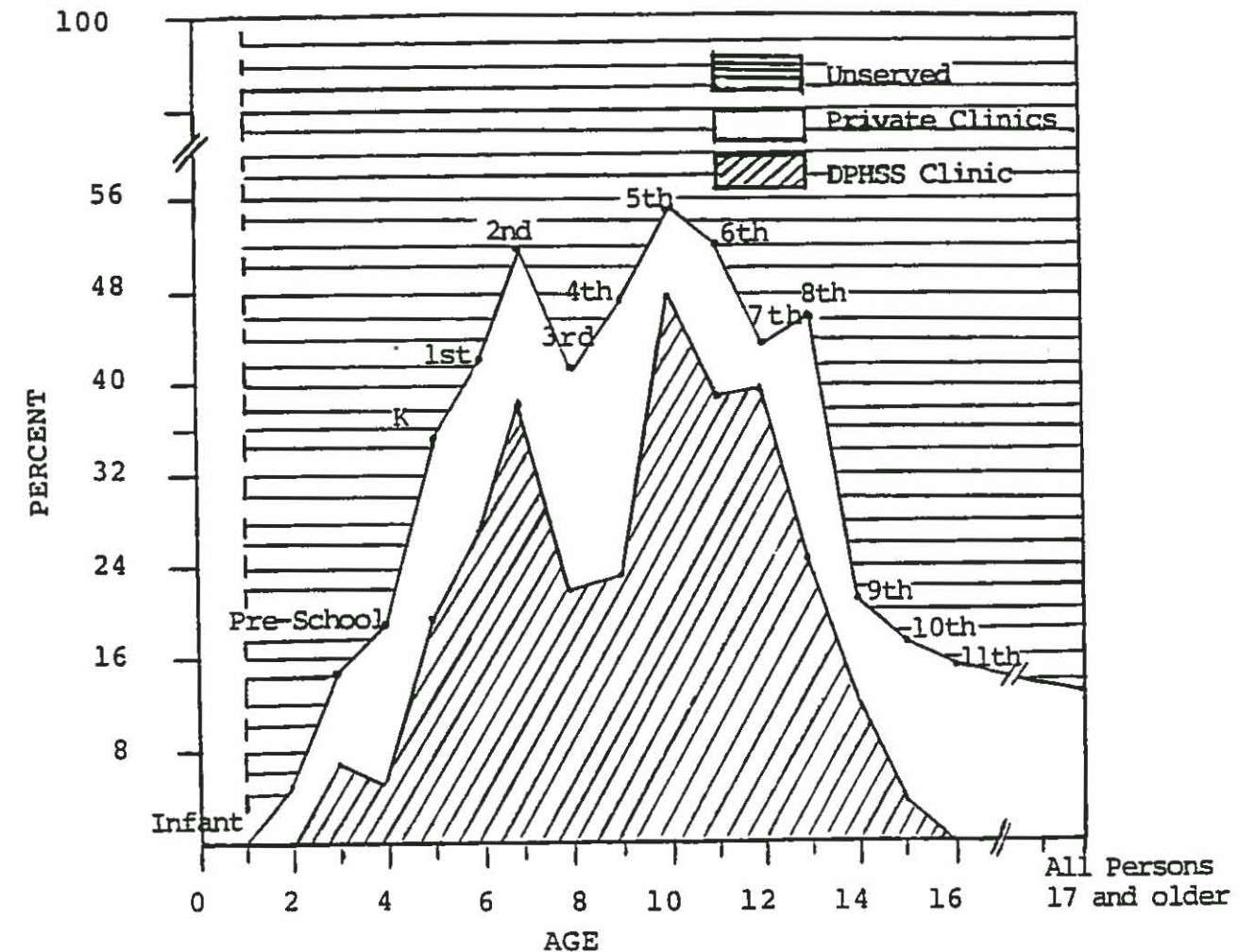


receiving dental care who had been served by the DPHSS Dental Clinic and by private dentists. Also shown in the figure is

was made in this study to find out why all needed dental care of young children and youths under age 17 had not been obtained from the government-supported clinic in Mangilao. In follow-up studies it may be of value to determine why services at a cost were obtained from private dentists when by law they are available from the government-supported clinic without charge.

Probably of even greater interest may be the matter of why such a large percentage--nearly two-thirds of the young children and youths--had not received any dental care at all. Granted, this proportion included the infants under two years of age. Even with the infants not included in the analysis, however, more than 60.0% of those ages 2 to 16 did not receive dental services during the 12-month period. It was mentioned earlier that of those who had gone to a dentist 60.3% had gone to the DPHSS Dental Clinic. When considering all infants, young children and youths ages 16 and younger in the study, the DPHSS Dental Clinic reached approximately 17.0% and private clinics 12.0% (Figure 3). If it is recommended an individual visit the dentist at least every six months, there would appear to be a major need for public dental education programs to acquaint parents and children with this recommended practice--as well as the public law providing free dental services for those who wish to avail themselves of that provision.

Percentage Distribution of Those Who Had Received Dental Care by Age and Estimated Corresponding Grade in School and Proportion Served by Private Public Clinics



2.7 Dental Insurance Coverage

The islandwide health behavior planning group felt it

due to know to what extent the household members
 ed dental care during the year were covered by
 ce. In addition, they also wanted to know who

provided the insurance. Information was not obtained in this
 study to determine the extent of dental insurance coverage
 among those who had not gone to a dentist at all during the
 year. If gathered in a future study, such information could
 be useful in explaining the impact dental insurance coverage
 may have, if any, on whether or not a person actually received
 dental services.

2.7.1 Gender

As shown in Table 18, the proportion of the 444 indivi-
 duals who had gone to a dentist at least once during the 12-
 month period prior to the survey and who were covered by a
 dental insurance plan was approximately equal to the proportion

Younger

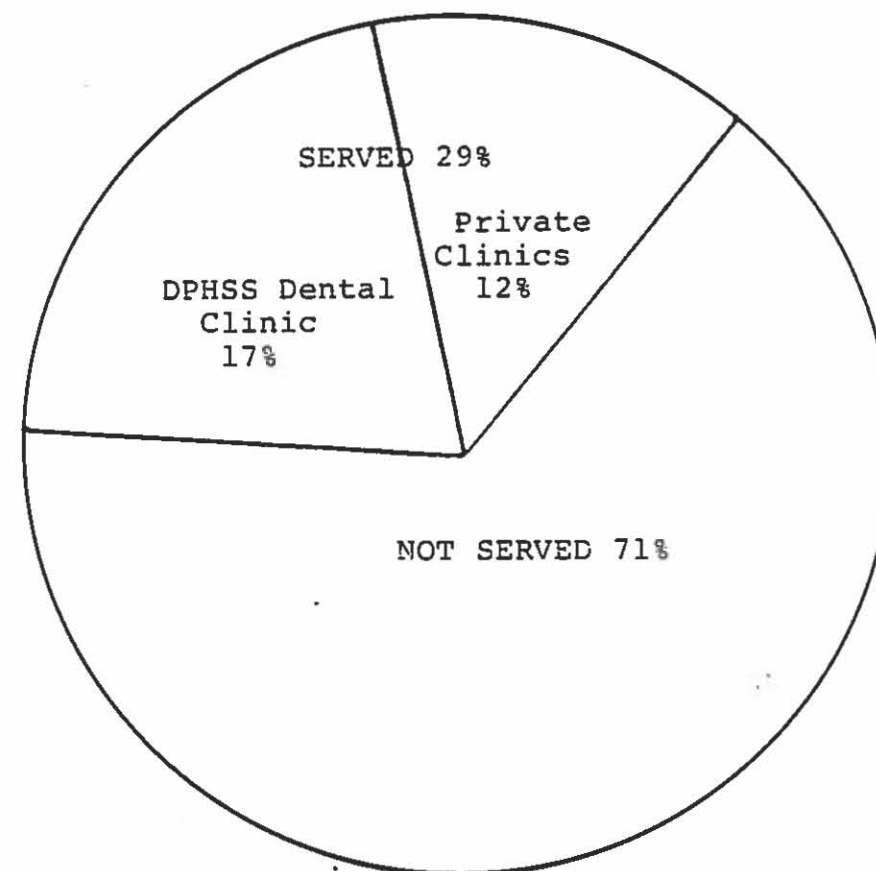


TABLE 18. Gender and Dental Insurance (Dental Services Recipients)

Coverage	Gender				Total	
	Male		Female			
	f	%	f	%	f	%
Yes	105	47.7	115	51.3	220	49.6
No	<u>115</u>	<u>52.3</u>	<u>109</u>	<u>48.7</u>	<u>224</u>	<u>50.4</u>
TOTAL	220	100.0	224	100.0	444	100.0
Insufficient Data	1		-		1	

who did not have dental insurance. The percentages were 49.6 and 50.4, respectively. A slightly larger percentage of the

Differences were noted among the various ethnic groups in regard to dental insurance coverage. Of those within the specific ethnic categories who had gone to a dentist the following proportions were noted for concurrently having dental insurance: Caucasians (70.6%), Chamorro (53.5%), Filipino (34.9%), Other Islander (35.7%), and Asian (33.3%).

Caucasians, therefore, not only were more likely to have received dental services than the other ethnic groups, but also were disproportionately more likely to have dental insurance (Table 19). As shown in the table, there was a general positive correlation between the percent of individuals in each of the

TABLE 19. Relationship Between Receiving Dental Services and Having Dental Insurance (by Ethnicity)

Ethnicity	Percent of Total Count Who Received Dental Services	Percent of Dental Services Recipients Who Had Dental Insurance
Caucasian	50.0	70.6
Other Islanders	24.2	35.7
Chamorro	22.9	53.5
Filipino	20.1	34.9
Asian	17.1	33.3

ethnic categories who had gone to a dentist during the 12-month period and the percentage of those visiting a dentist who had

ce. Among the ethnic categories, as the percent-
individuals who had gone to the dentist decreased, so
tages of individuals with dental insurance.

