U.S. ARMY - ACTIVE DUTY NOISE INDUCED HEARING INJURY SUMMARY CALENDAR YEARS 2007-2011

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U.S. Army-Active Duty Noise Induced Hearing Injury Summary
Calendar Years 2007-2011

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U.S Army Noise Induced Hearing Injury Data Summaries
Annual CY 2007-2011

EXECUTIVE SUMMARY

PURPOSE:

Since 2010, the Department of Defense (DOD) Hearing Conservation Working Group, the Army Institute of Public Health (AIPH) of the U.S. Army Public Health Command (USAPHC), the Armed Forces Health Surveillance Center (AFHSC) and recently, the Hearing Center of Excellence (HCE) collaborated to develop new DOD and individual Services' NIHI surveillance data. The purposes of these data summaries are as follows:

- To present and summarize available Army medical surveillance data for use in noise-induced hearing injury (NIHI) prevention program and policy planning, including -
    - Defining the relative impact of NIHI among U.S. Army Active Duty personnel in the total Army and at individual Army installations.
    - Providing Army injury rates and trends from 2007–2011.
    - Identifying demographics most closely associated with NIHI incidence.
- To monitor progress-based metrics for reducing the NIHI morbidity burden over time.

This first NIHI data summary establishes a baseline against which future years' data can be compared for assessment of NIHI trends as prevention performance indicators.

CONCLUSIONS:

The Army NIHI surveillance annual summary for calendar years (CY) 2007-2011 showed increasing incidence rates for sensorineural hearing loss (SNHL), tinnitus, and significant threshold shift (STS). These results imply need for modifications to NIHI prevention strategies and continued monitoring for improvements (reductions) in NIHI incidence rates over time.

RECOMMENDATIONS:

Commanders and Preventive Medicine (PM) assets at multiple levels should use NIHI data summaries trends to maintain situational awareness of the progress of NIHI prevention operations. Using the periodic NIHI data summaries, Commanders and PM assets should adjust and improve prevention plans when the need is indicated from the outcomes data trends.

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REFERENCES:

References are listed in Appendix A.

PURPOSE:

- To present and summarize available Army medical surveillance data for use in noise induced hearing injury (NIHI) prevention program and policy planning, including -
    - Defining the relative impact of NIHI among U.S. Army Active Duty personnel in the total Army and at individual Army installations.
    - Providing Army injury rates and trends from 2007–2011.
    - Identifying demographics most closely associated with NIHI.
- To monitor progress-based metrics for reducing the NIHI morbidity burden over time.

AUTHORITY:

Under Army Regulation (AR) 40-5, Section 2-19, the U.S. Army Public Health Command (USAPHC) is responsible for providing support for Army Preventive Medicine (PM) assets to include review and interpretation of surveillance data and identification and characterization of health problems as a foundation for injury prevention planning and policy efforts.

Under Department of Defense Instruction (DODI) 6055.12 Hearing Conservation Program, Enclosure 2, Section 3. requires The Heads of the DOD components to annually evaluate the effectiveness of their HCPs.

Under Department of Defense Directive (DODD) 6490-02E Comprehensive Health Surveillance*,* 2012; Section 1. paragraph c. establishes the Armed Forces Health Surveillance Center (AFHSC) as the single source for DOD-level health surveillance information.

Under DODD 6200.04 Force Health Protection, Section 4.3.1.2, requires DOD components to promote and improve the health of the force through programs on injury prevention.

BACKGROUND:

The World Health Organization describes public health surveillance as “the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice” (World Health Organization, 2013). By definition, surveillance systems include the capacity for data collection and analysis, as well as the timely dissemination of information to persons or groups of persons who can undertake effective prevention and control interventions related to specific health outcomes.

In 2006, an Institute of Medicine (IOM) report (Humes, et al) estimated the prevalence of noise-induced hearing loss (NIHL) and tinnitus among U.S. Military members from World War II through 2005. The report’s authors concluded that military hearing conservation programs (HCPs) had not adequately protected the hearing of U.S. service members. They recommended using prospective, longitudinal, epidemiological data to reliably estimate the incidence of NIHL and tinnitus in the U.S. Armed Forces.

In response to the IOM report, military audiologists and their Department of Veterans Affairs (VA) counterparts worked to develop a public health approach for monitoring and improving the effectiveness of HCPs. This collaboration produced a standard set of Military Health System (MHS) ICD-9-CM coding guidelines designed to improve the quality of data used for reporting and tracking incidence rates of NIHI. The NIHI ICD-9 code “watch list” has evolved over time based on a series of data mining studies of MHS clinical data (See Appendix A).

