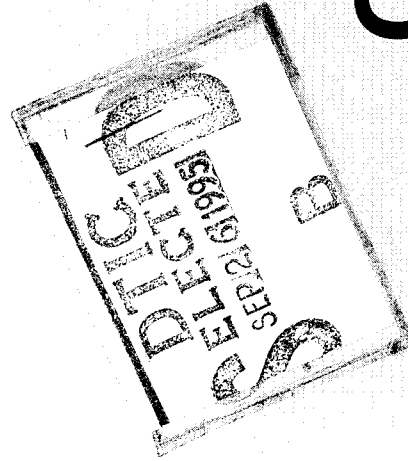




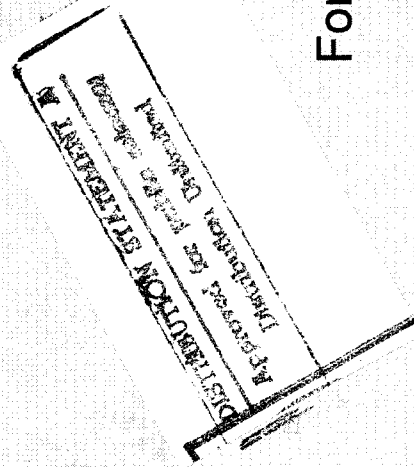
1994 Tri-Service Comprehensive Oral Health Survey Recruit Report

June 1995

NDRI Report No. PR-9502

DATA QUALITY IMPROVED 1

Andrew K. York, CDR, DC, USN
Forrest R. Poindexter, LT COL, USAF, DC
Michael C. Chisick, LTC, USA, DC



ERRATA
AD-A 299 414

5 February 1996

MEMORANDUM FOR MS. GRETCHEN SCHLAG

FROM: Tri-Service Comprehensive Oral Health Survey (TSCOHS)
Lt Col Forrest R. Poindexter
Naval Dental Research Institute Detachment
8901 Wisconsin Avenue
Bethesda, MD 22889-5602

SUBJECT: Errata pages for TSCOHS reports: ADA 299414 and ADA 299418

Enclosed are an errata list and hard copies of corrected pages from our recent reports which I would like you to insert into the master documents in the DTIC file.

ERRATA

Recruit Report: **#ADA 299414**

1. page 4, column 2, line 13 - should read "...the comparison national ..."
2. page 42, fig. 5.4 - shading for Class 2 segment (42.5%) is poor
3. page 56, fig. 6.4 - " " " " (39.5%) " "
4. page 68, fig. 7.4 - pie graph is incorrect.
5. page 90, column 2, next to last line - should read "... in class 3 are 0.2..."

Active Duty Report: **#ADA 299418**

1. page 44, fig. 5.4 - shading for Class 2 segment (37.8%) is poor
2. page 58, fig. 6.4 - " " " " (15.6%) " "
3. page 72, fig. 7.4 - " " " " (79.9%) " "
4. pages 108-111 - data labels on figures and tables were mixed up.

All pages need to be replaced.

If you have any questions, my phone numbers are (301) 295-4474 or DSN 295-4474. My email address is poindex@btdacr.med.navy.mil. Thanks for handling this promptly, since there have been several inquiries from parties interested in ordering the reports.

Forrest R Poindexter

FORREST R. POINDEXTER, Lt Col, USAF, DC
USAF Principal Investigator
TSCOHS

REPORT DOCUMENTATION PAGE

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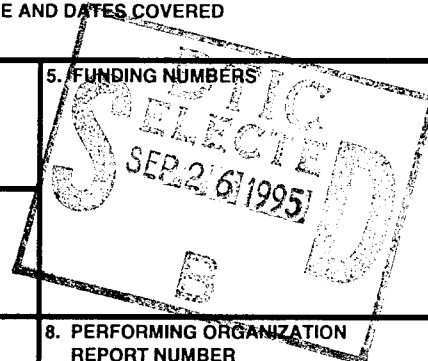
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Forrest Poindexter, LT COL, USAF, DC
Michael Chisick, LTC, USA, DC

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Tri-Service Comprehensive Oral Health Survey Working Group
Naval Dental Research Institute - Detachment
8901 Wisconsin Ave
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This study explores the oral health status, dental treatment needs, dental readiness status, dental utilization, and perceived need for dental care of a random sample of 2,711 Army, Navy, Air Force and Marine recruits. Clinical measures were collected by calibrated examiners; non-clinical data were collected from individual recruits using self-administered questionnaires. Data collection occurred between February and July 1994. Data were weighted by age, sex, and race to reflect the entire recruit population during the data collection period and were analyzed using Stata and Survey Data Analysis (SUDAAN) statistical software. Where possible, oral health outcome measures for military recruits were compared to their employed civilian cohorts. Results show that compared to civilians, military recruits have a higher proportion of decayed teeth and a lower annual dental utilization rate. Only 38.2% of military recruits have seen a dentist within the past year and 61% perceive a need for dental care. Nearly all (99.3%) recruits need some type of dental care with roughly half being in DoD dental readiness class 3. Four-fifths of military recruits require 75 or fewer composite time values of dental care. Treatment needs, dental utilization, and perceived need all vary across demographic characteristics.

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Andrew K. York, CDR, DC, USN
Forrest R. Poindexter, LT COL, USAF, DC
Michael C. Chisick, LTC, USA, DC

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Executive Summary

This report presents findings from an oral health survey of U.S. military recruits at time of entry into the armed services. The survey was conducted from February to June 1994. Data on oral health status, dental treatment needs, DoD dental readiness classification, dental utilization, and perceived need for dental care were collected on Army, Navy, Marine, and Air Force recruits at Ft. Leonard Wood, Naval Training Center Orlando, Marine Corps Recruit Depot Parris Island, and Lackland Air Force Base, respectively. Prior to analysis, the sample of 2,711 was weighted to reflect the population of military recruits for the first half of 1994 (101,072). Where possible, oral health measures on recruits were compared to identical measures on employed civilian cohorts. Key findings from this survey are summarized below:

RESULTS

Oral Health Status

- ◆ Compared to their employed civilian cohorts, military recruits have a statistically significant higher proportion of their decayed, missing, and filled index scores attributable to decay.
- ◆ Edentulism is virtually non-existent in military recruits. Excluding third molars, 87.7% of recruits have no missing teeth and only 2.3% have more than two missing teeth.
- ◆ Prevalence of soft tissue pathology in military recruits is under 5%.

Treatment Needs and DoD Dental Readiness Classification

- ◆ Nearly all (99.3%) military recruits need some type of dental care; roughly half are in DoD dental readiness class 3.
- ◆ Nearly all (96.7%) military recruits need an oral prophylaxis. Oral prophylaxis is the sole treatment need for only 6.7% of military recruits.
- ◆ Restorative care (79.3%) ranks second to oral prophylaxis as the most common area of dental treatment need for military recruits. On average, recruits with restorative needs require 4.4 restorations.
- ◆ Among military recruits in DoD dental readiness class 3, most (92%) require treatment of class 3 conditions in one or two clinical disciplines.
- ◆ Roughly 80% of military recruits require 75 or fewer composite time values (CTV) of dental care.
- ◆ Based on CTV counts, restorative and oral surgical procedures account for 58.2% of all dental treatment needs of military recruits.
- ◆ Different categories of dental treatment need, DoD dental class, and CTV counts were significantly affected by one or more of the following demographic variables: age, race, gender, and education level.

Dental Utilization

- ◆ Only 38.2% of military recruits have seen a dentist within the past year; 30% have either never seen a dentist or have not seen one in three or more years.
- ◆ With the exception of 18-19 year old white females, for every valid statistical comparison that could be made between military recruits and their employed civilian cohorts, military recruits have lower annual dental utilization rates than their employed civilian cohorts.
- ◆ Among recruits, there is no significant difference in dental utilization between males and females within race. Comparing across race, blacks tend to have lower annual dental utilization rates than other racial groups.
- ◆ Examinations and oral prophylaxis account for the largest categories of dental services consumed by all recruits as well as by only those recruits who have seen a dentist within the past year.
- ◆ Annual dental utilization of military recruits varies with gender, marital status, perceived need for dental care, race, education, age, DoD dental class, and region of U.S.

Perceived Need

- ◆ Sixty-one percent of military recruits perceive a need for dental care.
- ◆ No consistent pattern emerges when comparing perceived need for dental care between military recruits

and their employed civilian cohorts. Similarly no consistent pattern in perceived need for dental care exists among recruits both within and across race.

- ◆ Perceived need for dental care by military recruits varies with gender, DoD dental class, region of U.S., dental utilization, and presence of extensive decay or calculus.

CONCLUSIONS

The Tri-Service Comprehensive Oral Health Survey (TSCOHS) is the first military oral health survey to be conducted on a tri-service level, the first to use a standardized protocol, the first to use an automated data collection form, and the first to collect an expansive scope of oral health information in one interconnected database. These factors combine to give the TSCOHS many unique strengths including providing a **solid reference base to which future military oral health surveys may be compared to measure progress on military oral health policy objectives over time.**

Successful incorporation of a full-mouth charting of dental treatment needs into our automated data collection instrument demonstrates, in part, the potential of a computer-based dental patient record (CBDPR). Unlike paper records, data in a CBDPR is readily available for detailed analysis such as time trend analysis, intensity and mix of services consumed, measurement of oral health status and outcomes, and more.

RECOMMENDATIONS

- ◆ The focus of the TSCOHS was chiefly on active duty personnel. Accordingly, because the sample size of recruits in this survey is too small for detailed analysis at the individual service level, **we recommend that each service conduct a larger scale recruit survey.**
- ◆ **We recommend that a survey similar to the TSCOHS should be done on both active duty personnel and recruits on a periodic basis, at least every 5 years, in order to track trends in the oral health of the military population.** Further, we recommend that future surveys capitalize on the benefits of electronic data collection as the TSCOHS did. By greatly reducing errors in data entry and thereby minimizing the need for data clean-up prior to analysis, the use of an automated data collection form enabled the TSCOHS principle investigators to analyze this data and prepare a final report with unprecedented speed. It took less time for the TSCOHS analysis team to complete data analysis and write this report than it took previous military oral health survey analysis teams to complete pre-analysis data clean-up.
- ◆ We anticipate that the military dental services will eventually fully automate their dental patient records. However, until that time arrives, **we recommend** that to monitor the oral health of military personnel that the Tri-Service Dental Corps conduct **a periodic, automated, oral health survey (PAOHS) on the military population,** as follows. First, a PAOHS should be completed on every recruit or officer who enters the service. This will establish

a baseline comprehensive examination database for all incoming military personnel. Second, to capture the active duty population, a PAOHS should be incorporated as a requirement of inprocessing for every permanent change of station (PCS) move. This will establish a baseline comprehensive examination database for service members already in the service as well as provide an update database for the approximately one-quarter of service members who move each year. The update database could be used for both cross-sectional and longitudinal time trend analysis. We are likely to ensure full compliance as well as make data collection more convenient by linking the PAOHS to PCS inprocessing than by using conventional survey methods of identifying select individuals to call in for dental examinations.

- ◆ **When DoD develops its computer-based dental patient record (CBDPR), we recommend that it incorporate data elements routinely collected on oral health surveys.** A CBDPR incorporating oral health survey data would offer several advantages over the current approach of conducting military oral health surveys every 7-10 years. First, a CBDPR would establish a continually updated database from which a random, representative, cross-sectional sample of military personnel could be drawn to profile the oral health of the military population at a given point in time as well as to track trends in population oral health measures over time whenever requested by military health policy makers. This would allow monitoring of oral health trends in the military population as events unfold, not at fixed 7-10 year intervals. In today's health care environment, managers and policymakers face ever increasing demands for

current information on the health status of their catchment populations that only an automated database can reasonably provide. Second, for the first time, a CBDPR database will allow longitudinal dental studies on military personnel i.e. studies that can track oral health measures on individual service members over time. This will greatly enhance studies of outcomes assessment, enabling analysts to probe, for example, to what extent dental care provided in military dental clinics improves the oral health status of service members, the longevity of restorations placed in a patient, the intensity and mix of dental services consumed over time, and other issues.

◆ **We strongly recommend that the Tri-Service Dental Corps Chiefs create a tri-service health services research center.** There are many health service and management information research issues aside from those addressed in this survey that need to be addressed by a talented research team. Because these research issues are complex and require knowledge of many disciplines including, but not limited to, statistics, behavioral science, health policy, economics, law, epidemiology, and computer programming, the center should be staffed with individuals with advanced training and highly developed analytical and communication skills. Further, to ensure the efficiency and effectiveness of such a center, continuity in assigned personnel is essential.

1. BACKGROUND AND METHODS

Background

The most recent dental treatment needs studies were completed by the Army, Navy, and Air Force in the mid-1980's. Because the timing of these surveys was not synchronized and because, at times, each service used different methods to assess oral health status and treatment needs, it is difficult to compare the results of past surveys with one another. The 1994 Tri-Service Comprehensive Oral Health Survey (TSCOHS) was undertaken to overcome this problem. Funding for TSCOHS was provided by the Office of the Assistant Secretary of Defense for Health Affairs in June 1993.

Three common perspectives for determining need for dental care are normative, perceived, and expressed. **Normative need** refers to requirement for care as determined by expert opinion. **Perceived need** refers to the individual's self-assessment of his or her oral health status and **expressed need** (or demand) refers to individuals actively seeking dental care. The TSCOHS explored all three perspectives.

Previous military studies of dental treatment needs have focused almost exclusively on normative need. For most of these studies, the assessment of treatment needs did not use an index but was based on the examiner's best clinical judgment. To date, all military dental needs studies have employed simple descriptive statistics to summarize their findings. None have made

use of more advanced statistical methods, such as multiple or multivariate regression to control for potential confounders. Moreover, few have been able to compare their finding to comparable civilian cohorts because results were not stratified simultaneously for age, sex, and race. Because the methods used in sampling, collecting, and analyzing data have not been consistent, it is difficult to make comparisons over time.

The 1994 TSCOHS had a multifold purpose. First, it was designed to **overcome comparative limitations of previous military dental health surveys by providing standardized methods and simultaneous data collection for each military service**. Second, it was designed to be **more comprehensive in scope than previous military dental health surveys by including measures of perceived and expressed need rather than focusing solely on normative need**. Third, the TSCOHS was **designed so that results for military personnel could be compared with their employed, civilian cohorts**. Finally, by providing a **solid reference base to which the results of future oral health surveys on the military population can be compared**, the TSCOHS will enable military health policymakers to assess progress on oral health policy objectives over time.

Methods

1. Survey Instruments

This cross-sectional survey of active duty personnel and recruits involved collection of quantifiable data from individual airmen, sailors, and soldiers. Oral health status, dental treatment needs, dental utilization, and perceived need for dental care are inherently quantitative data. Satisfaction with military dental care is inherently qualitative. However, we measured satisfaction using ordered categorical scales which give the data a more quantitative flavor.

Data collection was done using two forms:

a clinical exam form and a patient questionnaire. Direct data entry onto notebook computers provided "paperless" data collection and transmission. Clinical exam data was collected by calibrated dental examiners and trained recorders. The computerized satisfaction, utilization, and perceived need questionnaire was completed by each patient in the survey. There are two versions of the questionnaire. The active duty version is longer than the recruit version. Both versions explore dental utilization and perceived need for dental care. However, because recruits have not yet sought care in military dental clinics, only the active duty questionnaire probes satisfaction with military dental care.

2. Clinical Examination

The clinical exam form is divided into five sections. The first section, patient demographic data, was collected by the dental examiner, questioning the patient as necessary to insure accuracy. The remaining sections of the clinical exam collected data on oral health status and treatment needs including prevalence of soft tissue conditions, caries status, clinical-discipline-specific treatment needs, and DoD dental classification. All clinical data were recorded first without radiographs and then separately with radiographs. Collecting data without radiographs was necessary to allow valid comparisons of the oral health status of military personnel versus their civilian cohorts because the comparison national civilian oral health survey did not use radiographs. However, diagnosis using current radiographs was also required to fully assess oral conditions, treatment needs, and DoD dental classification. Panoramic radiographs less than 5 years old and bite-wing radiographs less than 2 years old were considered current. Examiners were instructed to take new radiographs, as necessary, for thorough patient diagnosis.

3. Patient Questionnaire

The patient questionnaire is a composite. Questions on dental utilization and perceived need were drawn from Oral Health of U.S. Employed Adults and Seniors: 1985-86; U.S. Department of Health and Human Services, National Institute of Dental Research, NIH Pub. No. 87-2868, 1987, Bethesda, MD. This survey is the most recent study of adult oral health by the National Institute of Dental Research. Using these questions allows direct comparison between the civilian and military populations on these measures. Questions on satisfaction with military dental care were drawn chiefly from two sources: a medical satisfaction questionnaire prepared by the RAND Corporation to evaluate the CHAMPUS Reform Initiative (CRI) and the Dental Satisfaction Questionnaire (DSQ) prepared for the RAND Health Insurance Experiment. We chose these questions because they were the result of extensive development by RAND staff to evaluate the multiple components of the quality of health care. In addition, the CRI questions have been field tested with a military population.

4. Sampling Strategy

The population of interest for this study is all active duty airmen, sailors, and soldiers in the continental United States. The sampling strategy was developed by Molajo and Associates, Consultants in the Mathematical Sciences (a civilian firm specializing in survey sampling design). Active duty personnel information was provided by the Defense Manpower Data Center. The complex sampling scheme utilized to draw the non-recruit sample

is described in the non-recruit report. Recruits were sampled using single stage, stratified, systematic random sampling. Historic data of the size and composition of the most recent year's recruit population were used to determine sample size and what specific subgroups of interest were feasible to sample in sufficient numbers to allow comparisons across study outcome measures. Military recruits are predominantly white or black males. In order to sample sufficient numbers of females and non-white, non-black males to allow valid statistical comparisons of their outcome measures with other subgroups of the recruit population, we oversampled these groups. During analysis, data were weighted back to the proportional representation of each group in the actual recruit population. The recruit sample size was 2,711 which represented the 101,072 recruits that passed through the recruit training facilities of the Air Force, Army, Navy, and Marine Corps during the six month data collection period. Table (1.1) provides a breakout of the recruit sample and estimated population by race, gender, and age interval.

5. Human Subject Use

The TSCOHS protocol was reviewed by the Army Human Use Review and Regulatory Affairs Division; the Human Use Review Board, Naval Health Sciences Education and Training Command; and the Air Force Surgeon General's Clinical Investigation Committee. The protocol was found to be in full compliance with human use guidelines defined in Title 45, Code of Federal Regulations, Part 46 (Protection of Human Subjects).

Table 1.1

COMPOSITION OF SAMPLE AND ESTIMATED POPULATION BY AGE INTERVAL, RACE, AND GENDER							
AGE INTERVAL	RACE	MALE		FEMALE		TOTAL	
		NUMBER IN SAMPLE	ESTIMATED POPULATION	NUMBER IN SAMPLE	ESTIMATED POPULATION	NUMBER IN SAMPLE	ESTIMATED POPULATION
18-19	WHITE	701	26,221	221	7,949	922	34,170
	BLACK	198	6,620	60	2,017	258	8,637
	OTHER	118	3,508	48	2,089	166	5,597
	ALL GROUPS	1017	36349	329	12055	1346	48404
20-24	WHITE	566	22,489	216	8,192	782	30,681
	BLACK	190	7,108	67	2,452	257	9,560
	OTHER	116	3,336	34	1,297	150	4,633
	ALL GROUPS	872	32933	317	11941	1189	44874
25-29	WHITE	56	2,442	36	1,395	92	3,837
	BLACK	17	803	13	580	30	1,383
	OTHER	15	476	2	126	17	602
	ALL GROUPS	88	3721	51	2101	139	5822
30-35	WHITE	10	459	8	459	18	918
	BLACK	4	286	6	363	10	649
	OTHER	6	224	3	181	9	405
	ALL GROUPS	20	969	17	1003	37	1972
TOTAL POPULATION		1,997	73,972	714	27,100	2,711	101,072

6. Comparative Sample

Where possible, results from this recruit survey were compared with results from the Oral Health of U.S. Employed Adults and Seniors: 1985-86 (NIDR, 1987). In order to make these comparisons, the data from both samples were stratified simultaneously by age interval, gender, and race. Appendix (B) displays a breakout of the employed, civilian sample and estimated population by race, gender, and age interval.

7. Definition of Major Study Variables

Key Outcome Variables

Key outcome variables include dental utilization, perceived need for dental care, satisfaction with military dental care, oral health status, and dental treatment needs. Dental utilization was determined by measuring the interval since last dental visit, as well as reason for last dental visit. Perceived need was assessed by asking patients whether they felt they needed dental care.

Satisfaction with care was determined by using a multicomponent scale modified for dentistry in the military setting. Components of overall patient satisfaction include subscales to assess the following: interaction with care providers, access to care, availability / convenience of care, pain management, quality of clinical facilities, continuity of care, quality of care, and general satisfaction. Some satisfaction items, such as dental utilization and perceived need, are in a multiple choice format. Others are measured using a five-point

Likert scale, with one representing "very satisfied" and five representing "very dissatisfied".

Assessment of oral health status involved using several indices. To measure cumulative caries experience, we used the DMF (decayed, missing, and filled) index. Both DMFT (teeth) and DMFS (surfaces) were determined. The index is a simple count of the number of decayed, missing, and filled teeth or surfaces for each patient.

Periodontal health status was assessed using the Periodontal Screening and Recording (PSR) index. The PSR combines data on periodontal probing depth, gingival bleeding, and the presence of calculus and other local factors of periodontal significance to determine the level of periodontal treatment required for individuals and populations.

A Department of Defense (DoD) dental classification was assigned to each tooth and for each clinical discipline. Teeth were classified as class I (requiring no dental treatment), class II (requiring treatment but not expected to become a dental emergency within the next 12 months), class III (requiring treatment but likely to become a dental emergency within the next 12 months). A detailed summary of the criteria for the DoD dental classification is found in Appendix C.

In addition to these indices, we collected prevalence data on certain dental conditions that generate treatment requirements, such as oral soft tissue lesions and edentulism.

Key Explanatory Variables

Because previous studies have shown that demographic variables are strong correlates with the outcome variables mentioned above, we collected age, gender, race, and education level on every subject. In addition, branch of service, rank, type of service unit, and number of years of active duty service were collected because these variables are of potential interest to military health policymakers.

8. Measurement Error and Bias

To minimize measurement error and bias during data collection, prior to the start of data collection, each examiner participated in a three-day training/calibration course. During this course, data collection rules were explained and examiners participated in training exercises to become familiar with the indices and the computerized examination instrument. Examiners were given calibration manuals so they could review what they were taught, as necessary, at a later date. Inter- and intra-examiner reliability was tested on the DMF (decayed, missing, filled) and PSR (Periodontal Screening and Recording) indices and brought to an acceptable level, determined through the calculation of Cohen's kappa statistics and intraclass correlation coefficients. To assure that consistency in measurement was being maintained, the principal investigators conducted site visits during the data collection period and performed additional calibration checks for all examiners. To assure that all examinations were conducted using

consistent-quality diagnostic instruments, new dental explorers, front-surface mirrors, and World Health Organization-type periodontal probes were provided to each examiner. All data were collected in military dental clinics, under similar conditions and with proper lighting.

The survey data collection instrument was field tested by the Army Research Institute for the Behavioral and Social Sciences and recommended modifications were made. To avoid imparting bias to respondents who had inquiries about the survey questionnaire, examiners were instructed to respond to such inquiries in a value-neutral way. That is, examiners were instructed that when explaining the contents of a question to a patient, they were to avoid implying that any specific answer was preferred. Instead, examiners were to counsel patients, "No single answer is correct. Just tell us what you think." Also, patients were assured that their responses were anonymous and confidential.

Use of fully computerized questionnaires for data collection provided several advantages. First, it allowed skip patterns in the questionnaire to be automated. This solved two problems commonly encountered when paper questionnaires are used. The automated questionnaire prevented respondents from getting lost and thereby failing to respond to appropriate questions as well as giving responses to inappropriate questions. Second, use of computerized questionnaires allowed us to limit response entry to legitimate values only, thereby eliminating entry of "nonsense" responses oftentimes encountered with paper questionnaires. A further

advantage of using computers for data collection was that they were programmed to use input data to immediately calculate certain summary statistics for each study participant. For example, the computer was programmed to use examination data to calculate an individual's DMFS and PSR scores and frequency counts

of specific dental procedures. Thus, an individual's data record contains raw examination and survey data, plus individual summary statistics. Later, during data analysis, individual records were combined to generate group summary statistics.

9. Data Analysis

Data were analyzed using Stata and Survey Data Analysis (SUDAAN) statistical software. Statistical significance was determined with an alpha of 0.05 for all analyses.

2. ORAL HEALTH STATUS OF MILITARY RECRUITS

Recruit Oral Health Status

The TSCOHS evaluated oral health status using the standard epidemiologic measures of cumulative, lifetime caries experience - DMFT (decayed, missing and filled teeth) and DMFS (decayed, missing and filled surfaces). For DoD recruits, mean and median DMFT are 6.14 and 6 respectively; mean and median DMFS are 10.53 and 8, respectively. Figure 2.1 shows mean DMFS and the decayed, missing, and filled components for each race. Table 2.1 gives DMF scores stratified by gender and by race. The following statistically significant differences were found: Males

have lower DMF scores and higher (D) component than females; likewise blacks have lower DMF scores and higher (D) components compared to whites. Lower than average DMF scores with a higher than average (D) component are suggestive of low utilization of dental care. The race "other" (not white, black, Hispanic, or Asian), likely to be predominately Native American, have higher DMF scores compared to whites. Table 2.1 also shows that no recruits were edentulous in either the maxillary or mandibular arch.

MEAN DMFS AND COMPONENTS
(FOR ALL DOD RECRUITS)

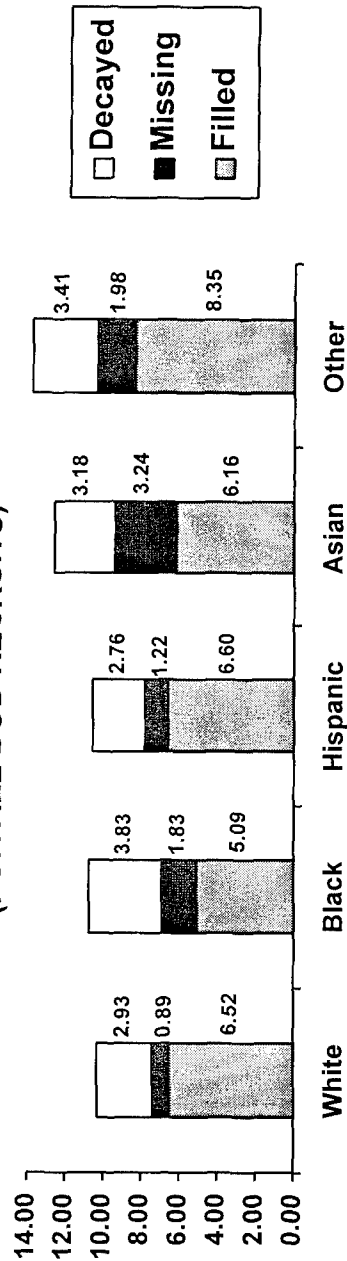


Figure 2.1

MEAN AND MEDIAN DISTRIBUTION OF VARIOUS ORAL HEALTH STATUS MEASURES (FOR ALL DOD RECRUITS)								
Oral Health Status Measure	Gender		Race			Total		
	Male	Female	White	Black	Hispanic		Asian	Other
Estimated Population	73,972	27,100	69,607	20,229	7,809	1,682	1,745	101,072
HARD TISSUE (TOOTH) STATUS								
Mean DMFT	6.02	* 6.47	6.15	5.99	6.04	6.50	* 7.58	6.14
95% CI (DMFT)	[5.83-6.21]	[6.15-6.78]	[5.96-6.35]	[5.61-6.37]	[5.46-6.13]	[5.38-7.62]	[6.41-8.76]	[5.98-6.30]
Median DMFT	6	7	6	5	6	6	8	6
Mean DMFS	10.32	11.12	10.34	10.75	10.58	* 12.57	* 13.74	10.53
95% CI (DMFS)	[9.88-10.75]	[10.36-11.88]	[9.89-10.78]	[9.88-11.62]	[9.15-12.01]	[9.55-15.6]	[10.59-16.89]	[10.16-10.91]
Median DMFS	8	9	8	8	8	10	12	8
Mean DFT	5.81	* 6.17	5.97	* 5.61	5.79	5.85	* 7.18	5.90
95% CI (DFT)	[5.62-5.99]	[5.88-6.46]	[5.78-6.16]	[5.26-5.96]	[5.25-6.32]	[4.89-6.81]	[6.13-8.22]	[5.75-6.06]
% D / DFT	40.9	* 34.6	37.0	* 48.8	35.6	41.2	34.7	39.2
Mean DFS	9.27	9.65	9.45	* 8.92	9.36	9.33	* 11.76	9.37
95% CI (DFS)	[8.90-9.65]	[9.05-10.24]	[9.06-9.84]	[8.25-9.57]	[8.21-10.51]	[7.48-11.19]	[9.48-14.05]	[9.06-9.69]
% D / DFS	31.7	* 24.0	31.0	* 42.9	29.5	34.1	29.0	33.2
% totally edentulous maxilla								0.0
% totally edentulous mandible								0.0

Each race compared to white, male compared to female

Tables 2.2(a-c) and 2.3(a-c) provide mean decayed and filled (DF) statistics stratified by race, age group, and gender for military recruits and their civilian counterparts. Civilian statistics are taken from the Oral Health of U.S. Adults and Seniors: 1985-86; (NIDR, 1987). **Striking differences are apparent.** Table 2.2a shows the mean

DFS and percent (D) of DFS are 9.37 and 33.2 for recruits. These same measures are 12.92 and 15.5 for civilians when civilian data are simultaneously adjusted for age, race, and gender to the military recruit population. Figure 2.2 graphically depicts these differences for decayed and filled surfaces.

**Distribution of Decayed and Filled Surfaces
(Recruits Compared to Civilian Cohorts)**

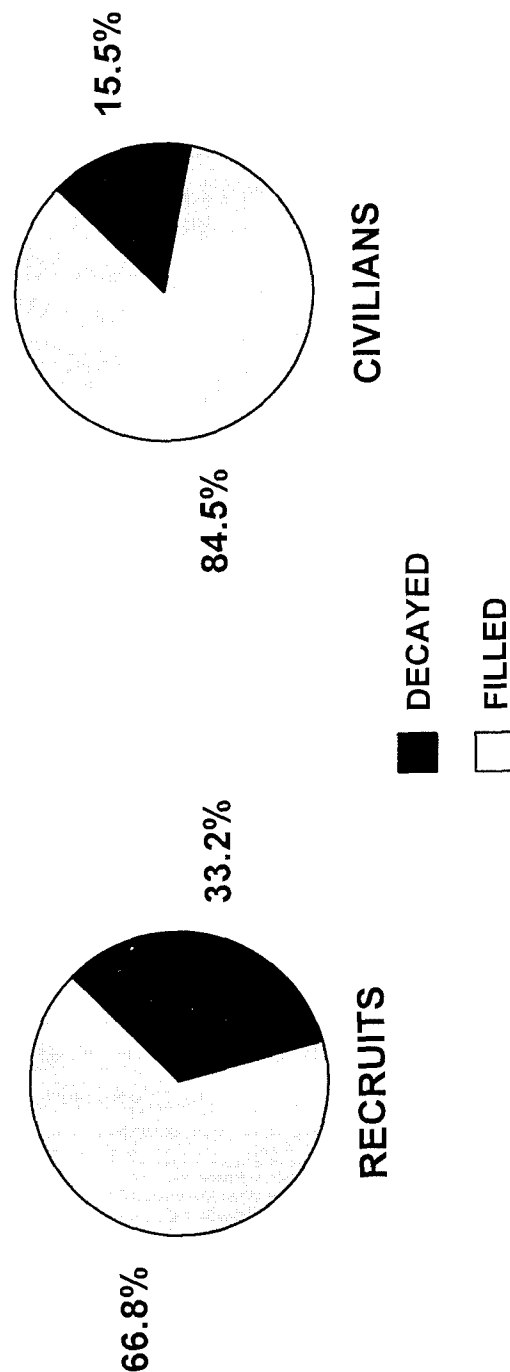


Figure 2.2

Table 2.2a

Percent components of decayed (D) and filled (F) tooth surfaces (S) MALES AND FEMALES COMBINED (Military Recruits compared to Civilian)									
WHITE									
Military					Civilian *				
AGE	Mean DFS	St Dev	% D	% F	Mean DFS	St Dev	% D	% F	
18-19	8.19	6.84	33.1	66.9	12.04	8.50	10.3	89.7	
20-24	10.27	9.79	31.4	68.6	14.51	11.96	10.2	89.8	
25-29	12.91	8.66	19.0	81.0	18.08	13.38	8.7	91.3	
30-34	14.52	9.06	23.2	76.8	22.50	15.51	5.8	94.2	
All Ages	9.44	8.51	31.0	69.0					
BLACK									
18-19	7.33	6.70	44.3	55.7	10.40	9.25	42.4	57.6	
20-24	9.25	7.62	45.1	54.9	12.19	9.84	23.4	76.6	
25-29	11.22	9.25	39.8	60.2	15.13	12.22	18.9	81.2	
30-34	20.42	14.29	25.4	74.6	13.49	11.16	16.1	83.9	
All Ages	8.92	7.99	42.9	57.1					
BOTH BLACK AND WHITE									
18-19	8.09	6.91	35.0	65.0	11.96	8.56	11.8	88.2	
20-24	9.93	9.14	34.2	65.8	14.05	11.72	11.7	88.3	
25-29	12.66	8.68	23.6	76.4	17.50	13.31	9.7	90.3	
30-34	18.62	13.01	21.8	78.2	21.30	15.27	6.6	93.4	
All Ages	9.37	8.41	33.2	66.8	12.92 **	not avail.	15.5 **	84.5 **	

* Civilian data taken from the National Institute of Dental Research Survey:

ORAL HEALTH OF UNITED STATES ADULTS (1985-86)

** Civilian totals are adjusted by age, gender, and race to the military population

Military recruits have lower DF scores with a significantly higher (D)ecayed component than their civilian counterparts. Low DMF scores with a high (D)

component are suggestive of low utilization of dental care.