2.7.3. Income Level

As shown in Table 20, no obvious correlation existed between the proportion of individuals from various income categories who received dental care and their having had dental insurance. Rather than using income as a causative factor, the subject's type of employment may be a better variable to use when determining the relationship between dental insurance and dental care received. Future research should address this relationship.

TABLE 20. Relationship Between Receiving Dental Services and Having Dental Insurance by Income Level

Income Level \$	Percent of Total Count Who Received Dental Services	Percent of Dental Services Recipients Who Had Dental Insurance
1 - 3,000	23.9	36.4
3,001 - 7,830	14.7	71.4
7,831 - 11,130	14.8	76.0
11,131 - 14,430	26.9	64.3
14,431 - 17,730	21.4	73.3
17,731 - 25,000	24.4	65.0
25,001 - 35,000	33.3	86.7
35,001 +	29.2	57.1

2.8 Type of Dental Insurance

2.8.1. Gender

GMHP and FHP more so than males. On the other hand, the males were more likely to have military/CHAMPUS, federal or "Other" dental plans than were the females. There were, however, more males and more females who had GMHP and FHP dental coverage than military/CHAMPUS, federal, or "Other" coverage (Table 21).

A closer inspection of the table will reveal that slightly more than one-fourth (25.8%) of the males who had dental insurance and went to the dentist had military/CHAMPUS or federal coverage. About 17% of the females had such coverage.

TABLE 21. Gender of Dental Services Recipients with Dental Insurance by Type of Insurance Program

Type of Insurance	Gender	
	Males (%) N=105	Females (%) N=115
GMHP	25.7	37.4
FHP	26.7	33.9
HML	1.9	-
Military/CHAMPUS	22.9	16.5
Other*	19.0	12.2
Federal	2.9	-

*For a detailed listing of dental insurance programs included in the "Other" category, see Appendix B.

2.8.2 Ethnicity

An analysis of the type of dental insurance carried by

who had gone to the dentist was revealing when made among the major ethnic categories. More females (35.0%) who had gone to a dentist and had dental insurance carried FHP coverage than any other coverage. Other percentages were 29.2 with GMHP and 20.4 with military/CHAMPUS. The Filipinos differed in the type of dental insurance that they carried. In their case 47.4% were insured by GMHP, an additional 26.3% had "Other" coverage and only 13.2% had FHP. About 10.0% were covered by military/CHAMPUS or federal programs. The distribution of dental insurance plans held by the Caucasians was also of interest. The percentages were split generally into four groups with 29.0%, 25.0%, 25.0%, and 21.0% divided among GMHP, FHP, Military/CHAMPUS, and "Other," respectively (Table 22).

It had been observed that there are several differences between the GMHP and the FHP insurance programs. For instance, FHP subscribers are restricted in their choice of dentists to FHP-designated clinics. These specific clinics are known to be staffed primarily with dentists identified as Caucasians. The GMHP subscribers, on the other hand, have a choice of dentists. This, in effect, increases their selection of dentists to include the total range of ethnic origins available. These findings tend to give rise to the notion that, given a choice, individuals demonstrate a tendency to obtain dental services from dentists of their own ethnic origin.

TABLE 22. Ethnicity of Dental Services Recipients with Dental Insurance Type of Insurance Program

Type of Insurance	Ethnicity				Asian (%) N=2
	Chamorro (%) N=137	Filipino (%) N=38	Caucasian (%) N=24	Other Island (%) N=5	
GMHP	29.2	47.4	29.2	60.0	-
FHP	35.0	13.2	25.0	40.0	-
HML	0.7	2.6	-	-	-
Military/CHAMPUS	20.4	7.9	25.0	-	50.0
Other	13.1	26.3	20.8	-	50.0
Federal	0.7	2.6	-	-	-

2.8.3 Income Level

One's level of income also was compared to the type of insurance he carried. The data presented in Table 23 is on those who had gone to a dentist during the study covered by dental insurance. As may be noted

upon inspecting the data in this table, some major variations existed. These differences tend to further suggest a possible relationship between the type of employment (which was not analyzed in this study) and the type of dental coverage. The type of coverage, in turn, was closely linked to ethnicity--more specifically, the country or island of origin. It also may be noted, that those reported as having military/CHAMPUS dental coverage were in the moderately low (27.8%) or moderately high (67.2%) income categories (Table 23). None were in the absolute lowest, middle or absolute highest income groups. Those with "Other" types of dental insurance displayed more of a tendency toward very low annual income levels of \$7,830 or very high levels of \$25,001 or more.

A rather interesting difference between the GMHP and FHP dental insurance subscribers emerged in this study. As shown in Table 23, those subjects with yearly incomes of \$14,430 or less were clearly more likely to have GMHP while those with the higher incomes of \$14,430 or more had FHP coverage.

TABLE 23. Income Level of Dental Services Recipients with Dental Insurance Program

Type of Insurance	Income Level						N=4
	\$1 to \$3,000 (%) N=4	\$3,001 to \$7,830 (%) N=15	\$7,831 to \$11,130 (%) N=19	\$11,131 to \$14,430 (%) N=18	\$14,431 to \$17,730 (%) N=11	\$17,731 to \$25,000 (%) N=13	
GMHP	25.0	46.7	42.1	55.6	9.1	38.5	-
FHP	25.0	6.7	31.6	27.8	36.4	46.2	25.0
HML	25.0	6.7	-	-	-	-	-
Military/ CHAMPUS	-	6.7	21.1	-	36.4	15.4	-
Other	25.0	20.0	5.3	11.1	18.2	-	75.0
Federal	-	13.3	-	5.6	-	-	-

SECTION THREE
SUMMARY OF FINDINGS

Services

Interviews were conducted in 400 households sampled at random from among all households located throughout the island. Those located on military bases and in institutions were not included. Of the 1,928 individuals found residing in the 400 households, 445 (23.1%) had gone to a dentist at least once during the 12-month period immediately prior to the survey.

The 445 individuals who had received dental services made a total of 995 dental visits for an average per person of 2.24 trips to the dental clinics. This average rate was equal to a dental visit every five months and eleven days.

The number of visits to a dentist for treatment or cure of a given condition ranged from one to nine. When comparing the Islandwide Health Behavior Study findings with comparable data from the Northern Area Health Status and Needs Survey of about five years earlier, a drop in the percentage of individuals who had gone to the dentist (as well as the number of dental visits) was noted.

3.2 Socioeconomic Factors

Some differences emerged among the three geographical regions of the island with regard to the proportion of individuals who had gone to a dentist. The Central had the highest rate of about 1:3.8. The South was next with 1 out of every 4

persons having made a dental visit, whereas the ratio in the North Region was the lowest at 1:5.

Only a slightly larger percentage of females than males

reported to have gone to a dentist over the year. Children at this age would generally be expected to be in the fifth grade. Children between the ages of 5 and 13 were more likely to have gone to a dentist than all others. There was a rapid decline in the percentage of youths who had gone to a dentist after age 13.

Caucasians were by far more likely to have gone to a dentist than those of the other major ethnic categories. Filipino and Asian individuals were least likely to have received dental services. There was a significant difference in the proportion of individuals who had gone to a dentist for care, depending on their income. Those in the low- to middle-income categories were significantly less likely to have been cared for by a dentist than were those who had received a higher annual income.

3.3 Dental Conditions and Related Visits

The 445 individuals who had gone to a dentist did so for a variety of reasons. Most (76.6%) went for care or treatment of only one condition, with 23.4% seeking care for a second condition and only 2.7% seeking care for a third dental condition treated. Nearly two-thirds of the dental visits were for having a dental check up and/or cleaning of teeth. Tooth extractions and/or fillings were the next most common dental

conditions treated. While some visits to the dentist did not require follow up visits, nearly 11.0% of all dental visits made were for conditions that required as many as six visits

Dental Facilities

The 995 dental visits reported were made at 13 locations, or clinics. Slightly over one-third of all visits were to dentists at the DPHSS Dental Clinic in Mangilao. Children were almost exclusive users of this public service. By law, dental services are available without charge for children age 16 or younger--if received at the DPHSS Dental Clinic. The next most "popular" dental clinics were SDA and FHP. Both are located in Tamuning.

Not all children (83.0%) received dental care at the public clinic. The percentage of those having gone to DPHSS for dental care (out of all children who had received dental services) varied by age levels. Nearly 9 out of every 10 of the 10- and 12-year-old youths were reported to have gone there. The percentage, however, dropped to 22.0 for those age 15 and zero for those who were 16. The primary question not answered by this study was why so many individuals had not gone to a dentist even once during the 12-month period studied. This seemed even less clear in view of the public law that makes such services available to children at no cost.

3.5 Dental Insurance Coverage

Those who had gone to a dentist during the year were evenly divided between having or not having dental insurance

coverage. This study did not ascertain the rate of coverage among those who did not go to a dentist at all during the 12-month period.

Caucasians who went to the dentist had dental insurance. For Chamorros, the proportion was slightly over one-half, while for Filipinos, Other Islanders and Asians, about one-third who had received dental services also had dental insurance.

One's level of income did not correlate to his having dental insurance. No doubt this occurred as a result of dental insurance typically applying to the family rather than to just an individual.

3.6 Type of Insurance

Females more so than males were covered by GMHP and FHP for dental care, while males were more likely to have CHAMPUS (military), federal or "other" dental plans. Nearly one out of every four males who went to a dentist was covered through CHAMPUS or other federal programs. Chamorro individuals were more likely (35.0%) to be covered for dental care by FHP. Those identifying themselves as Filipino differed in that 47.0% were insured by GMHP. Caucasians received dental coverage in similar proportions from GMHP, FHP, military/CHAMPUS and "Other" insurance providers. It was noted that GMHP allows their clients to select their dentists while FHP primarily covers services provided by dentists associated with two specific clinics.

One's level of income was found to relate in somewhat strange ways to the type of insurance coverage held. Results suggest further study is needed to determine if, in effect, payment rather than income is a more direct cause. This study did not explain the clear distinction between GMHP and FHP with regard to income. It was reported that those who had incomes of \$14,430 or less were more likely to be GMHP subscribers, while those receiving over \$14,430 annually were more apt to have FHP dental coverage.