A public health approach to injury prevention in the military first involves utilizing data to define the magnitude and scope of injuries. Ongoing analysis of surveillance data is essential for monitoring injury trends and detecting unexpected changes in injury occurrence. The AFHSC operates the Defense Medical Surveillance System (DMSS); which is the central repository of all inpatient and outpatient medical encounters used for disease and injury surveillance of U.S. military personnel.

Figure 1 presents the public health process (Petruccelli & Knapik, 2006). The five elements of the public health process necessary to make continued progress toward prevention of disease and injury are: (1) surveillance; (2) basic epidemiological studies; (3) systematic review of intervention studies; (4) program and policy implementation; and (5) evaluation of implemented strategies, programs, and policies.

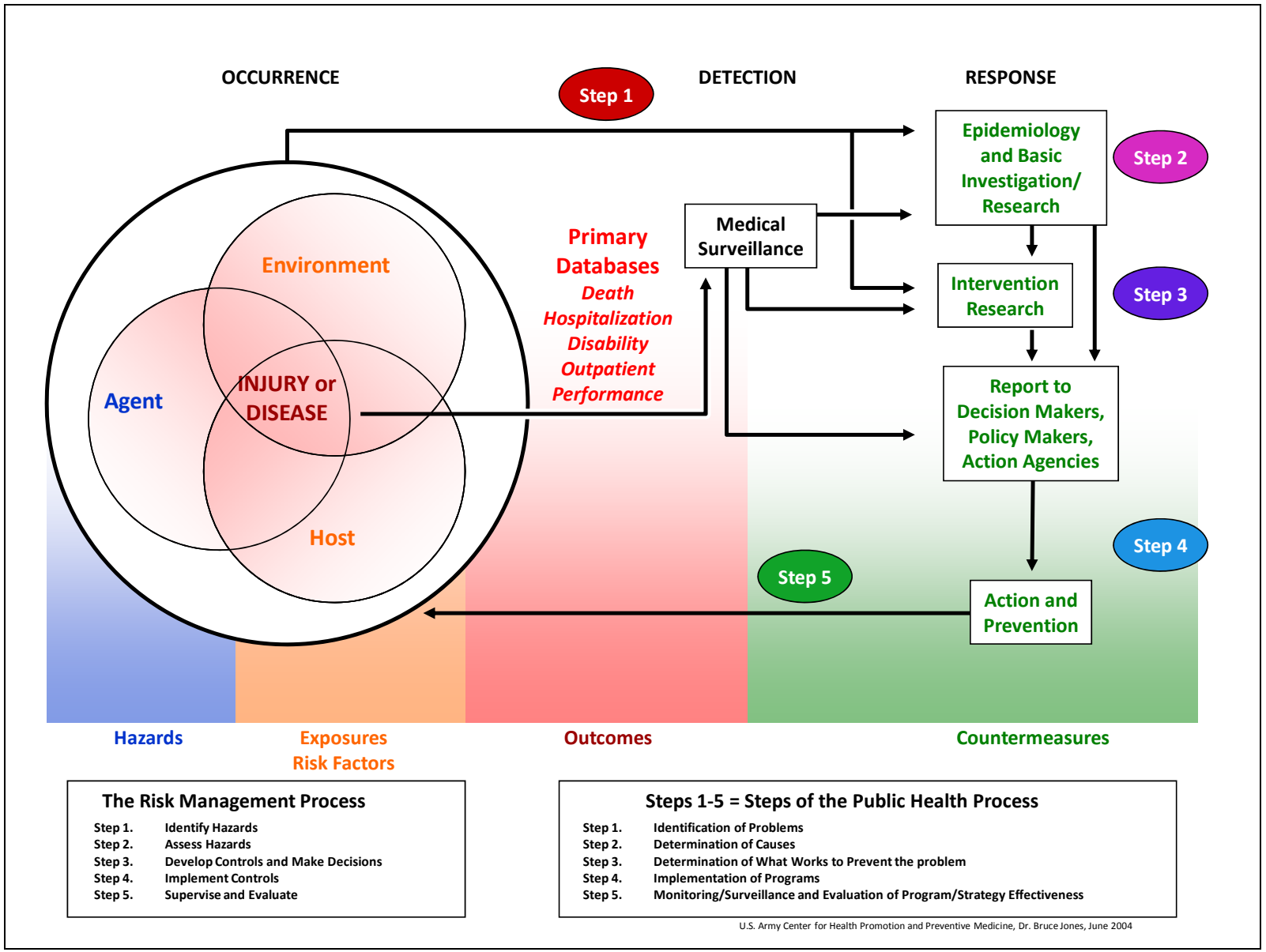


Figure 1. Steps of the Public Health Process

Starting in 2010 the DOD Hearing Conservation Working Group, the Army Institute of Public Health (AIPH), and recently, the Hearing Center of Excellence (HCE) collaborated with AFHSC to develop new DOD and individual Services' NIHI surveillance capabilities.