Table 2.2b

Percent components of decayed (D) and filled (F) tooth surfaces (S)									
MALES ONLY									
(Military Recruits compared to Civilian)									
WHITE									
AGE	Military			Civilian *			Mean DFS	St Dev	% F
	Mean DFS	St Dev	% D	% D	% F	% F			
18-19	8.32	6.96	34.6		65.4		10.90	7.41	10.5
20-24	10.42	10.18	33.4		66.6		14.01	12.40	13.7
25-29	12.92	9.37	18.9		81.1		16.74	12.99	13.0
30-34	14.51	10.74	19.4		80.6		21.92	15.76	7.4
All Ages	9.51	8.75	32.8		67.2				
BLACK									
18-19	7.33	6.39	49.2		50.8		12.58	9.53	54.6
20-24	8.51	7.72	47.4		52.6		11.60	8.17	23.3
25-29	11.35	9.91	41.5		58.5		15.40	12.95	20.2
30-34	21.25	19.80	23.5		76.5		12.53	9.43	18.5
All Ages	8.39	7.85	46.5		53.5				
BOTH BLACK AND WHITE									
18-19	8.10	6.81	37.2		62.8		11.00	7.58	13.4
20-24	9.91	9.49	36.1		63.9		13.38	11.89	14.9
25-29	12.85	9.32	22.9		77.1		16.36	12.92	13.73
30-34	18.14	15.19	21.7		78.3		20.78	15.45	8.21
All Ages	9.26	8.57	35.5		64.5				

* Civilian data taken from the National Institute of Dental Research Survey:
ORAL HEALTH OF UNITED STATES ADULTS (1985-86)

Table 2.2c

Percent components of decayed (D) and filled (F) tooth surfaces (S) FEMALES ONLY (Military Recruits compared to Civilian)									
WHITE									
AGE	Military				Civilian *				
	Mean DFS	St Dev	% D	% F	Mean DFS	St Dev	% D	% F	
18-19	7.75	6.43	28.0	72.0	13.19	9.33	10.1	89.9	
20-24	9.85	8.62	25.7	74.3	15.04	11.44	6.7	93.3	
25-29	12.90	7.38	19.1	80.9	19.78	13.67	4.0	96.0	
30-34	14.54	7.66	27.0	73.0	23.27	15.14	3.8	96.2	
All Ages	9.28	7.76	25.9	74.1					
BLACK									
18-19	7.28	7.68	28.3	71.7	7.81	8.18	19.0	81.0	
20-24	11.39	6.92	40.2	59.8	12.70	11.05	23.5	76.5	
25-29	11.05	8.65	37.4	62.6	14.82	11.34	17.2	82.8	
30-34	19.76	10.72	26.8	73.2	14.36	12.47	14.2	85.8	
All Ages	10.38	8.20	35.1	64.9					
BOTH BLACK AND WHITE									
18-19	8.07	7.22	28.0	72.0	12.94	9.35	10.3	89.7	
20-24	9.99	8.11	28.8	71.2	14.77	11.48	8.5	91.5	
25-29	12.31	7.50	25.0	75.0	18.89	13.64	5.3	94.7	
30-34	19.09	10.89	21.8	78.2	21.97	15.00	4.7	95.3	
All Ages	9.53	7.87	28.1	71.9					

* Civilian data taken from the National Institute of Dental Research Survey:
ORAL HEALTH OF UNITED STATES ADULTS (1985-86)

Table 2.3a

Percent components of decayed (D) and filled (F) teeth (T) MALES AND FEMALES COMBINED Military Recruits compared to Civilian									
WHITE									
Military					Civilian *				
AGE	Mean DFT	St Dev	% D	% F	Mean DFT	St Dev	% D	% F	
18-19	5.52	3.72	39.7	60.3	7.37	4.32	12.8	87.2	
20-24	6.32	4.46	36.5	63.5	7.99	4.70	12.9	87.1	
25-29	7.45	3.61	24.7	75.3	9.16	4.95	10.1	89.9	
30-34	8.53	3.89	29.1	70.9	10.27	4.99	7.9	92.1	
All Ages	5.97	4.11	37.0	63.0					
BLACK									
18-19	4.94	4.01	50.0	50.0	5.59	3.43	52.3	47.7	
20-24	5.85	4.07	50.0	50.0	6.73	4.20	26.5	73.5	
25-29	6.12	4.39	48.5	51.5	7.72	5.05	23.5	76.5	
30-34	9.96	5.37	33.6	66.4	6.69	4.58	20.8	79.2	
All Ages	5.61	4.20	48.8	51.2					
BOTH BLACK AND WHITE									
18-19	5.32	3.78	41.6	58.4	7.28	4.30	14.4	85.6	
20-24	6.21	4.38	39.4	60.6	7.78	4.70	14.6	85.4	
25-29	7.10	3.85	30.5	69.5	8.87	5.00	11.6	88.4	
30-34	9.12	4.51	31.1	68.9	9.81	5.08	8.9	91.1	
All Ages	5.89	4.13	39.5	60.5	7.36 **	not avail.	18.7 **	81.3 **	

* Civilian data taken from the National Institute of Dental Research Survey:
ORAL HEALTH OF UNITED STATES ADULTS (1985-86)

** Civilian totals are adjusted by age, race, and gender to the recruit population

Table 2.3b

Percent components of decayed (D) and filled (F) teeth (T) MALES ONLY (Military Recruits compared to Civilian)									
WHITE									
AGE	Military				Civilian *				% F
	Mean DFT	St Dev	% D	% F	Mean DFT	St Dev	% D	% F	
18-19	5.48	3.78	40.9	59.1	7.02	4.04	12.9	87.1	
20-24	6.30	4.65	40.0	60.0	7.75	4.82	17.4	82.6	
25-29	7.22	3.83	25.2	74.8	8.50	4.98	14.4	85.6	
30-34	7.96	4.75	24.5	75.5	10.02	5.23	9.8	90.2	
All Ages	5.94	4.22	38.5	61.5					
BLACK									
18-19	4.93	3.85	54.6	45.4	6.29	2.58	71.2	28.8	
20-24	5.39	4.05	52.2	47.8	6.50	3.52	25.9	74.1	
25-29	6.18	4.59	49.8	50.2	7.79	5.25	25.4	74.6	
30-34	7.50	4.93	26.7	73.3	6.25	3.83	22.8	77.2	
All Ages	5.27	4.01	52.3	47.7					
BOTH BLACK AND WHITE									
18-19	5.36	3.79	43.3	56.7	6.97	3.98	15.9	84.1	
20-24	6.07	4.47	40.7	59.3	7.47	4.71	18.7	81.3	
25-29	7.32	4.24	29.0	71.0	8.33	4.99	15.6	84.4	
30-34	7.81	4.93	25.1	74.9	9.58	5.24	10.8	89.2	
All Ages	5.79	4.19	41.3	58.7					

* Civilian data taken from the National Institute of Dental Research Survey:
ORAL HEALTH OF UNITED STATES ADULTS (1985-86)

Table 2.3c

Percent components of decayed (D) and filled (F) teeth (T) FEMALES ONLY (Military Recruits compared to Civilian)									
WHITE									
AGE	Military				Civilian *				
	Mean DFT	St Dev	% D	% F	Mean DFT	St Dev	% D	% F	
18-19	5.19	3.51	35.1	64.9	7.73	4.56	12.7	87.3	
20-24	6.39	3.90	32.6	67.4	8.25	4.56	8.4	91.6	
25-29	7.85	3.20	23.8	76.2	9.99	4.79	5.5	94.5	
30-34	9.10	2.95	33.2	66.8	10.60	4.64	5.5	94.5	
All Ages	6.04	3.77	32.6	67.4					
BLACK									
18-19	4.98	4.51	35.3	64.7	4.75	4.07	22.4	77.6	
20-24	7.21	3.86	44.2	55.8	6.93	4.69	26.9	73.1	
25-29	6.05	4.28	46.8	53.2	7.65	4.82	21.3	78.7	
30-34	11.90	5.31	37.2	62.8	7.09	5.14	19.2	80.8	
All Ages	6.57	4.55	41.1	58.9					
BOTH BLACK AND WHITE									
18-19	5.30	3.77	35.7	64.3	7.58	4.58	13.0	87	
20-24	6.47	3.89	34.9	65.1	8.11	4.67	10.5	89.5	
25-29	7.42	3.51	31.3	68.7	9.54	4.93	7.3	92.7	
30-34	10.41	3.84	29.8	70.2	10.10	4.85	6.7	93.3	
All Ages	6.16	3.96	34.8	65.2					

*Civilian data taken from the National Institute of Dental Research Survey:
ORAL HEALTH OF UNITED STATES ADULTS (1985-86)

Figure 2.3 shows the percentage of military recruits by the number of missing teeth, for each race and overall. Results show **87.7% [ci ±1.2%] of recruits have no missing teeth and only 2.2% [ci ±0.6%] have more**

than two missing teeth. These percentages do not include third molars. No recruit in the study sample has more than 12 missing teeth.

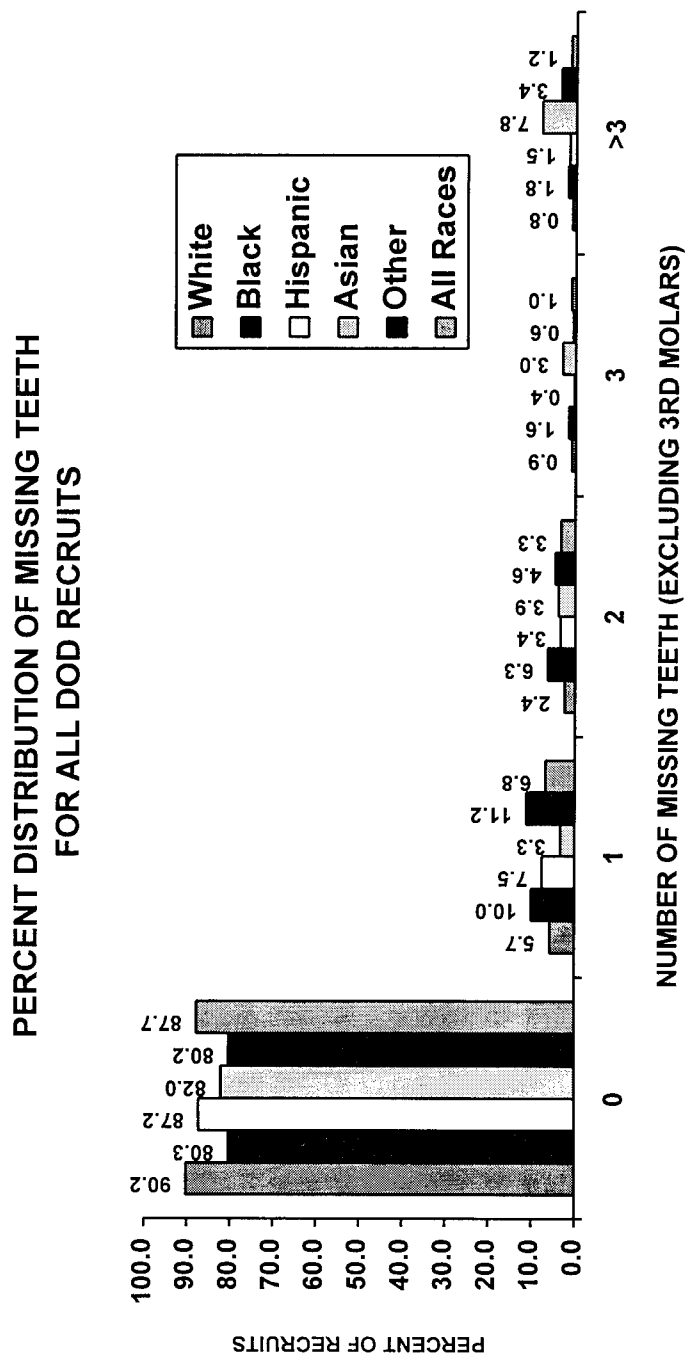


Figure 2.3

In addition to hard tissue (tooth) status, the TSCOHs collected subjective examiner assessments of the prevalence of oral soft tissue lesions, severe temporomandibular dysfunction (TMD), and severe orthodontic malocclusion. **Overall the percent prevalence for soft tissue lesions is as follows: ANUG (0.3%), aphthous ulcer (2.2%), active herpetic lesion (0.6%), tobacco lesion (1.4%), pericoronitis (4.0%), other lesion requiring referral (0.9%).** Table 2.4 shows the percentage of recruits with each condition surveyed, stratified by gender and by race. Logistic regression analysis found statistically significant differences between the following groups: **Males are significantly more likely to present with oral tobacco lesions than females.** Individuals who did not classify themselves as white, black, Hispanic, or Asian, i.e. "other", have significantly more oral lesions requiring referral for further evaluation compared with whites. This difference could not be

explained based on available survey information including gender, age, home state, and tobacco usage.

The prevalence of oro-facial pain or limited mandibular movement sufficient to require referral and/or treatment for TMD is significantly greater in females (3.5%) than in males (1.5%). Also, blacks (0.4%) require significantly less TMD referral compared to whites (2.6%).

Severe orthodontic malocclusion was defined as "severe malocclusion interfering with proper function sufficiently to require referral for orthodontic evaluation". **The prevalence of this condition is significantly greater in Asians (3.3%) compared to whites (1.2%).** No other significant differences were found based on gender, race, age, or level of education.

Table 2.4

PERCENT DISTRIBUTION OF VARIOUS ORAL HEALTH STATUS MEASURES (FOR ALL DOD RECRUITS)									
Oral Health Status Measure	Gender		Race						
	Male	Female	White	Black	Hispanic	Asian	Other	Total	
Estimated Population	73,972	27,100	69,607	20,229	7,809	1,682	1,745	101,072	
ORAL SOFT TISSUE LESIONS STATUS									
anug	0.3	0.3	0.2	0.5	0.2	0.0	0.0	0.0	0.3
aphthous ulcer	2.2	2.1	2.6	1.1	1.6	1.9	0.0	0.0	2.2
active herpetic lesion	0.7	0.4	0.6	0.4	1.7	0.0	0.0	0.0	0.6
tobacco lesion	1.8	* 0.3	2.0	0.0	0.0	0.0	0.0	0.0	1.4
pericoronitis	4.4	3.0	4.0	4.3	3.4	4.6	3.6	0.0	4.0
other lesion requiring referral	0.8	1.3	1.0	0.3	0.7	0.0	** 6.9	0.0	0.9
TEMPOROMANDIBULAR DYSFUNCTION STATUS									
oro-facial pain or limited mandibular movement sufficient to require referral and/or treatment for TMD	1.5	** 3.5	2.6	** 0.4	1.0	6.0	0.0	0.0	2.1
ORTHODONTIC STATUS									
severe malocclusion interfering with proper function sufficiently to require referral for orthodontic evaluation	1.5	1.0	1.2	1.8	1.3	* 3.3	0.0	0.0	1.4

* statistically significant p<0.05 ** statistically significant p<0.01

Each race compared to white, male compared to female

3. DISTRIBUTION OF DOD DENTAL CLASSIFICATION AMONG MILITARY RECRUITS

Distribution of DoD Dental Classification Among Recruits

During the examination, the overall DoD dental classification was recorded for each recruit. Figure 3.1 shows that **less than one percent of all recruits are class 1 while 50.2 percent are class 2 and 49.1 percent are class 3.** Table 3.1 gives the DoD dental class stratified by gender, by race, by age category, and by education. Logistic regression analysis found the following significant differences: **whites are less likely to be in dental class 3 compared to other races, and recruits with some college or a college degree are less likely to be in dental class 3 compared to those with no college. Recruits with a college degree are more likely to be in dental class 1.**

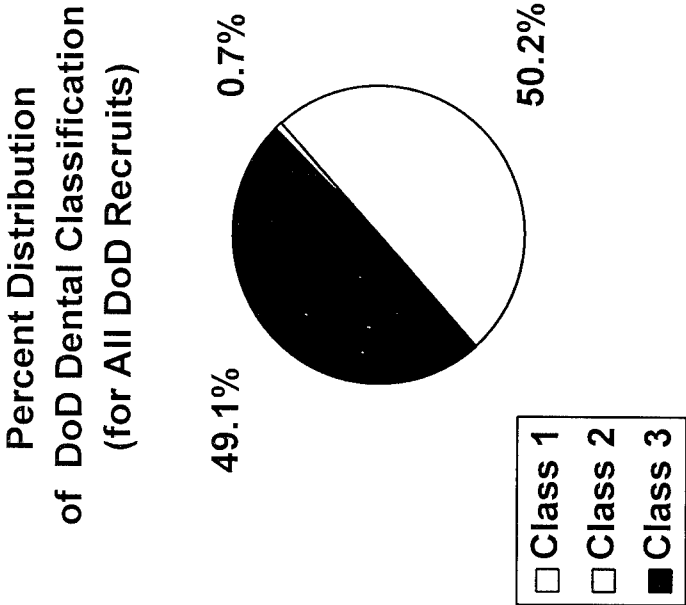


Figure 3.1

Table 3.1

PERCENT DISTRIBUTION OF DOD DENTAL CLASSIFICATION (FOR ALL DOD RECRUITS)				
	Estimated Population	DoD Dental Readiness Class		
Gender		1	2	3
Male	73,972	0.6	50.8	48.6
Female	27,100	1.0	48.4	50.6
Race				
White	69,607	1.0	52.6	46.4
Black	20,229	0.0	44.8	55.2
Other	11,236	0.1	44.7	55.2
Age Category				
18 - 19 years	48,404	0.6	51.8	47.6
20 - 24 years	44,874	0.9	48.6	50.5
25 - 29 years	5,822	0.0	47.5	52.5
30 - 34 years	1,972	0.0	52.3	47.8
Education				
Not HS Graduate	1,540	0.0	46.5	53.5
High School Grad	51,985	0.6	47.4	52.0
Some College	41,708	0.6	52.3	47.1
College Graduate	5,839	2.7	60.2	37.1
All DoD Recruits	101,072	0.7	50.2	49.1
95% Confidence Interval (±%)		0.4	2.1	2.1

DoD dental classification was collected for each clinical discipline independently. Distributions of dental classification based solely on each clinical discipline are provided in later sections of this report.

To address the issue of military dental readiness, insight into the level of treatment need among DoD dental class 3 individuals is provided in Figure 3.2.

The treatment level is defined as the number of clinical disciplines in which each individual has at least one DoD dental class 3 condition. **More than half (58.4%) of class 3 recruits require treatment of a class 3 condition in only one clinical discipline and 92% in**

one or two clinical disciplines. An individual with dental class 3 conditions in three or more clinical disciplines is considered to require complex care. **Among class 3 recruits, 8.0% require complex dental treatment.** Logistic regression analysis found no significant differences in the likelihood of needing complex dental treatment based on gender, race, age or education level.

Restorative and oral surgical treatment needs are the leading causes of recruits being classified in DoD dental class 3.

PERCENT DISTRIBUTION OF DOD CLASS 3 RECRUITS BY TREATMENT LEVEL

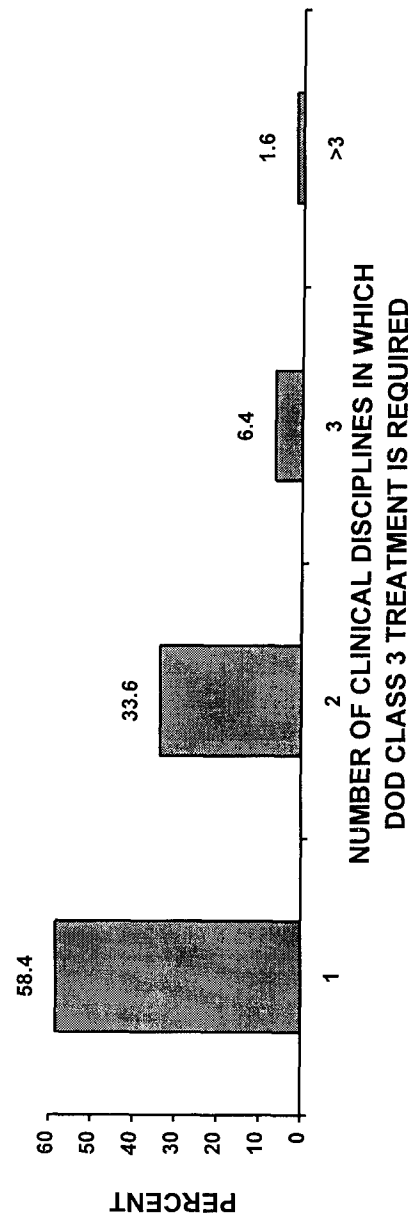


Figure 3.2

The National Institute of Dental Research divided the United States into seven geographic regions for their 1985-86 study of the Oral Health of U.S. Adults. The TSCOHS data was analyzed using identical geographic regions with one additional region (Other). The regions are defined as New England (CT, ME, MA, NH, RI, VT), Northeast (NJ, NY, PA), Midwest (IL, IN, IA, MI, MN, MO, OH, WI), Southeast (AL, AR, DE, FL, GA, KY, LA, MD, MS, NC, SC, TN, VA, DC),

Southwest (AZ, CO, NM, TX), Northwest (ID, KS, MT, NE, NV, ND, UT, WY), Pacific (CA, OR, WA), and Other (AK, HI, PR, Other). Each recruit reported his/her state of residence just prior to entering military service. Results are shown in Table 3.2. ***Chi-square analysis found no statistically significant differences in DoD dental classification among patients from the various geographic regions.***

Table 3.2

PERCENT DISTRIBUTION OF DOD DENTAL CLASSIFICATION BY HOME REGION (FOR ALL DOD RECRUITS)				
Home Region	Estimated Population	DoD Dental Classification		
		1	2	3
New England	6,023	1.7	63.4	34.9
Northeast	13,293	1.0	51.0	48.0
Midwest	18,929	0.6	49.9	49.5
Southeast	34,414	0.6	49.1	50.3
Southwest	9,897	0.3	46.8	52.9
Northwest	3,551	0.7	48.4	50.9
Pacific	11,200	1.0	49.0	50.0
Other	3,765	0.0	50.2	49.8
All DoD Recruits	101,072	0.7	50.2	49.1
95% Confidence Interval (± %)		0.4	2.1	2.1

4. TREATMENT REQUIREMENTS EXPRESSED AS COMPOSITE TIME VALUES (CTV)

Treatment Requirements Expressed as Composite Time Values (CTV)

Figure 4.1 shows the mean and median number of CTV for each clinical discipline for all DoD recruits. **The CTV counts represent the number of CTV that would be generated when the needed treatment is delivered, including ancillary procedures.**

Appendix A provides a full description of procedure codes used to calculate CTV for each type of dental treatment. **The mean number of CTV of treatment required is 52.3; the median is 40.4.** A relatively

small group of high-need individuals accounts for a disproportionate share of the total treatment needs for this population. Figure 4.2 gives the percentage of the total CTV of treatment need contributed by each clinical discipline. **Among recruits, oral surgical (31.2%) and restorative (27.0%) treatment needs make up 58.2% of the total treatment required.** Each discipline is discussed independently and in depth in later sections of this report.

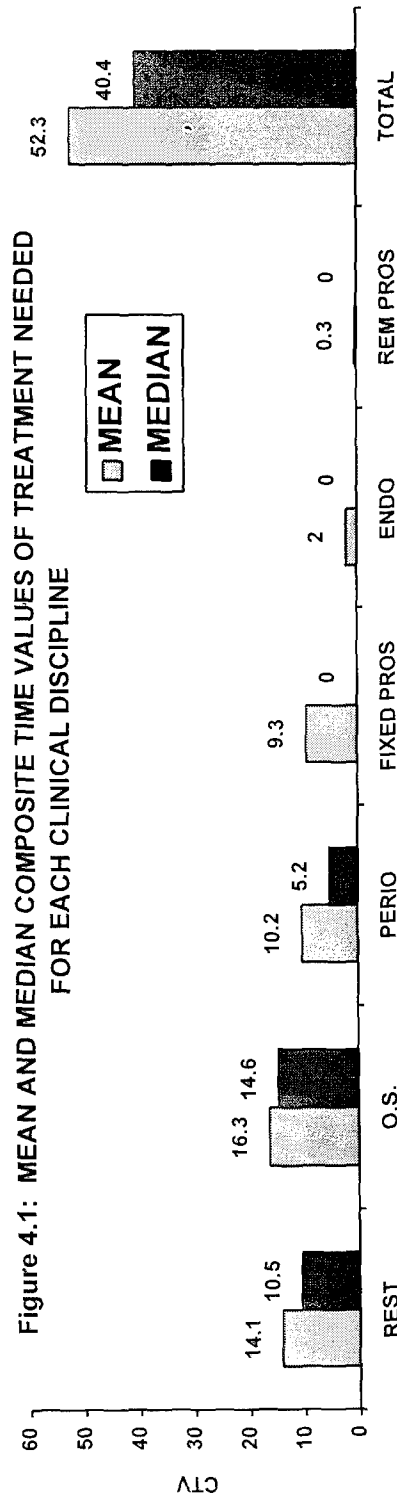


FIGURE 4.2: PERCENT OF TOTAL CTV CONTRIBUTED BY EACH CLINICAL DISCIPLINE

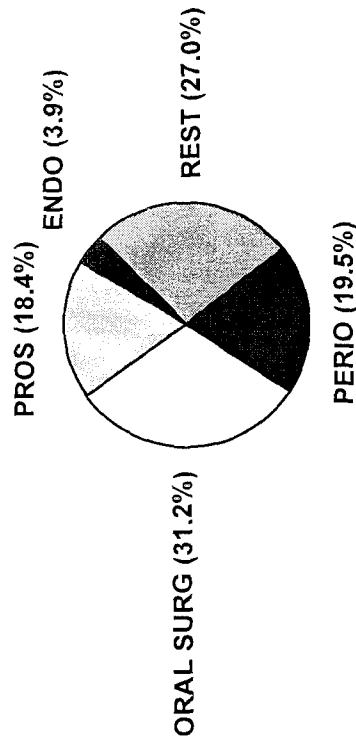


Table 4.1 shows the mean CTV for each clinical discipline stratified by gender, by race, by education, and by age category. Regression analysis demonstrated the following statistically significant differences: **CTV of treatment need increase with age in all clinical disciplines except oral surgical CTV, which decrease with increasing age; individuals with education beyond high school have less CTV of restorative and oral surgical treatment need and greater fixed prosthodontic need compared to those with no college experience; overall CTV of treatment need is inversely proportional to level of education; and blacks have significantly greater CTV of treatment need in all clinical disciplines compared to whites.**

TABLE 4.1

MEAN COMPOSITE TIME VALUES (CTV) FOR EACH CLINICAL DISCIPLINE (FOR ALL DOD RECRUITS)									
	ESTIMATED POPULATION	REST	PERIO	ENDO	ORAL SURG	FIXED PROS	REM PROS	MEAN TOTAL	
GENDER									
Male	73972	14.2	10.3	2.1	16.5	8.8	0.2	52.2	
Female	27100	14.5	9.8	1.8	15.8	10.6	0.3	52.8	
RACE									
White	69607	13.9	8.1	1.7	14.8	7.3	0.2	46.0	
Black	20229	15.9	16.6	3.7	20.7	15.7	0.5	73.3	
Other	11236	13.2	11.2	1.4	17.9	9.9	0.3	54.0	
AGE CATEGORY									
18 - 19 years	48404	13.6	8.5	1.6	17.1	6.8	0.1	47.6	
20 - 24 years	44874	14.5	10.3	2.2	16.5	9.2	0.2	53	
25 - 29 years	5822	16.3	19.1	3.8	10.7	22.5	1.3	73.7	
30 - 34 years	1972	16.7	22.2	4.3	10.2	34.6	3.1	91.1	
EDUCATION									
Not HS Graduate	1540	19.9	13.5	1.9	18.8	13.7	0.0	67.7	
High School Graduate	51985	15.3	9.7	2.2	17.8	8.5	0.3	53.7	
Some College	41708	13.3	10.7	2.0	15.0	10.2	0.3	51.5	
College Graduate	5839	10.1	9.6	1.3	11.8	20.7	0.3	42.0	
MEAN TOTAL	101072	14.1	10.2	2.0	16.3	9.3	0.3	52.3	
95% Confidence Interval		[13.5-14.6]	[9.7-10.6]	[1.8-2.3]	[15.7-16.9]	[8.4-10.2]	[.2-.4]	[50.5-54.2]	
% of Mean Total CTV									
95% Confidence Interval (± %)		27.0	19.5	3.9	31.2	17.8	0.6	100.0	
		1.8	1.6	0.8	1.8	1.4	0.2		
MEDIAN TOTAL		10.5	5.2	0.0	14.6	0.0	0.0	40.4	

Composite Time Values for Recruit Treatment Needs

Figure 4.3 shows the percentage of DoD recruits with total treatment needs represented by each CTV range. **Over 99% of recruits require dental treatment and 20.4% require more than 75 CTV of treatment. This 20.4% of recruits accounts for 46.9% of the total CTV required by all recruits.**

PERCENT OF RECRUITS BY CTV RANGE

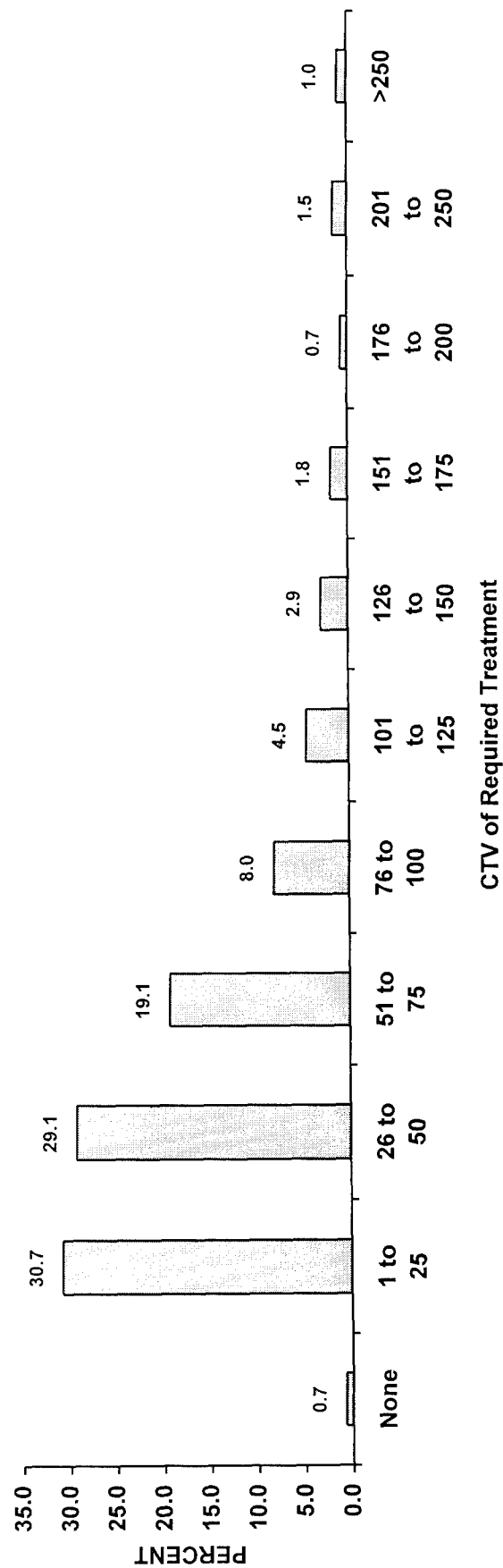


Figure 4.3

Table 4.2 gives the percentage of recruits in each CTV range stratified by gender, by race, by education, and by age category.