APPENDICES

APPENDIX A
DEMOGRAPHIC TERMS, DEFINITIONS
AND EXPLANATIONS

DEMOGRAPHIC TERMS, DEFINITIONS AND EXPLANATIONS

Demographic Terms, Definitions and Explanations (continued)

The following formula was used in calculating medians:

$$\text{Median} = l + \left(\frac{\frac{N}{2} - f_c}{f_w} \right) h$$

l = lower theoretical limit of the interval in which the median lies

f_c = cumulative frequency up to the interval containing the median

f_w = frequency within the interval containing the median

N = total number of cases

h = height of the interval

as the Trust Territory of the Pacific Islands.

f is used in tables to refer to the frequency or count of individuals, etc.

% is used in the tables and text and, of course, refers to percent. Percentage totals may not equal 100.00 due to normal mathematical rounding error.

Education means number of years of formal schooling completed. Highest grade completed.

Adults occasionally is used and refers to those age 16 and older. The characteristics of income, education, and marital status are analyzed for individuals of this age category. This differs from the Federal Census which includes those age 15 and older for certain characteristics and age 16 and over for others.

Ethnicity is based on the interviewee's perception of himself and each individual member of the household. This differs from the Federal Census where all members of a household are designated the same ethnicity as the head of the household.

Age refers to a person's age at his last birthday.

Income includes regular earnings for work and/or all other sources. The income question was dependent on one's memory and not records. Therefore, an under-reporting could be expected especially in those cases involving a variety of types and sources.

Marital Status Although civil/religious marriages and common-law marriages are treated separately in the tables, on occasion "married" is used in the text and includes both forms.

Median figures are generally reported since as a statistic they are not affected by extreme values in a distribution as are mean figures.

Civilian Population was established by GHPDA for this study as follows:

1980 Census Total Population	105,979
Minus Military Population	
(living either on bases or in the community)	<u>-21,000</u>
	84,979

DISEASE CLASSIFICATIONS

INSURANCE GROUPINGS

1th Plan (FHP)
ial Health Plan (GMHP)

- Leukemia, Hodgkin's Disease, sarcoma, melanoma, cancer of any of the organs, etc.
- Trauma or injury to the head or spinal cord
- Birth defects
- Heart disease requiring surgery
- Kidney transplant

Chronic Diseases:

- Hypertension
- Diabetes
- Arthritis (any kind) and rheumatism
- Chronic kidney disease
- Chronic liver disease
- ALS/PD (Amyotrophic Lateral Sclerosis/Parkinson Disease also known as lytico/bodig)
- Multiple Sclerosis
- Myotonic dystrophy

Acute Diseases:

- Everything else not listed above

Disabling Conditions:

- Blindness
- Deafness
- Loss of speech
- Loss of limb
- Full or partial paralysis

"Free" Diseases (free treatment by Guam Law):

- Tuberculosis
- ALS/PD (Amyotrophic Lateral Sclerosis/Parkinson Disease)
- Renal Dialysis
- Mental illness

Military Related:

- Veterans Administration (VA)
- Civilian Health and Medical Program of the Uniformed Services (CHAMPUS)
- Military dependents

Medicare

Medicaid/Lol program of Guam Memorial Hospital (GMH)*/
Medically Indigent Program of GMH

All Other Insurance Companies, such as:

- Blue Cross/Blue Shield
- Stay Well
- Prudential
- Nambo
- Universe Insurance Underwriters (UIU)
- etc.

Non-Insurance

*Lol Program was dropped some time after data for this study had been collected.

ISLAND DISTRICTS

North Central:

- Tamuning (including Tumon)
- Barrigada (including Barrigada Heights)

Central:

- Piti
- Asan/Maina
- Agana
- Agana Heights
- Sinajana
- Chalan Pago/Ordot
- Mangilao
- Mongmong/Toto/Maite

South Central:

- Agat
- Santa Rita (including Santa Rosa)
- Talofofo
- Yona

South:

- Inarajan
- Merizo
- Umatac

FIGURE 4. Geographical Regions

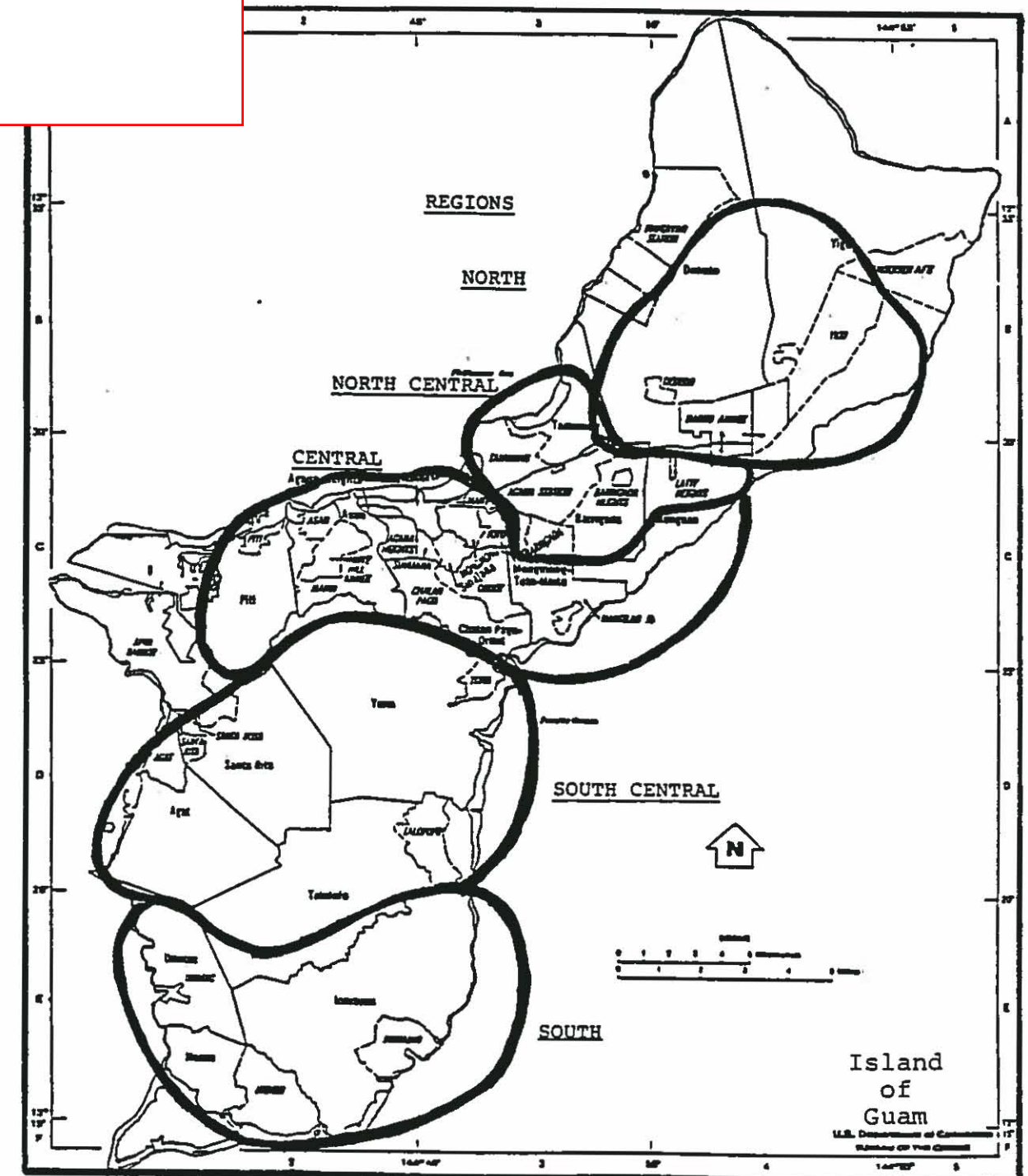
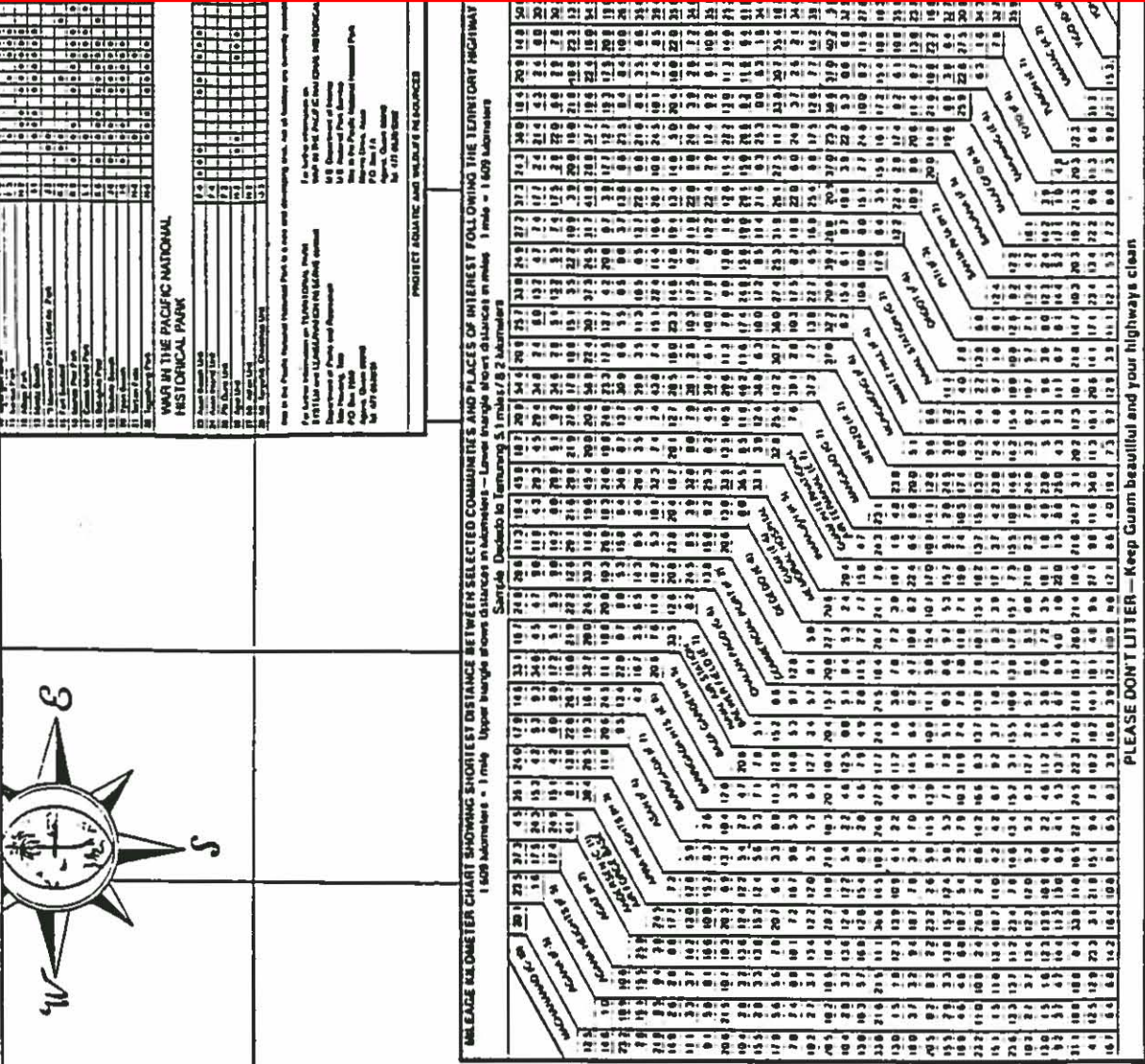


