



DEVISING A MANPOWER MODEL FROM DENTAL TREATMENT NEEDS OF U.S. AIR FORCE RECRUITS

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OUTLINE

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- OBJECTIVE
- MATERIALS AND METHODS
- RESULTS
- DISCUSSION
- CONCLUSIONS



NEED FOR MANPOWER ASSESSMENT

- ACCURATE, VALID, AND CURRENT DATA OF CURRENT DENTAL CONDITIONS
 - PLANNING FOR DENTAL SERVICES DURING TRAINING AND FOLLOW-ON CARE
 - DEPLOYABILITY OF FUTURE AIRMEN

THUS, PERIODIC ASSESSMENTS OF RECRUITS' ORAL HEALTH UPON ENTRY INTO THE U.S. AIR FORCE IS COMPLETED.

“RECRUIT ORAL HEALTH SURVEY”

- PERIODIC DEPARTMENT OF DEFENSE SPONSORED COLLECTION OF INFORMATION PERTAINING TO THE ORAL HEALTH PERCEPTIONS, CONDITIONS, AND NEEDS OF MILITARY ENLISTEES 1994
 - 2000
 - 2008
 - **2018**
- **DESCRIPTIVE** STUDIES FROM WHICH PLANNERS CAN MAKE INFORMED DECISIONS

MANPOWER MODEL



- FROM THE 1994 STUDY, A MANPOWER MODEL WAS ESTABLISHED IN 1997 TO ASSIST PLANNERS IN STAFFING DENTAL CLINICS BASED ON ESTIMATED FUTURE TREATMENT NEEDS OF THE U.S. AIR FORCE
 - THE DENTAL NEEDS OF THE GENERAL PUBLIC HAVE SHIFTED IN THE LAST 20 YEARS

MANPOWER MODEL

- CURRENTLY POPULATION-BASED
 - 650 ACTIVE DUTY MEMBERS: ONE GENERAL DENTIST
 - TRAINING COMMANDS: ONE GENERAL DENTIST PER 2000 STUDENTS
 - SPECIALISTS LAYERED IN AS POPULATION INCREASES
- THE MANPOWER MODEL WAS BUILT ON A SERIES OF ASSUMPTIONS AND BEST-GUESSES IN REGARDS TO TIME REQUIRED PER PROCEDURE

SHIFT IN DENTAL TREATMENT NEEDS

- SIGNIFICANT DECLINE IN UNTREATED CARIES FROM 6-11 YEAR OLDS FROM 1988-1994 TO 2011-2012
 - AGE BRACKET INCLUDED IN THIS RECRUIT POPULATION
 - REVIEW OF MANNING MODEL INDICATED



GOAL

EXAMINE TREATMENT NEEDS OF A REPRESENTATIVE SAMPLE OF AIR FORCE RECRUITS OBTAINED OVER THE SPAN OF 12 MONTHS AND DETERMINE IF THE MANPOWER MODEL COULD BE ADJUSTED TO MEET THOSE NEEDS IN A MORE EFFICIENT MANNER.

CORPORATE DENTAL SYSTEM (CDS)

- CREATED IN 1999 FOR MULTIPLE PURPOSES
SCHEDULING
 - READINESS ASSESSMENT
 - WORKLOAD MANAGEMENT
 - RESEARCH



“Provide Warrior focused oral health care with an exceptional team of professionals, dedicated to excellence and unified in service”



- USED TODAY BY U.S. NAVY, U.S. ARMY, U.S. AIR FORCE
 - ALL THREE SERVICES INCLUDED IN PREVIOUS RECRUIT ORAL HEALTH SURVEYS
 - 2018 RECRUIT ORAL HEALTH SURVEY INVOLVES ONLY USAF

OBJECTIVE

DENTAL TREATMENT NEEDS OF USAF RECRUITS

+

TIME-REQUIRED ASSESSMENTS PER PROCEDURE VIA CDS

+

PRACTICE PATTERNS PER AFSC (AIR FORCE SPECIALTY CODE)

=

UP-TO-DATE, EFFICIENT MANPOWER MODEL

MATERIALS AND METHODS

- 1500 RANDOMLY SELECTED RECRUITS TO THE U.S. AIR FORCE WERE ASKED IF THEY WOULD PARTICIPATE IN THE 2018 AIR FORCE RECRUIT ORAL HEALTH STUDY
 - CLINICAL EXAM COMPONENT
 - SURVEY COMPONENT
 - TREATMENT NEEDS ANONYMIZED AND COMPILED BY TRI SERVICE CENTER FOR ORAL HEALTH STUDIES (TSCOHS)