Multidisciplinary subject matter experts (SMEs) at AIPH and AFHSC collaborated to develop the new Army NIHI data tables. The AIPH SMEs included 1) Army Hearing Program audiology, 2) Injury Prevention Program epidemiology and preventive medicine, 3) USAPHC command statisticians and 4) clinical and statistical data managers. AFHSC SMEs included 1) public health data managers and 2) analysts.

The new data summaries were based on existing AFHSC-AIPH injury reports for musculoskeletal and traumatic injuries for DOD, individual Services, and installations of individual Services. The new NIHI data summaries are modeled on the AIPH Injury Prevention Program's recurring injury reports format and philosophy of data utilization to improve prevention processes' performance using outcome metrics to drive change. The new data summaries are intended to provide a non-punitive means to track hearing health indicators for commanders and occupational health and PM assets at multiple levels for their situational awareness and to inform their hearing loss prevention programs' progress.

Background and published references for the selection of the NIHI code groups coming under surveillance from the DMSS can be found on AFHSC's web page under the surveillance case definitions tab at http://www.afhsc.mil/caseSurveillanceDefs.

Because of this collaboration, surveillance systems at the AFHSC and the AIPH will now be able to provide recurring data summaries that should be utilized by public health personnel and Commanders to identify hearing injury occurrences and to be alerted to emerging injury problems.

METHODS:

Data Delivery:

The Army NIHI data received at AIPH provided by AFHSC are in the same format as the data summaries for DOD and the other Services. Army data summaries are from Army data only. Transmission of annual NIHI data from AFHSC to AIPH and the other Services' surveillance hubs occurs in April of the following year.

AFHSC's DMSS data processing takes into account the following variables.

- Population: U.S. Army, Navy, Marines, and Air Force. Active component only.
- Surveillance period: Annual, covering a 5 -year "moving window".

- Data source: inpatient, outpatient, and Theater Medical Data Store (TMDS) records.

- Denominator Adjustments: For reporting purposes AFHSC makes denominator adjustments to "person year" to exclude time lost to follow up (either from deployment, separation from service, retirement, demobilization, or death); usually expressed as "rate per 1,000 person years."

The year 2007 was selected as the starting reporting year because data quality objectives in the form of ICD-9 coding guidelines for NIHI were not attained until 2005 and it took 2 years before clinicians started using these guidelines more consistently in clinical practice.

Data Description:

The relative burden of NIHI presented in this data summary is characterized by two indicators: (1) the total number of incident cases for each major diagnosis group (allows a person to be counted in more than one group) and (2) the number of individuals with one of a particular diagnosis from any of the major diagnosis groups (allows a person to only be counted only once).

Appendix B shows the thirteen NIHI ICD-9 diagnostic codes in four diagnostic groups that comprise the NIHI case definition for AFHSC surveillance. These code groups include sensorineural hearing loss (SNHL), significant threshold shift (STS), NIHL and tinnitus. Appendix B also presents Current Procedural Terminology (CPT) codes and DOD occupation codes used in this data summary.

Appendix C provides annual Army data from 2007-2011 with data at the summary level by diagnostic group and at the installation level (stratified by DMIS ID) for each diagnostic group. An Army detail data table characterizes those with any NIHI by occupation using DOD Occupation codes listed in Appendix B, as well as by sex, age, and deployment association. Individual Services occupation codes were combined to create the DOD military occupation codes based on those occupations across the Services that had the most closely associated work activities. The DOD consolidated codes are shown in the appendix. An NIHI diagnosis was considered to be deployment associated if the diagnosis occurred during a deployment period or within 180 days of deployment.

Incident Cases: The NIHI data are presented as "incident cases", meaning NEW cases only per reporting period (CY). A lifetime incidence rule was applied, and cases were censored (not counted again) after receiving an initial NIHI diagnosis. Service members (SMs) with more than one NIHI subgroup diagnosis were counted in EACH subgroup, but only once (lifetime) per subgroup in the Army diagnostic summary data table and installation level data tables. In the Army detail data table, SMs with more than one NIHI sub-group diagnosis were counted ONCE with the first qualifying diagnosis in

order to avoid double counting of individuals when summarizing data for total NIHI. Therefore, the numbers in these two data tables will not match.