FIGURE 5. Village-to-Village Mileage Chart



APPENDIX B
SAMPLE AND METHODOLOGY

DETERMINING SAMPLE SIZE

Guidelines to Determine Survey Use:

- Designing the Items
- Planning for Item Construction
- Item Sequencing
- Designing Response Modes
- Modes of Response
- Establishing Appropriate Scales
- Coding Survey Items
- Forced-Response Codes
- Open-Response Codes
- Electronic Data Processing
- Conducting the Survey
- Sampling Considerations
- Communicating with the Target Population
- Protection of Human Subjects
- Inclusionary Language
- One Planning Technique
- Adapting Other Designs
- Other Effective Methods
- Analyzing the Data
- Descriptive Techniques
- Inferential Statistical Tests
- Implications of Analysis
- Writing the Research Report
- Planning the Report
- Parts of the Research Report

Sensible Surveys

Donald C. Orlich

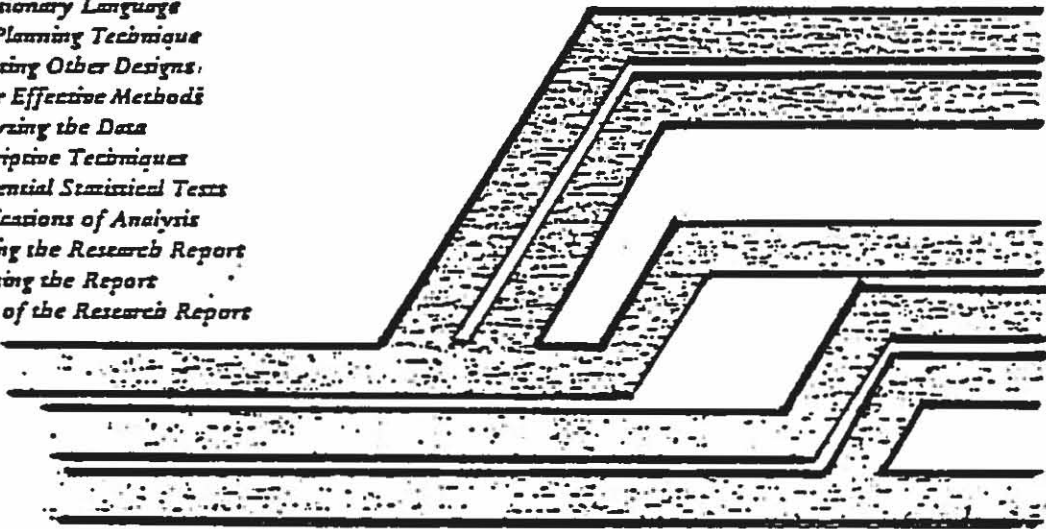


Table 5-1. Estimated Population and Sample Sizes

Population Size	Sample Size	Population Size	Sample Size
100	79	5,000	357
200	132	6,000	361
300	168	8,000	367
400	196	10,000	370
500	217	15,000	375
600	234	20,000	377
800	260	30,000	379
1,000	278	50,000	381
2,000	322	75,000	382
3,000	341	100,000	383

Sources: The National Education Association. Table 5-1 is reproduced with the written permission of the National Education Association.

DETERMINING SAMPLE SIZE (continued)

Sample Sizes for Selected Population Sizes
In a Simple Random Sample

Households in the Population*	Number of Households Needed in the Sample	Total Number of Households in the Population	Number of Households Needed in the Sample
100	80	6,000	375
120	92	7,000	378
140	104	8,000	381
160	114	9,000	383
180	124	10,000	385
200	133	More than 10,000	390
220	142		
240	150		
260	158		
280	165		
300	171		
320	178		
340	184		
360	189		
380	195		
400	200		
420	205		
440	210		
460	214		
480	218		
500	222		
600	240		
700	255		
800	267		
900	277		
1,000	286		
1,250	303		
1,500	316		
1,750	326		
2,000	333		
2,500	345		
3,000	353		
3,500	359		
4,000	364		
4,500	367		
5,000	370		

* Make sure that you have added together all the households (rural and town) in the population before you determine the sample size.

TABLE 24. Confidence Limits for Sample Proportions

Sample	95 Percent		99 Percent	
	Lower	Upper	Lower	Upper
10	7.2	13.4	6.5	14.5
15	11.7	18.9	10.7	20.1
20	16.2	24.3	15.1	25.6
30	25.6	34.8	24.3	36.2
40	35.2	45.0	33.7	46.5
50	45.0	55.0	43.5	56.5
60	55.0	64.8	53.5	66.3
70	65.2	74.4	63.8	75.7
80	75.7	83.8	74.4	84.9
85	81.1	88.3	79.9	89.3
90	86.6	92.8	85.5	93.5
95	92.4	96.9	91.5	97.4

NOTE: Interpretation of Table 24. In this study, approximately 50% of the households surveyed were located in the North Region of the island. At the 95% level of confidence, it may be concluded that the true proportion of houses in the North would fall somewhere in the 45.0% to 55.0% range.

DETAILED METHODOLOGY

Health study sample geographically represents the entire island to accommodate islandwide ethnicity and rural-urban characteristics. The central and northern regions of the island are more developed, multi-ethnic and contain urban-like villages. The southern part of Guam, by contrast, remains more culturally homogenous with villages "rural" in character. Most medical diagnostic and treatment personnel and facilities are found in central Guam. Thus, the geographically proportionate sample reflects a representative distribution of Guam's rural-urban and ethnic-cultural composition.

To achieve such sample characteristics, a geographically stratified, two-step, proportionate random cluster sample design was adopted for the study. Permanent housing units located throughout the island (excluding those on military installations, other federal housing compounds, temporary alien labor quarters, resort hotels, and those facilities for the institutionalized) are defined as representing the civilian population.

The 1980 Guam Census Report showed 28,225 housing units of which 4,676 (16.5%) were located on land claimed by the federal government. The balance of 23,549 housing units thus represents the population from which the survey sample was drawn.

For enumeration purposes in 1980, the U.S. Department of Commerce, Bureau of the Census, considered the entire island

(CDP's) 34 more highly settled areas including those identified as cities in 1970. The entire MCD of Agana was designated as one CDP. Three other MCD's were subdivided into two or three CDP's which, however, were inclusive of the MCD's. These MCD's were Asan/Maina, Chalan Pago/Ordot, and Mongmong/Toto/Maite. The remaining 15 MCD's all contained one or more CDP's and a residual or less densely settled area (MCD-CDP's). Table 25 shows that eight of the 34 CDP's designated in the 1980 Census were official U.S. military or other federal housing areas and, therefore, were excluded from the total sampling area. The geographical subdivisions remaining for our sample included 26 CDP's and 15 MCD's/CDP's, for a total of 41. The distribution of the agreed upon 400 housing samples is also shown in Table 25.

Although all highways, most streets and many roads are officially named, signs are absent in a number of instances. In addition, certain roads, trails and drives are without uniform identification markers, particularly on unsurveyed tracts of rural land located beyond the more densely populated village CDP's. In view of these conditions, aerial photography housing maps of the island were utilized to determine the specific sample units for the study. A total of 146 section maps were

required to cover all areas of the island that contain residential housing. Each section map contained 36 grid-block number of houses in a grid-block varied depending on. Grid-blocks in the CDP's were, of course, more populated than those in the lesser settled areas of the MCD's. The CDP grid-blocks in northern and central MCD's contained as many as 25-30 housing units, while selected residential area grids in the southern part of the island had a few or in several cases only one.

Sample Unit

Representative sampling among MCD's could be achieved by randomly selecting grid-blocks in proportion to the number of households located in each MCD. A more precise representation could be obtained by proportionately sampling grid-blocks within the given MCD subdivision (CDP's and MCD minus CDP's). Therefore, the Sample Unit in this study was a randomly selected grid-block.

The second level or step in the sampling procedure was a purposive designation of an initial contact house (Figure 7) in each randomly selected grid-square or "housing cluster".

In order to ensure a final minimum sample size of 400 surveys, a "back-up" sampling strategy was utilized in the event where all households in the sample unit (map grid) were contacted. In such instances alternate grid-blocks were to be utilized. A systematic pattern of alternating from the immediate left of the original sample grid to the right was set in

order to maintain the proper sample representation within and among the MCD's.