POPULATION

- 1216 RANDOMLY SELECTED RECRUITS
 - VIA RANDOM NUMBER GENERATOR
- STATISTICAL POWER OF 80%
- MARGIN OF ERROR OF 4%
- CONFIDENCE INTERVAL OF 95%

SURVEY DATA

- NEAR EQUAL NUMBER OF RECRUITS WERE EXAMINED EACH MONTH OVER 12 MONTHS
- CLINICAL EXAM FINDINGS RECORDED IN CUSTOM DESIGNED SOFTWARE
- ORAL PATHOLOGY, TMD, MALOCCLUSION, REMOVABLE PROSTHETIC NEEDS, EDENTULISM, PERIODONTAL HEALTH, RESTORATIONS, OTHER DENTAL TREATMENT NEEDS AND **DENTAL READINESS CLASS** RECORDED

Recruit Dental Needs	
Discipline	Average Number of Units/Recruit
Entrance exam	1
Prophylaxis	1
Operative	1.4
Oral surgery	1.3
Fixed Prosthodontics	1.7
Endodontics	0.1
	% of Recruits Needing a Consultation
TMD	0.3
Orthodontics	14.3
Oral Diagnosis	4.1
Periodontics	4.1

PROVIDER PRACTICE PROFILE

- CORPORATE DENTAL SYSTEM (CDS) PROVIDED 2 YEARS WORTH OF CURRENT DENTAL TERMINOLOGY (CDT) CODES CLAIMED BY EACH TYPE OF PROVIDER, PER AIR FORCE SPECIALTY CODE (AFSC)
- THE RECRUIT NEEDS WERE COMPARED WITH THE PROVIDERS WHO CODED FOR CORRESPONDING DENTAL TREATMENT





FOR EXAMPLE

- OPERATIVE NEEDS: AVERAGED D2000 SERIES (EXCEPT D2700s - FOR SINGLE CROWNS)
- FIXED PROS NEEDS: AVERAGED D6000 SERIES + D2700 SERIES
- ENDODONTIC NEEDS: AVERAGED D3000 SERIES
- ORTHODONTIC/OFP: SINGLE CODES FOR EVAL

A WORD ON SINGLE UNIT CROWNS

- TYPICALLY A GENERAL DENTISTRY PROCEDURE
- ACCOUNTED FOR IN THE SURVEY SEPARATE OF GEN DENT
 - FIXED PROSTHODONTIC NEEDS
 - REMOVABLE PROSTHODONTIC NEEDS

Fixed Prosthodontic	Estimated Population	28,687	1,766	2,768
	Percent	86.4%	5.3%	8.3%
Removable Prosthodontic	Estimated Population	37,211	0	0
	Percent	100.0%	0.0%	0.0%
Operative	Estimated Population	10,633	18,355	4,231
	Percent	32.0%	55.3%	12.7%

MATERIALS AND METHODS

- A COMPLEMENT OF PROVIDERS (PER AFSC) WAS STRATIFIED BASED ON HISTORICAL CONTRIBUTION TO RECRUIT-TYPE DENTAL NEEDS.
 - I.E. GENERAL DENTISTS COMPLETED 83% OF ALL OPERATIVE CODES CLAIMED
 - THE AVERAGE RECRUIT NEEDS 2.38 HOURS OF OPERATIVE TREATMENT
 - TYPICAL INPUT FROM GENERAL DENTISTS IS 1.96 HOURS





MATERIALS AND METHODS

- COMPILED DENTAL NEEDS, COMPILED ACROSS A THEORETICAL CLASS OF 10,000 RECRUITS
 - YOU'LL NEED 37 GENERAL DENTISTS TO COMPLETE THE WORK IN 6 MONTHS

MATERIALS AND METHODS

- CORPORATE DENTAL SYSTEM ANALYSTS PRODUCED AVERAGE SCHEDULING TIME FOR SINGLE-CODE ENCOUNTERS TO ESTIMATE HOW MUCH TIME A SPECIFIC TREATMENT WOULD BE EXPECTED
- RECRUIT NEEDS WERE MATCHED WITH CODES:
 - I.E. PLANNED EXTRACTION OF FOUR 3RD MOLARS?
117 MINUTES.