TABLE 4.2

PERCENT DISTRIBUTION OF COMPOSITE TIME VALUES (CTV) (FOR ALL DOD RECRUITS)													
	Estimated Population	None	1-25	26-50	51-75	76-100	101-125	126-150	151-175	176-200	201-250	>250	
Gender													
Male	73972	0.6	31.2	29.9	18.3	7.6	4.2	3.2	2.0	0.6	1.3	1.1	
Female	27100	1.0	29.4	27.1	21.0	9.2	5.3	2.3	1.2	1.0	1.9	0.6	
Race													
White	69607	1.0	35.2	29.4	17.8	7.5	4.1	1.8	1.0	0.3	1.1	0.8	
Black	20229	0.0	18.5	24.7	22.3	11.3	6.6	5.7	3.4	2.2	3.1	2.2	
Other	11236	0.0	24.9	34.6	21.3	5.8	3.3	5.1	3.4	0.6	0.9	0.1	
Age Category													
18 - 19 years	48404	0.5	32.7	30.5	18.9	7.2	4.1	3.0	1.3	0.5	0.8	0.5	
20 - 24 years	44874	1.0	29.7	27.8	20.3	8.8	5.0	2.6	1.8	0.6	1.6	0.8	
25 - 29 years	5822	0.0	25.8	28.1	14.2	10.6	4.1	4.8	1.1	2.2	2.0	7.1	
30 - 34 years	1972	0.0	17.4	29.3	10.4	3.6	3.9	4.9	14.0	3.3	13.2	0.0	
Education													
Not HS Graduate	1540	0.0	14.8	37.8	14.2	17.2	1.7	4.3	1.5	0.0	4.1	4.4	
High School Graduate	51985	0.5	29.3	28.4	20.8	8.6	4.8	2.8	1.7	0.7	1.4	1.0	
Some College	41708	0.6	32.1	29.8	17.9	6.9	4.2	3.3	1.8	0.8	1.7	0.9	
College Graduate	5839	3.8	37.3	28.1	13.3	8.5	4.0	1.5	2.4	1.1	0.0	0.0	
All DoD Recruits	101072	0.7	30.7	29.1	19.1	8.0	4.5	2.9	1.8	0.7	1.5	1.0	
95% Confidence Interval ($\pm$ %)		0.4	1.8	1.8	1.6	1	0.8	0.6	0.6	0.4	0.4	0.4	

Figure 4.4 shows how the treatment needs of recruits in each CTV range are distributed among the clinical disciplines. **Restorative, periodontal, and surgical treatment needs account for essentially all**

of the CTV for those individuals in the lower CTV ranges (1 to 75 CTV). This group represents 79.4 percent of all recruits. As CTV range increases, the proportion of prosthodontic and endodontic treatment needs progressively increases.

PERCENT CONTRIBUTION OF EACH CLINICAL DISCIPLINE TO THE TOTAL CTV OF TREATMENT REQUIRED IN EACH CTV RANGE

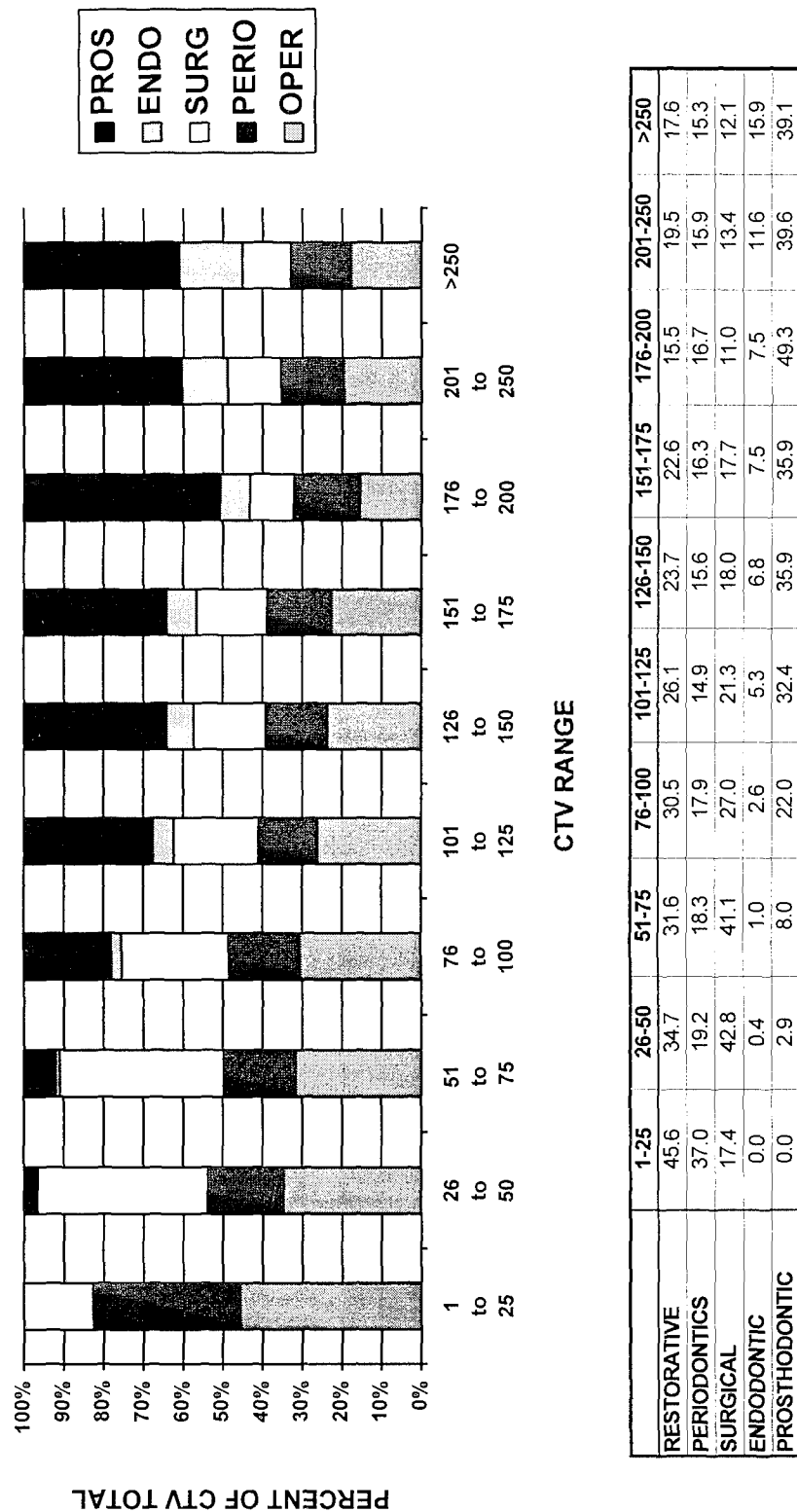


Figure 4.4

5. RESTORATIVE TREATMENT NEEDS

Restorative Treatment Needs (RTN) and Dental Classification based on RTN

1. Method of Restorative Data Collection

Survey examiners assessed the health status and treatment needs of each surface of each tooth using standardized mirrors and explorers and current radiographs. Examiners used the DMFS index and associated criteria for diagnosing dental caries in this assessment.

2. Restorative Treatment Needs for the Total Recruit Population

Table 5.1 and Figure 5.1 details the intensity of restorative treatment needs for all DoD

recruits stratified by gender, by race, by age category, and by education level. *Among all recruits, roughly one-fifth have no restorative needs while the remaining four-fifths are equally divided between needing 1-3 restorations and 4 or more restorations.* Using ordered logistic regression analysis, the following groups were found to need significantly greater numbers of restorations: older persons compared to younger persons; blacks compared to whites; and non-high school graduates compared to high school graduates. Persons with college experience or a degree need significantly fewer restorations compared to high school graduates.

Percent Intensity of Restorative Treatment Needs for All DoD Recruits

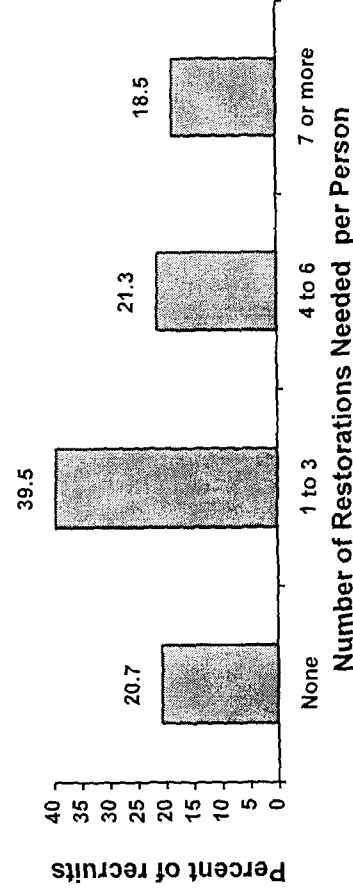


Figure 5.1

Table 5.1

PERCENT, MEAN, AND MEDIAN INTENSITY OF RESTORATIVE TREATMENT NEEDS (FOR ALL DOD RECRUITS)									
	Estimated Population	# of Restorations Needed					Mean Number of Restorations Needed	Median Number of Restorations Needed	
Gender		None	1 to 3	4 to 6	7 +				
Male	73,972	20.7	39.7	21.0	18.6		3.51	3	
Female	27,100	20.4	39.2	22.3	18.1		3.57	3	
Race									
White	69,607	21.8	39.7	21.3	17.2		3.44	3	
Black	20,229	17.1	38.9	20.0	24.0		3.94	3	
Other	11,236	19.8	39.7	24.2	16.3		3.29	3	
Age Category									
18 - 19 years	48,404	21.8	39.6	20.7	17.9		3.39	3	
20 - 24 years	44,874	20.4	40.0	21.3	18.3		3.59	3	
25 - 29 years	5,822	15.0	37.2	23.4	24.4		3.93	3	
30 - 34 years	1,972	14.9	34.7	29.5	20.9		3.99	4	
Education									
Not HS Graduate	1,540	6.9	34.8	17.1	41.2		5.08	4	
High School Graduate	51,985	18.9	38.0	22.0	21.1		3.80	3	
Some College	41,708	22.3	41.1	20.9	15.7		3.26	2	
College Graduate	5,839	27.9	43.6	19.3	9.2		2.46	2	
All DoD Recruits	101,072	20.7	39.5	21.3	18.5		3.52	3	
95% Confidence Interval ($\pm$ %)		1.6	1.8	1.6	1.4		[3.39 - 3.65]		

3. Restorative Treatment Needs Among Those Needing Restorative Care

Table 5.2 on the facing page and Figure 5.2 below detail the intensity of restorative treatment needs among DoD recruits who require restorative care. About one-half of recruits with restorative treatment needs require 1-3 restorations. The remaining half require 4 or more restorations.

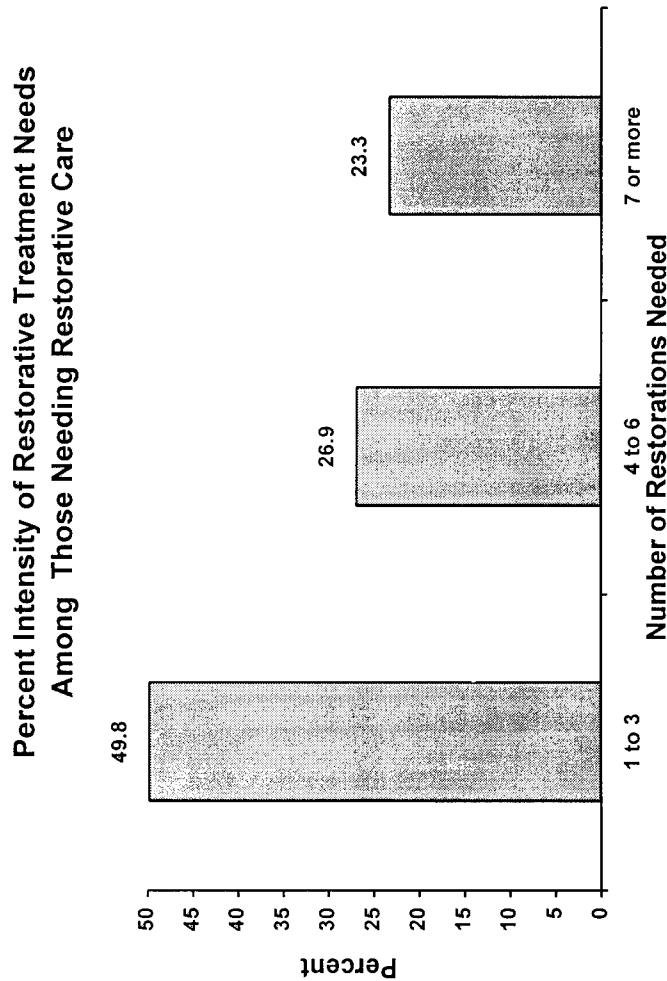


Figure 5.2

Table 5.2

PERCENT, MEAN, AND MEDIAN INTENSITY OF RESTORATIVE TREATMENT NEEDS (AMONG THOSE NEEDING RESTORATIVE CARE)						
	Estimated Population	# of Restorations Needed 1 to 3	4 to 6	7 +	Mean Number of Restorations Needed	Median Number of Restorations Needed
Gender						
Male	58,648	50.1	26.4	23.5	4.42	3
Female	21,583	49.2	28.1	22.7	4.48	3
Race						
White	54,442	50.7	27.2	22.1	4.40	3
Black	16,781	47.0	24.1	28.9	4.74	3
Other	9,008	49.6	30.1	20.3	4.10	3
Age Category						
18 - 19 years	37,852	50.6	26.5	22.9	4.34	3
20 - 24 years	35,752	50.3	26.8	22.9	4.50	3
25 - 29 years	4,949	43.8	27.5	28.7	4.62	3
30 - 34 years	1,677	40.7	34.7	24.6	4.69	4
Education						
Not HS Graduate	1,434	37.4	18.4	44.2	5.46	4
High School Graduate	47,161	46.8	27.2	26.0	4.68	3
Some College	32,424	52.9	26.9	20.2	4.20	2
College Graduate	4,212	60.5	26.8	12.7	3.41	2
DoD Recruits with restorative needs	80,231	49.8	26.9	23.3	4.44	3
95% Confidence Interval ($\pm$ %)		2.2	1.8	1.8	[4.29 - 4.58]	

4. Types of Restorations Needed by All Recruits and by Those with Restorative Needs

As shown by Figure 5.3 below and Table 5.3 on the opposite page, the majority of restorations needed are one- or two-surface types. Among all recruits, a mean of 3.52 restorations are needed per person, consisting of 1.81 one-surface restorations, 1.19 two-surface restorations, 0.09 three-surface restorations, 0.06 four-surface restorations, and 0.04 five-surface restorations. Among those who need restorative care, a similar overall

pattern prevails. The mean number of restorations required is 4.44 per person, comprising 2.28 one-surface restorations, 1.49 two-surface restorations, 0.49 three-surface restorations, 0.12 four-surface restorations, and 0.06 five-surface restorations. A median of 3 restorations is needed by all recruits and the median is 4 restorations for those who need restorative care.

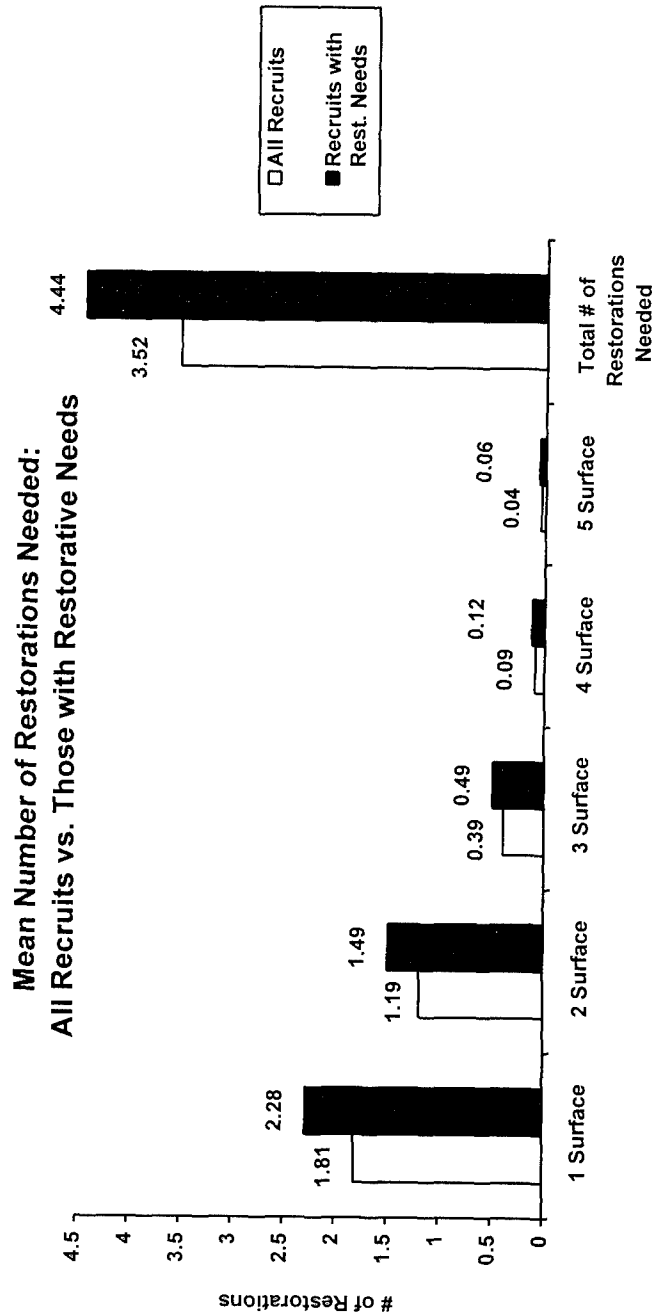


Figure 5.3

Table 5.3

MEAN AND MEDIAN NUMBER OF TYPES OF RESTORATIONS NEEDED (FOR DOD RECRUITS)				
TYPE OF RESTORATION	Among All Recruits		Among Those Needing Rest. Care	
	Mean	Median	Mean	Median
1 surface restoration	1.81	1		
95% Confidence Interval	1.74-1.89		2.28	2
			2.20-2.36	
2 surface restoration	1.19	0	1.49	1
95% Confidence Interval	1.12-1.25		1.42-1.57	
3 surface restoration	0.39	0	0.49	0
95% Confidence Interval	0.35-0.42		0.44-0.53	
4 surface restoration	0.09	0	0.12	0
95% Confidence Interval	0.08-0.11		0.10-0.13	
5 surface restoration	0.04	0	0.06	0
95% Confidence Interval	0.03-0.05		0.04-0.07	
TOTAL	3.52	3	4.44	4
95% Confidence Interval	3.39-3.65		4.29-4.58	

5. Distribution of DoD Dental Classification Based Only on Restorative Treatment Needs

Based only on restorative conditions, one-fifth of all recruits are in dental class 1, over two-fifths are in class 2, and almost two-fifths are in class 3.

Percent Distribution of DoD Dental Classification Based Only on Restorative Treatment Needs for All Recruits

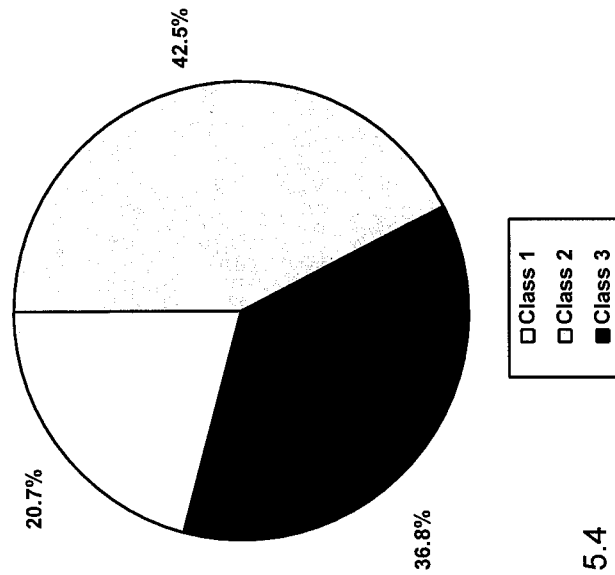


Figure 5.4

Table 5.4

PERCENT DISTRIBUTION OF DOD DENTAL CLASSIFICATION BASED ONLY ON RESTORATIVE TREATMENT NEEDS (FOR ALL DOD RECRUITS)				
	Estimated Population	DoD Dental Class		
		1	2	3
Gender				
Male	73,972	20.8	42.8	36.4
Female	27,100	20.4	41.7	37.9
Race				
White	69,607	21.8	43.1	35.1
Black	20,229	17.1	43.1	39.8
Other	11,236	19.8	38.1	42.0
Age Category				
18 - 19 years	48,404	21.8	43.2	35.0
20 - 24 years	44,874	20.4	42.2	37.4
25 - 29 years	5,822	15.0	38.2	46.8
30 - 34 years	1,972	14.9	47.2	37.9
Education				
Not HS Graduate	1,540	6.9	45.6	47.5
High School Graduate	51,985	18.9	42.2	38.9
Some College	41,708	22.3	42.6	35.1
College Graduate	5,839	27.9	44.3	27.8
All DoD Recruits	101,072	20.7	42.5	36.8
95% Confidence Interval (± %)		1.6	1.8	1.8

Recruits with restorative treatment needs split roughly half-and-half into DoD class 2 and class 3, (based only on restorative status). Logistic regression shows the following statistically significant differences in the likelihood of being in class 3 status for restorative reasons: **Older recruits more likely than younger**

recruits; non-black other races more likely than whites; non-high school graduates more likely than high school graduates and persons with education beyond high school less likely than those with no college experience.

Percent Distribution of Dental Classification Based Only on Restoration Treatment Needs for Those with Restorative Needs

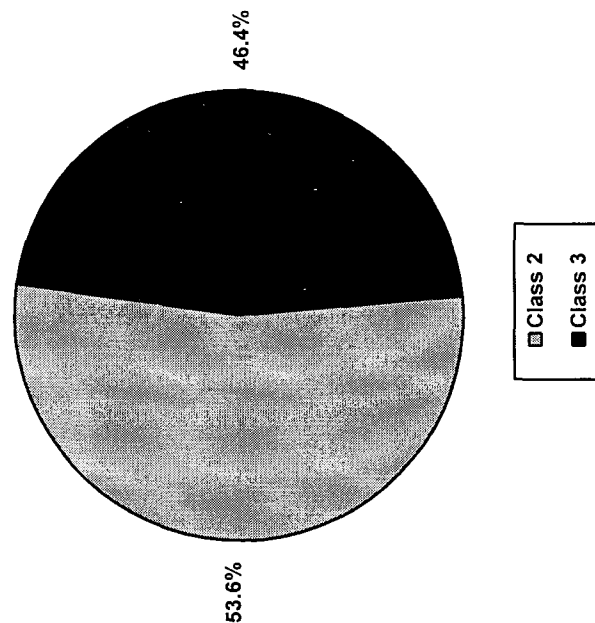


Figure 5.5

Table 5.5

PERCENT DISTRIBUTION OF DOD DENTAL CLASSIFICATION BASED ONLY ON RESTORATIVE TREATMENT NEEDS (AMONG THOSE RECRUITS NEEDING RESTORATIVE CARE)			
	Estimated Population	2	3
Gender			
Male	58,648	54.1	45.9
Female	21,583	52.3	47.7
Race			
White	54,442	55.1	44.9
Black	16,781	52.0	48.0
Other	9,008	47.6	52.4
Age Category			
18 - 19 years	37,852	55.3	44.7
20 - 24 years	35,752	53.0	47.0
25 - 29 years	4,949	45.0	55.0
30 - 34 years	1,677	55.5	44.5
Education			
Not HS Graduate	1,434	49.0	51.0
High School Graduate	47,161	52.0	48.0
Some College	32,424	54.9	45.1
College Graduate	4,212	61.5	38.5
DoD Recruits with restorative needs	80,231	53.6	46.4
95% Confidence Interval ($\pm$ %)		2.2	2.2

6. Distribution of Number of Teeth per Person in Dental Class 3 (based only on Restorative Needs)

Of those persons in dental class 3 for restorative reasons, **over two-thirds have just one or two class 3 teeth and nearly 90% have four or fewer class 3**

teeth. The remaining 12% have from five to seventeen class 3 teeth.

Percent Distribution of Number of Class 3 Teeth per Person
Among Those who are Dental Class 3 for Restorative Reasons

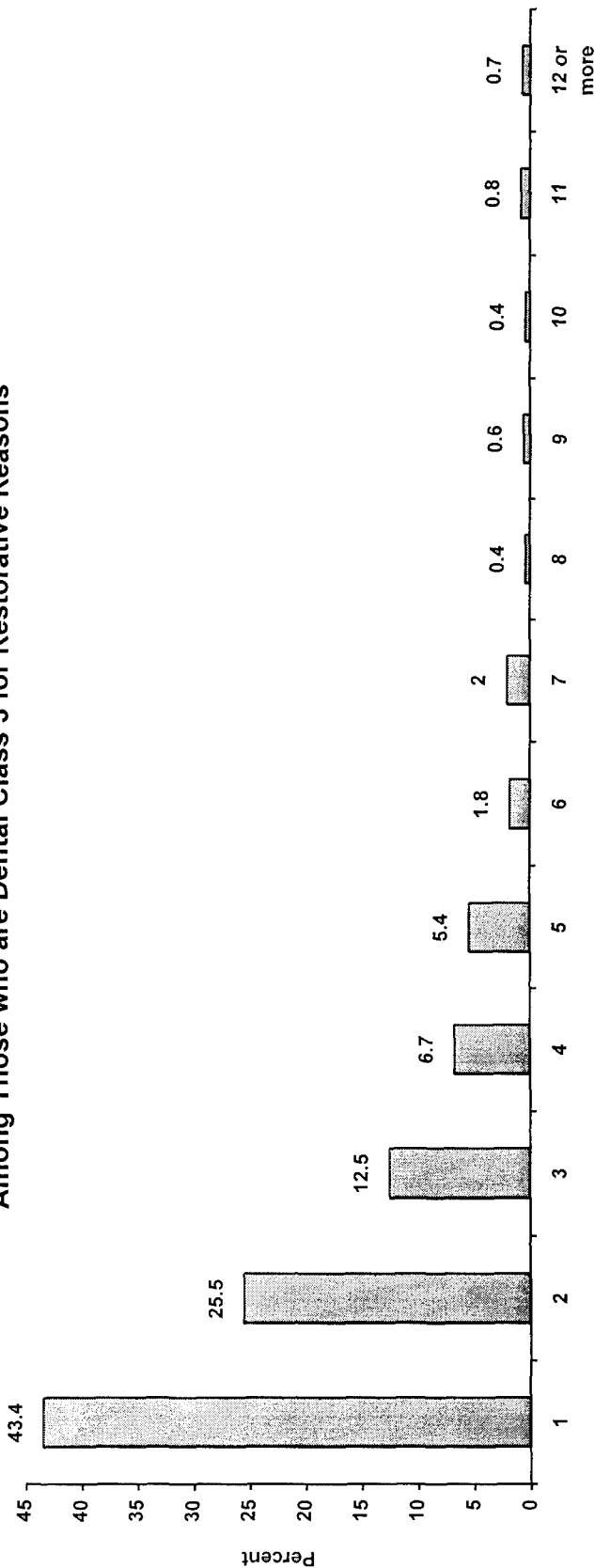


Figure 5.6

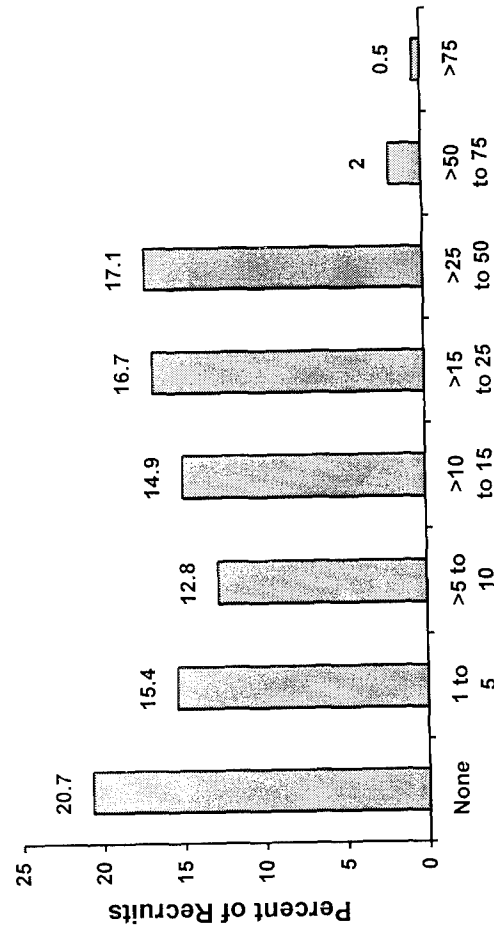
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7. Composite Time Values for Restorative Treatment Needs

Appendix 1 describes the assumptions used to compute CTV. Table 5.6 shows that, for all recruits, the mean CTV for restorative care is 14.1 and the median is 10.5. Figure 5.7 shows that one-fifth of recruits have no restorative treatment needs; three-fifths require between 1-25 CTV of restorative care; and the remaining one-fifth require

greater than 25 CTV of restorative care. Roughly half of all recruits require between 11-50 CTV of restorative care. Figure 5.8, illustrates that **over three-quarters of the total restorative CTV workload is concentrated in the one-third of recruits who need more than 15 CTV of restorative treatment.**

Percent Distribution of Restorative CTV



CTV for Needed Restorative Treatment

Figure 5.7

Percentage of Total Restorative CTV

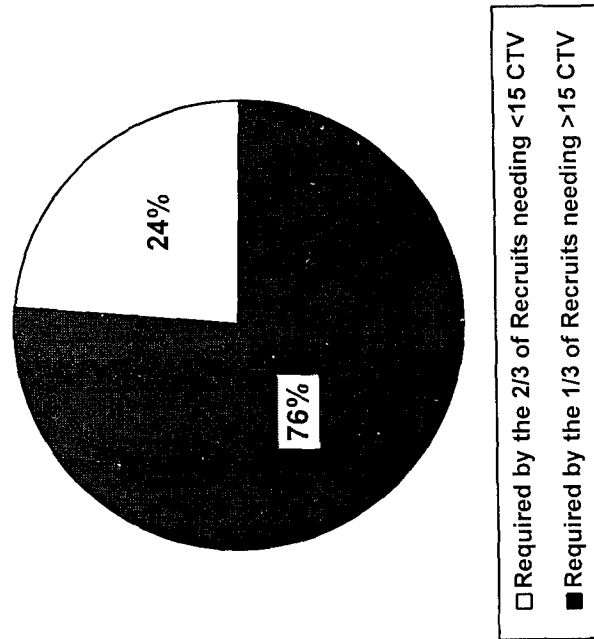


Figure 5.8

Table 5.6

PERCENT DISTRIBUTION OF RESTORATIVE COMPOSITE TIME VALUES (CTV) (FOR ALL DOD RECRUITS)												
	Estimated Population	None	1-5	6-10	11-15	16-25	26-50	51-75	>75	Mean Rest. CTV	Median Rest. CTV	
Gender												
Male	73,972	20.8	15.6	12.7	14.9	16.6	17.1	1.7	0.6	14.0	10.5	
Female	27,100	20.4	14.8	13.2	14.6	17.0	16.9	3.0	0.1	14.3	10.5	
Race												
White	69,607	21.8	16.2	12.9	14.3	16.5	15.5	2.2	0.6	13.7	10.5	
Black	20,229	17.1	13.0	12.3	15.9	16.5	22.7	2.1	0.4	15.8	11.7	
Other	11,236	19.8	14.8	13.3	16.3	18.3	16.9	0.5	0.1	13.1	10.5	
Age Category												
18 - 19 years	48,404	21.8	15.1	13.5	14.6	16.6	16.3	1.7	0.3	13.4	10.5	
20 - 24 years	44,874	20.4	16.2	12.2	15.2	16.2	16.6	2.4	0.8	14.4	10.5	
25 - 29 years	5,822	15.0	13.8	11.9	13.7	18.5	24.5	2.6	0.0	16.2	11.4	
30 - 34 years	1,972	14.9	9.7	11.0	15.5	24.5	24.3	0.0	0.0	16.6	14.0	
Education												
Not HS Graduate	1,540	6.9	18.4	10.2	12.0	9.4	41.1	2.0	0.0	19.8	15.2	
High School Graduate	51,985	18.9	13.0	14.0	14.9	17.7	18.5	2.4	0.6	15.2	11.4	
Some College	41,708	22.3	17.8	11.4	15.1	15.6	15.3	1.9	0.5	13.1	9.5	
College Graduate	5,839	27.9	18.8	11.9	13.5	17.3	10.7	0.0	0.0	10.0	7.5	
All DoD Recruits	101,072	20.7	15.4	12.8	14.9	16.7	17.1	2.0	0.5	14.1	10.5	
95% Confidence Interval ($\pm$ %)		1.6	1.4	1.2	1.4	1.4	1.4	0.6	0.2	13.8-14.9		

6. ORAL SURGERY TREATMENT NEEDS

Oral Surgery Treatment Needs (OSTN) and Dental Classification based on OSTN

1. Method of Oral Surgery Data Collection

Examiners assessed oral surgical treatment needs using standardized exam instruments and current bitewing and panoramic radiographs.