The random selection of 400 map grid-blocks pinpointed

TABLE 25. Sample Frame: Guam

Geographical Subdivision	1	2	3	4
	Population	Housing Units	Population/ Housing (C1/C2)	Housing Sample *
	(105,979)	(28,225)	(3.75)	(400)
Agana (MCD/CDP)	896	384	2.30	7
Agana Heights (CDP)	2,970	900	3.30	15
Agana Heights (MCD/CDP)	314	71	4.40	1
Agat (CDP)	2,908	706	4.10	12
Agat (MCD/CDP)	1,091	284	3.80	5
Asan (MCD/CDP)	726	210	3.46	4
Maina (CDP)	891	231	3.86	4
Nimitz Hill Annex (CDP)	417	148	2.80	NS**
Naval Air Station (CPD)	1,650	352	4.69	NS
Barrigada Heights (CDP)	1,127	260	4.30	4
Barrigada (CDP)	3,127	787	3.97	13
Barrigada (MCD/CDP)	1,852	531	3.49	9
Chalan Pago (MCD/CDP)	1,921	472	4.07	8
Ordot (CDP)	1,199	266	4.50	5
Dededo (CDP)	2,524	641	3.90	11
Finegayan Station (CDP)	3,538	874	4.05	NS
Dededo (MCD/CDP)	17,582	4,019	4.40	67
Inarajan (CDP)	918	205	4.48	3
Inarajan (MCD/CDP)	1,141	250	4.56	4
Mangilao (CDP)	4,029	1,312	3.07	22
Latte Heights (CDP)	1,056	268	3.90	5
Marbo Annex (CDP)	856	253	3.40	NS
Mangilao (MCD/CDP)	899	234	3.80	4
Merizo (CDP)	1,500	356	4.20	6
Merizo (MCD/CDP)	163	42	3.90	1
Mongmong (MCD)	2,058	656	3.10	11
Toto (CDP)	2,358	498	4.70	8
Maite (CDP)	419	201	2.10	3
Agana Station (CDP)	410	135	3.04	NS
Piti (CDP)	737	226	3.30	4
Piti (CDP/CDP)	2,129	277	7.68	5
Santa Rita (CDP)	1,264	291	4.30	5
Santa Rosa (CDP)	860	209	4.10	4
Apra Harbor (CDP)	5,633	1,432	3.90	NS
Santa Rita (MCD/CDP)	1,426	321	4.40	5
Sinajana (CDP)	1,879	464	4.05	8
Sinajana (MCD/CDP)	606	155	3.90	3
Talofofo (CDP)	1,470	291	5.05	5
Talofofo (MCD/CDP)	536	154	3.50	3
Tamuning (CDP)	8,862	3,047	2.90	52

(continued next page)

FIGURE 7. Sample Unit: Grid-Block Cluster of Households

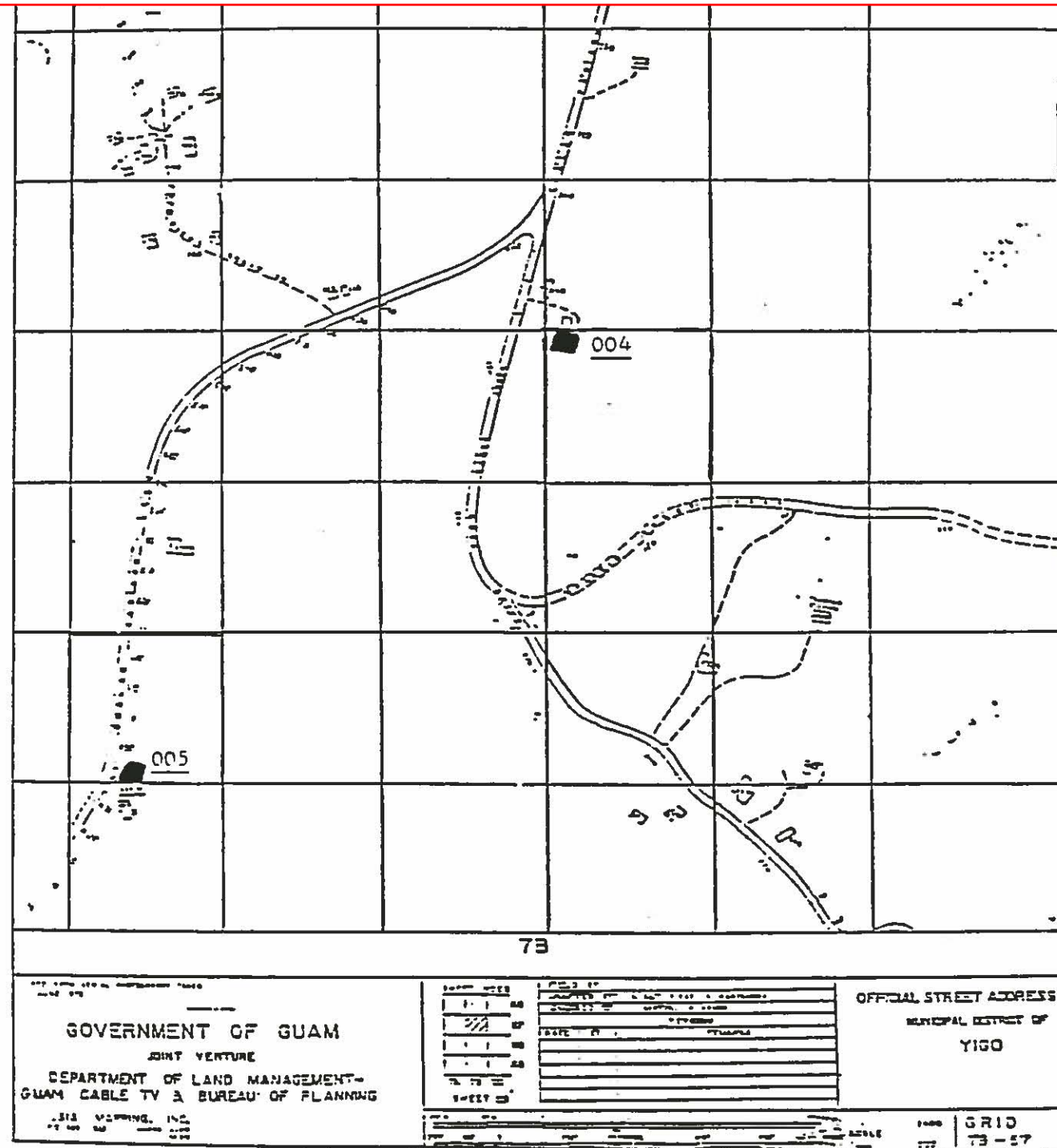
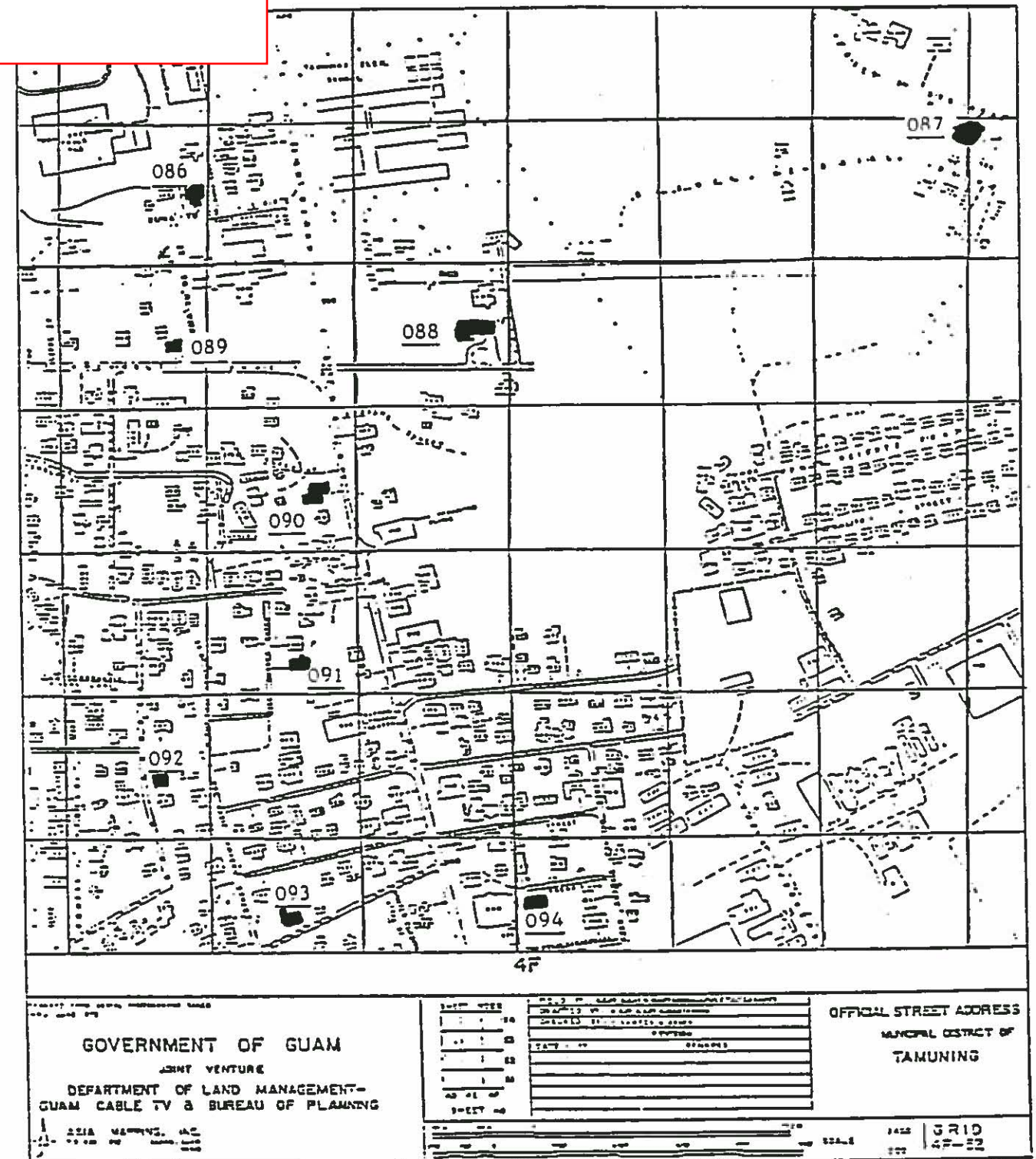