Procedure Categories			Average Duration in Minutes
D0150	D0274	D0330	60
New pt exam	bitewings	panograph	
D1110	D1330	D0330	60
prophylaxis	OHI	Fluoride	
D2000 series Average across operative			102
D3000 Average across endodontics			135
D7000 series Average across oral surgery			117
D6000 series Average across fixed-prostodontics			111
D99202 TMD consultation			120
D9310 Average orthodontic consultation			34
D0000 series Average oral diagnosis evaluation			30
D0180 + D4000 series Periodontal evaluation and treatment			120

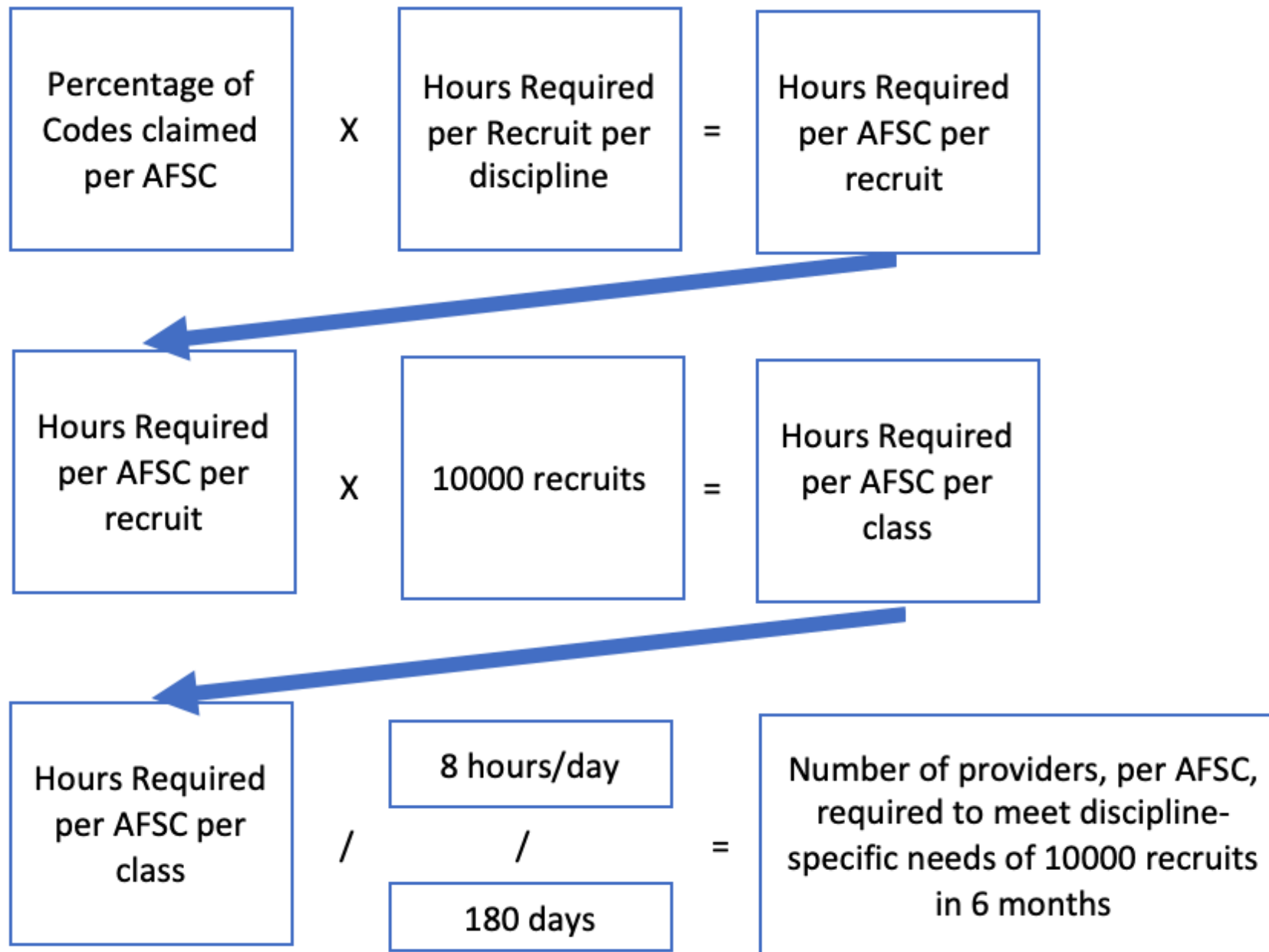


Figure 6: Method of calculations for provider stratification

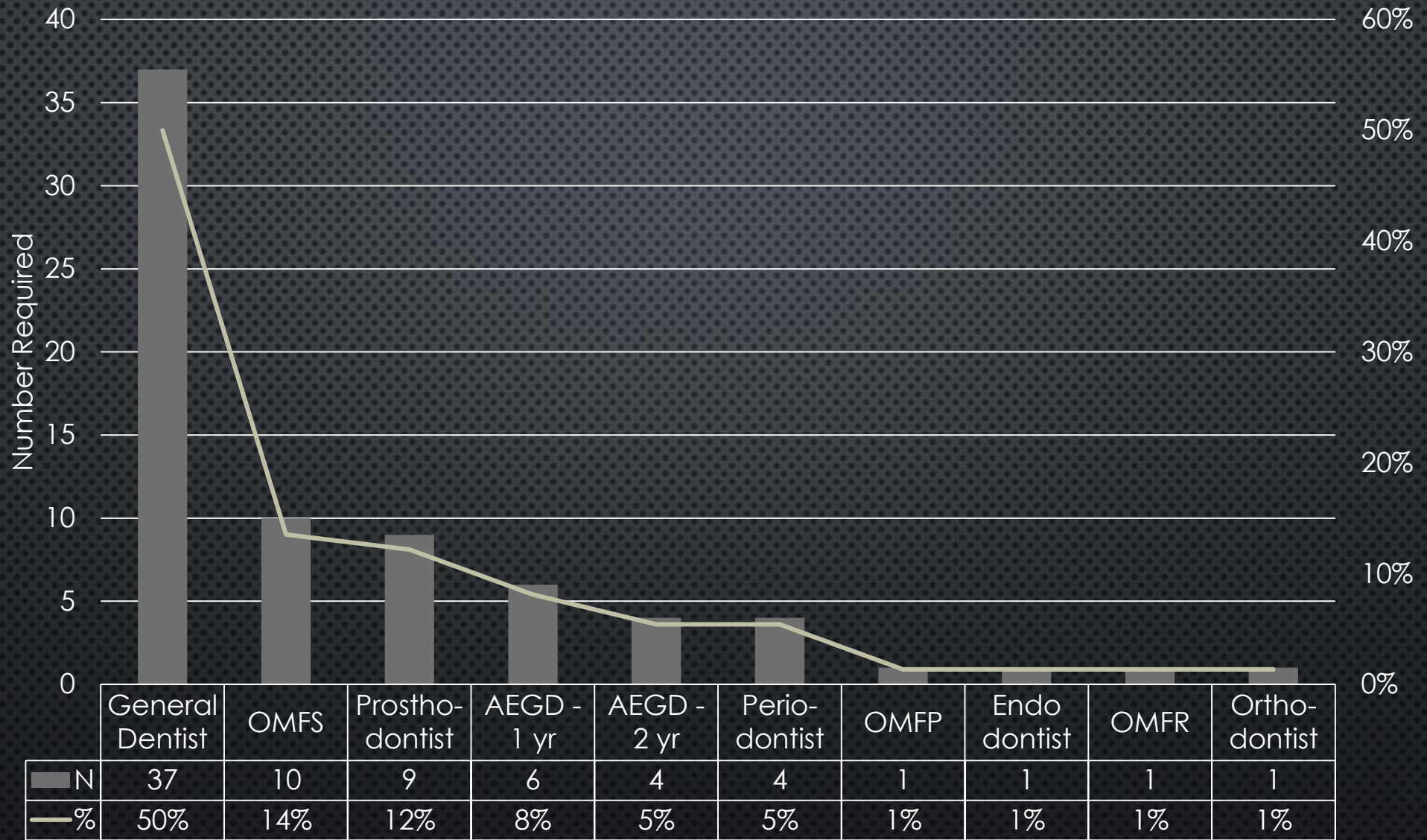
IMMEDIATE LIMITATIONS

- SNAPSHOT OF DENTAL TREATMENT NEEDS:
 - NO IDENTIFIED NEED FOR REMOVABLE PROSTHODONTICS
 - DOES NOT INCLUDE OFFICERS, JUST ENLISTED
- OROFACIAL PAIN IS NOT INCLUDED IN OUR BREAKOUT OF AFSCs PER CDS
- PEDIATRIC DENTISTRY IS NOT INCLUDED DUE TO LACK OF TREATMENT ON THE RECRUIT POPULATION