2. Oral Surgery Treatment Needs for the Total Recruit Population

Table 6.1 and Figure 6.1 detail the intensity of oral surgery treatment needs for all DoD recruits as well as stratified by gender, by race, by age category, and by education.

Among all recruits, about two-fifths have no oral surgery treatment needs, one-fifth need 1 or 2 teeth removed, and two-fifths need 3 or 4 teeth removed. Only 2% need more than 4 teeth removed. The mean number of teeth needing removal per person is 1.9 and the median is 1. **Regression analysis shows that the following groups need significantly more teeth removed: males compared to female; younger recruits compared to older recruits; blacks and other races compared to whites; and high school graduates compared to those with some college experience.**

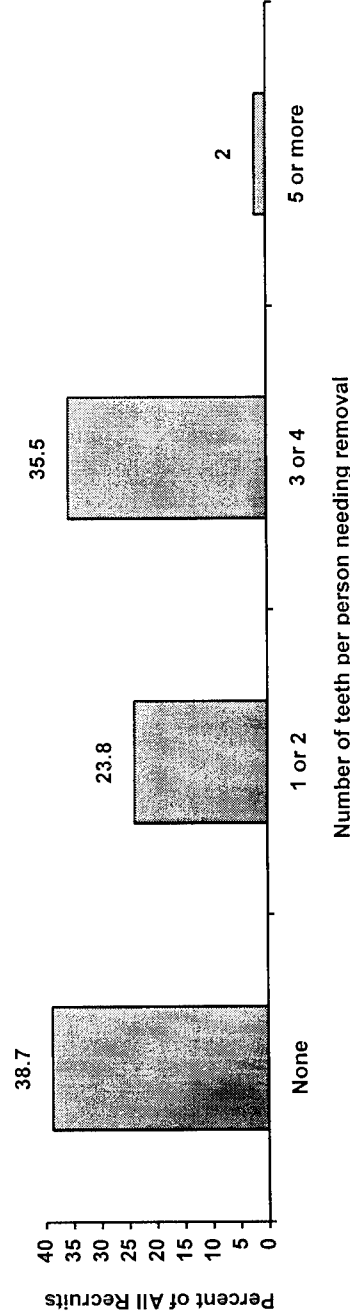


Figure 6.1

Table 6.1

PERCENT, MEAN, AND MEDIAN INTENSITY OF ORAL SURGICAL TREATMENT NEEDS (FOR ALL DOD RECRUITS)								
	Estimated Population	Number of Extractions Needed				Mean Number of Extractions Needed	Median Number of Extractions Needed	
Gender		None	1 or 2	3 or 4	5 +			
Male	73,972	37.6	23.3	36.8	2.3	1.9	2	
Female	27,100	41.7	25.0	31.9	1.3	1.7	1	
Race								
White	69,607	43.8	23.4	31.3	1.5	1.7	1	
Black	20,229	25.5	22.9	47.6	4.0	2.4	2	
Other	11,236	30.9	27.6	39.6	1.8	2.1	2	
Age Category								
18 - 19 years	48,404	38.3	25.6	34.5	1.6	1.8	1	
20 - 24 years	44,874	37.1	21.8	38.6	2.5	2	2	
25 - 29 years	5,822	51.6	24.1	21.5	2.8	1.3	0	
30 - 34 years	1,972	46.9	22.8	30.3	0.0	1.4	1	
Education								
Not HS Graduate	1,540	27.4	28.4	41.0	3.2	2.2	2	
High School Graduate	51,985	35.0	24.1	38.4	2.5	2	2	
Some College	41,708	42.0	23.9	32.6	1.5	1.7	1	
College Graduate	5,839	50.7	18.5	29.3	1.5	1.5	0	
All DoD Recruits	101,072	38.7	23.8	35.5	2.0	1.9	1	
95% Confidence Interval ($\pm$ %)		1.8	1.6	1.8	0.6	[1.8-1.9]		

3. Oral Surgery Treatment Needs Among Those Needing Oral Surgery Care

Table 6.2 and Figure 6.2 detail the intensity of oral surgery treatment needs among those recruits who have OS needs. Of this group, about two-fifths need one or two teeth removed, and three-fifths need 3 or

4 teeth removed. Only 3.3% need five or more teeth removed. The mean number of teeth needing removal for the entire group is 3.0 and the median is 1 tooth.

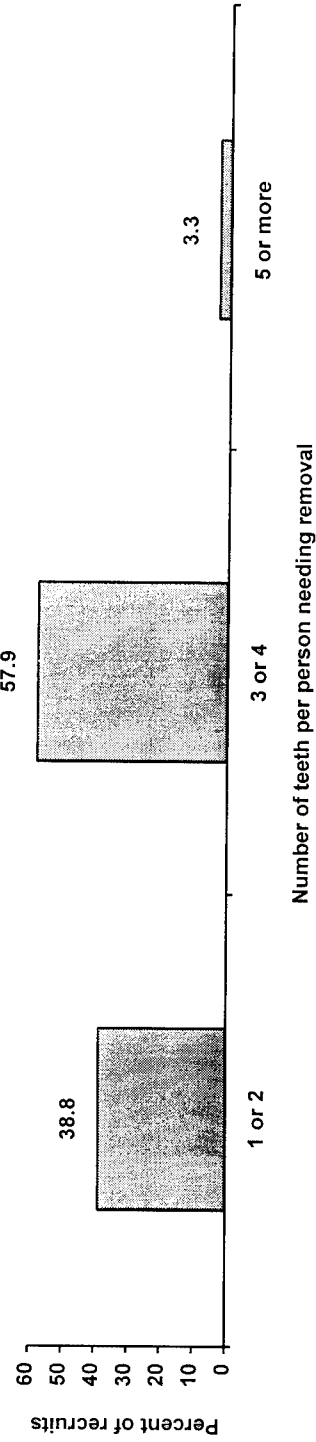


Figure 6.2

Table 6.2

PERCENT, MEAN, AND MEDIAN INTENSITY OF ORAL SURGICAL TREATMENT NEEDS (AMONG THOSE NEEDING ORAL SURGERY)						
	Estimated Population	# of Extractions needed			Mean Number of Extractions Needed	Median Number of Extractions Needed
Gender		1 or 2	3 or 4	5 +		
Male	46,142	37.4	59.0	3.6	3.1	2
Female	15,773	43.0	54.7	2.3	3.0	1
Race						
White	39,093	41.6	55.8	2.6	3.0	1
Black	15,067	30.7	63.8	5.4	3.2	2
Other	7,755	40.0	57.4	2.6	3.0	2
Age Category						
18 - 19 years	29,836	41.5	56.0	2.6	3.0	1
20 - 24 years	28,220	34.7	61.4	3.9	3.1	2
25 - 29 years	2,813	49.8	44.5	5.7	2.7	0
30 - 34 years	1,046	42.9	57.1	0.0	2.6	1
Education						
Not HS Graduate	1,116	39.2	56.5	4.3	3.1	2
High School Graduate	33,752	37.1	59.1	3.8	3.1	2
Some College	24,169	41.2	56.2	2.6	3.0	1
College Graduate	2,879	37.5	59.5	3.0	3.0	0
DoD Recruits with O.S. Treatment Needs	61,915	38.8	57.9	3.3	3.0	1
95% Confidence Interval ($\pm$ %)		2.4	2.4	0.8	[2.9-3.1]	

4. Types of Oral Surgical Procedures Needed for Persons with OS Treatment Needs

Figure 6.3 and Table 6.3 show that the majority of OS procedures needed are classified as impactions. Among the recruits who need OS, the mean number of extractions needed per person is 3.1, comprising means of 0.5 simple procedures, 0.6 complex procedures, and

2.0 impaction procedures. (Procedure classification follows guidelines described in DoD Instruction 6410.2, Standardization of Code on Dental Procedures, February 13, 1992).

**Mean Number of Type of Surgical Procedure Needed
by Those with OS Treatment Needs**

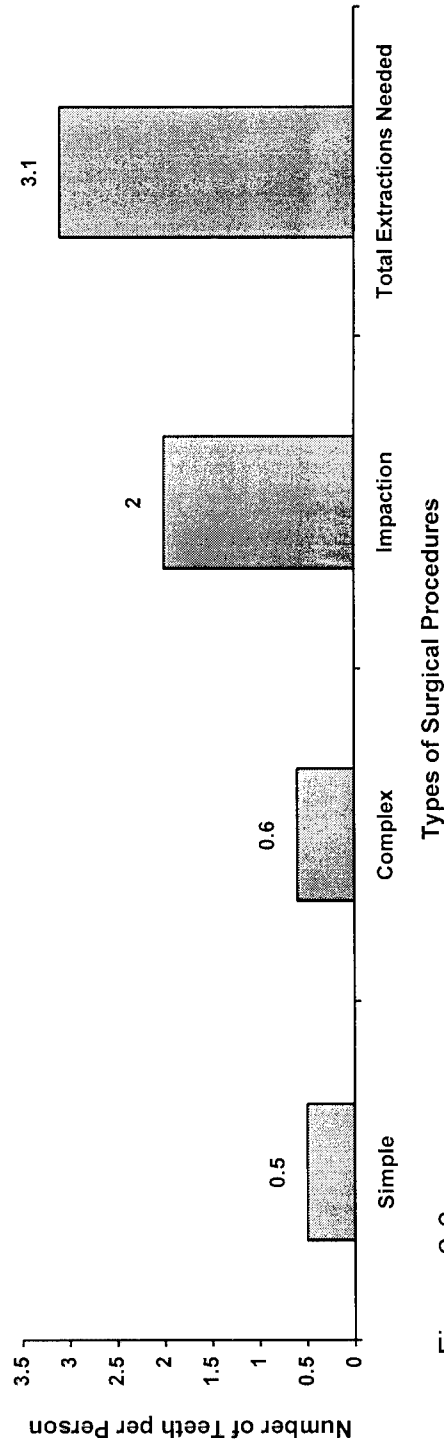


Figure 6.3

Table 6.3

MEAN NUMBER OF SIMPLE, COMPLEX, AND IMPACTION SURGERIES NEEDED PER PERSON (AMONG THOSE NEEDING ORAL SURGERY)							
	Estimated Population	Mean Number of Ea. Surg. Type		Mean Number of Extractions Needed	Median Number of Extractions Needed		
Gender		Simple	Complex	Impact.			
Male	46,142	.5	.6	1.9	3.1		2
Female	15,773	.3	.4	2.2	3.0		1
Race							
White	39,093	.5	.4	2.0	3.0		1
Black	15,067	.4	.9	1.9	3.2		2
Other	7,755	.5	.6	1.9	3.0		2
Age Category							
18 - 19 years	29,836	.4	.3	2.3	3.0		1
20 - 24 years	28,220	.6	.7	1.8	3.1		2
25 - 29 years	2,813	.5	.9	1.3	2.7		0
30 - 34 years	1,046	.5	1.3	.8	2.6		1
Education							
Not HS Graduate	1,116	.5	1.0	1.2	3.1		2
High School Graduate	33,752	.5	.4	1.4	3.1		2
Some College	24,169	.5	.6	1.4	3.0		1
College Graduate	2,879	.6	1.0	1.4	3.0		0
DoD Recruits with O.S. Treatment Needs							
	61,915	.5	.6	2.0	3.0		1
95% Confidence Interval		[.4-.5]	[.5-.6]	[1.9-2.1]	[2.9-3.1]		

5. Distribution of DoD Dental Classification Based Only on Oral Surgery Treatment Needs

Based only on oral surgical treatment needs, about two-fifths of all recruits are in class 1, another two-fifths are in class 2, and one-fifth are in class 3. Logistic regression analysis shows that black recruits are more likely than whites to be class 3 due to oral surgical treatment requirements.

Table 6.4

PERCENT DISTRIBUTION OF DOD DENTAL CLASSIFICATION BASED ONLY ON ORAL SURGICAL TREATMENT NEEDS (FOR ALL DOD RECRUITS)				
	Estimated Population	1	2	3
Gender				
Male	73,972	37.6	40.1	22.3
Female	27,100	41.7	37.9	20.4
Race				
White	69,607	43.8	36.2	20.0
Black	20,229	25.5	48.7	25.8
Other	11,236	30.9	43.2	25.9
Age Category				
18 - 19 years	48,404	38.3	41.8	19.9
20 - 24 years	44,874	37.1	38.1	24.8
25 - 29 years	5,822	51.6	30.7	17.7
30 - 34 years	1,972	46.9	42.0	11.1
Education				
Not HS Graduate	1,540	27.4	48.2	24.4
High School Graduate	51,985	35.0	41.4	23.6
Some College	41,708	42.0	37.5	20.5
College Graduate	5,839	50.7	35.2	14.1
All DoD Recruits	101,072	38.7	39.5	21.8
95 % Confidence Interval (± %)		2.4	2.4	2.0

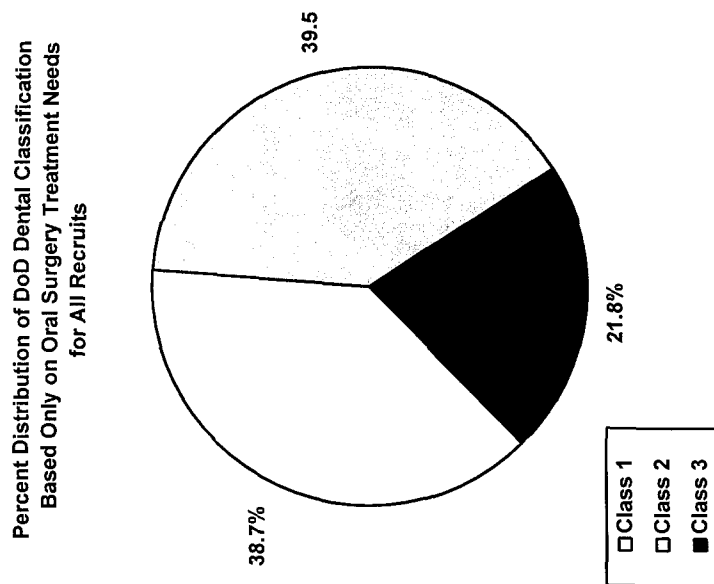


Figure 6.4

Of those recruits with oral surgical treatment needs, roughly two-thirds are dental class 2 and one-third are class 3, (based only on oral surgery status).

Percent Distribution of Dental Classification
Based Only on Oral Surgery Treatment Needs
for Those Needing O. S. Care

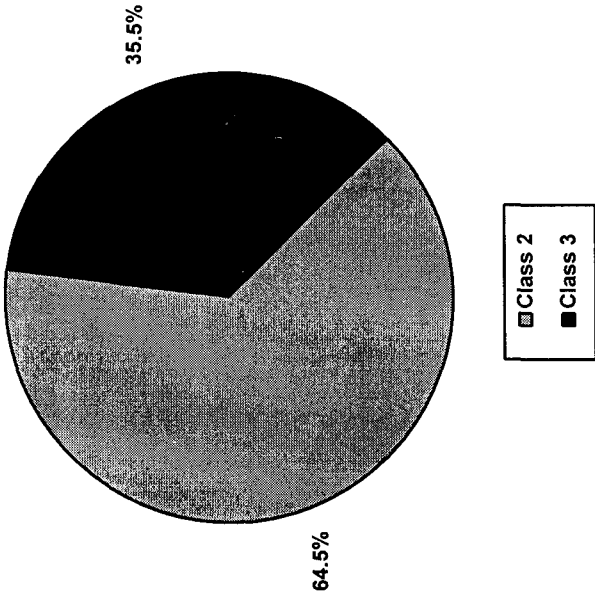


Figure 6.5

Table 6.5

PERCENT DISTRIBUTION OF DOD DENTAL CLASSIFICATION BASED ONLY ON ORAL SURGICAL TREATMENT NEEDS (AMONG THOSE RECRUITS NEEDING O.S. CARE)			
	Estimated Population	DoD Dental Class	
		2	3
Gender			
Male	46,142	64.3	35.7
Female	15,773	65.0	35.0
Race			
White	39,093	64.5	35.5
Black	15,067	65.4	34.6
Other	7,755	62.5	37.5
Age Category			
18 - 19 years	29,836	67.7	32.3
20 - 24 years	28,220	60.6	39.4
25 - 29 years	2,813	63.5	36.5
30 -34 years	1,046	79.2	20.8
Education			
Not HS Graduate	1,116	66.4	33.6
High School Graduate	33,752	63.6	36.4
Some College	24,169	64.7	35.3
College Graduate	2,879	71.5	28.5
DoD Recruits with O.S. Treatment Needs	61,915	64.5	35.5
95% Confidence Interval (+/- %)		2.4	2.4

6. Composite Time Values for Oral Surgery Treatment Needs

Appendix A shows the computation of CTV for each dental procedure. For all recruits, the mean CTV for needed oral surgery care is 16.3 and the median is 14.6. **No oral surgery treatment is needed by nearly two-fifths of recruits**, and another 12% need between 1 and

15 CTV of treatment. Most of these individuals need one tooth removed. The remaining 49.3% of recruits need between 15 and 70 CTV of treatment, reflecting multiple and/or more complicated surgical procedures.

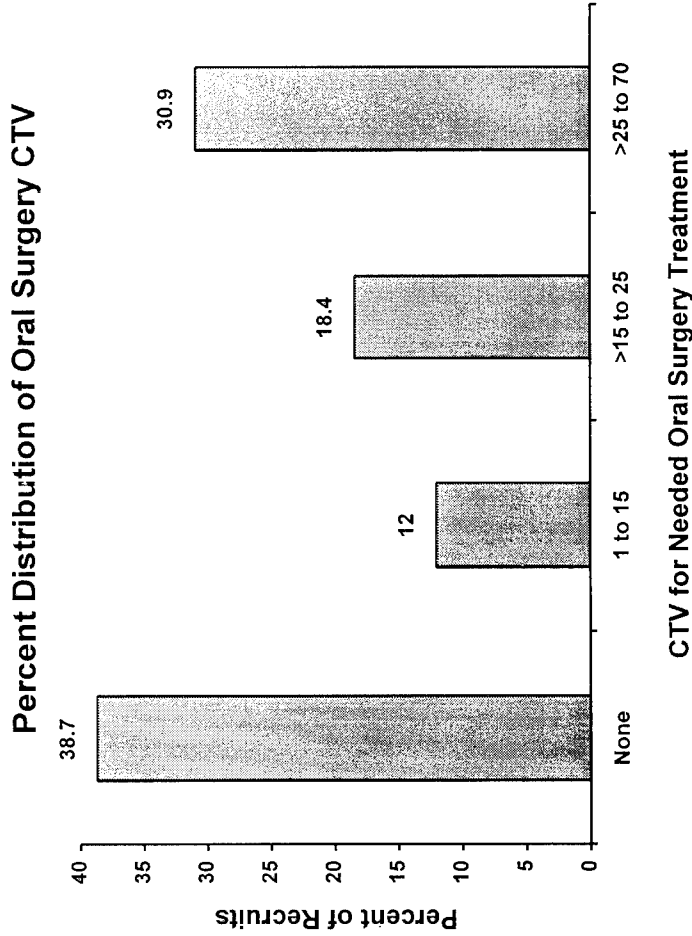


Figure 6.6

Distribution of Oral Surgery CTV Across the Recruit Population

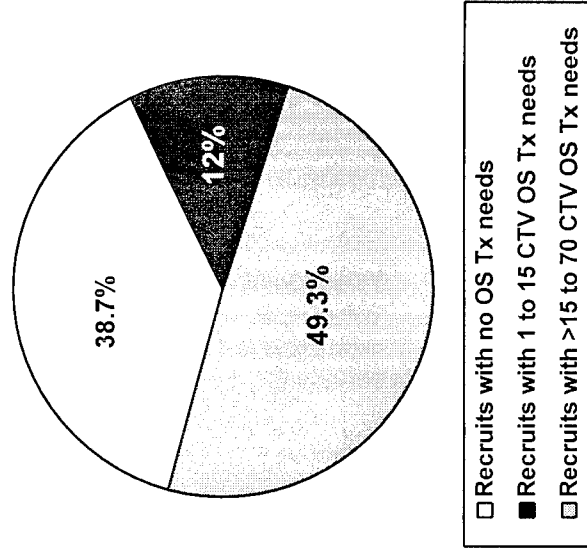


Figure 6.7

Table 6.6

PERCENT DISTRIBUTION OF ORAL SURGERY COMPOSITE TIME VALUES (CTV) (FOR ALL DOD RECRUITS)							
	Estimated Population	% in Each CTV Category			Mean OS CTV	Median OS CTV	
Gender		None	1-15	>15-25	>25-70		
Male	73,972	38.7	12.0	18.4	30.9	16.5	10.4
Female	27,100	37.6	13.0	17.9	31.5	15.8	9.4
Race							
White	69,607	43.8	11.8	17.8	26.6	14.8	8.4
Black	20,229	25.5	11.8	18.6	44.1	20.7	20.8
Other	11,236	30.9	13.7	21.8	33.6	17.9	14.3
Age Category							
18 -19 years	48,404	38.3	10.3	20.3	31.1	17.1	10.4
20 - 24 years	44,874	37.1	12.9	17.2	32.8	16.5	10.4
25 - 29 years	5,822	51.6	16.7	13.8	17.9	10.7	0
30 -34 years	1,972	46.9	22.1	13.0	18.0	10.2	7
Education							
Not HS Graduate	1,540	27.4	13.3	22.7	36.6	18.8	17.4
High School Graduate	51,985	35.0	11.3	19.8	33.9	17.8	12.6
Some College	41,708	42.0	12.7	17.2	28.1	15.0	8.4
College Graduate	5,839	50.7	13.3	14.2	21.8	11.8	0
All DoD Recruits	101,072	38.7	12.0	18.4	30.9	16.3	14.6
95% Confidence Interval ($\pm$ %)		1.8	1.2	1.4	1.8	[13.7-14.8]	

7. PERIODONTAL HEALTH STATUS AND TREATMENT NEEDS

Periodontal Health Status, Treatment Needs, and DoD Dental Classification

1. Method of Periodonal Data Collection

Periodontal status and treatment needs were assessed using the Periodontal Screening and Recording (PSR) index, a rapid and effective way to screen patients for periodontal diseases. PSR is an adaptation of the Community Periodontal Index of Treatment Needs (CPITN), which is endorsed by the World Health Organization. PSR is recommended by The American Dental Association and The American Academy of Periodontology for all patients as an integral part of oral examinations.

Survey examiners recorded the deepest probing depth for each sextant of the dentition using the CPITN-E periodontal probe. Examiners also recorded the presence or absence of gingival bleeding and local factors (calculus/defective restoration margins) for each sextant. PSR scores were calculated electronically, based on this information.

2. Periodontal Health Status

A patient's deepest periodontal probing depth is one measure of periodontal health status. Among all DoD recruits two-thirds have no probing depth greater than 3 mm while 31.1% have at least one probing depth in the 4 to 5 mm range. **Only 2.7% of the recruits had a probing depth of 6 mm or greater.** Among all DoD recruits **88.6% have bleeding on probing and 85.6% have calculus or local factors** (Figure 7.1). Table 7.1 provides detailed information on these periodontal health status measures stratified by gender, by race, by age category, and by education. Logistic regression analysis demonstrated the following statistically significant trends:

- **whites are more likely to have no probing depth greater than 3mm and less likely to have a probing depth of 6mm or greater compared to other races;**
- **probing depth and the likelihood of bleeding on probing increases with increasing age;**
- **non-high school graduates are more likely to have a probing depth of 6mm or greater compared to individuals with a high school degree or college;**
- **bleeding on probing is more common in females, non-whites, and non-college recruits;**
- **the presence of calculus/local factors is less likely in females and college graduates.**

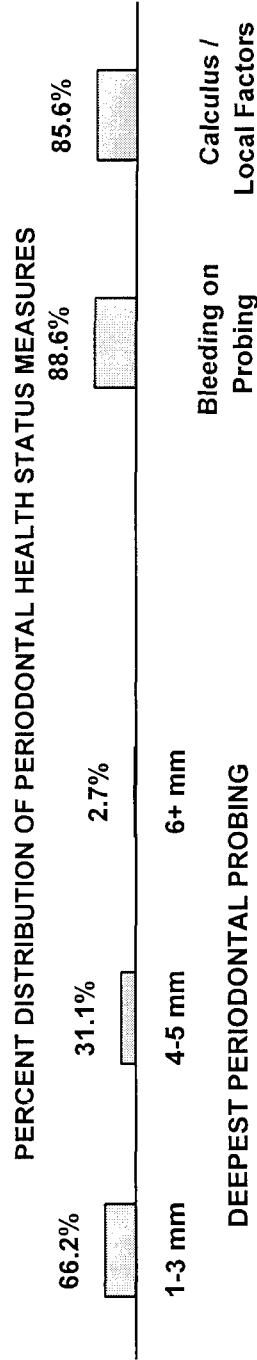


Figure 7.1

Table 7.1

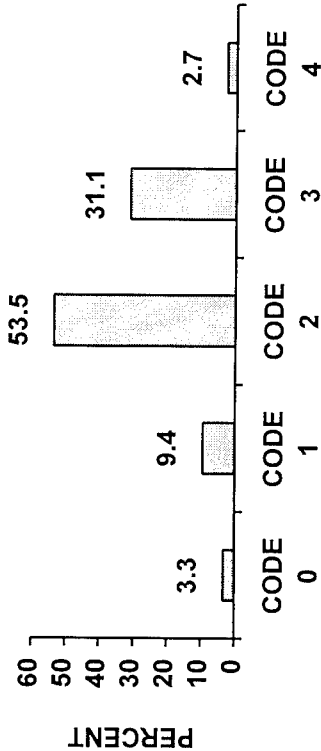
DOD RECRUIT PERIODONTAL HEALTH STATUS (FOR ALL DOD RECRUITS)							
	Estimated Population	Deepest Perio. Probing (%)			Bleeding on Probing (%)	Calculus/local Factors (%)	
Gender		1-3 mm	4-5 mm	6+ mm			
Male	73,972	66.2	31.3	2.5	87.7		87.4
Female	27,100	66.5	30.4	3.1	91.1		80.6
Race							
White	69,607	71.5	27.6	0.9	86.7		85.0
Black	20,229	50.6	41.0	8.4	92.5		86.0
Other	11,236	62.0	34.4	3.6	92.9		88.7
Age Category							
18 - 19 years	48,404	72.1	26.2	1.7	87.1		85.3
20 - 24 years	44,874	64.0	33.4	2.6	89.3		86.0
25 - 29 years	5,822	46.2	44.8	9.0	92.7		84.5
30 - 34 years	1,972	32.0	57.8	10.2	96.5		84.5
Education							
Not HS Graduate	1,540	70.7	16.5	12.8	100.0		90.9
High School Graduate	51,985	67.4	30.3	2.3	89.0		87.8
Some College	41,708	64.9	32.2	2.9	87.9		84.2
College Graduate	5,839	64.9	33.3	1.8	86.5		74.2
All DoD Recruits	101,072	66.2	31.1	2.7	88.6		85.6
95% Confidence Interval ($\pm$ %)		1.8	1.8	0.6	1.2		1.4

3. Periodontal Screening and Recording Results

Figure 7.2 shows the percentage of recruits with each PSR code. Table 7.2 provides the same information stratified by gender, by race, by age category, and by education. Ordered logistic regression analysis demonstrated the following statistically significant findings: *PSR scores increase with increasing age; blacks are likely to have higher PSR scores compared to whites; and college graduates are likely to have lower PSR scores compared to high school graduates.* Listed below is a brief description of the periodontal therapy recommended for each PSR code.