FIGURE 7. Sample Unit: Grid-Block Cluster of Households (continued)



HEALTH STATUS OF THE POPULATION OF GUAM SURVEY
November 8, 1984

CODING DATA ENTRY AND ANALYSIS

Interviewer's Narrative Report and Coder's Comments:

COMMENT/SPECIFY

- dures to key data in through the UOG Computer Center's Interactive Computing and Control Facility (ICCF). The size of data file members that can be utilized by the ICCF is very limited (5000 record lines). Miscommunication with the Computer Center led CDI staff to plan for only two (2) data file members that would contain the entire data set. However, because the data set is extremely large (approximately 36,632 record lines), the data files that had been keyed in were already too large. This required creation of an additional service of programming operations to rectify.
2. Working with Rudy Villagomez, Programmer Analyst at the UOG Computer Center, procedures were developed to: (a) divide the large ICCF data files into smaller usable segments; (b) these segments can be resorted as originally planned from the order pattern of keypunching (all household members for each data record line before entering of the next data record line) to the order pattern necessary for data analyses (all data record lines for each person and subsequent persons); (c) the resorted segments are then placed out on DISC storage, which permits the use of a SAS program to read, MERGE (a SAS Proc), and output all segments as a simple SAS Data set on a permanent computer TAPE file.
 3. Data analyses will be processed using SAS software programs reading (input) the data from this tape.

38102

Had to retire because of his heart disease (originally had 365 days at home in bed last 12 months); Q45 covered by military and medicare (doesn't use the medicare), coded 12-Military.

Subject is diabetic and so she eats once an hour (about 13 "snacks" per day).
Figured: 24 hours/day
- 8 hours sleep
16 hours
- 3 hours/3 meals
13

Coded Q25 as 8 (Maximum number for 1 column).

17302

Covered by BC/BS, FHP and Metropolitan.
Coded 06 BC/BS for Q45a.

17304

Same as the above.

374 (all)

Household of six with #1 category income, no public assistance, and some with BC/BS insurance. The head of the household (husband) just died and apparently was the family's wage earner.

38910/12

Q9. Both subjects while they were in to see doctor about their colds, the doctor gave them their "baby shots" (measles, mumps, rubella, etc.).

37402/05

Q8 shows HMSA insurance, Q45 shows no insurance. At the time she had the baby in Q8, she was living and working in Hawaii and was covered by HMSA. Currently lives on Guam, no insurance.

37003/06 and
37005/06

Q20, uses FHP but Q45, no insurance. Q8 and Q12, one doctor delivered, another doctor for prenatal visits. Q14 has FHP insurance but went to Dr. Labalan.

SUBJECT NO.COMMENTS/SPECIFY

Verifier (Mary Vacher) asked interviewer if she knew more about the above or why.

39002

Q2d/e. Coded 9's because he went to Brodie Memorial and they "don't have grades." He is not attending at the present.

Subject was referred to as a "slow learner" and "disabled." He went to Brodie Memorial. He puts in 8 hours a day doing housework. (Interviewer has not coded him in Q7. Subject looked retarded to the interviewer. Interviewer also got the impression subject is not allowed to drive or to learn to drive. Subject doesn't drive.)

39001/01/03/04

FHP and Medicaid (coded 01-FHP in Q45)

31302/03/04

Q48c. Coded as "9" because all part of a family business. The joint family income is coded "8" with person #01 the father.

39203

Q2g. Suggested "mongolian" be added. This is the real origin of the Chamorro people.

HEALTH STATUS OF THE POPULATION OF GUAM
RUN LIST

SUBJECT NO.RECORD CODECOMMENT/SPECIFY

ship to head of the household:

25-Other

Respondent gave S39904 as his son-in-law and single. (When asked about it, #04 is single and like a son-in-law).

Q2d. Ref. 66 years and older--Marital Status:

40001

12-High
School

Graduated from high school and had 4 years as apprentice.

Q2f. Place in which attended highest grade they finished:

05902

29-Other

Samoa

06702

29-Other

Germany

06703

29-Other

Germany

28301

29-Other

Africa

39502

29-Other

Sweden

Q2g. Ethnic group:

05106

10-T.T.

Rotanese

20302

10-T.T.

Trukese

20303

10-T.T.

Trukese

20304

10-T.T.

Trukese

20305

10-T.T.

Trukese

17401

10-T.T.

Palauan

17402

10-T.T.

Palauan

17403

10-T.T.

Palauan

28301

12-Other/Single African

37502

12-Other/Single Mexican

37503

14-Other/Comb. Mexican/Chamorro

06702

12-Other/Single German

06703

12- " German

06704

14-Other/Comb. German/Black

06706

14- " German/Filipino/Black

(cont.)

SUBJECT NO.	RECORD CODE	COMMENT/SPECIFY
05902		
05903	14-Other/Comb.	Chamorro/Samoan
05904	14- "	Chamorro/Samoan
17803	14-Other/Comb.	Caucasian/Palauan
38701	14-Other/Comb.	Japanese/Chamorro
39303	14-Other/Comb.	Caucasian/Chamorro
39304	14- "	Caucasian/Chamorro
17503	14-Other/Comb.	Caucasian/Chamorro
17504	14- "	Caucasian/Chamorro
17303	14-Other/Comb.	Yapese/Hawaiian
17304	14- "	Yapese/Hawaiian/Chamorro
19103	14-Other/Comb.	Chamorro/Japanese
19104	14- "	Chamorro/Japanese
19105	14- "	Chamorro/Japanese
19106	14- "	Chamorro/Japanese
19107	14- "	Chamorro/Japanese
39503	14-Other/Comb.	Chamorro/Caucasian
39504	14- "	Chamorro/Caucasian
38914	14-Other/Comb.	Chamorro/Japanese/Hawaiian
38915	14- "	Chamorro/Japanese/Hawaiian
19503	14-Other/Comb.	Caucasian/Filipino
18003	14-Other/Comb.	Chamorro/Caucasian
18004	14- "	Chamorro/Caucasian
18005	14- "	Chamorro/Caucasian
06002	14-Other/Comb.	Chamorro/Canadian
06003	14- "	Chamorro/Canadian
06004	14- "	Chamorro/Canadian
06005	14- "	Chamorro/Canadian
08803	14-Other/Comb.	Filipino/Caucasian
08804	14- "	Filipino/Caucasian
08805	14- "	Filipino/Caucasian
27701	14-Other/Comb.	Filipino/Japanese

(cont.)

SUBJECT NO.	RECORD CODE	COMMENT/SPECIFY
26403	14-Other/Comb.	Filipino/Italian
26404	14- "	Chamorro/French
t home during the last 2 weeks:		
	000-Other	Tooth extraction kept S36901 in bed.
Q7a. Health conditions during the past 12 months:		
26203	1700-General	Injury (not specified).
26003	0000-Other	Jaw defect.
19103	0000-Other	Ingrown toenails.
11306	1800-General	Crippled since disabilities/impairment birth, uses walker.
21303	1903-Birth Defect	Clubfoot.
13005	0000-Other	Hearing problem--since birth.
40003	1705-Cuts	Abscess on gum where he had cut it.
39202	1100-General	Bone stuck in throat.
39101	0000-Other	Dizziness (blacked out once), not related to drugs or alcohol.
29004	0800-General	Shaken up (car accident).
13004	1800-General	School suggest got hearing problem.
Q12c. Reason(s) for good health doctors visit during the past 12 months:		
13004	7-Prenatal Post	Reason for visit: school suggest thought person had hearing problem.
Q14b. Reason(s) for dentist visits during the past 12 months:		
20204	08-Other	Injuries (lost tooth).
20101	08-Other	"Toothache. Only cut nerve surgery," had to do with nerve, not an extraction.
40003	08-Other	Cut gum and had an abscess.

SUBJECT NO.	RECORD CODE	COMMENT/SPECIFY
-------------	-------------	-----------------

Q14i. Dental insurance during the past 12 months:

04002	06-	"	Fiduciary
17302	06-	"	Metropolitan
05701	06-	"	BC (John Hancock)
05702	06-	"	BC (John Hancock)
05703	06-	"	BC (John Hancock)
16301	06-	"	Staywell
31301	06-	"	Nambo
21102	06-	"	Nambo
00801	06-	"	Lincoln
12603	06-	"	UIU
07903	06-	"	John Hancock
07904	06-	"	John Hancock
07905	06-	"	John Hancock
01401	06-	"	Blue Cross
01402	06-	"	Blue Cross
01403	06-	"	Blue Cross
01404	06-	"	Blue Cross
38501	06-	"	UIU
13705	02-GMHP		Subject was covered under 02-GMHP during his visit to the dentist, but presently no dental insurance.

APPENDIX C
INTERVIEW SCHEDULE
(QUESTIONNAIRE)

HEALTH SURVEY
VARIABLE DEFINITIONS FOR ANSWERS TO SURVEY

FIGURE: Demographic variables

- I2E - Was this grade completed?
- I2F - Country or Island where this grade was finished
- I2G - Ethnic group
- I45 - Any health insurance?
- I45A - Who is insured and which insurance plan?
- I47A - Do you receive welfare (OAA, AB, APTD)?
- I47B - Food stamps?
- I47C - Medicaid?
- I47D - GHURA Housing Assistance/Low income family housing subsidy?
- I47E - Other, specify: _____

II. TITLE: Health Conditions

- I7A1-I7A3 - During the past 12 months (not including the last 2 weeks) has anyone in this household had any of the following health problems? If yes, who, and what are the conditions?
- I3C - During the last 2 weeks, for what condition was the person in the hospital?
- I4B - During the last 2 weeks, what was the primary causal illness or injury that kept the person in bed?
- I5B - During the last 2 weeks, what was the primary causal illness or injury that the person had?
- I8C - During the past 12 months, for what illness or injury was the person hospitalized?