RESULTS

- 74 DENTAL PROVIDERS WOULD BE REQUIRED TO MEET THE NEEDS OF 10,000 RECRUITS IN 6 MONTHS
- 50 OF THESE PROVIDERS ARE GENERAL DENTISTS (A, B AND C)



Current Force:

140	49	52	265	178	62	7	45	3	47
16%	6%	6%	30%	20%	7%	1%	5%	<1%	5%

DISCUSSION



- ENHANCED FOCUS:
 - ORAL SURGERY: CORRELATES TO NORMAL AND EXPECTED PRESENCE OF 3RD MOLARS
 - THOUGH REDUCED ON ACCOUNT OF GENERAL DENTISTS PERFORMING 39% OF ORAL SURGERY PROCEDURES

DISCUSSION



- ENHANCED FOCUS:

- PROSTHODONTICS: CORRELATES TO IDENTIFIED SURGE IN NEED FOR SINGLE CROWNS
 - TEETH THAT MAY HAVE BEEN TREATMENT PLANNED FOR CUSPAL COVERAGE DIRECT RESTORATIONS IN THE PAST
 - THOUGH REDUCED ON ACCOUNT OF A LACK OF NEED FOR REMOVABLE PROSTHODONTIC NEEDS

DISCUSSION

- DEEMPHASIZED:
 - PERIODONTICS: DIFFICULT TO PROJECT PERIODONTAL TREATMENT NEEDS FROM REGULAR EXAM
 - PSR ISN'T NECESSARILY ADEQUATE FOR PREDICTING PERIODONTAL TREATMENT NEEDS AND CONSEQUENTLY CHAIR TIME

DISCUSSION

- WITHOUT DIRECT PATIENT CARE, HOW DO PATHOLOGY AND RADIOLOGY STILL PLAY A ROLE IN A READINESS-BASED CALCULATION?
 - 4.1% OF RECRUITS HAD FINDINGS THAT WERE SUSPICIOUS ENOUGH TO WARRANT FURTHER EVALUATION ALBEIT THROUGH BIOPSY OR FURTHER IMAGING
 - THE CDT CODES CLAIMED BY ORAL AND MAXILLOFACIAL PATHOLOGY/RADIOLOGY MATCH WITH THIS NEED

DISCUSSION

- GENERAL DENTISTS CLAIM 74% OF ALL CDT CODES AVAILABLE
 - PRACTICE PATTERNS SKEW TOWARD GENERAL DENTISTS
 - EVERY ITERATION OF TRAINING OF GENERAL DENTISTS FURTHERS THEIR ABILITY TO CODE FOR "SPECIALTY-LEVEL" PROCEDURES.
 - I.E. 43.3% OF ALL PERIODONTAL OSSEOUS SURGERY WAS PERFORMED BY GENERAL DENTISTS IN THE AIR FORCE IN 2018 VERSUS CIVILIAN PRACTICE WHERE 93.4% WERE SEEN TO NOT HAVE CODED FOR A SINGLE OSSEOUS PROCEDURE OVER A 5 YEAR PERIOD.

PRACTICE PATTERNS

- COMPLICATING MEDICAL HISTORY:
 - MOST INFLUENTIAL DECISION POINT FOR CIVILIAN DENTISTS TO REFER, PARTICULARLY WHEN IT PERTAINS TO SURGERY.



PRACTICE PATTERNS



- AIR FORCE PATIENT POPULATION IS YOUNGER AND HEALTHIER COMPARED TO GENERAL PUBLIC, THUS LESS BIAS TOWARD REFERRAL
 - EVIDENCE SUGGESTING OTHERWISE: PERIODONTAL DISEASE HAS GROWN WORSE AMONGST THE GENERAL POPULATION BUT REFERRALS TO PERIODONTISTS HAVE BEEN REDUCED.
 - AUTHORS POSTULATED STUDENT LOAN DEBT IS A CONTRIBUTOR

CONCLUSIONS

- GENERAL DENTISTS ARE THE MOST IN-DEMAND
- THIS METHOD HAS A SERIES OF LIMITATIONS AND IS BASED ON SOME DEGREE OF CONJECTURE
- THIS IS NOT AN EFFICIENCY-BASED MODEL AS THE TIME TO COMPLETE PROCEDURES CAME FROM SCHEDULING AND NOT ACTUAL TIME REQUIREMENTS.
- MORE RESEARCH WOULD BE NEEDED TO TRANSLATE THIS MODEL INTO POLICY



QUESTIONS