Most therapy required by codes 0, 1 and 2 can be accomplished by auxiliary dental personnel. Therapy for recruits with PSR code 3 involves direct patient contact with a general dentist. Code 4 recruits require complex periodontal treatment involving direct treatment by a periodontist. *For recruits, 66.2% of needed periodontal treatment can be accomplished by auxiliary dental personnel, 31.1% of needed treatment requires direct patient contact with a general dentist, and 2.7% requires direct patient contact with a periodontist.*

PERCENT OF RECRUITS WITH EACH PSR CODE



PSR CODE	THERAPY INDICATED
0	Appropriate preventive care
1	OHI, plaque removal
2	OHI, plaque-calculus removal, correct restoration margins
3	Comprehensive perio. exam, OHI, plaque-calculus removal, correct restoration margins, re-evaluate
4	Complex periodontal treatment including all treatment under code 3, surgery as indicated, long term periodontal maintenance

Figure 7.2

Table 7.2

PERCENT DISTRIBUTION OF PERIODONTAL SCREENING AND RECORDING (PSR) CODE (FOR ALL DOD RECRUITS)						
	Estimated Population	% WITH EACH PSR CODE				
		CODE 0	CODE 1	CODE 2	CODE 3	CODE 4
Gender						
Male	73,972	3.2	7.7	55.2	31.3	2.6
Female	27,100	3.7	13.9	48.9	30.4	3.1
Race						
White	69,607	4.1	9.6	57.8	27.6	0.9
Black	20,229	1.8	9.7	39.2	40.9	8.4
Other	11,236	1.6	7.3	53.1	34.4	3.6
Age Category						
18 - 19 years	48,404	3.3	10.3	58.5	26.2	1.7
20 - 24 years	44,874	3.6	8.6	51.7	33.4	2.7
25 - 29 years	5,822	1.4	7.3	37.5	44.8	9.0
30 - 34 years	1,972	1.0	10.3	20.7	57.8	10.2
Education						
Not HS Graduate	1,540	0.0	9.1	61.6	16.5	12.8
High School Graduate	51,985	2.3	8.6	56.4	30.3	2.4
Some College	41,708	3.9	9.8	51.2	32.2	2.9
College Graduate	5,839	9.1	13.0	42.8	33.3	1.8
All DoD Recruits	101,072	3.3	9.4	53.5	31.1	2.7
95% Confidence Interval ($\pm$ %)		0.6	1.2	2.0	1.8	0.6

4. Composite Time Values for Periodontal Treatment Needs

PSR includes suggested guidelines for appropriate patient management based on individual PSR score. Following the guidance of a group of advisory military periodontists, we converted PSR treatment guidelines into dental procedure codes and composite time values (CTV). Appendix A provides the breakout of dental procedure codes for each PSR coded sextant and an explanation of the conversion to CTV. Table 7.3 gives a breakout of CTV stratified by gender, by race, by age category, and by education. Regression analysis found the following statistically significant trends: **Non-whites have more CTV of treatment need compared to whites; CTV of treatment need increase as age increases; college graduates have less CTV of**

treatment need compared to high school graduates. Table 7.3 also shows a difference between the mean (10.16) and median (5.2) number of periodontal CTV needed among all DoD recruits. This difference is due to an increase in the mean caused by a small number of individuals requiring a large amount of periodontal treatment. One half of all individuals require periodontal treatment representing 5.2 or fewer CTV. Figure 7.3 shows the percentage distribution of recruits requiring periodontal treatment by specified CTV range. **While 1.2% of recruits require more than 50 periodontal CTV, 74.7% require 10 or less periodontal CTV of treatment, and 3.7% require no periodontal treatment.**

PERCENT OF RECRUITS IN EACH PERIODONTAL CTV RANGE

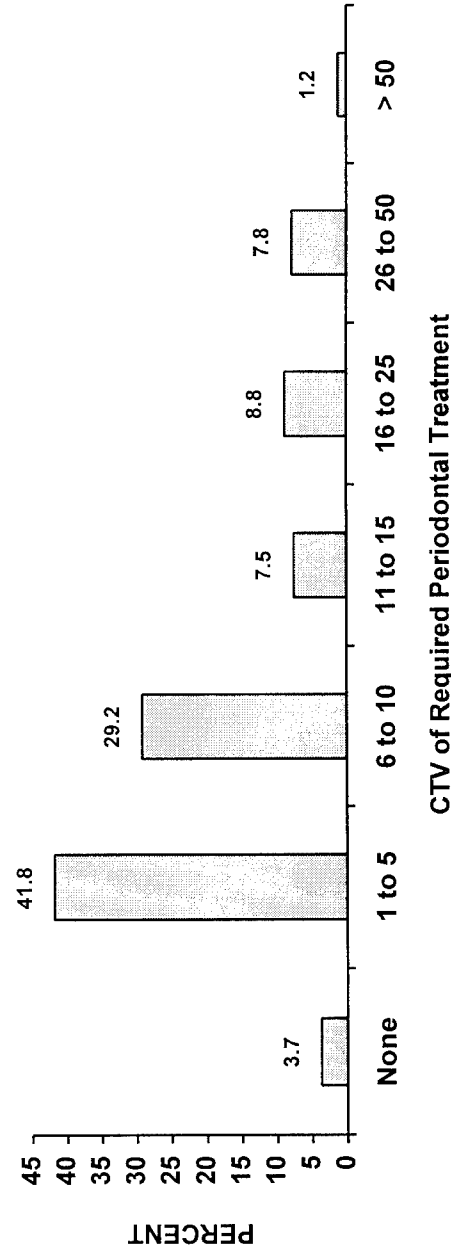


Figure 7.3

Table 7.3

PERCENT DISTRIBUTION OF PERIODONTAL COMPOSITE TIME VALUES (CTV) (FOR ALL DOD RECRUITS)										
	Estimated Population	None	1-5	6-10	Percent in Each CTV Category				Mean Perio. CTV	Median Perio. CTV
Gender										
Male	73,972	3.2	40.3	26.5	8.0	10.4	10.2	1.4	10.31	5.2
Female	27,100	3.7	41.1	27.4	8.8	9.4	7.8	1.8	9.75	5.2
Race										
White	69,607	4.1	44.7	27.5	8.0	8.8	6.5	0.4	8.12	5.2
Black	20,229	1.8	30.9	20.7	7.7	14.5	19.3	5.1	16.63	7.2
Other	11,236	1.5	31.6	33.0	10.7	10.5	10.9	1.8	11.16	5.6
Age Category										
18 - 19 years	48,404	3.4	45.8	27.3	7.4	8.7	6.6	0.8	8.47	5.2
20 - 24 years	44,874	3.6	37.6	27.1	8.7	11.3	10.3	1.4	10.30	5.2
25 - 29 years	5,822	1.4	26.5	22.0	9.1	11.5	23.2	6.3	19.12	10.4
30 - 34 years	1,972	1.0	17.0	19.4	15.3	13.8	23.4	10.1	22.19	14.4
Education										
Not HS Graduate	1,540	0.0	45.0	28.1	5.8	4.1	8.5	8.5	13.47	5.2
High School Graduate	51,985	2.3	41.2	28.3	8.4	9.8	9.0	1.0	9.72	5.2
Some College	41,708	3.9	39.7	25.3	8.3	10.6	10.3	1.9	10.68	5.2
College Graduate	5,839	9.1	39.0	22.6	7.2	11.4	9.5	1.2	9.58	5.2
All DoD Recruits	101,072	3.7	41.8	29.2	7.5	8.8	7.8	1.2	10.16	5.2
95% Confidence Interval ($\pm$ %)		0.8	1.8	1.8	1.0	1.0	1.0	0.4	[9.68-10.65]	

5. DoD Dental Classification Based Only on Periodontal Treatment Need

During the periodontal examination the DoD dental classification, ***based only on periodontal treatment needs***, was recorded for all dentition sextants of each recruit examined. Figure 7.4 shows that ***only 3.4 percent of recruits are class 1 for periodontal reasons while 92.7***

percent are class 2 and 3.9 percent are class 3. Table 7.4 gives the periodontal DoD dental classification stratified by gender, by race, by age category, and by education. Only ***6.7% percent of the recruit population require a dental prophylaxis as their sole dental treatment need.***

Percent Distribution of Periodontal DoD Dental Classification (for All DoD Recruits)

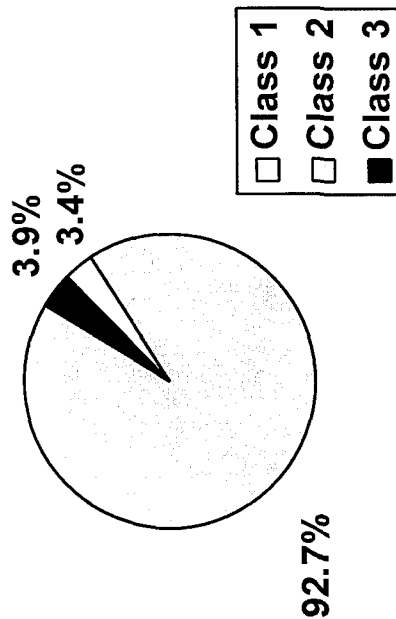


Figure 7.4

PERCENT DISTRIBUTION OF DOD DENTAL CLASSIFICATION BASED ONLY ON PERIODONTAL TREATMENT NEEDS (FOR ALL DOD RECRUITS)				
	Estimated Population	DoD Dental Readiness Class		
		1	2	3
Gender				
Male	73,972	3.2	92.5	4.3
Female	27,100	3.7	93.5	2.8
Race				
White	69,607	4.1	92.7	3.2
Black	20,229	1.8	92.1	6.1
Other	11,236	1.5	94.4	4.1
Age Category				
18 - 19 years	48,404	3.4	93.7	2.9
20 - 24 years	44,874	3.6	91.9	4.5
25 - 29 years	5,822	1.4	89.8	8.8
30 - 34 years	1,972	1.0	99.0	0.0
Education				
Not HS Graduate	1,540	0.0	100.0	0.0
High School Grad	51,985	2.4	93.8	3.8
Some College	41,708	3.9	91.5	4.6
College Graduate	5,839	9.2	90.0	0.8
All DoD Recruits	101,072	3.4	92.7	3.9
95% Confidence Interval (± %)		0.6	1.0	0.8

Table 7.4

Figure 7.5 shows that, **among recruits in periodontal DoD dental class 3**, a mean of 2.2 sextants are class 3, 3.3 sextants are class 2, and 0.5 are class 1. Logistic regression analysis to determine if an individual is more likely to be in periodontal DoD dental class 3 based on

gender, sex, race, age, or level of education shows that **the likelihood of being in periodontal dental class 3 increases with increasing age and blacks are more likely to be periodontal dental class 3 than whites.**

**Mean Number of Sextants in Each Periodontal DoD Dental Class
Among Recruits in DoD Class 3 Based Only on Periodontal Treatment Need**

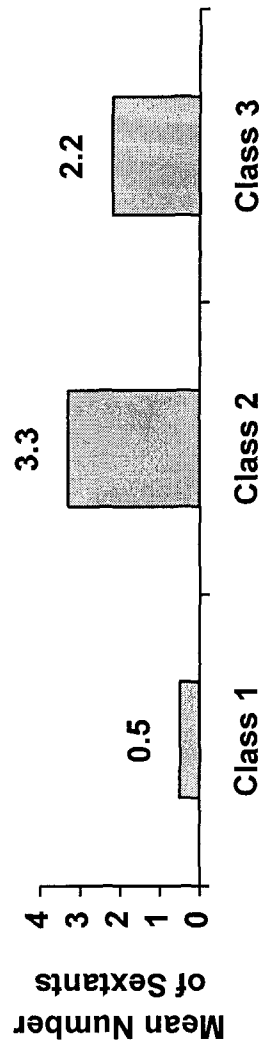


Figure 7.5

Figure 7.6 shows that among recruits in periodontal DoD dental class 2, a mean of 4.9 sextants are class 2 and 1.1 are class 1.

**Mean Number of Sextants in Periodontal DoD Dental Class 1 and 2
Among Recruits in DoD Class 2 Based Only on Periodontal Treatment Need**

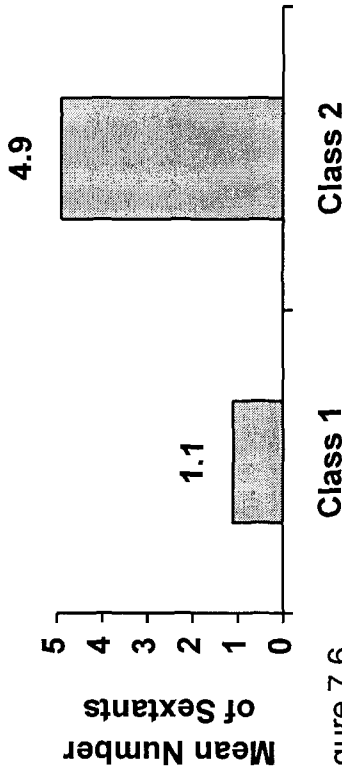


Figure 7.6

8. PROSTHODONTIC TREATMENT NEEDS

Prosthodontic Treatment Needs (ProsTN) and Dental Classification based on ProsTN

1. Method of Prosthodontic Data Collection

Survey examiners assessed the number of missing teeth and/or teeth requiring removal for each patient and made the determination whether to replace missing teeth using fixed or removable prostheses. Current use of partial or complete removable prostheses was assessed along with need for their replacement or repair.

2. Removable Prosthodontic Treatment Needs for the Total Recruit Population

Because no recruits were found to be completely edentulous or to require full-mouth extractions, ***need for complete denture treatment is non-existent among recruits***. Figure 8.1 on the facing page illustrates the

number of missing teeth per person (excluding third molars) seen in the recruit population. While 87.7% of the group have no missing teeth, 6.8% have one missing tooth, 3.3% have two missing teeth, and the remaining 2.2% have from 3 to 12 missing teeth. Table 8.1 shows that 0.30% of recruits need a maxillary removable partial denture (RPD) and 0.94% need a mandibular RPD. ***Of those who need RPDs, about one-in-ten need both maxillary and mandibular RPDs***. Logistic regression analysis found the following statistically significant differences: **blacks are more likely to need an RPD compared to whites; and the likelihood of needing an RPD increases as age increases**.

Intensity of Partial Edentulism
among Recruits

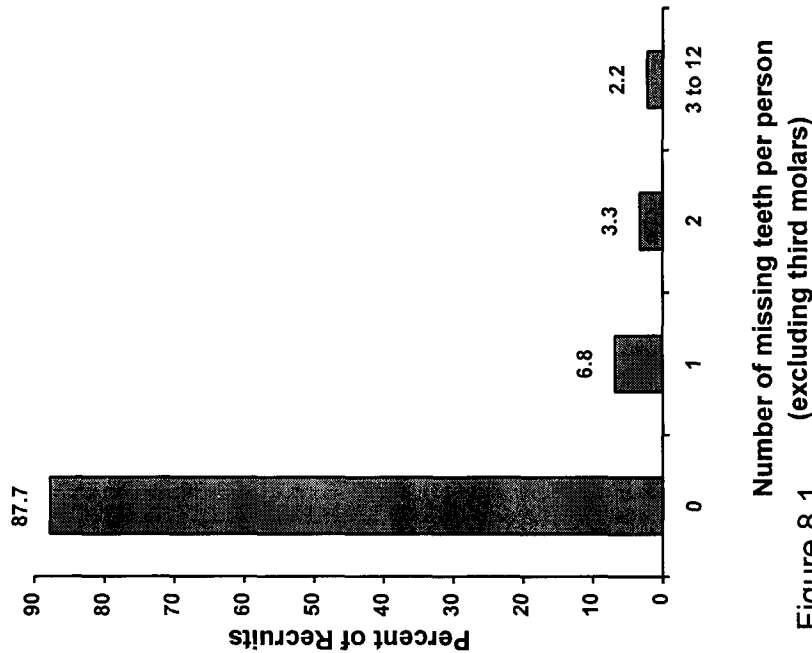


Figure 8.1
(excluding third molars)

Table 8.1

DISTRIBUTION OF REMOVABLE PROSTHODONTIC TREATMENT NEEDS (FOR ALL DOD RECRUITS)			
	Estimated Population	% Needing RPDs Max. Only	Mand. Only
Gender			
Male	73,972	0.25	0.87
Female	27,100	0.43	1.12
Race			
White	69,607	0.26	0.57
Black	20,229	0.53	1.90
Other	11,236	0.09	1.49
Age Category			
18 - 19 years	48,404	0.08	0.17
20 - 24 years	44,874	0.27	0.81
25 - 29 years	5,822	2.40	3.75
30 - 34 years	1,972	0.00	14.26
Education			
Not HS Graduate	1,540	0.00	0.00
High School Graduate	51,985	0.33	0.82
Some College	41,708	0.30	1.08
College Graduate	5,839	0.00	1.23
All DoD Recruits	101,072	0.30	0.94
95 % Confidence Interval (± %)		0.2	0.5

3. Fixed Prosthodontic Treatment Needs for the Total Recruit Population

Table 8.2 details the intensity of fixed prosthodontic (FP) treatment needs for all DoD recruits stratified by gender, by race, by age category, and by education level. Figure 8.2 (below) presents FP treatment needs for all recruits. As the figure illustrates, 80.6% of all recruits have no FP needs; 8.8% need one or two units; 8.6% need three to six units; and 2.0%

need seven or more units of FP. The mean number of fixed units needed is 0.61 and the median is 0. Ordered logistic regression analysis reveals statistically significant differences in the level of FP treatment needs as follows: **older persons need more fixed units than younger persons; and blacks need more fixed units than whites**

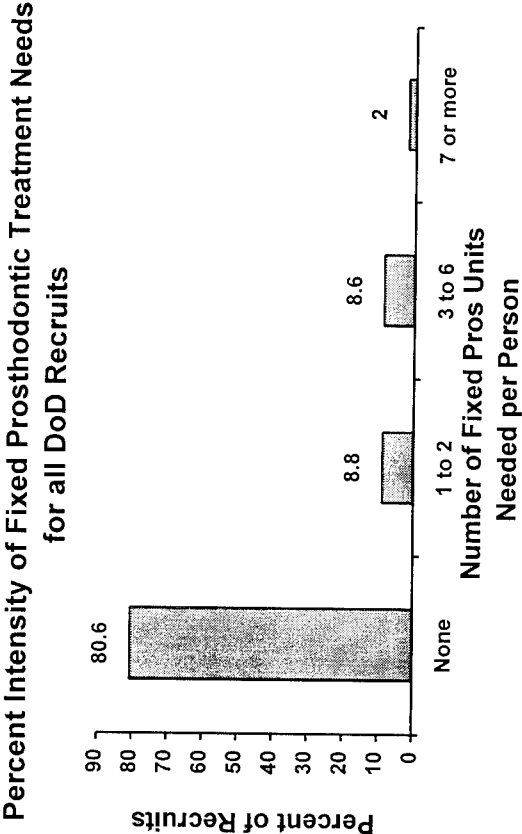


Figure 8.2

Table 8.2

PERCENT, MEAN, AND MEDIAN INTENSITY OF FIXED PROSTHODONTIC TREATMENT NEEDS (FOR ALL DOD RECRUITS)							
	Estimated Population	% Needing Given # of Fixed Units			Mean # of Fixed Units Needed	Median # of Fixed Units Needed	
		None	1 to 2	3 to 6	7 +		
Gender							
Male	73,972	81.1	8.7	8.4	1.8	0.57	0
Female	27,100	79.1	9.2	9.1	2.6	0.71	0
Race							
White	69,607	83.8	8.0	7.0	1.2	0.47	0
Black	20,229	68.8	13.5	14.0	3.7	1.03	0
Other	11,236	81.7	6.1	8.8	3.4	0.70	0
Age Category							
18 - 19 years	48,404	84.6	8.2	5.9	1.3	0.44	0
20 - 24 years	44,874	79.2	9.4	9.9	1.5	0.62	0
25 - 29 years	5,822	66.4	9.8	15.5	8.3	1.49	0
30 - 34 years	1,972	53.9	9.7	24.0	12.4	2.12	0
Education							
Not HS Graduate	1,540	77.8	4.1	12.2	5.9	1.12	0
High School Graduate	51,985	81.8	8.2	8.3	1.7	0.55	0
Some College	41,708	79.4	9.7	8.6	2.3	0.66	0
College Graduate	5,839	79.4	9.3	9.8	1.5	0.62	0
All DoD Recruits	101,072	80.6	8.8	8.6	2.0	0.61	0
95% Confidence Interval ($\pm$ %)		1.6	1.0	1.0	0.6	[0.55-0.67]	

4. Fixed Prosthodontic Treatment Needs Among Those Needing Fixed Prosthodontic Care

Table 8.3 and Figure 8.3 detail the intensity of fixed prosthodontic (FP) treatment needs among DoD recruits who need FP care. Of the recruits needing FP care, 45.6% need one or two units, 44.1% need three to six

units, and 10.3% need seven or more units of fixed prostheses. The mean number of fixed units needed is 3.1 and the median is 3.

Percent Intensity of Fixed Prosthodontic Treatment Needs
among Those with Fixed Prosthodontic Needs

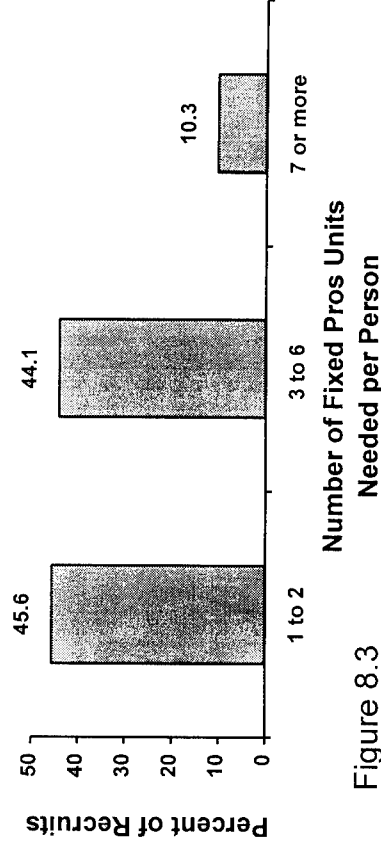


Figure 8.3

Table 8.3

PERCENT, MEAN, AND MEDIAN INTENSITY OF FIXED PROSTHODONTIC TREATMENT NEEDS (AMONG THOSE NEEDING FIXED PROSTHODONTIC CARE)							
	Estimated Population	% Needing Given # of Fixed Units			Mean # of Fixed Units Needed	Median # of Fixed Units Needed	
Gender		1 to 2	3 to 6	7 +			
Male	13,951	46.1	44.4	9.5	3.0	3	
Female	5,634	43.8	42.3	13.9	3.4	3	
Race							
White	11,240	49.2	43.0	7.8	2.9	3	
Black	6,297	43.1	44.9	12.0	3.3	3	
Other	2,048	33.3	48.0	18.7	3.8	3	
Age Category							
18 - 19 years	7,419	53.2	38.3	8.5	2.8	3	
20 - 24 years	9,304	45.3	47.6	7.1	3.0	3	
25 - 29 years	1,955	29.2	46.2	24.6	4.4	4	
30 - 34 years	907	21.2	52.0	26.8	4.6	5	
Education							
Not HS Graduate	342	18.6	54.9	26.5	5.1	3	
High School Graduate	9,450	45.2	45.6	9.2	3.0	3	
Some College	8,589	47.1	41.6	11.3	3.2	3	
College Graduate	1,204	45.1	47.5	7.4	3.0	3	
DoD Recruits w/ Fixed Pros Tx Needs	19,585	45.6	44.1	10.3	3.1	3	
95% Confidence Interval ($\pm$ %)		4.6	4.6	2.8	[2.9-3.4]		

5. Composite Time Values for Prosthodontic Treatment Needs

Appendix A provides the calculation of CTV for each dental procedure. Table 8.4 on the facing page shows the demographic details of prosthodontic CTV distribution. For all recruits, the mean number of CTV needed for prosthodontic care is 9.6 and the median is 0. As shown by Figure 8.4 below, **80.1% of recruits need no prosthodontic CTV and another 11.5% need less than 41 CTV** (no more than 1 unit of removable or 3 units of fixed prosthodontics). The remaining 8.4% need 41 to 165 CTV (corresponding to multiple units of fixed and/or removable prosthodontics).

The prosthodontic workload is heavily concentrated in a small portion of the population. As Figure 8.5 depicts, the 11.5% of recruits who need 1 to 40 CTV require nearly 34% of the total amount of prosthodontic care. But, the 4.3% of recruits who need 41 to 70 CTV require 26.6% of the total amount of prosthodontic treatment. And, the 4.1% of recruits who need over 71 CTV require almost 40% of total prosthodontic treatment. **Thus, the 8.4% of recruits with greatest prosthodontic treatment needs require 2/3 of the total amount of prosthodontic care needed by the entire recruit population.**

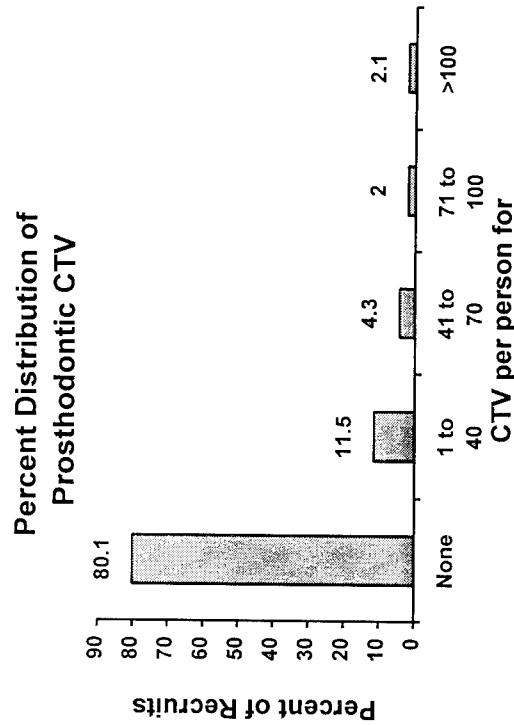


Figure 8.4 Needed Prosthodontic Treatment

Distribution of Total Prosthodontic CTV Workload

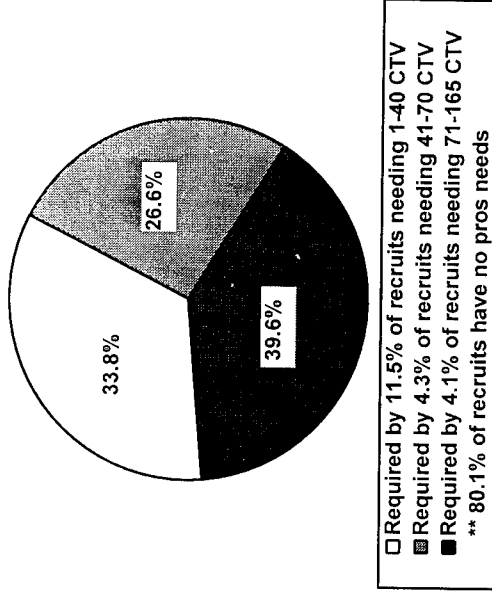


Figure 8.5

Table 8.4

PERCENT DISTRIBUTION OF PROSTHODONTIC COMPOSITE TIME VALUES (CTV) (FOR ALL DOD RECRUITS)									
	Estimated Population	Percent in Each CTV Category					Mean Pros. CTV	Median Pros. CTV	
		None	1-40	41-70	71-100	>100			
Gender									
Male	73,972	80.8	11.4	3.9	2.2	1.7	9.1	0.0	
Female	27,100	78.4	11.9	5.4	1.4	2.9	10.9	0.0	
Race									
White	69,607	83.3	10.1	3.8	1.3	1.5	7.5	0.0	
Black	20,229	68.5	17.5	6.3	4.1	3.6	16.3	0.0	
Other	11,236	81.3	9.7	3.6	2.3	3.1	10.3	0.0	
Age Category									
18 - 19 years	48,404	84.4	9.8	3.0	1.7	1.1	6.8	0.0	
20 - 24 years	44,874	78.7	13.1	5.1	1.6	1.5	9.5	0.0	
25 - 29 years	5,822	65.0	13.1	7.7	5.5	8.7	23.8	0.0	
30 - 34 years	1,972	50.5	13.5	10.2	5.7	20.1	37.7	0.0	
Education									
Not HS Graduate	1,540	76.1	13.7	4.3	5.9	0.0	13.7	0.0	
High School Graduate	51,985	81.2	11.0	4.5	1.7	1.6	8.7	0.0	
Some College	41,708	79.0	12.1	3.9	2.4	2.6	10.5	0.0	
College Graduate	5,839	79.4	11.6	6.4	1.5	1.1	9.1	0.0	
All DoD Recruits	101,072	80.1	11.5	4.3	2.0	2.1	9.6	0.0	
95% Confidence Interval ($\pm$ %)		1.6	1.2	0.8	0.6	0.6	[8.7-10.5]		

9. ENDODONTIC TREATMENT NEEDS

Endodontic Treatment Needs (ETN) and Dental Classification based on ETN

1. Method of Endodontic Data Collection

Survey examiners assessed the potential need for endodontic therapy using radiographs and visual inspection. Definitive vitality testing for all teeth was beyond the scope of this survey. However, if the examiner believed a tooth would require endodontic care following extensive restorative procedures, it was counted as needing endodontia. (It should be remembered that a large portion of overall endodontic treatment needs likely arise over time, diagnosed as acute problems, rather than occurring passively and being diagnosed on surveys such as this).

2. Endodontic Treatment Needs - All Recruits

Table 9.1 and Figure 9.1 detail the intensity of endodontic treatment needs for all DoD recruits. **Among all recruits, 90.8% have no current need for endodontic therapy**; 6.6% need one tooth treated endodontically; 2.6% have two or more teeth in need of endodontic therapy. The mean number of endodontia needed is 0.13, and the median is 0. Using logistic regression analysis, statistically significant differences in likelihood of needing endodontic care are as follows: **older recruits are more likely than younger recruits; and blacks are more likely than whites.**

Percent Intensity of Endodontic Treatment Needs
for All DoD Recruits

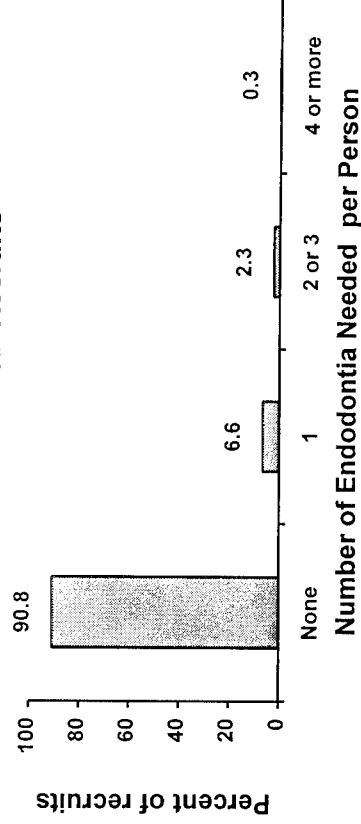


Figure 9.1

Table 9.1

PERCENT AND MEAN INTENSITY OF ENDODONTIC TREATMENT NEEDS (FOR ALL DOD RECRUITS)						
	Estimated Population	% Needing this Number of Endo.				Mean Number of Endo. Needed
Gender		None	1	2 or 3	4 +	
Male	73,972	90.8	6.2	2.5	0.5	0.14
Female	27,100	90.8	7.5	1.7	0.0	0.11
Race						
White	69,607	93.0	4.9	1.6	0.5	0.11
Black	20,229	82.0	13.3	4.6	0.1	0.24
Other	11,236	93.2	4.7	2.0	0.1	0.09
Age Category						
18 - 19 years	48,404	92.5	5.5	1.9	0.1	0.10
20 - 24 years	44,874	90.5	6.9	2.0	0.6	0.14
25 - 29 years	5,822	85.5	7.5	7.0	0.0	0.24
30 - 34 years	1,972	74.9	21.8	3.3	0.0	0.28
Education						
Not HS Graduate	1,540	88.1	11.9	0.0	0.0	0.19
High School Graduate	51,985	91.0	6.0	2.6	0.4	0.14
Some College	41,708	90.3	7.5	1.9	0.3	0.13
College Graduate	5,839	94.0	3.7	2.3	0.0	0.08
All DoD Recruits	101,072	90.8	6.6	2.3	0.3	0.13
95% Confidence Interval ($\pm$ %)		1.2	1.0	0.6	0.2	[0.11-0.15]

3. Endodontic Treatment Needs Among Those Needing Endodontic Care

Table 9.2 and Figures 9.2 and 9.3 detail the intensity of endodontic treatment needs among recruits *who need endodontic care*. Of this group (9.2% of the total population), 17.2% need at least one anterior tooth treated endodontically, 17.5% need at least one premolar treated, and 73.5% need at least one molar treated. The mean number of anterior teeth requiring endodontia per person is 0.22 (indicating about 1 in 5 persons who need endodontic treatment have anterior tooth involvement).

The mean is 0.20 premolars per person (indicating about 1 in 5 people who need endodontic treatment have premolars involved). Molars are the most frequently involved teeth, with a mean of 1.00 molar involved per person who needs endodontic care. *The mean number of involved teeth per person requiring endodontic care is 1.42.*

Distribution of Type of Endodontic Treatment Needs among Those Needing Endodontic Care

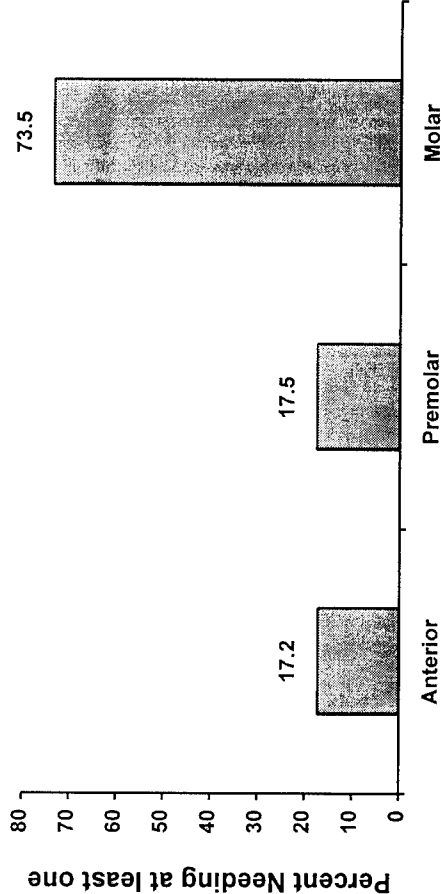


Figure 9.2
Type of Endodontia

Intensity of Endodontic Treatment Needs
among Those Needing Endodontic Care



Figure 9.3

Table 9.2

DISTRIBUTION OF ENDODONTIC TREATMENT NEEDS (AMONG THOSE RECRUITS NEEDING ENDODONTIC THERAPY)									
	Estimated Population	% Needing at Least One		Mean Number of Endo. Needed				95% Confidence Interval ($\pm$ %)	
		Anterior	Premolar	Molar	Anterior	Premolar	Molar		
Gender									
Male	6,752	18.8	19.0	72.4	.25	.22	1.03		1.50
Female	2,471	12.8	13.6	76.3	.13	.16	.94		1.23
Race									
White	4,847	17.4	19.1	73.7	.25	.22	1.04		1.51
Black	3,618	18.7	14.2	73.8	.19	.16	.98		1.32
Other	758	7.8	23.4	70.6	.16	.34	.87		1.37
Age Category									
18 - 19 years	3,627	20.0	11.9	70.3	.25	.16	.93		1.34
20 - 24 years	4,260	15.4	18.4	77.2	.22	.20	1.08		1.50
25 - 29 years	843	8.5	24.5	84.0	.09	.32	1.24		1.64
30 - 34 years	493	26.5	39.3	47.4	.26	.39	.48		1.13
Education									
Not HS Graduate	182	0.0	28.2	71.8	.00	.28	.72		1.00
High School Graduate	4,651	14.4	18.4	77.7	.18	.22	1.14		1.54
Some College	4,042	22.6	17.6	69.8	.29	.21	.82		1.32
College Graduate	348	0.0	0.0	100.0	.00	.00	1.37		1.37
All DoD Recruits	9,223	17.2	17.5	73.5	.22	.20	1.00	[.88-1.12]	1.42
95% Confidence Interval ($\pm$ %)		5.4	5.4	6.4	[.14-.30]	[.14-.27]	[.88-1.12]		[1.31-1.54]

4. **Distribution of DoD Dental Classification Based Only on Endodontic Treatment Needs**

Assuming any tooth identified as needing endodontic therapy has the potential for an acute flareup at any time, all patients with endodontic

treatment need (9.2 percent of the population) were automatically considered to be in dental class 3 status.