III. TITLE: DRS and sources of care:

- I3F - Name of doctor of the person in the hospital for last 2 weeks
- I4F - Name of doctor of the person in bed at home for sickness for the last 2 weeks
- I5F - Name of the doctor of the person restricted from activities for the last 2 weeks
- I6A - The name of the doctor who was visited.
- I50A - Which doctor did this person visit? (with regards to diagnosis and treatment over the past 2 weeks)

Health Survey
Variable Definitions for answers to survey
Page 2

III. TITLE: DRS and sources of care (con't)

- Did the person visit another doctor at another location? (with regards to diagnosis and treatment over the past 2 weeks)
- Name of the doctor of the person who was in the hospital for the past 12 months

- I9C - Name of any other doctor this person may have visited
- I12A - Who was the doctor visited for immunization, x-rays, or advise?
- I12D - Did the person visit another doctor at another location?

IV. TITLE: Dental visits

- I14A - Who went to see the dentist? Who was the dentist?
- I14D - Did this person visit another dentist at another location?
- I14B1-I14B3 - What were the reasons for the dental visit?
- I14I - By which insurance is this person covered for dental visits?

V. TITLE: Good health doctor visits reasons

- I6C - What was the reason for the visit to a doctor when under good health?
- I12C1-I12C3 - What was the reason for the visits to a doctor with no injury at the time and in good health?

VI. TITLE: Hospital stays

- I3B - How many days during the last 2 weeks was the person in the hospital?
- I8B - How many days during the past 12 months was the person in the hospital?

VII. TITLE: Work days missed

- I4L - During the last 2 weeks, how many days did illness or injury keep the person from going to work for which pay is received?
- I5 - During the last 2 weeks, how many days did illness or injury (with regards to restricted activities) keep the person from going to work for which pay is received? (Record # of days or "99" for N/A)

VII. TITLE: Work days missed (con't)

- I10B - Of the total # of days in bed at home, how many days did illness or injury (with regards to being in bed at home for the last 12 months) keep the person from going to work for which pay is received?
(Record # of days or "99" for N/A)

VIII. TITLE: School days missed

- I4M - During the last 2 weeks, how many days did illness or injury (with regards to being in bed at home over the past 2 weeks) keep the person from going to school? (record # of days, or "99" for N/A)
- I5J - During the last 2 weeks, how many days did this illness or injury (with regards to restricted activities over the past 2 weeks) keep the person from going to school? (record # of days or "99" for N/A)
- I10C - Of the total # of days in bed at home over the past 12 months, just mentioned, how many days did illness or injury keep the person from going to school? (record # of days)
- I11C - Of the total # of days of the restricted activities over the past 12 months just mentioned, how many days did illness or injury keep the person from going to school? (record # of days)

IX. TITLE: Individual 12 month income

- I48C - During the past 12 months, approximately what was the person's income before taxes?

X. TITLE: Recognition & retention of condition

- I3D - When did the person first notice or get this condition which required a hospital stay over the past 2 weeks?
- I3E - Does the person still have this condition at this time?
- I4C - When did the person first notice or get this condition which required to be in bed at home over the last 2 weeks?
- I4D - Does the person still have this condition at this time?
- I5C - When did the person first notice or get this condition with regards to restricted activities over the last 2 weeks?
- I5D - Does the person still have this condition at this time?

House Number: _____
Questionnaire I.D. # _____
Interviewer's Number: _____
Village Area: _____
Date: _____
Coder's Name: _____

A SURVEY TO DETERMINE THE HEALTH STATUS
OF THE POPULATION OF GUAM

ADMINISTERED BY THE
COMMUNITY DEVELOPMENT INSTITUTE
COLLEGE OF AGRICULTURE AND LIFE SCIENCES
COOPERATIVE EXTENSION SERVICES
UNIVERSITY OF GUAM

for

GUAM HEALTH PLANNING AND DEVELOPMENT AGENCY
GOVERNMENT OF GUAM

FUNDED IN PARTS
GHPDA - DESS MONEY

NARRATIVE REPORT AND

House Code			(2-4)		
Person (5-6)	Card (7-8)	Village (9-10)			
0	0	1	0		

(NOTE: To be completed by interviewer after the interview has been conducted, and all questions are answered. Complete this page in your home or our office.)

Interview Completed during visit number 1 2 3 4

Narrative Report: (Include comments on accuracy of responses, interviewer interference, etc.)

Comments or Problems that you encountered that you feel would be helpful to us.

Concerning the interview on the whole:

1. Satisfactory _____
2. Unsatisfactory (explain) _____
3. Refused (explain) _____
4. Not Available (explain) _____
5. Other (explain) _____

Length of Interview _____
(Hours:Minutes)

INTERVIEWER SIGNATURE

DATE

Household Interview Number
(Pre-Assigned)

Time Interview Began _____

Card Identification

House (2-4)					
Person (5-6)	Card (7-8)	Village (9-10)			
0	0	1	1		

Address _____
(House number and street)

_____ (village)

Mailing Place: (See Card Y for code)

Interviewer (24-25)

(26-27)

Map of House Location

(If more space is needed, use back of sheet)

NOTE: Interview must be an adult member of the household.
(Preference: Head of Household or Spouse)

Date:

Month (28-29)	Day (30-31)	Year (32-33)

How many persons have lived in or moved to this household since February 1, 1983? (Identify individuals who regularly eat and sleep in this household. Do not include individuals off-island attending school, family in military stations off-island).

(34) (35)

Are any of these temporarily living in this household? Code actual number (col. 23-24).

(36) (37)

WHAT IS YOUR NAME, PLEASE?

Name of Respondents (contact persons)

(38) (39)

In case we need to get in touch with you for clarification of your questionnaire, we would like your mailing address and a phone number.

Mailing Address:

Phone Number:

Home:

Work:

Other:

1. To begin with would like you to tell us the first names of all the members of this household who usually live, eat, and sleep here. Begin with the head of the household listing all adults, children, and infants.
2. What is the relationship of all others to ____ (head of household)? (See CARD A for code)
 - (a) What are the ages of all members of this household? (Record actual age after last birthday)
 - (b) Their Sex?
Record (1) = Male
(2) = Female
 - (c) For those 16 years and older, what is their marital status at the present time? (Show CARD B to Respondent)
Record (1) = single (never married)
(2) = married only once
(3) = married more than once
(4) = common-law
(5) = widowed
(6) = separated
(7) = divorced
 - (d) For those 16 years and older, what is the highest grade ____ attended in school? (See CARD C for code)
 - (e) Did they finish that grade?
Record (1) = Yes
(2) = No (Skip to Question 2(g))
 - (f) (If Yes to 2(e)) Where did they finish that grade?
Record ____ (See CARD Q for code)
Country or Island
 - (g) What ethnic group does each member of this household identify with? (CARD D, Ethnicity)

[illegible]

PROBE: Are there any persons who usually lived, ate, and slept here during the past year but are now away for some reason. If YES, what is this person's name? Then ask Question 2 through 2(g).

14. During the past 12 months, did anyone in the household visit a DENTIST for any reason?
Record (1) = Yes
(2) = No (Skip to Question 15)
- (a) If YES, who went and which dentist did ____ visit?
(See CARD F for code)
- (b) What was/were the reason(s) for the visit(s)?
(CARD J DENTAL CONDITIONS)
- (c) How many times did ____ visit this dentist?
Record number of times
- (d) Did ____ visit another dentist at another location?
If YES, who was this dentist? (See CARD F for code).
If NO, record 99 and skip to Question 14(h).
- (e) How many times did ____ visit this dentist?
Record number of times
- (f) Did ____ visit a different dentist at different location from those mentioned above?
- (g) How many times did ____ visit this dentist?
Record number of times
- (h) Is ____ covered by Dental Insurance?
Record (1) = Yes
(2) = No (Skip to Question 15)
- (i) By which insurance is ____ covered? (CARD K, Dental Insurance)

[illegible][illegible]

90

CARD C - Question 2d
Education

Trade Completed

```
entary  - K  1  2  3  4  5  6  7  8
```

School - 9 10 11 12

(3) College - 1 2 3 4 5 or more years

CARD D - Question 2g
Ethnicity

- 01 - Black
02 - Caucasian
03 - Chamorro
04 - Chinese
05 - Filipino
06 - Indian
07 - Japanese
08 - Korean
09 - Saipanese
10 - T.T. Islander (Specify: _____)
Island Group
11 - Vietnamese
12 - Other Single (Specify: _____)
13 - Chamorro/Filipino
14 - Other Combination (Specify: _____)

A SURVEY TO DETERMINE THE HEALTH STATUS
OF THE POPULATION ON GUAM

INTERVIEW SCHEDULE
CODE CARDS

CARD F - Questions 3f,h,k; 4f,j; 5f; 8d; 9a,e; 12d,f; 13c,e;
14d; 20a,b; 50a,c
Doctors and Health Facilities on Guam