5. **Composite Time Values for Endodontic Treatment Needs**

Appendix A shows CTV calculations for dental procedures. For the entire population, the mean CTV needed for endodontic treatment is 2.0 and the median is 0. For those who have treatment need, the mean CTV required is 22.2 and the median is 16.1, which corresponds to treatment for one tooth. CTV

counts cluster relative to the number of teeth needing treatment. Figure 9.4 illustrates that 53.6% of the total endodontic CTV requirements are due to one tooth per person needing care, 24.0% of the total relate to 2 teeth per person needing care, 11.1% and 11.2% of total CTV requirements are needed for treating 3 and 4+ teeth per person, respectively.

Distribution of Endodontic CTV Clusters Corresponding to Number of Teeth to be Treated

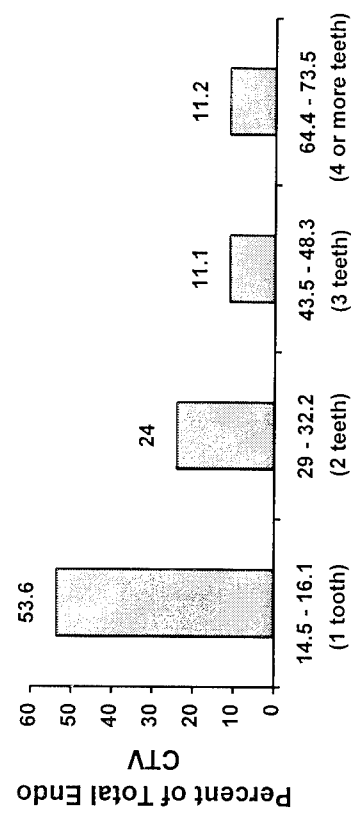


Figure 9.4

6. Distribution of Teeth Requiring Endodontic Therapy

As illustrated in Figure 9.5, the distribution of type of teeth diagnosed to need endodontic treatment is as follows: anterior - 15.4%, $[\pm 3.8\%]$; premolar - 14.3%, $[\pm 3.8\%]$; and molar - 70.3%, $[\pm 4.0\%]$.

Distribution of Type of Teeth Needing Endodontic Care

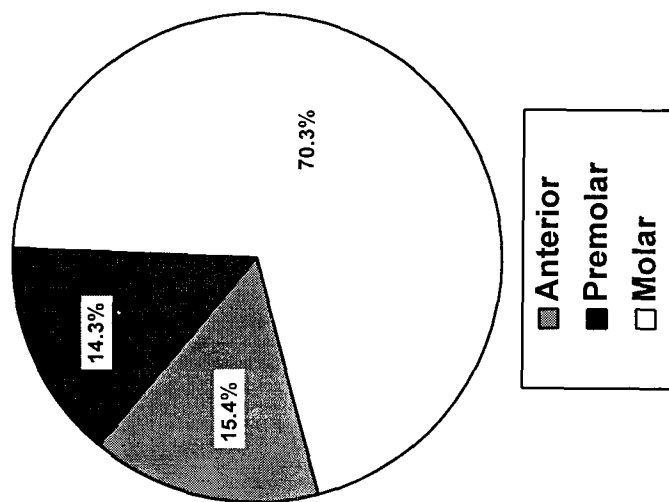


Figure 9.5

**10. DENTAL UTILIZATION
OF
MILITARY RECRUITS**

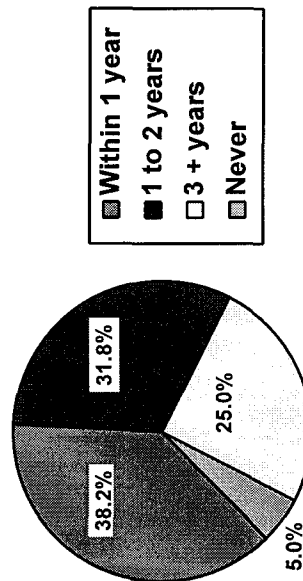
Dental Utilization of Military Recruits

Dental utilization prior to entering the service was assessed for all recruits using a self-administered questionnaire. To enable valid comparisons of recruits with their civilian cohorts, many questions were identical in wording to those used on the National Survey of Oral Health in U.S. Employed Adults and Seniors: 1985-1986 (NIDR, 1987). In all tables, point estimates are presented along with 95% confidence intervals so that statistically significant differences between any two values within the table or between tables can be readily determined. Due to variation in the size of subgroups in the sample, some estimates have wider confidence intervals than others.

Figure 10.1 and Table 10.1 show time since last dental visit for all recruits. **Only 38.2% of all recruits have seen a dentist within the past year. Thirty percent have either never seen a dentist or have not seen one in three or more years.** Table 10.1 also presents bivariate results of time since last dental visit across gender, race, age group, education level, and DoD dental fitness classification. Statistically significant differences in annual dental utilization exist between blacks versus non-blacks, 18-19 versus 20-24 year olds, non-high school graduates versus recruits with some college, DoD dental class 1 versus class 3, and DoD dental class 2 versus class 3.

Logistic regression results show the following factors significantly affect the *likelihood of having seen a dentist within the past year: being female, single, or an Air Force recruit increases the likelihood* 1.3, 1.4,

and 1.7 times, respectively; *perceiving a need for dental care decreases the likelihood* 0.3 times; *compared to whites, being black decreases the likelihood* 0.6 times *while being in the non-white and non-black group (predominantly Native Americans) increases the likelihood* 2.0 times; *compared to coming from the Southeastern United States, coming from the Midwest, the Southwest, or the West Coast decreases the likelihood* 0.8, 0.6, and 0.7 times, respectively; *compared to recruits without a high school degree, having a high school degree, having some college, and having a college degree increases the likelihood* 3.2, 4.2, and 4.3 times, respectively; *compared to 18-19 year olds, 20-24 year olds and 25-29 year olds are* 0.7 and 0.4 times, respectively, *less likely to have seen a dentist within the past year, and compared to recruits in DoD dental class 1, recruits in class 2 and recruits in class 3 are* 0.2 and 0.1 times, respectively, *less likely to have seen a dentist within the past year.*



Dental Utilization: Time Since Last Dental Visit
(All DoD Recruits)

Figure 10.1

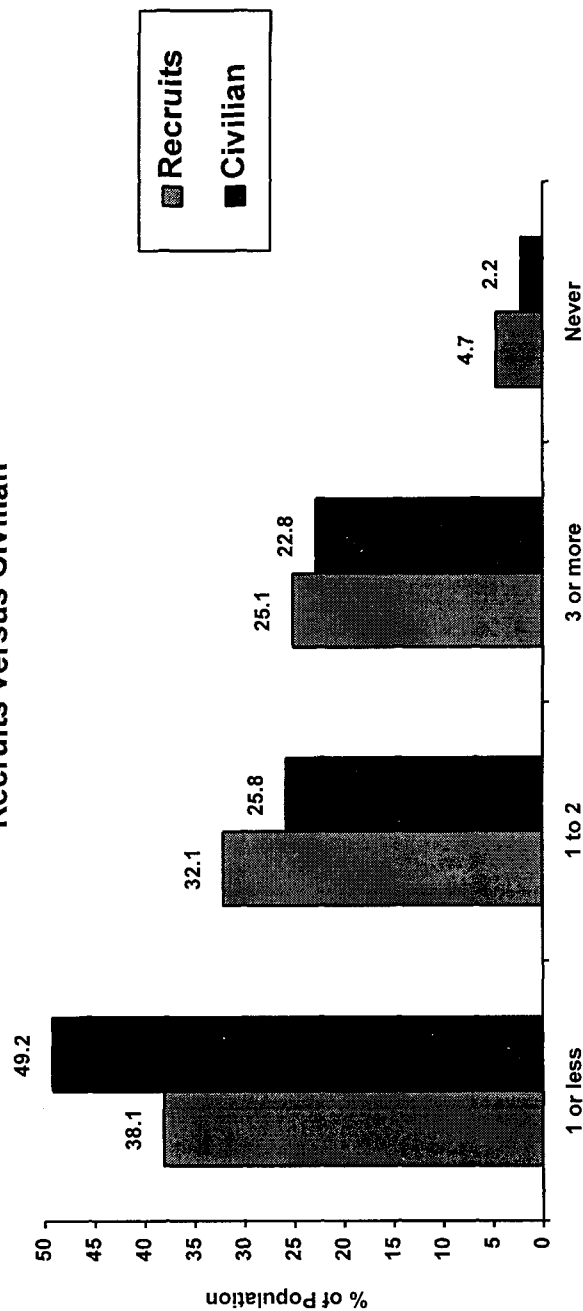
Table 10.1

PERCENT DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT (FOR ALL DOD RECRUITS)									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
Gender									
Male	73,972	37.6	±2.3	31.4	±2.2	25.3	±2.1	5.8	±1.1
Female	27,100	40.0	±3.9	32.9	±3.9	24.1	±3.5	3.0	±1.4
Race									
White	69,607	41.1	±2.4	32.8	±2.4	22.9	±2.1	3.3	±0.9
Black	20,229	27.6	±4.3	30.1	±4.4	32.3	±4.5	10.0	±2.9
Other	11,236	39.9	±6.0	28.8	±5.5	24.3	±5.4	7.0	±3.0
Age									
18 - 19 years	48,404	44.2	±2.9	31.0	±2.7	20.3	±2.4	4.6	±1.2
20 - 24 years	44,874	33.3	±2.9	31.3	±2.9	29.9	±2.9	5.5	±1.4
25 - 29 years	5,822	30.9	±8.4	39.5	±9.0	25.2	±7.8	4.4	±3.6
30 - 34 years	1,972	26.2	±15.1	40.0	±16.8	26.9	±15.0	6.9	±9.3
Education									
Not HS Graduate	1,540	20.9	±14.2	43.8	±16.3	24.0	±12.8	11.3	±10.2
High School Graduate	51,985	36.9	±2.7	30.7	±2.6	25.9	±2.5	6.5	±1.4
Some College	41,708	40.7	±3.2	31.3	±3.0	24.8	±2.8	3.2	±1.2
College Graduate	5,839	37.8	±8.9	41.0	±9.0	17.6	±7.0	3.6	±3.5
Dental Health Class									
1	713	91.0	±10.6	9.0	±10.6	0.0	0.0	0.0	0.0
2	50,595	43.6	±2.9	30.5	±2.8	21.4	±2.5	4.5	±1.2
3	49,764	32.1	±2.6	33.4	±2.7	28.9	±2.6	5.6	±1.3
All DoD Recruits	101,072	38.2	±2.0	31.8	±1.9	25.0	±1.8	5.0	±0.9

Tables 10.2-10.6 show time since last dental visit across age groups, holding gender and race constant. Where available, comparison data from the National Survey of Oral Health in U.S. Employed Adults and Seniors: 1985-86 (NIDR, 1987) is provided. Figure 10.2 shows an overall comparison of dental utilization between military recruits and their civilian cohorts. This comparison is based on black and white races only because no data are available for non-black, non-white civilians. For this reason, recruit percentages in Figure 10.2 differ slightly from those given in Figure 10.1. Furthermore, overall civilian figures were adjusted to match the race, gender, and age composition

of the military recruits so that valid comparisons between the populations could be made. Adjustment was necessary because 83-94% of the estimated recruit population is between 18-24 years old, while only 35-39% of the civilian employed population falls between 18-24 years of age. Likewise, the two populations differ in racial and gender composition. **Recruits are less likely to have visited a dentist within the past year than their civilian cohorts.** Graphical presentations of the data should be viewed with caution because they exclude variances of the estimated values.

Dental Utilization: Years Since Last Dental Visit
Recruits versus Civilian



Years Since Last Dental Visit

Figure 10.2

Figure 10.3 and Table 10.2 present results for white males. Across all age groups where sufficient data are available, **white male recruits are less likely to have seen a dentist within the past year than their employed civilian cohorts.**

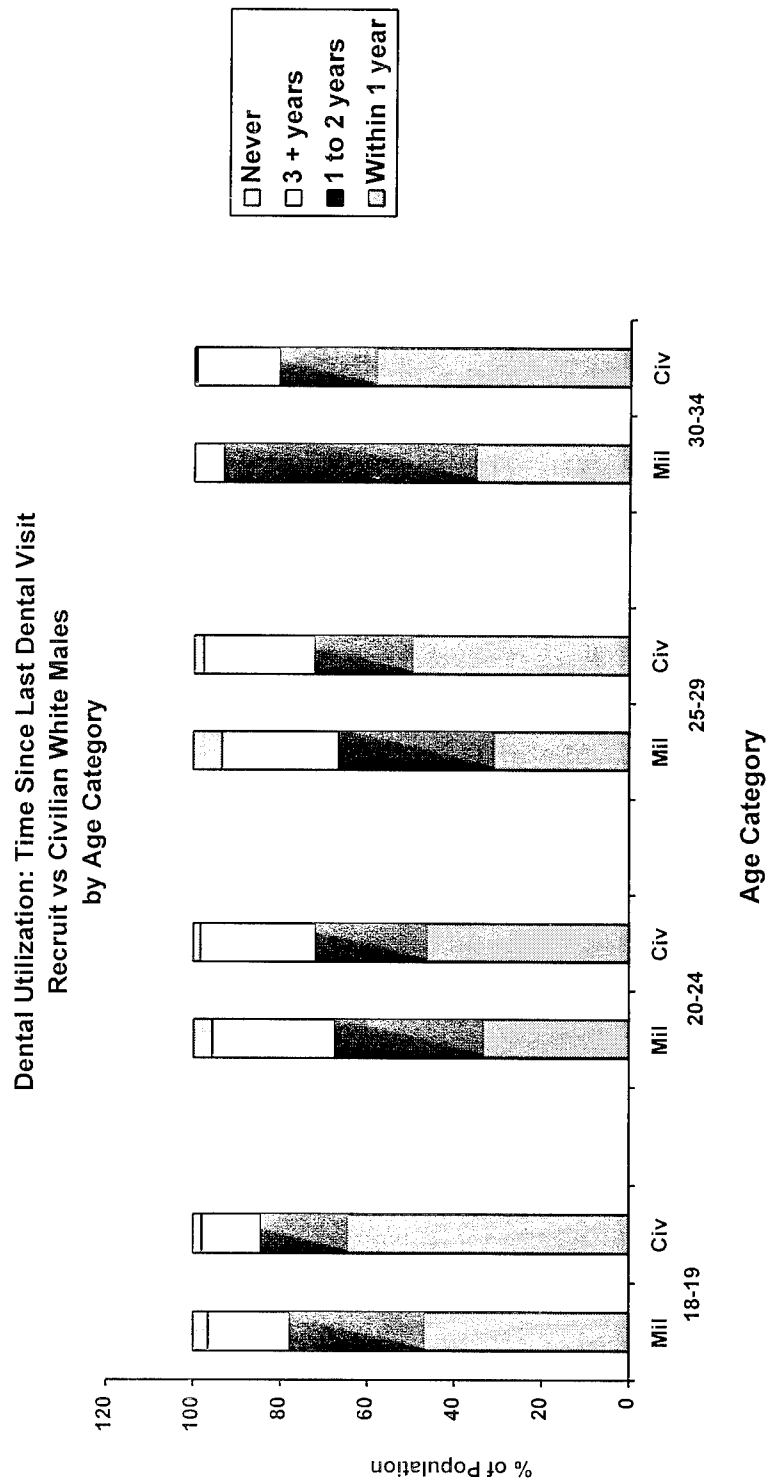


Figure 10.3

Table 10.2

DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT MILITARY WHITE MALES									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	26,221	47.1	± 4.0	30.6	± 3.6	18.8	± 3.1	3.5	± 1.5
20 - 24 years	22,489	33.4	± 4.1	34.0	± 4.2	28.2	± 4.0	4.3	± 1.8
25 - 29 years	2,442	31.1	± 13.1	35.6	± 13.6	26.8	± 12.1	*	*
30 - 34 years	459	*	*	*	*	*	*	*	*
All ages	51612	40.3	± 2.8	32.6	± 2.7	23.2	± 2.4	4.0	± 1.1

* insufficient sample size for stable estimate

DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT CIVILIAN WHITE MALES									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	1,640,716	64.6	± 7.8	19.8	± 6.7	13.6	± 5.7	*	*
20 - 24 years	6,030,197	46.4	± 3.9	25.4	± 3.3	26.5	± 3.5	1.7	± 1.0
25 - 29 years	7,363,804	49.9	± 3.3	22.2	± 2.7	25.6	± 3.1	2.3	± 1.0
30 - 34 years	7,168,794	58.5	± 3.5	22.0	± 2.9	19.1	± 2.5	*	*
All ages	22,203,511	52.8	± 2.0	22.8	± 1.8	24.0	± 1.8	1.5	± 0.4

* insufficient sample size for stable estimate

Table 10.3 and Figure 10.4 present results for white females. *With the exception of 18-19 year olds, across all age groups where sufficient data are available, white female recruits are less likely to have seen a dentist within the past year than their employed civilian cohorts.*

Dental Utilization: Time Since Last Dental Visit
Recruit vs Civilian White Females
by Age Category

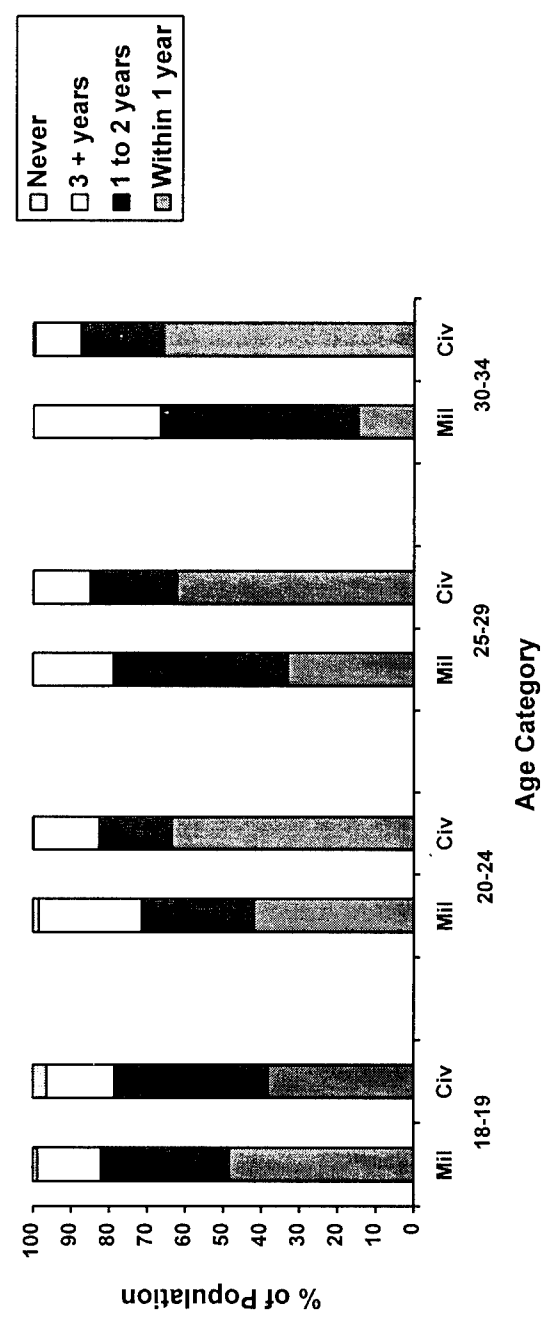


Figure 10.4

Table 10.3

DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT MILITARY WHITE FEMALES									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	7,949	48.4	± 7.2	33.7	± 6.9	16.7	± 5.5	*	*
20 - 24 years	8,192	41.9	± 7.1	29.5	± 6.6	27.0	± 6.6	*	*
25 - 29 years	1,395	33.0	± 16.3	45.8	± 17.9	21.2	± 14.1	*	*
30 - 34 years	459	*	*	*	*	*	*	*	*
All ages	17,995	43.4	± 4.8	33.2	± 4.7	22.2	± 4.2	1.2	± 1.2

* insufficient sample size for stable estimate

DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT CIVILIAN WHITE FEMALES									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	1,621,700	38.2	± 8.6	40.4	± 8.6	17.8	± 6.7	3.6	± 3.3
20 - 24 years	5,601,953	63.5	± 3.3	19.1	± 2.5	17.2	± 2.7	*	*
25 - 29 years	5,834,949	62.2	± 3.1	22.8	± 2.7	14.9	± 2.4	*	*
30 - 34 years	5,388,541	65.7	± 3.3	21.8	± 2.9	12.1	± 2.4	*	*
All ages	18,447,143	61.5	± 2.0	22.9	± 1.6	15.0	± 1.4	0.5	± 0.2

* insufficient sample size for stable estimate

The sample size for black males (Table 10.4) was insufficient to provide stable estimates for 18-19 year old black male civilians and 25-34 year old black male recruits. Thus, the only valid comparison between datasets in the table is **for 20-24 year olds**. That comparison shows that **black male recruits (24.2%) were nearly half as likely to have seen a dentist within the past year as employed black civilians (46.6%)**. The data is presented graphically in Figure 10.5.

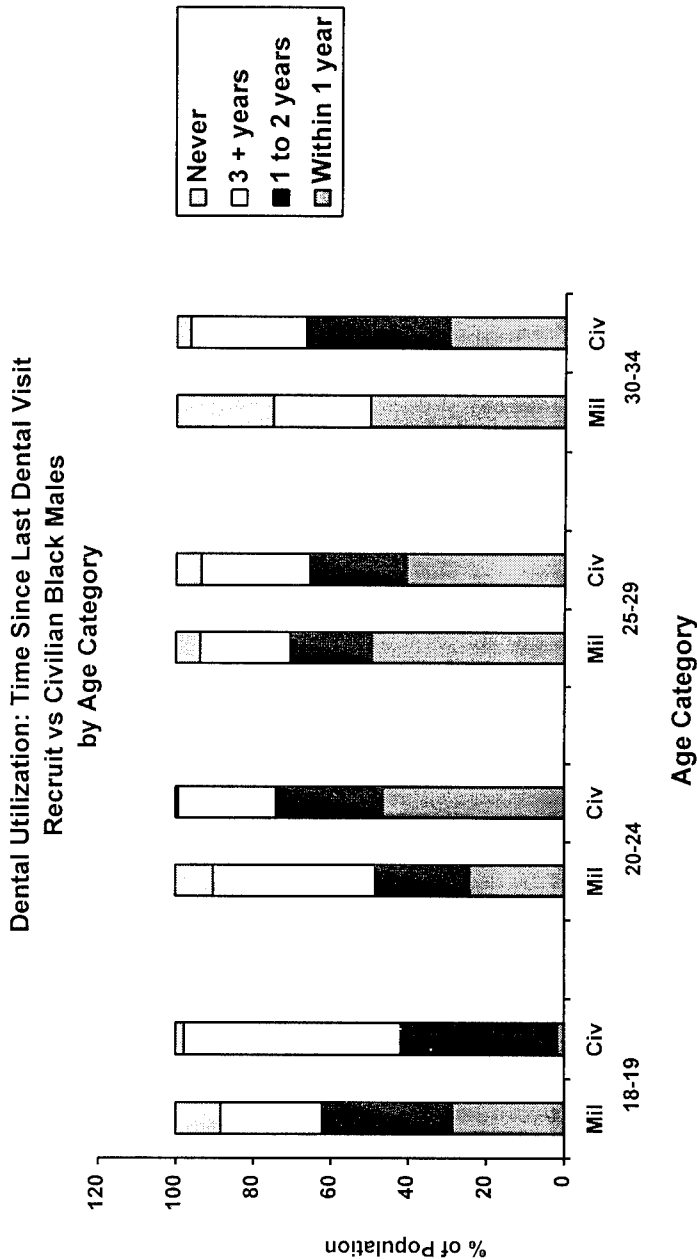


Figure 10.5

Table 10.4

DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT MILITARY BLACK MALES									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	6,620	28.6	± 7.1	33.6	± 7.8	26.1	± 6.7	11.7	± 5.2
20 - 24 years	7,108	24.2	± 7.0	24.3	± 6.5	41.8	± 8.1	9.8	± 5.1
25 - 29 years	803	*	*	*	*	*	*	*	*
30 - 34 years	286	*	*	*	*	*	*	*	*
All ages	14,817	28.0	± 5.0	27.8	± 5.0	33.4	± 5.2	10.7	± 3.5

* insufficient sample size for stable estimate

DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT CIVILIAN BLACK MALES									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	104,764	1.8	± 7.2	40.1	± 26.6	55.9	± 27.0	*	*
20 - 24 years	677,753	46.6	± 11.4	27.5	± 10.2	25.2	± 10.0	*	*
25 - 29 years	760,904	40.6	± 9.8	24.9	± 8.6	27.9	± 8.8	6.6	± 4.9
30 - 34 years	704,268	29.7	± 9.0	36.9	± 9.4	29.8	± 9.0	*	*
All ages	2,247,689	37.2	± 5.7	30.2	± 5.3	28.9	± 5.3	3.7	± 2.2

* insufficient sample size for stable estimate

Results for black females are displayed in Table 10.5 and Figure 10.6. As with black males, insufficient data are available to provide valid estimates for 25-34 year old black female recruits and 18-19 year old employed black female civilians. Thus, the only valid comparison between black female civilians and recruits is **for 20-24 year olds**. That comparison reveals **that black female recruits (19.6%) were much less likely to have seen a dentist within the past year than employed black female civilians (47.1%)**.

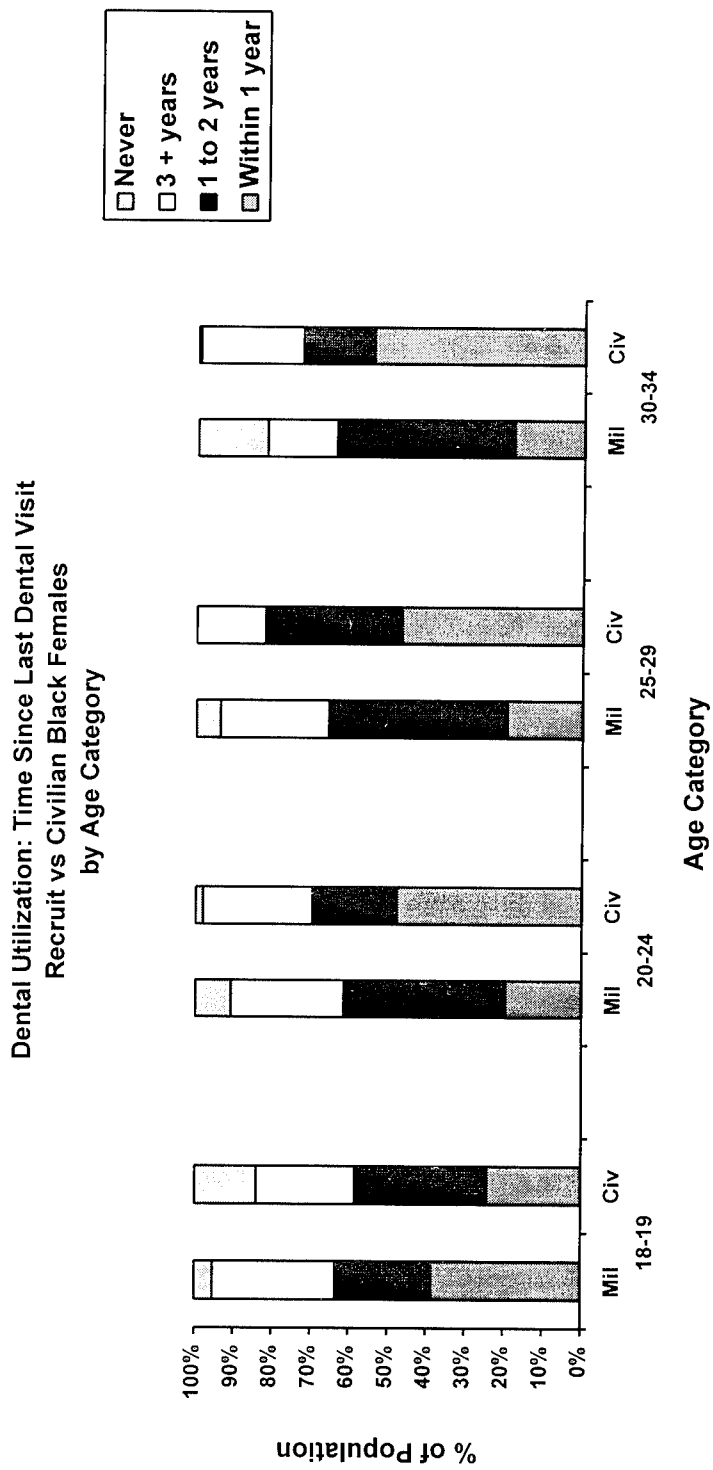


Figure 10.6

Table 10.5

DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT MILITARY BLACK FEMALES									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	2,017	38.6	± 14.9	24.9	± 13.6	31.8	± 13.9	4.7	± 5.1
20 - 24 years	2,452	19.6	± 10.9	41.8	± 13.8	29.2	± 12.7	9.3	± 8.4
25 - 29 years	580	*	*	*	*	*	*	*	*
30 - 34 years	363	*	*	*	*	*	*	*	*
All ages	5,412	26.6	± 8.3	36.3	± 9.2	29.3	± 8.5	7.8	± 5.0

* insufficient sample size for stable estimate

DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT CIVILIAN BLACK FEMALES									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	87,757	*	*	*	*	*	*	*	*
20 - 24 years	787,285	47.1	± 10.2	21.6	± 8.4	27.9	± 9.2	*	*
25 - 29 years	684,780	46.4	± 8.6	35.0	± 8.2	17.7	± 6.7	*	*
30 - 34 years	771,602	54.8	± 8.2	18.5	± 6.3	26.7	± 7.2	*	*
All ages	2,331,424	48.6	± 5.1	25.0	± 4.3	24.4	± 4.3	1.6	± 1.2

* insufficient sample size for stable estimate

There is no national civilian data available on dental utilization to compare with non-white, non-black military recruits. Table 10.6 and Figure 10.7 profile dental utilization of non-white, non-black males and females. Results show no statistically significant difference between these groups.

Comparing military recruit subgroups only (i.e. comparing results between rather than within previous tables), there is no significant difference in annual dental utilization

between males and females within race for any given age group. However, there is significantly lower annual dental utilization by blacks than by whites within 20-24 year olds. Among 18-19 year olds, black males (28.6%) have lower annual dental utilization than white males (47.1%) or white females (48.4%), but there is no statistically significant difference between 18-19 year old black females (38.6%) and white males or white females.

**Dental Utilization: Time Since Last Dental Visit
Recruit Non-white, Non-black Males vs Females
by Age Category**

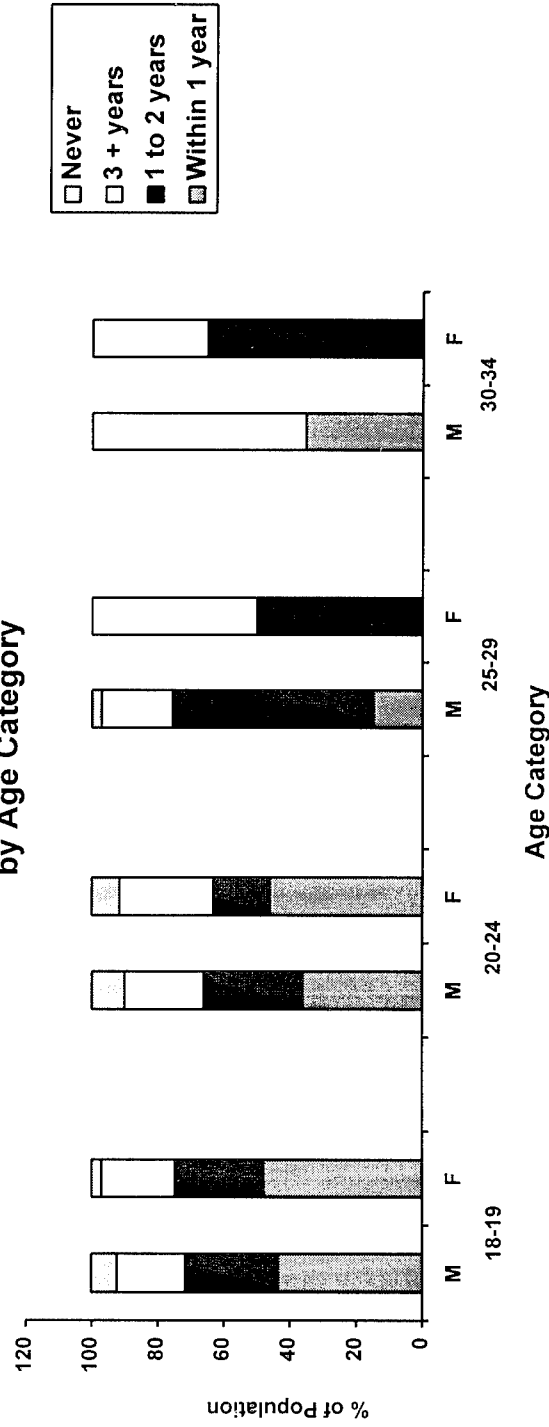


Figure 10.7

Table 10.6

DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT MILITARY NON-WHITE, NON-BLACK MALES									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	3,508	43.5	± 10.2	28.2	± 9.1	20.7	± 8.8	7.7	± 5.1
20 - 24 years	3,336	36.1	± 10.1	29.9	± 9.5	24.0	± 9.2	9.9	± 6.0
25 - 29 years	476	*	*	*	*	*	*	*	*
30 - 34 years	224	*	*	*	*	*	*	*	*
All ages	7,544	38.2	± 6.8	30.2	± 6.4	23.5	± 6.2	8.1	± 3.6

* insufficient sample size for stable estimate

DISTRIBUTION OF TIME SINCE LAST DENTAL VISIT CIVILIAN NON-WHITE, NON-BLACK FEMALES									
	Estimated Population	Within 1 year		1 to 2 years		3 + years		Never	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	2,089	47.9	± 15.8	26.9	± 13.8	22.2	± 13.4	*	*
20 - 24 years	1,297	46.0	± 19.7	*	*	28.4	± 17.6	*	*
25 - 29 years	126	*	*	*	*	*	*	*	*
30 - 34 years	181	*	*	*	*	*	*	*	*
All ages	3,693	43.3	± 11.7	26.1	± 10.4	25.9	± 10.5	*	*

* insufficient sample size for stable estimate

Table 10.7 shows the distribution of dental services consumed over the past 12 months by all recruits across DoD dental classification. **Recruits in dental class 1 are far more likely to have had a dental examination and an oral prophylaxis and less likely to have received**

emergency care, crown and bridge work, or endodontic therapy than recruits in DoD class 2 or 3. As Figure 10.8 shows, **examinations, teeth cleanings, and fillings account for the largest categories of dental services consumed by all recruits.**

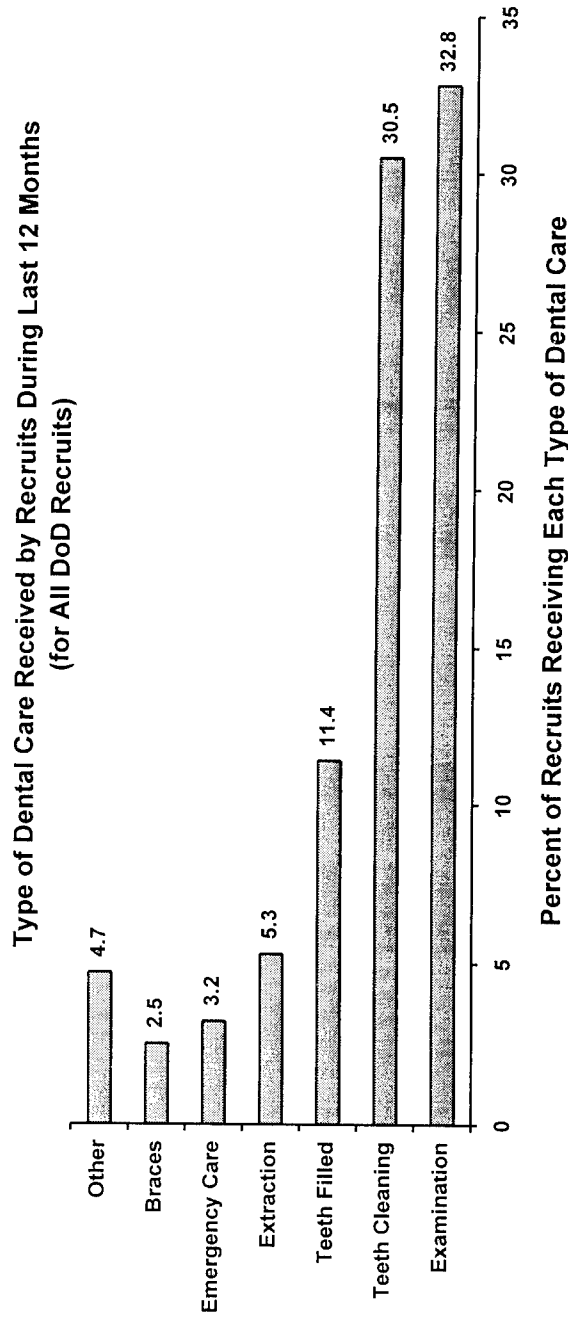


Figure 10.8

Table 10.7

PATTERN OF DENTAL CARE RECEIVED OVER THE PAST 12 MONTHS BY DOD DENTAL CLASSIFICATION							
TYPE OF DENTAL CARE RECEIVED	ALL (N = 101,072)	PERCENT FOR EACH DOD DENTAL CLASSIFICATION					
		95% CI	Class 1 (N = 713)	95% CI	Class 2 (N = 50,595)	95% CI	Class 3 (N = 49,764)
EXAMINATION	32.8	± 1.8	82.1	± 17.2	39.4	± 2.5	25.3
TEETH CLEANING	30.5	± 1.8	82.1	± 17.2	37.6	± 2.5	22.5
TEETH FILLED	11.4	± 1.2	10.9	± 13.9	12.3	± 1.8	10.6
EXTRACTION	5.3	± 0.8	20.4	± 18.0	6.0	± 1.4	4.4
EMERGENCY CARE	3.2	± 0.6	0.0	0.0	2.3	± 0.8	4.1
DENTURES	0.2	± 0.2	0.0	0.0	0.1	± 0.2	0.2
CROWN & BRIDGE	1.6	± 0.4	0.0	0.0	1.5	± 0.6	1.6
GUM SURGERY	0.1	± 0.2	0.0	0.0	0.1	± 0.2	0.1
ROOT CANAL	1.6	± 0.4	0.0	0.0	0.8	± 0.4	2.4
BRACES	2.5	± 0.6	4.4	± 9.2	2.4	± 0.8	2.5
OTHER	1.2	± 0.4	0.0	0.0	1.7	± 0.8	0.6

Restricting the sample to only those recruits who reported having seen a dentist within the past 12 months, the distribution of dental services consumed is presented in Table 10.8. Because this sample is smaller than the one in the immediately preceding table, the confidence intervals are wider. Statistically **significantly fewer emergency, crown and bridge, and endodontic**

services were consumed by recruits in DoD dental class 1 than recruits in class 2 or 3. Figure 10.9 displays a bar graph of the type of dental services consumed by **recruits who saw a dentist within the past year.** Again, **examinations, teeth cleanings, and fillings account for the largest categories of dental services consumed.**

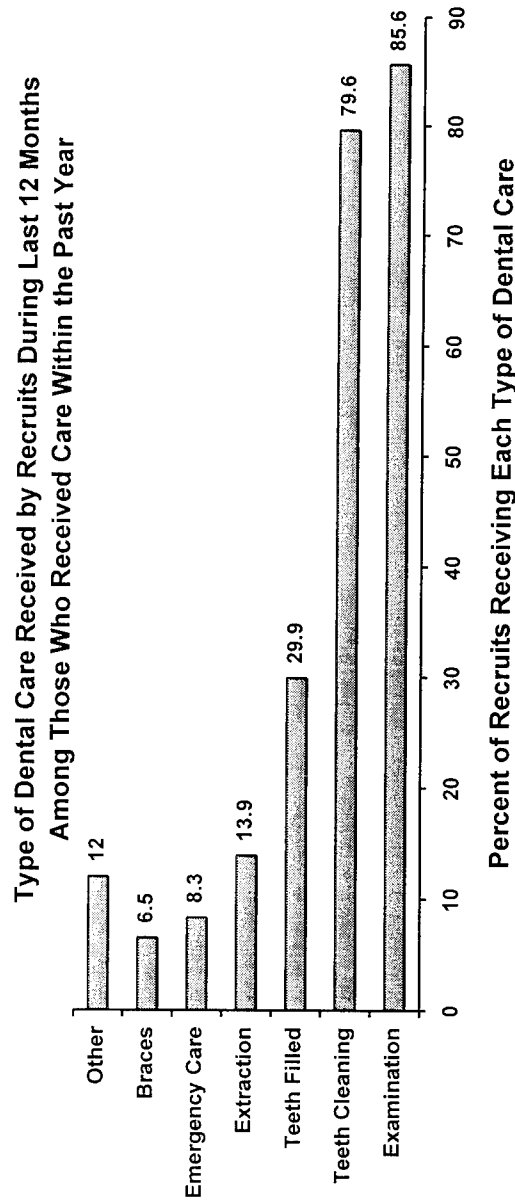


Figure 10.9

Table 10.8

PATTERN OF DENTAL CARE RECEIVED OVER THE PAST 12 MONTHS AMONG THOSE RECEIVING CARE IN THE PAST YEAR BY DOD DENTAL CLASSIFICATION							
TYPE OF DENTAL CARE RECEIVED	ALL (N = 38,656)	PERCENT FOR EACH DOD DENTAL CLASSIFICATION					
		Class 1 (N = 649)	95% CI	Class 2 (N = 22,047)	95% CI	Class 3 (N = 15,960)	95% CI
EXAMINATION	85.6	90.2	± 2.2	90.4	± 2.4	78.6	± 3.7
TEETH CLEANING	79.6	90.2	± 2.4	86.3	± 2.7	69.8	± 4.1
TEETH FILLED	29.9	12.0	± 2.7	28.2	± 3.5	33.0	± 4.3
EXTRACTION	13.9	22.4	± 2.2	13.8	± 2.7	13.7	± 3.1
EMERGENCY CARE	8.3	0.0	± 1.6	5.4	± 1.8	12.8	± 3.1
DENTURES	0.4	0.0	± 0.4	0.3	± 0.4	0.5	± 0.6
CROWN & BRIDGE	4.1	0.0	± 1.2	3.5	± 1.4	5.1	± 2.0
GUM SURGERY	0.3	0.0	± 0.4	0.3	± 0.4	0.3	± 0.6
ROOT CANAL	4.2	0.0	± 1.2	2.0	± 1.2	7.5	± 2.4
BRACES	6.5	4.8	± 1.6	5.6	± 1.8	7.8	± 2.5
OTHER	3.0	0.0	± 1.0	3.8	± 1.6	2.0	± 1.4

11. Perceived Need for Dental Care

Perceived Need for Dental Care

Perceived need for dental care was assessed for all recruits using a self-administered questionnaire. To enable valid comparisons of recruits with their civilian cohorts, many questions were identical in wording to those used on the National Survey of Oral Health in U.S. Employed Adults and Seniors: 1985-1986 (NIDR, 1987). In all tables, point estimates are presented along with 95% confidence intervals so that statistically significant differences between any two values within the table or between tables can be readily determined. Due to variation in the size of subgroups in the sample, some estimates have wider confidence intervals than others.

Logistic regression shows that **recruits more likely to perceive a need for dental care** have the following characteristics and odds ratios (OR): **females** (OR=1.5), **from the Southwestern United States** (OR=1.7), **have calculus or overhanging restorations** (OR=1.1), **have four or more decayed teeth** (1.7), or are **in DoD dental class 3** (1.9). **Recruits who have seen a dentist in the past year are less likely to perceive a need for dental care** (OR=0.3).

Table 11.1 shows perceived need for dental care for all recruits as well as across gender, race, age category, education level, and DoD dental classification. **Sixty-one percent of all recruits perceive a need for dental care. Statistically significant differences in perceived need for dental care exist between blacks and whites, 18-19 year olds and all other age groups, and between DoD class 2 and DoD class 3 recruits.** Figure 11.1 presents a bar chart of perceived need for dental care across DoD dental classification.

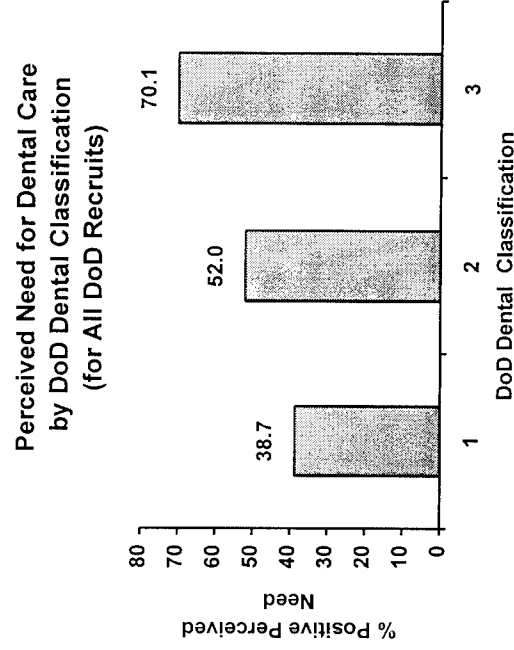


Figure 11.1

Table 11.1

PERCENT DISTRIBUTION OF PERCEIVED NEED FOR DENTAL CARE (FOR ALL DOD RECRUITS)			
	Estimated Population	Positive Perceived Need %	95% CI
GENDER			
Male	73,972	59.0	± 2.4
Female	27,100	65.8	± 3.7
RACE			
White	69,607	58.0	± 2.4
Black	20,229	68.7	± 4.4
Other	11,236	63.9	± 5.8
AGE CATEGORY			
18 - 19 years	48,404	55.6	± 2.9
20 - 24 years	44,874	64.1	± 3.0
25 - 29 years	5,822	72.9	± 7.9
30 - 34 years	1,972	76.8	± 14.3
EDUCATION			
Not HS Graduate	1,540	60.2	± 15.8
High School Graduate	51,985	61.1	± 2.8
Some College	41,708	60.4	± 3.2
College Graduate	5,839	61.5	± 8.8
DOD DENTAL CLASS			
1	713	38.7	± 25.0
2	50,595	52.0	± 2.9
3	49,764	70.1	± 2.6
ALL RECRUITS	101,072	60.8	± 2.0

Tables 11.2-11.6 show perceived need for dental care across age groups, holding gender and race constant. Where available, comparison data from the National Survey of Oral Health in U.S. Employed Adults and Seniors: 1985-86 (NIDR, 1987) is provided. Figure 11.2 shows an overall comparison of perceived need between military recruits and their civilian cohorts. This comparison is based on black and white races only because no data are available for non-black, non-white civilians. Furthermore, overall civilian figures were adjusted to match the race, gender, and age composition of the

military recruits so that valid comparisons between the populations could be made. Adjustment was necessary because 83-94% of the estimated recruit population is between 18-24 years old, while only 35-39% of the civilian employed population falls between 18-24 years of age. Likewise, the two populations differ in racial and gender composition. **Recruits are more likely to perceive a need for dental care than their civilian cohorts.** Graphical presentations of the data should be viewed with caution because they exclude variances of the estimated values.

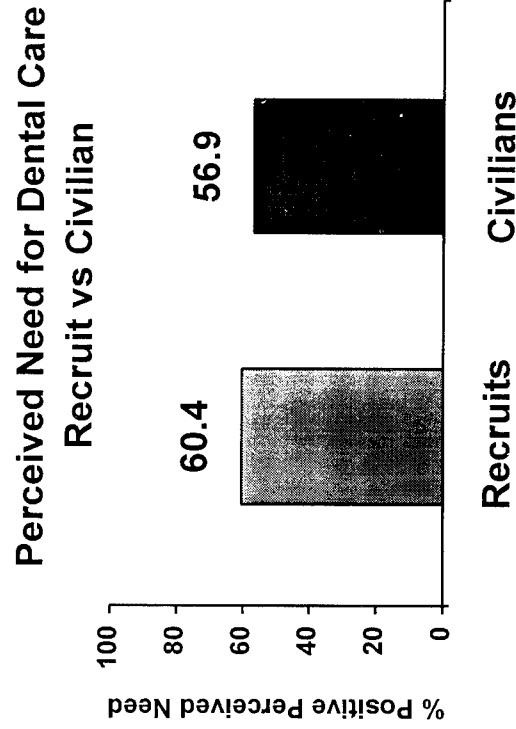


Figure 11.2

Table 11.2 and Figure 11.3 present results for white males. While 18-19 year old white male recruits are more likely, 25-29 year old white males recruits are less likely to perceive a need for dental care than their respective employed civilian cohorts. There is no significant difference in perceived need for dental care between recruits and employed civilians for 20-24 year olds and 30-34 year olds.

Perceived Need for Dental Care
Recruit vs Civilian White Males
by Age Category

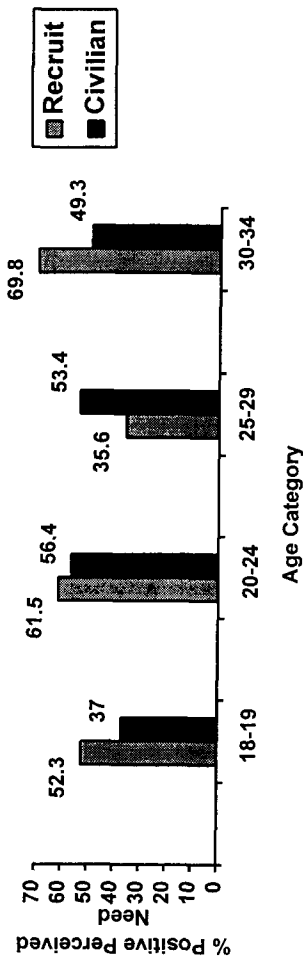


Figure 11.3

Table 11.2

PERCENT DISTRIBUTION OF PERCEIVED NEED FOR DENTAL CARE RECRUIT VS CIVILIAN WHITE MALES					
	MILITARY			CIVILIAN	
	Estimated Population	Positive Perceived Need %	95% CI	Estimated Population	Positive Perceived Need %
18 - 19 years	26,221	52.3	± 4.0	1,640,716	37.0
20 - 24 years	22,489	61.5	± 4.3	6,030,197	56.4
25 - 29 years	2,443	35.6	± 13.6	7,363,804	53.4
30 - 34 years	459	69.8	± 30.4	7,168,794	49.3
All ages	51,612	57.0	± 2.8	22,203,511	51.7
					± 2.0

Table 11.3 and Figure 11.4 present results for white female recruits. *While 18-19 year old white females recruits are less likely, white female recruits for all other age groups are more likely to perceive a need for dental care than their respective civilian cohorts.*

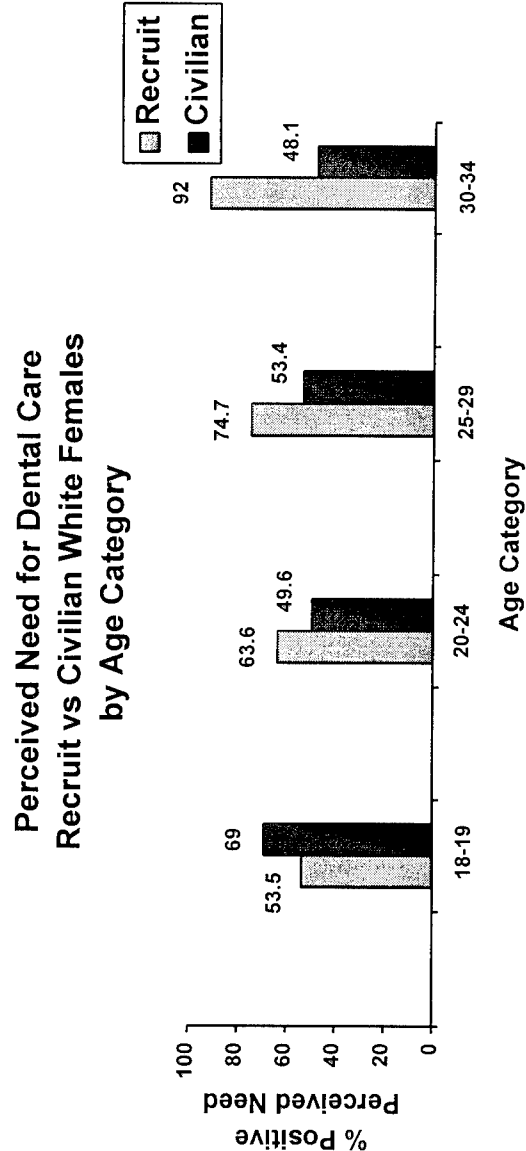


Figure 11.4

Table 11.3

PERCENT DISTRIBUTION OF PERCEIVED NEED FOR DENTAL CARE RECRUIT VS CIVILIAN WHITE FEMALES					
	MILITARY			CIVILIAN	
	Estimated Population	Positive Perceived Need %	95% CI	Estimated Population	Positive Perceived Need %
18 - 19 years	7,949	53.5	± 7.2	1,621,700	69.0
20 - 24 years	8,192	63.6	± 7.0	5,601,953	49.6
25 - 29 years	1,395	74.7	± 14.8	5,834,949	53.4
30 - 34 years	459	92.0	± 15.5	5,388,541	48.1
All ages	17,995	60.7	± 4.7	18,447,143	52.1
					± 2.0

The sample size for 30-34 year old black male recruits (Table 11.4) was insufficient to provide stable estimates. **Perceived need for dental care is greater among 18-19 year old employed black males than among 18-19 year old black male recruits.** There is **no significant difference** in perceived need for dental care **between recruits and employed civilians for 20-24 and 25-29 year old black males.** Figure 11.5 presents the data graphically.

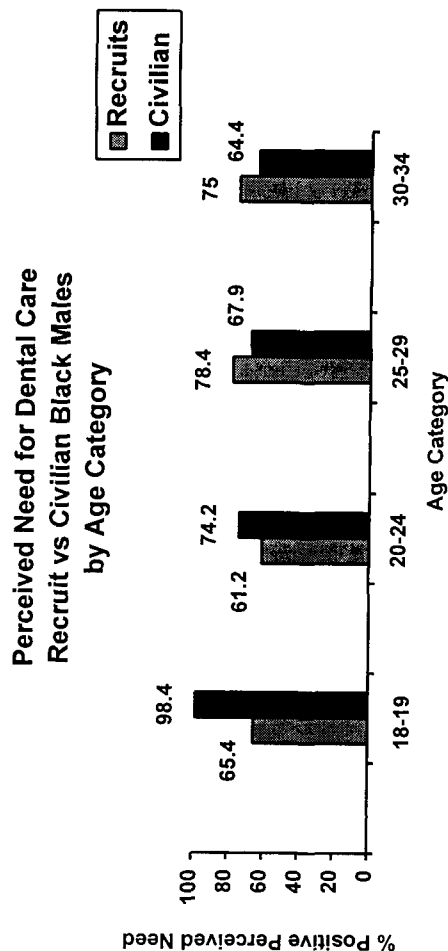


Figure 11.5

Table 11.4

PERCENT DISTRIBUTION OF PERCEIVED NEED FOR DENTAL CARE RECRUIT VS CIVILIAN BLACK MALES					
	MILITARY			CIVILIAN	
	Estimated Population	Positive Perceived Need %	95% CI	Estimated Population	Positive Perceived Need %
18 - 19 years	6,620	65.4	± 7.6	104,764	98.4
20 - 24 years	7,108	61.2	± 7.9	677,753	74.2
25 - 29 years	803	78.4	± 19.8	760,904	67.9
30 - 34 years	286	*	*	704,268	64.4
All ages	14,817	64.3	± 5.3	2,247,689	70.1
					± 5.3

* insufficient sample size for stable estimate

Table 11.5 and Figure 11.6 present results for black female recruits. There is *no significant difference in perceived need for dental care between black female recruits and black female employed civilians for any age group.*

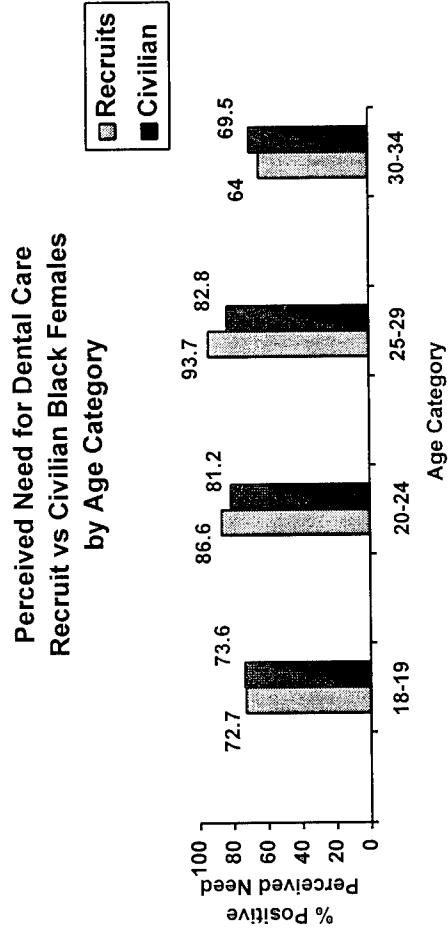


Figure 11.6

Table 11.5

PERCENT DISTRIBUTION OF PERCEIVED NEED FOR DENTAL CARE RECRUIT VS CIVILIAN BLACK FEMALES						
	MILITARY			CIVILIAN		
	Estimated Population	Positive Perceived Need %	95% CI	Estimated Population	Positive Perceived Need %	95% CI
18 - 19 years	2,017	72.7	± 13.6	87,757	73.6	± 23.1
20 - 24 years	2,452	86.6	± 8.4	787,285	81.2	± 8.0
25 - 29 years	580	93.7	± 12.1	684,780	82.8	± 6.7
30 - 34 years	363	64.0	± 39.8	771,602	69.5	± 7.6
All ages	5,412	80.6	± 7.3	2,331,424	77.5	± 4.3

There is no national civilian data available on perceived need for dental care to compare with non-white, non-black military recruits. Accordingly, Table 11.6 and Figure 11.7 profile perceived need for dental care of non-white, non-black males and females. Results show no statistically significant difference between these groups.

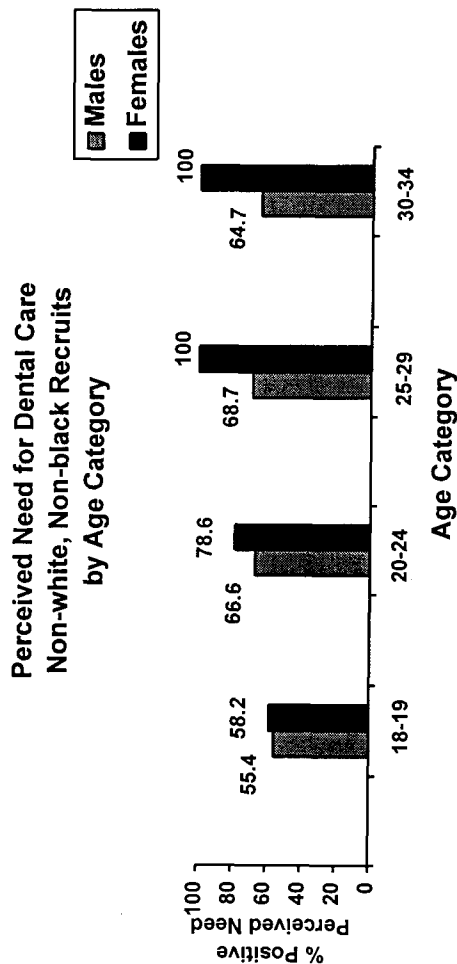


Figure 11.7

Table 11.6

PERCENT DISTRIBUTION OF PERCEIVED NEED FOR DENTAL CARE NON-WHITE, NON-BLACK MALES AND FEMALES					
	MALES			FEMALES	
	Estimated Population	Positive Perceived Need %	95% CI	Estimated Population	Positive Perceived Need % 95% CI
18 - 19 years	3,508	55.4	± 10.3	2,089	58.2 ± 15.5
20 - 24 years	3,336	66.6	± 9.8	1,297	78.6 ± 16.0
25 - 29 years	476	68.7	± 27.4	126	* *
30 - 34 years	224	64.7	± 45.9	181	* *
All ages	7,544	61.5	± 6.9	3,693	68.9 ± 10.7

* insufficient sample size for stable estimate

Comparing military recruit subgroups only (i.e. comparing results between rather than within previous tables) *within race, females have significantly higher levels of perceived need for dental care than males for 25-29 year old whites, 20-24 year old blacks, and for blacks overall. Comparing across race, 18-19 and 25-29 year old black males and females have significantly greater perceived need for dental care than same age white males; 20-24 year old black females have significantly greater perceived need for dental care than similarly aged white males or females; and overall, black*

females have significantly greater perceived need for dental care than white males, white females, and non-white, non-black males.

Tables 11.7-11.12 and Figures 11.8-11.13 display self-perceived urgency for dental care among those who perceive a need for dental care. Perceived need for immediate dental care is statistically significantly greater in DoD Class 3 recruits than in Class 1 or 2 recruits (Table 11.7 and Figure 11.8).

Perceived Urgency for Dental Care
Among Those Perceiving a Need for Dental Care
by DoD Dental Health Classification

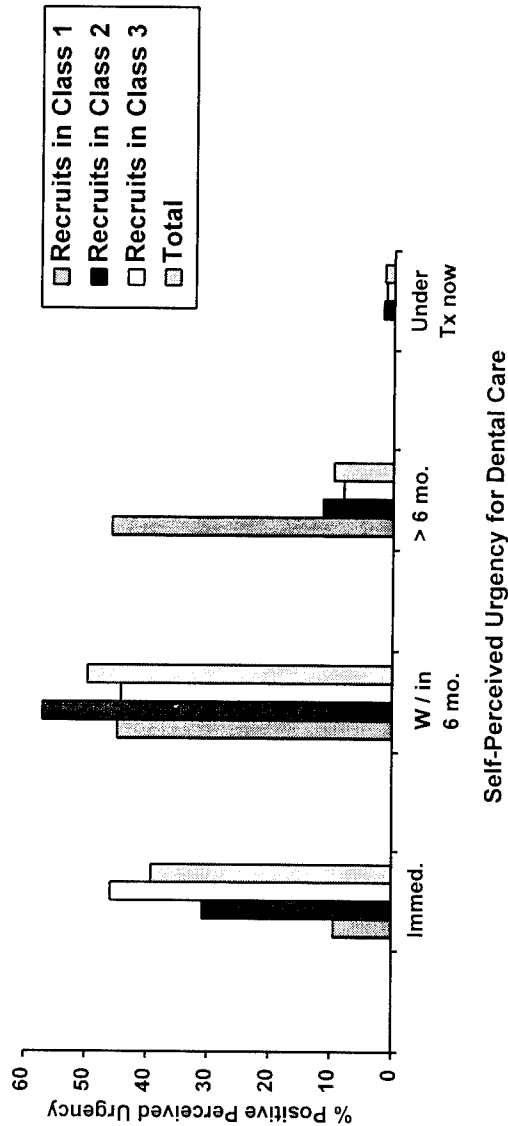


Figure 11.8

Table 11.7

PERCENT DISTRIBUTION OF SELF-PERCEIVED URGENCY FOR DENTAL CARE AMONG RECRUITS PERCEIVING A NEED FOR DENTAL CARE									
		Self-Perceived Urgency for Dental Care							
	Estimated Population	Immediately		Within 6 months		More than 6 months		Currently under Tx	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
DOD DENTAL CLASS									
1	275	9.4	± 18.1	44.8	± 35.7	45.8	± 39.1	0.0	± 0.0
2	26,280	30.8	± 3.9	57.0	± 4.2	11.4	± 2.8	0.7	± 0.7
3	34,877	45.8	± 3.4	44.2	± 3.4	8.0	± 2.0	2.0	± 1.0
TOTAL	61,432	39.2	± 2.5	49.7	± 2.6	9.6	± 1.6	1.5	± 0.6

Tables 11.8-11.12 and Figures 11.9-11.13 focus on self-perceived urgency for dental care across age group, holding gender and race constant. Results for white males are presented in Figure 11.9 and Table 11.8.