- 00 - NO PREFERENCE/NO CHOICE 06 - FAMILY HEALTH PLAN (FHP) (TAMUNING)
- (ASAN)
01-Dr. Acosta
- 02 - CARLOS HEIGHTS CLINIC (TUMON, TAMUNING)
02-Dr. Santos (Tumon, Tamuning)
03-Dr. M. Kallingal (Harmon, Dededo)
04-Dr. S. Kallingal (Tumon, Tamuning)
- 03 - CRUZ PHARMACY (TAMUNING)
05-Dr. Olivia Cruz
- 04 - DR. CURRY'S OFFICE (GCIC, AGANA)
06-Dr. Curry
- 05 - DEDEDO MEDICAL CENTER (DEDEDO)
07-Dr. Atendido
08-Dr. Carrera
- 06 - FAMILY HEALTH PLAN (FHP) (TAMUNING)
00-Dr. McDonald
09-Dr. Aquino
10-Dr. Binkley
11-Dr. Burkhard*
12-Dr. Camacho
13-Dr. Cariaga
14-Dr. Eigner*
15-Dr. Fishman**
16-Dr. Freeman
17-Dr. Dorneweerd
18-Dr. Huitema
19-Dr. Larive*
20-Dr. Lombard
- 24-Dr. Oliver
25-Dr. Rozychi
26-Dr. Ryan*
27-Dr. Silan**
28-Dr. Smith
29-Dr. Stadler
30-Dr. Wanlass
31-Dr. Wenner
- 07 - DR. GARRETT'S OFFICE (GCIC, AGANA)
32-Dr. Garrett
- 08 - GOOD SAMARITAN CLINIC AND SURGICENTER (CHALAN SAN ANTONIO, TAMUNING)
33-Dr. Bollinger
34-Dr. Hayes*
35-Dr. Matthews**
36-Dr. Macaraeg
37-Dr. Soriano
38-Dr. Teiche
39-Dr. Werthman
- 09 - GUAM MEDICAL CLINIC (CHALAN SAN ANTONIO, TAMUNING)
40-Dr. Sirilan
- 10 - GUAM MEMORIAL HOSPITAL (GMH) (TAMUNING)
- 11 - GUAM POLY CLINIC (TAMUNING)
41-Dr. Chiu
42-Dr. Griley
43-Dr. Hong

CARD F - Continued
Doctors and Health Facilities on Guam

- 12 - I.T.C. CLINIC # (TAMUNING)
44-Dr. Aguelles
45-Dr. Silio
46-Dr. Boonprakong
47-Dr. Boonprakong
48-Dr. Sison
- 13 - I.T.C. CLINIC #2 (TAMUNING)
50-Dr. K. Chen
- 14 - FAMILY CLINIC (I.T.C., TAMUNING)
51-Dr. Duenas
52-Dr. Ericson
53-Dr. Perez
54-Dr. Taitano
- 15 - MARIANAS MEDICAL CLINIC (TAMUNING)
55-Dr. Guzman
- 16 - DEPARTMENT OF PUBLIC HEALTH AND SOCIAL SERVICE (MANGILAO)
00-Dr. Parents (Mangilao)
- 17 - DR. SABLAN'S CLINIC (MONGMONG/TOTO/MAITE)
56-Dr. Sablan
- 18 - DR. SAGISI and DR. BATOYAN'S CLINIC (GOOD SAMARITAN CLINIC, CHALAN SAN ANTONIO, TAMUNING)
57-Dr. Batoyan
58-Dr. Sagisi
- 19 - ST. ANTHONY'S CLINIC (TAMUNING)
59-Dr. Concepcion
60-Dr. Salvador
- 20 - SEVENTH DAY ADVENTIST CLINIC (TAMUNING)
00-Dr. Werthman
61-Dr. Boyle
62-Dr. Holm
63-Dr. Hanson
64-Dr. Gerling
65-Dr. B. Steinman
66-Dr. W. D. Steinman
67-Dr. Rick
68-Dr. White
00-Dr. Newbold
- 21 - TAMUNING MEDICAL CLINIC (TAMUNING)
69-Dr. Chang
- 22 - DR. TOLENTINO'S OFFICE (I.T.C., TAMUNING)
70-Dr. Tolentino
- 23 - DEDEDO DENTAL CLINIC (DEDEDO)
71-Dr. Walker
- 24 - FHP DENTAL CLINIC (TAMUNING)
72-Dr. Chun
73-Dr. Goldstein
74-Dr. Ives
75-Dr. Soriano
76-Dr. Walpole
- 25 - ST. ANTHONY'S DENTAL CLINIC (CHALAN SAN ANTONIO, TAMUNING)***
77-Dr. Yumang
- 26 - G.I.T.C. DENTAL CLINIC (TAMUNING)
78-Dr. Labalan
- 27 - GUAM POLY DENTAL CLINIC (TAMUNING)
79-Dr. Silos
- 28 - DR. MADARANG'S CLINIC (HARMON, DEDEDO)
80-Dr. Madarang

CARD F - ContinuedDoctors and Health Facilities on Guam

29 - MARIANAS DENTAL CLINIC 39 - EAST WEST ORIENTAL CLINIC

31 - ORTHODONTICS CLINIC
CHALAN SAN ANTONIO,
TAMUNING)
84-Dr. Camacho
85-Dr. Hoffman

32 - DEPARTMENT OF PUBLIC
HEALTH AND SOCIAL
SERVICES (MANGILAO)
86-Dr. Adamson
87-Dr. Mayberry
88-Dr. Sterritt

33 - DR. REYNOLDS & ASSOC.
(GCIC, AGANA)
89-Dr. Fleischer
90-Dr. Post
91-Dr. Reynolds
92-Dr. Romero
93-Dr. Yasuhiro

34 - SEVENTH DAY ADVENTIST
DENTAL CLINIC (YPAO,
TAMUNING)
94-Dr. Agnette
95-Dr. Guth
96-Dr. Lee
97-Dr. McFarlane

35 - DR. TROYER'S CLINIC
98-Dr. Troyer

36 - DR. VAN DER PYLE'S
CLINIC (GCIC, AGANA)
99-Dr. Van der Pyle

37 - CHINA ACUPUNCTURE
CLINIC (TAMUNING)
00-Dr. Liu

38 - GUAM ACUPUNCTURE CLINIC ***Clinic 25 corrected from Good
Samaritan Dental Clinic to St.
Anthony's Dental Clinic.

41 - GUAM CHIROPRACTOR CLINIC
(GCIC, AGANA)

42 - DEPT. OF MENTAL HEALTH and
SUBSTANCE ABUSE (OLD GMH
BLDG., TAMUNING)

43 - PSYCHOLOGICAL SERVICES
01-Dr. E. Fuerst
02-Dr. E. Woodyard (Agana)
03-Behavioral Clinic
(Tamuning)

44 - SURUHANA/SURUHAN

45 - HILOG

46 - TRADITIONAL HEALTH HEALER

50 - NURSE PRACTITIONER

51 - UOG CLINIC (MANGILAO)

60 - ZEE'S COMPLEX/CENTURY PLAZA
(TAMUNING)
80-Dr. Wy Chen, GP
81-Dr. Acosta, Optical

47 - NAVAL HOSPITAL (AGANA HTS)
00-Dr. Espirito
00-Dr. Smith

48 - ANDERSEN CLINIC (YIGO)
*Dr. no longer practicing on
island, went off-island.
**Dr. presently located:
-0615, ITC (Tamuning)
-0627, Asia Plaza (Tamuning)
-0835, Micronesia Eye Center
(Tamuning).

CARD I - Questions 6c, and 12 c
Good Health/No injury Doctor's Visit

1 - Prescription/Refill
Health Exam
ment or School Physical
ation Update
Check-up
m
al/Post

8 - Other

CARD J - Question 14b
Dental Conditions

1 - Checkup and/or Cleaning
2 - Filling
3 - Extractions
4 - Fitting for Tooth Replacement, Crown Cap
or False Teeth
5 - Orthodontist
6 - Gum Disease
7 - Others (Specify:_____)

CARD K - Question 14i
Dental Insurance

1 - PUBLIC HEALTH
2 - GMHP
3 - FHP
4 - HML
5 - Military
6 - Other
7 - Federal

CARD Y Question 48a

2 - \$3,001 - \$7,830	\$116 - \$301
3 - \$7,831 - \$11,130	\$302 - \$428
4 - \$11,131 - \$14,430	\$429 - \$555
5 - \$14,431 - \$17,730	\$556 - \$682
6 - \$17,731 - \$25,000	\$683 - \$962
7 - \$25,001 - \$35,000	\$963 - \$1,346
8 - \$35,000 or more	\$1,347 or more

CARD YType of Dwelling Place

01 - All concrete
 02 - Concrete walls, tin roof
 03 - Wood walls, tin roof
 04 - Tin walls, tin roof
 05 - Wood/tin, tin roof
 06 - Mobile home
 07 - Apartment
 08 - Modular
 09 - All wood

APPENDIX E
REFERENCES CITED

REFERENCES

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- (4) 1984-87 Guam Cooperative Extension Service Plan of Work. College of Agriculture and Life Sciences, University of Guam (1984).
- (5) Kasperbauer, Lawrence F., Leonardo M. Rapadas, and Randy L. Workman. Health Status of the Population of Guam: Salient Social and Economic Characteristics. Vol. 1, Community Development Report No. 12, College of Agriculture and Life Sciences, University of Guam (1985).

APPENDIX F
PROJECT PLANNING TEAM

GHPDA/CDI PROJECT TEAM

A number of individuals played an active part in the planning and implementation of the islandwide health behavior survey project. The extent of involvement varied. However, all played significant roles.

GHPDA Personnel

Ms. Priscilla Maanao, former Administrator
 Mr. Michael Duenas, Acting Administrator
 Mr. Jose Mendiola, Deputy Administrator
 Ms. Gloria Long, former Planner
 Ms. Ulla-Katrina Craig, Planner
 Ms. Cynthia Naval, Planner

CDI Personnel

Dr. Lawrence F. Kasperbauer, Project Leader/Director, CDI
 Mr. Leonardo M. Rapadas, Data Collection Computer Entry
 Supervisor
 Dr. Randall Workman, Sociology Extension Specialist

Special recognition and gratitude is due and extended to the team's support staff at GHPDA and CDI. Special thanks are in order for Ms. Anita Manglona for her meticulous management of personnel action paperwork and payroll matters for interviewers and data coders, in addition to her efforts in data preparation and entry (among other valuable tasks). Dangkulo na Si Yuus Maase Ms. Arsenia Procalla for long hours of general assistance as CDI secretary throughout the project and, in particular, for drawing the numerous figures and typing this report. A special thanks is also in order for Extension Specialists Richard Prelosky, Laura Allman, Roberta Flores, and all others who helped in some way to complete the final revision and typing of this report.

The College and Extension administrators are gratefully acknowledged for their support of the project and their understanding of the complex processes involved in carrying out a study of this nature and magnitude.