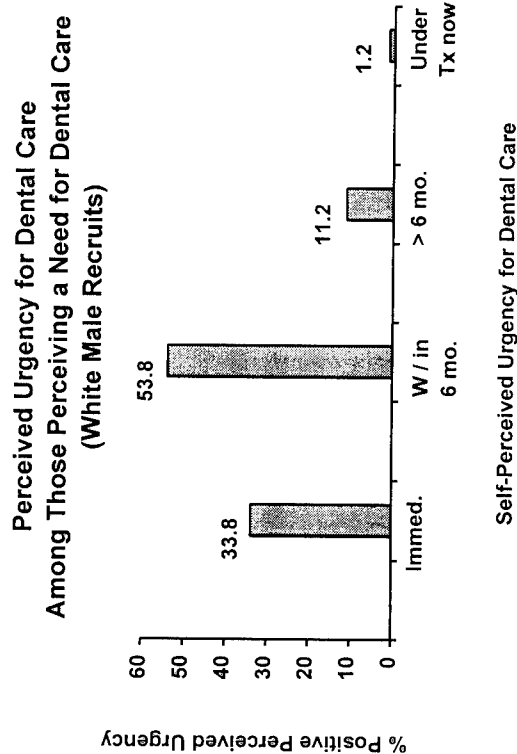


Figure 11.9

Table 11.8

PERCENT DISTRIBUTION OF SELF-PERCEIVED URGENCY FOR DENTAL CARE AMONG THOSE PERCEIVING A NEED FOR DENTAL CARE WHITE MALE RECRUITS							
	Estimated Population	Self-Perceived Urgency for Dental Care					
		Immediately	Within 6 months		More than 6 months		Currently under Tx
		%	95% CI	%	95% CI	%	95% CI
18 - 19 years	13,719	29.5	± 5.0	57.6	± 5.4	11.9	± 3.7
20 - 24 years	13,822	35.1	± 5.3	52.0	± 5.6	11.3	± 3.7
25 - 29 years	1,574	54.6	± 17.2	39.4	± 16.9	*	*
30 - 34 years	320	60.5	± 40.1	*	*	0.0	-
All ages	29,436	33.8	± 3.6	53.8	± 3.8	11.2	± 2.5
						1.2	± 0.8

* insufficient sample size for stable estimate

Perceived urgency for dental care of white females across age group is given in Table 11.9 and Figure 11.10. The sample size of 30-34 year old white female recruits was too small to allow valid estimates.

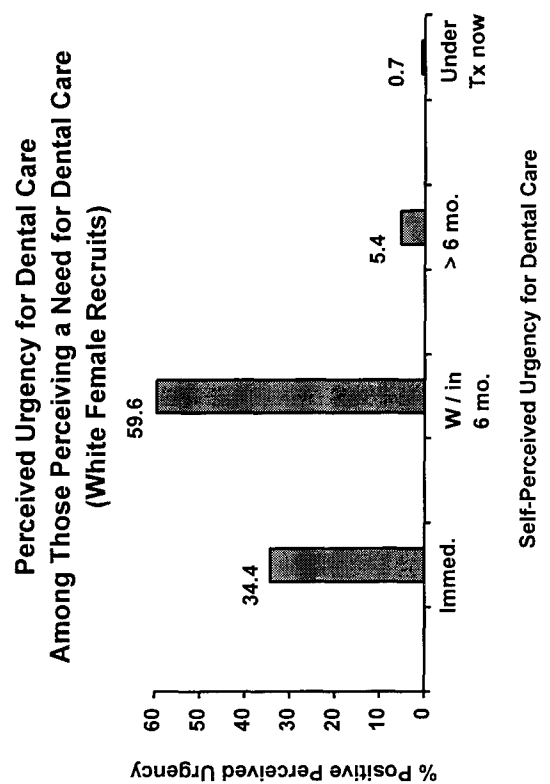


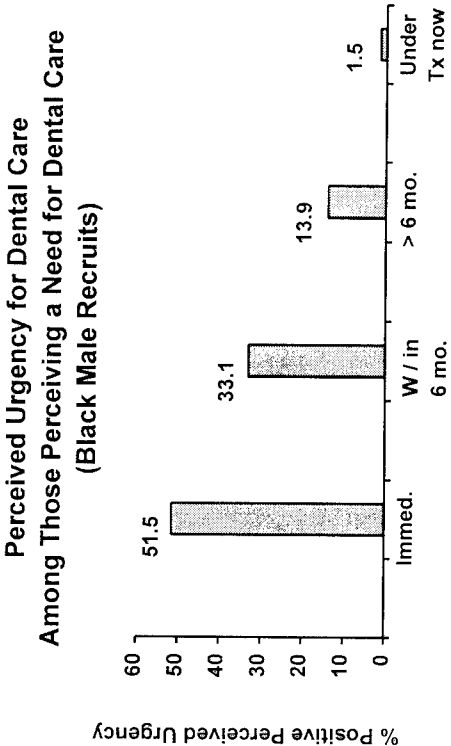
Figure 11.10

Table 11.9

PERCENT DISTRIBUTION OF SELF-PERCEIVED URGENCY FOR DENTAL CARE AMONG THOSE PERCEIVING A NEED FOR DENTAL CARE MILITARY WHITE FEMALES									
		Self-Perceived Urgency for Dental Care							
	Estimated Population	Immediately		Within 6 months		More than 6 months		Currently under Tx	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	4,249	25.3	± 8.7	70.6	± 9.0	3.2	± 2.9	0.9	± 1.7
20 - 24 years	5,208	41.5	± 9.0	51.5	± 9.1	6.3	4.6	0.7	± 1.4
25 - 29 years	1,043	36.6	± 20.2	58.1	± 20.6	*	*	0.0	-
30 - 34 years	422	*	*	*	*	*	*	*	*
All ages	10,922	34.4	± 6.0	59.6	± 6.2	5.4	± 2.8	0.7	± 0.9

* insufficient sample size for stable estimate

Results for black males are presented in Figure 11.11 and Table 11.10. The sample size of 30-34 year old black male recruits was too small to allow valid estimates.



Self-Perceived Urgency for Dental Care

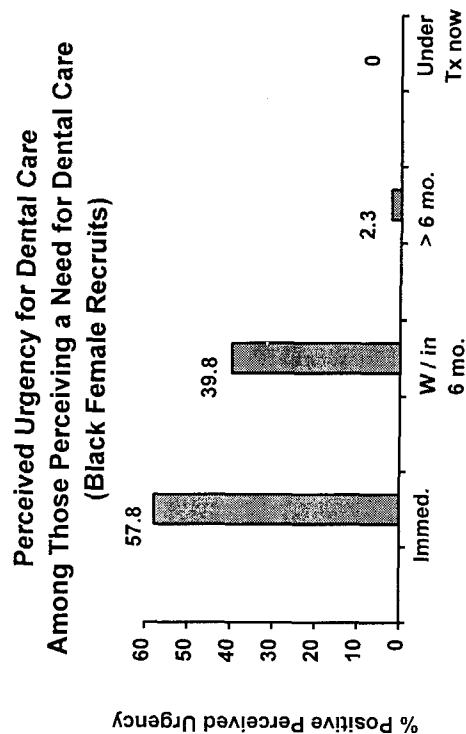
Figure 11.11

Table 11.10

PERCENT DISTRIBUTION OF SELF-PERCEIVED URGENCY FOR DENTAL CARE AMONG THOSE PERCEIVING A NEED FOR DENTAL CARE MILITARY BLACK MALES							
	Estimated Population	Self-Perceived Urgency for Dental Care					
		Immediately		Within 6 months		More than 6 months	
		%	95% CI	%	95% CI	%	95% CI
18 - 19 years	4,330	54.8	± 9.4	31.9	± 9.1	12.5	± 7.0
20 - 24 years	4,354	46.8	± 10.2	34.5	± 9.9	16.3	± 8.4
25 - 29 years	630	56.3	± 30.8	*	*	*	*
30 - 34 years	214	*	*	*	*	*	*
All ages	9,529	51.5	± 7.0	33.1	± 6.5	13.9	± 5.2
						1.5	± 1.4

* insufficient sample size for stable estimate

Perceived urgency for dental care of black females across age group is given in Figure 11.12 and Table 11.11. The sample size of 30-34 year old **black female recruits** and 18-19 year old black female civilians was too small to allow valid estimates.



Self-Perceived Urgency for Dental Care

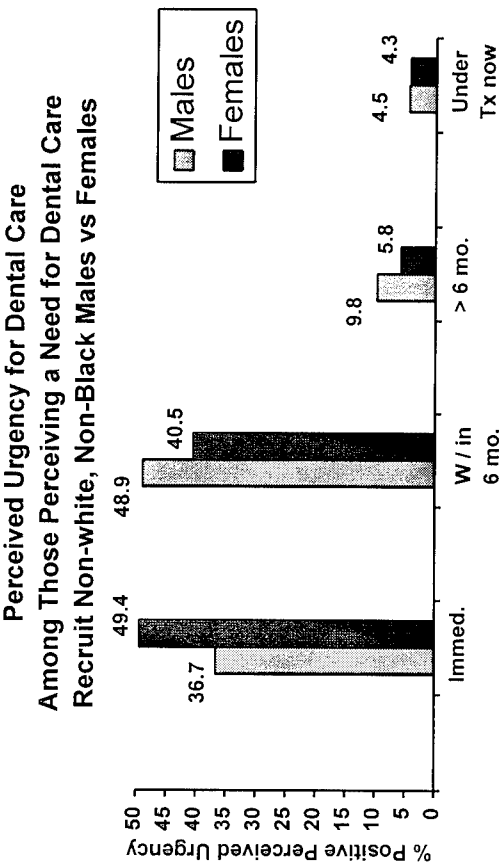
Figure 11.12

Table 11.11

PERCENT DISTRIBUTION OF SELF-PERCEIVED URGENCY FOR DENTAL CARE AMONG THOSE PERCEIVING A NEED FOR DENTAL CARE MILITARY BLACK FEMALES									
		Self-Perceived Urgency for Dental Care							
	Estimated Population	Immediately		Within 6 months		More than 6 months		Currently under Tx	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	1,466	53.1	± 17.8	41.7	± 17.5	*	*	0.0	-
20 - 24 years	2,122	57.5	± 15.1	41.3	± 15.0	*	*	0.0	-
25 - 29 years	544	66.0	± 27.9	34.0	± 27.9	0.0	-	0.0	-
30 - 34 years	232	*	*	*	*	*	*	*	*
All ages	4,364	57.8	± 10.5	39.8	± 10.4	2.3	± 3.2	0.0	-

* insufficient sample size for stable estimate

Table 11.12 and Figure 11.13 compare perceived urgency for dental care of non-black, non-white males to non-black, non-white females.



Self-Perceived Urgency for Dental Care

Figure 11.13

Comparing results between tables 11.8 - 11.12, There is **no significant difference in perceived need for immediate dental care between males and females within race** for any given age group. However, **across race there is significantly greater perceived need for immediate dental care by blacks than by whites for 18-19 year olds.**

Table 11.12

PERCENT DISTRIBUTION OF SELF-PERCEIVED URGENCY FOR DENTAL CARE AMONG THOSE PERCEIVING A NEED FOR DENTAL CARE MILITARY NON-BLACK, NON-WHITE MALES										
		Self-Perceived Urgency for Dental Care								
	Estimated Population	Immediately		Within 6 months		More than 6 months		Currently under Tx		
		%	95% CI	%	95% CI	%	95% CI	%	95% CI	
18 - 19 years	1,943	28.3	± 11.5	53.7	± 13.6	*	*	*	*	*
20 - 24 years	2,223	43.2	± 12.9	42.5	± 12.0	12.8	9.7	*	*	*
25 - 29 years	327	*	*	65.7	30.6	*	*	*	*	*
30 - 34 years	145	*	*	*	*	*	*	*	*	*
All ages	4,638	36.7	± 8.2	48.9	± 9.0	9.8	± 5.9	4.5	± 4.3	

* insufficient sample size for stable estimates

PERCENT DISTRIBUTION OF SELF-PERCEIVED URGENCY FOR DENTAL CARE AMONG THOSE PERCEIVING A NEED FOR DENTAL CARE MILITARY NON-BLACK, NON-WHITE FEMALES									
		Self-Perceived Urgency for Dental Care							
	Estimated Population	Immediately		Within 6 months		More than 6 months		Currently under Tx	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI
18 - 19 years	1,217	31.6	± 19.2	57.8	± 20.6	*	*	*	*
20 - 24 years	1,020	61.6	± 21.1	25.9	± 18.5	*	*	*	*
25 - 29 years	126	*	*	*	*	*	*	*	*
30 - 34 years	181	*	*	*	*	*	*	*	*
All ages	2,543	49.4	± 13.8	40.5	± 14.0	*	*	*	*

* insufficient sample size for stable estimate

APPENDIX A

COMPUTATION OF COMPOSITE TIME VALUES (CTV) FOR DENTAL TREATMENT PROCEDURES

COMPOSITE TIME VALUES (CTV) ASSIGNMENT FOR DENTAL CLINICAL PROCEDURES

counts of dental treatment procedures were converted into CTV.

Military dentistry uses a Standardized Code on Dental Procedures which is a modification of the American Dental Association's Code on Dental Procedures and Nomenclature. The military code for dental procedures assigns Composite Time Values (CTV) for each procedure to be used for workload accountability. For every episode of dental care delivered, the care provider records a list of the treatment codes involved. This list of codes is then converted to numeric CTV.

The TSCOHS collected dental treatment requirements expressed as counts of specific dental procedures (i.e. number of two surface restorations, crowns, molars requiring endodontic treatment, patients in each PSR code, etc.). In order to address the total workload of treatment needs and to make comparisons across clinical disciplines possible, raw

Consulting specialists in each clinical discipline were asked to provide a list of the dental procedure codes they normally record when delivering each specific dental treatment. For example, when treating a patient with an amalgam restoration it is customary to record procedure codes for patient examination, rubber dam, local anesthesia, and patient handling time. ***The specialists were asked to exclude procedure codes which are occasionally taken and list only those which are routinely a part of each specific dental treatment.*** ***This approach guards against artificial inflation of CTV counts.*** The following pages of this section provide a detailed description of the calculations and assumptions used in the process of converting required dental treatments into composite time values.

CTV ASSIGNMENT FOR RESTORATIVE CARE AND SEALANTS

ADD ON PROCEDURES FOR RESTORATIVE CARE

0130 - other examination	0.4
9973 - patient handling (tx)	1.4
2960 - rubber dam	0.4
9211 - local anesthesia	1.0

subtotal for restorative care	3.2
-------------------------------	-----

TOTAL (for each rest. procedure)	3.2/ 1.3 restorations per appointment = 2.5
----------------------------------	--

(assumption: 1.3 restorative procedures per restorative appointment) Based on information collected on 555 restorative appointments at Bolling AFB from May-July 1994.

TOTAL PROCEDURES FOR RESTORATIVE CARE

One surface restoration

2140 - one surface amalgam	1.0 plus 2.5 = 3.5
----------------------------	---------------------------

Two surface restoration

2150 - two surface amalgam	1.9 plus 2.5 = 4.4
----------------------------	---------------------------

Three surface restoration

2160 - three surface amalgam 2.2 plus 2.5 = **4.7**

Four or more surface restoration

2161 - four or more surface amalgam 2.6 plus 2.5 = **5.1**

Note: CTV for amalgam restorations were used. The CTV for a single surface resin plus etch (1.4) is greater than for a single surface amalgam (1.0). However, the CTV for a two surface resin (1.4) is less than for a two surface amalgam (1.9). Also, three surface resin plus etch (2.1) and three surface amalgam restorations (2.2) have essentially the same CTV. The TSCOHS data base does not indicate the type of restorative material required. Assuming all restorations to be amalgam should not cause significant error in the operative CTV count.

PROCEDURES FOR SEALANTS

0130 - other examination	0.4
9973 - patient handling (tx)	1.4
subtotal for sealants	1.8

(assume four sealants placed per appointment) $1.8 / 4 = 0.45$

1350 - pit/fissure sealant $0.3 + 0.45 = \mathbf{0.75}$

CTV ASSIGNMENT FOR ORAL SURGERY (EXTRACTIONS)

SIMPLE EXTRACTION

7110 - simple tooth removal	0.7
0130 - other examination	0.4
0160 - blood pressure x 2	0.4
9211 - local anesthesia	1.0
9973 - pt. handling (tx)	1.4
9631 - prescription	0.3
7520 - biopsy	(1.4) not included in total
TOTAL	4.2

COMPLICATED EXTRACTION

7120 - complicated tooth removal	1.2
0130 - other examination x 2	0.8
0160 - blood pressure x 2	0.4
9211 - local anesthesia	1.0
9973 - pt. handling (tx) x 2	2.8
9631 - prescription	0.3
9918 - post-op. tx	0.5
7520 - biopsy	(1.4) not included in total
TOTAL	7.0

IMPACTION REMOVAL

7130 - impacted tooth removal	1.4
0130 - Other examination x 2	0.8
0160 - blood pressure x 2	0.4
9211 - local anesthesia	1.0
9973 - pt. handling (tx) x 2	2.8
9630 - other therapeutic med.	0.6
9631 - prescription	0.3
4250 - mucogingival flap	2.6
9918 - post-op. tx	0.5
7520 - biopsy	(1.4) not included in total
9231 - IV sedation	(1.2) not included in total
TOTAL	10.4

Assumption: By not including biopsy, IV sedation and other commonly used codes not listed, giving full credit for other listed codes for each extraction should provide a reasonable estimate of actual CTV for each procedure.

CTV ASSIGNMENT FOR ENDODONTIC PROCEDURES

0130 - other examination x 2	0.8
0220 - radiographs x 4	0.8
2940 - temporary restoration x 2	1.0
2960 - rubber dam x 2	0.8
3360 - endodontic interim treatment	1.8
4330 - occlusal adjustment	0.7
3311-3334 endodontic therapy	2.3 (anterior), 2.8 (premolar), 3.9 (molar)
9211 - local anesthesia x 2	2.0
9630 - other therapeutic med (NaOCl, etc.) x 2	1.2
9631 - prescription	0.3
9973 - patient handling time (tx) x 2	2.8
<u>TOTAL (anterior)</u>	<u>14.5</u>
<u>TOTAL (premolar)</u>	<u>15.0</u>
<u>TOTAL (molar)</u>	<u>16.1</u>

CTV ASSIGNMENT FOR PROSTHODONTIC PROCEDURES

SINGLE TOOTH CAST RESTORATION

0130 - other examination x 2	0.8	
9973 - patient handling (tx) x 2	2.8	
9630 - other therapeutic med.	1.2	
9211 - local anesthesia	2.0	
9923 - Impression	0.8	
6711 - interim crown	2.1	
2940 - temp. cementation	0.5	
6611 - stain and glaze (71%)	1.5	(2.1)(.71) = 1.5
61x0 - metal(29%), pfm(71%)	10.1	.29(7.7) + .71(11.1) = 10.1
(assumes 71% of crowns will be porcelain fused to metal. 1990 ADA Survey of Dental Services Rendered)		

TOTAL

21.8

FIXED PARTIAL DENTURE ABUTMENTS

(assumes 2 abutments per FPD, does not include the pontics)

0130 - other examination x 2	0.8	
9973 - patient handling (tx) x 2	2.8	
9923 - Impression	0.8	
6711 - interim FPD	3.2	
6611 - stain and glaze (71%)	3.0	(2.1)(.71)(2) = 3.0
2940 - cementation x 2 abutments	1.0	
61x0 - metal (29%), pfm (71%)	20.2	(10.1)(2) = 20.2
total for both abutments	31.8	

TOTAL (single abutment)

15.9 (31.8/2 = 15.9)

FIXED PARTIAL DENTURE PONTIC

(note: all patient handling time, impressions, etc. are counted with the abutments)

62xx - pontic (assume .5 metal and .5 pfm)	1.4
6611 - stain and glaze (assume pfm are chairside stained and glazed)	1.5
TOTAL (single pontic)	2.9

REMOVABLE PARTIAL DENTURE

0130 - other examination x 4	1.6	
9973 - patient handling (tx) x 4	5.6	
9923 - impression	0.8	
5330 - rpd corrected cast x 25%	0.7	2.6/4 = .65 (assumes corrected cast technique 25% of cases)
5203 - cast metal RPD	12.3	
2970 - odontoplasty	0.4	(0.2)(2) = 0.4
9918 - post-op tx	0.5	
TOTAL	21.9	

COMPLETE DENTURE (ONE ARCH)

0130 - other examination x 6	2.4
9973 - patient handling (tx) x 6	8.4
9923 - impression x 2	1.6
9924 - jaw relation record	4.1
5820 - chairside remount	3.5
5110 - complete denture	10.3
9918 - post-op. tx	0.5
TOTAL	30.8

POST AND CORE

0130 - other examination x 2	0.8
9973 - patient handling (tx) x 2	2.8
9630 - other ther. med. (irrigation)	0.6
9211 - local anesthesia	1.0
3335 - root canal filling removal	2.0
2940 - temporary restoration	0.5
6711 - interim crown	2.1
6720 - post-core, metal	4.4
9923 - impression	0.8
2960 - rubber dam x 2	0.8
TOTAL	15.8

CTV ASSIGNMENT FOR PERIODONTAL SCREENING AND RECORDING CODES

Periodontal status and treatment requirements were assessed using Periodontal Screening and Recording (PSR) a rapid and effective way to screen patients for periodontal diseases. PSR is an adaptation of the Community Periodontal Index of Treatment Needs (CPITN), which is endorsed by the World Health Organization. PSR is recommended by The American Dental Association and The American Academy of Periodontology for all patients as an integral part of oral examinations. PSR includes suggested guidelines for appropriate patient management based on individual PSR score. Following the guidance of a group of consulted military periodontists, PSR treatment guidelines were converted to dental procedure codes and composite time values (CTV). The following provides the breakout of dental procedure codes taken when treating each PSR coded sextant and an explanation of the conversion to CTV.

<i>Code 1:</i>	Oral hygiene instruction Coronal polish Topical fluoride application
<i>Code 2:</i>	Oral hygiene instruction Scaling by oral prophylaxis technician or registered dental hygienist Coronal polish Topical fluoride application
<i>Code 3:</i>	Comprehensive periodontal examination by a dental officer Vertical bitewing and selected periapical radiographic survey Oral hygiene instruction Scaling, and root planing as indicated, with anesthetic by RDH or a dental officer Coronal polish Topical fluoride application Post-hygiene reevaluation by a dental officer.

Code 4:

Comprehensive periodontal examination by a dental officer
Vertical bitewing and selected periapical radiographic survey
Oral hygiene instruction
Scaling, and root planing as indicated, with anesthetic by RDH or a dental officer
Coronal polish
Topical fluoride application
Post-hygiene reevaluation by a dental officer
Periodontal Surgery to include:
 a) blood pressure recording
 b) anesthetic
 c) mucogingival flaps
 d) root planing
 e) prescription medications
 f) adjunctive surgical procedures

Postoperative Treatment at 1, 2, and 4 weeks.

Included in this scheme are the conservative assumptions that:

- Two sextants can receive either root planing or surgery during the same appointment.
- No surgical therapy will be required for code 3 sextants.
- Osseous surgery, osseous grafting, guided tissue regeneration, or distal/mesial wedge will be required in only one-half of code 4 sextants.
- Complete (7.2) or limited (0.7) occlusal adjustment, and antimicrobial therapy have not been factored into these estimates.
- The requirement for supportive periodontal therapy is not included in the algorithm.

Estimated Comprehensive Periodontal Treatment Based on Whole Mouth PSR

- 1) Given a dentition with all six sextants PSR code 1, the following dental treatment is required:
Oral hygiene instruction, coronal polish, topical fluoride application.

<u>Dental Procedure Codes</u>	
0130- other examination	0.4
1330- oral hygiene inst.	0.3
1110- adult prophylaxis	1.8
1240- topical fluoride tx	0.7
9973- patient handling (tx)	<u>1.4</u>
Total CTV	4.6

CTV per Code 1 sextant = $4.6/6 = 0.8$

- 2) Given a dentition with all six sextants PSR code 2, the following dental treatment is required:

Oral hygiene instruction, coronal polish, topical fluoride application, scaling by hygienist.

<u>Dental Procedure Codes</u>	
0130- other examination	0.4
1330- oral hygiene inst.	0.3
4342- periodontal scaling x 6	2.4
1110- adult prophylaxis	1.8
1240- topical fluoride tx	0.7
9973- patient handling (tx)	<u>1.4</u>
Total CTV	7.0

CTV per Code 2 sextant = $7.0/6 = 1.2$

3) Given a dentition with all six sextants PSR code 3, the following dental treatment is required:

Oral hygiene instruction, coronal polish, topical fluoride application, type 2 exam by specialist, selected periapical radiographs, vertical bitewing radiographs, scaling and root planing (4 settings, root plane x 6), local anesthetic.

Dental Procedure Codes

0130- other examination x 4	1.6
0140- comprehensive exam x 2	7.2
0210- intraoral series of radiographs	2.8
1330- oral hygiene inst. x 6	1.8
4343- scaling and root planing x 6	8.4
1110- adult prophylaxis	1.8
1240- topical fluoride tx	0.7
9211- local anesthesia x 4	4.0
9972- patient handling (dx) x 2	2.0
9973- patient handling (tx) x 4	<u>5.6</u>
Total CTV	35.9

CTV per Code 3 sextant = 35.9/6 = 6.0

4) Given a dentition with all six sextants PSR code 4, the following dental treatment is required:

Oral hygiene instruction, coronal polish, topical fluoride application, type 2 exam by specialist, selected periapical radiographs, vertical bitewing radiographs, scaling and root planing (4 settings, root plane x 6), local anesthetic, post-hygiene reevaluation by specialist, six sextants of periodontal surgery at four settings, final scaling and root planing (4 sittings, root plane x 6).

Dental Procedure Codes

0130- other examination x 14	5.6
0140- comprehensive exam x 2	7.2
0160- blood pressure x 8	1.6
0210- intraoral series of radiographs	2.8
1330- oral hygiene inst. x 16	4.8
4250- mucogingival flap x 12	31.2
4343- scaling and root planing x 12	19.2
1110- adult prophylaxis	1.8
1240- topical fluoride tx	0.7
9211- local anesthesia x 8	8.0
9631- prescription x 4	1.2
9918- postoperative treatment x 9	4.5
9972- patient handling (dx) x 2	2.0
9973- patient handling (tx) x 14	<u>19.6</u>
Total CTV	110.2 + 15 (surgery supplement 2.5 x 6) = 125.2

CTV per Code 4 sextant = 125.2/6 = 20.9

Osseous surgery, osseous grafting, guided tissue regeneration, or distal/mesial wedge techniques will be required in only one half of code 4 sextants. Therefore count $5.1/2 = 2.5$ CTV (surgery supplement) for each code 4 sextant.

<u>Surgery supplement</u>	
4260- osseous resective surgery	1.4
4261- osseous graft	1.5
4268- guided tissue regeneration	1.5
4230- mesial/distal wedge	<u>0.7</u>
Total	5.2

APPENDIX B

ORAL HEALTH OF UNITED STATES ADULTS 1985-86 (NATIONAL FINDINGS) COMPOSITION OF SAMPLE AND ESTIMATED POPULATION							
AGE INTERVAL	RACE	MALE		FEMALE		TOTAL	
		NUMBER IN SAMPLE	ESTIMATED POPULATION	NUMBER IN SAMPLE	ESTIMATED POPULATION	NUMBER IN SAMPLE	ESTIMATED POPULATION
18-19	WHITE	140	1,640,716	123	1,621,700	263	3,262,416
	BLACK	13	104,764	14	87,757	27	192,521
	TOTAL	153	1,755,787	137	1,714,859	290	3,470,646
20-24	WHITE	637	6,030,197	791	5,601,953	1428	11,632,150
	BLACK	73	677,753	91	787,285	164	1,465,038
	TOTAL	710	7,013,913	882	6,557,441	1592	13,571,354
25-29	WHITE	836	7,363,804	915	5,834,949	1751	13,198,753
	BLACK	98	760,904	126	684,780	224	1,445,684
	TOTAL	934	8,462,000	1041	6,854,000	1975	15,316,000
30-34	WHITE	763	7,168,794	777	5,051,200	1540	12,219,994
	BLACK	100	704,268	143	771,602	243	1,475,870
	TOTAL	863	8,194,000	920	6,421,000	1783	14,615,000
TOTAL POPULATION		2,660	25,425,700	2,980	21,547,300	5,640	46,973,000

Oral Health of U.S. Employed Adults and Seniors: 1985-86; U.S. Department of Health and Human Services, National Institute of Dental Research, NIH Pub. No. 87-2868, 1987, Bethesda, Maryland

APPENDIX C

DOD DENTAL CLASSIFICATION CRITERIA

DOD DENTAL CLASSIFICATION CRITERIA

Source: DoD Instruction 6410.1, *Standardization of Dental Classifications*

CLASS 1 : not requiring dental treatment or reevaluation within 12 months.

- A. No dental caries or defective restorations
- B. Arrested caries for which treatment is not indicated
- C. Healthy periodontium, no bleeding on probing, oral prophylaxis not indicated
- D. Replacement of missing teeth not indicated
- E. Unerupted, partially erupted, or malposed teeth that are without historical, clinical, or radiographic signs or symptoms of pathosis and are not recommended for prophylactic removal
- F. Absence of temporomandibular disorder; stable occlusion

CLASS 2: conditions present which, if not treated or followed up, are **not expected** to, but have the potential to result in dental emergencies within 12 months.

- A. Treatment or followup indicated for dental caries with minimal extension into dentin or minor defective restorations easily maintained by the patient where the condition does not cause definitive symptoms
- B. Interim restorations or prostheses that can be maintained by the patient where the underlying condition does not cause definitive symptoms. (This includes teeth that have been restored with permanent restorative materials, but for which protective coverage is indicated).
- C. Edentulous areas requiring prostheses but not on an immediate basis
- D. Periodontal disease or periodontium exhibiting:
 - (1) Requirement for oral prophylaxis
 - (2) Requirement for maintenance therapy; this includes stable or non-progressive mucogingival conditions requiring periodic evaluation
 - (3) Non-specific gingivitis
 - (4) Early or mild adult periodontitis
 - (5) Supragingival or slight subgingival calculus

CLASS 2: (Cont.)

- E. Unerupted, partially erupted, or malposed teeth that are without historical, clinical, or radiographic signs or symptoms of pathosis, but which are recommended for prophylactic removal
- F. Active orthodontic treatment
- G. Temporomandibular disorder patients in maintenance therapy

CLASS 3: oral conditions which, if not treated, **are expected** to result in dental emergencies within 12 months. When there are questions in determining classification between Class 2 and Class 3, patient should be placed in Class 3.

- A. Dental caries, tooth fractures, or defective restorations where the condition extends beyond the dentinoenamel junction and causes definitive symptoms; dental caries with moderate or advanced extension into dentin; and defective restorations not maintained by the patient.
- B. Interim restorations or prostheses that cannot be maintained for a 12-month period. (This includes teeth that have been restored with permanent restorative materials but for which protective coverage is indicated).
- C. Periodontal diseases or periodontium exhibiting:
 - (1) Acute gingivitis or pericoronitis
 - (2) Active moderate to advanced periodontitis
 - (3) Periodontal abscess
 - (4) Progressive mucogingival condition
 - (5) Periodontal manifestations of systemic disease or hormonal disturbances
 - (6) Moderate to heavy subgingival calculus
- D. Edentulous areas or teeth requiring immediate prothodontic treatment for adequate mastication, communication, or acceptable esthetics
- E. Unerupted, partially erupted, or malposed teeth with historical, clinical, or radiographic signs or symptoms of pathosis, that are recommended for removal

CLASS 3: (Cont)

- F. Chronic oral infections or other pathologic lesions including:
 - (1) Pulpal or periapical pathology requiring treatment
 - (2) Lesions requiring biopsy or awaiting biopsy report
- G. Emergency situations requiring therapy to relieve pain, treat trauma, treat acute oral infections, or provide timely follow-up care (e.g., drain or suture removal) until resolved
- H. Temporomandibular disorder requiring active treatment