Statistical Analysis:

Statistical analysis was performed only on selected data from Appendix C. Each diagnosis group (SNHL, STS, NIHL, and tinnitus) was analyzed using linear regression to determine if the linear trend of incidence rates was increasing or decreasing through time. A negative slope indicates the trend was decreasing (incidence rate declining), and a positive slope indicates the trend was increasing (incidence rate increasing). If the coefficient of the slope for 'year' was statistically significant ($p<.05$), the linear trend of the data was significantly increasing or decreasing at the 95% confidence level, depending on the sign of the slope coefficient.

RESULTS:

Overall:

Analysis is provided for data from the Army Diagnostic Summary data table and Army Detail data table in Appendix C. No aggregate analysis was performed with the installation level data. Installation level data are provided for review by program managers as an aid to communication with unit commanders on their installation for their situational awareness and coordination of prevention activities planning and execution. No analysis was done on audiogram data.

Army Diagnostic Summary:

Overall, STS is the most common NIHI diagnosis in the Army with a 2011 lifetime incidence rate over 20 per 1000 p-yrs. SNHL and tinnitus had approximately the same incidence, approximately 15 per 1000 p-years. NIHL incidence is much lower with 2 cases per 1000 p-yrs.

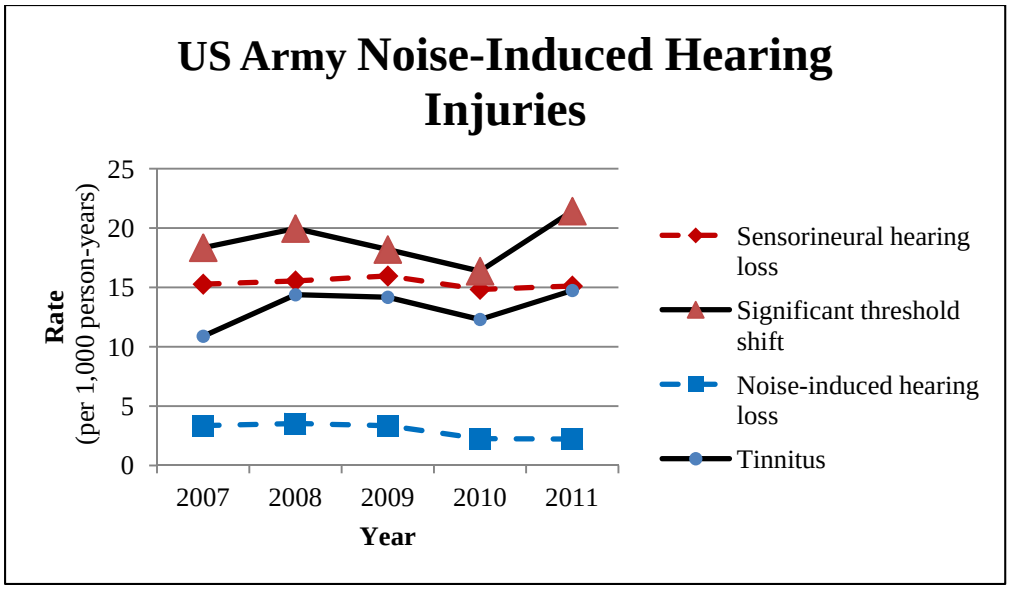


Figure 2. U.S. Army Noise-Induced Hearing Injuries

- The overall STS rate increased between 2007 and 2011; however it actually declined in 2008 and 2010. Regression analysis indicated that although the coefficient of the linear slope from 2007 to 2011 was positive, this increasing linear trend was not statistically significant (p=.734).

- The SNHL rate slightly increased between 2007 and 2009 but then decreased from 2009 to 2010. In 2011 the rate slightly increased again but was still lower than 2007. Regression analysis indicated that although the coefficient of the linear slope from 2007 to 2011 was negative, this decreasing linear trend was not statistically significant (p=.529), i.e. the rate of SNHL was stable across the five years.

- The tinnitus rate increased between 2007 and 2011 but, like STS, showed a decline in rates from 2008 to 2010. Regression analysis indicated that although the coefficient of the linear slope was positive, the increasing linear slope was not statistically significant (p=.347).

- The NIHL count and rate decreased between 2007 and 2011, but this decrease was not found to be statistically significant by a regression analysis (p=.059). Since the decrease in NIHL approached statistical significance, this trend may indicate possible improved performance. This would seem to be a positive performance indicator; however, the NIHL data have to be viewed with some skepticism. Clinicians have been reported to often use the broader SNHL diagnosis instead of the more specific NIHL diagnosis. So the incident cases of SNHL are the more important performance indicator vs. NIHL.

STS accounted for 35-40% of the total NIHIs from 2007 to 2011. SNHL accounted for about 30% and tinnitus around 25-30%.

Table 1. Proportion of Total Army Diagnoses Counts by NIHI

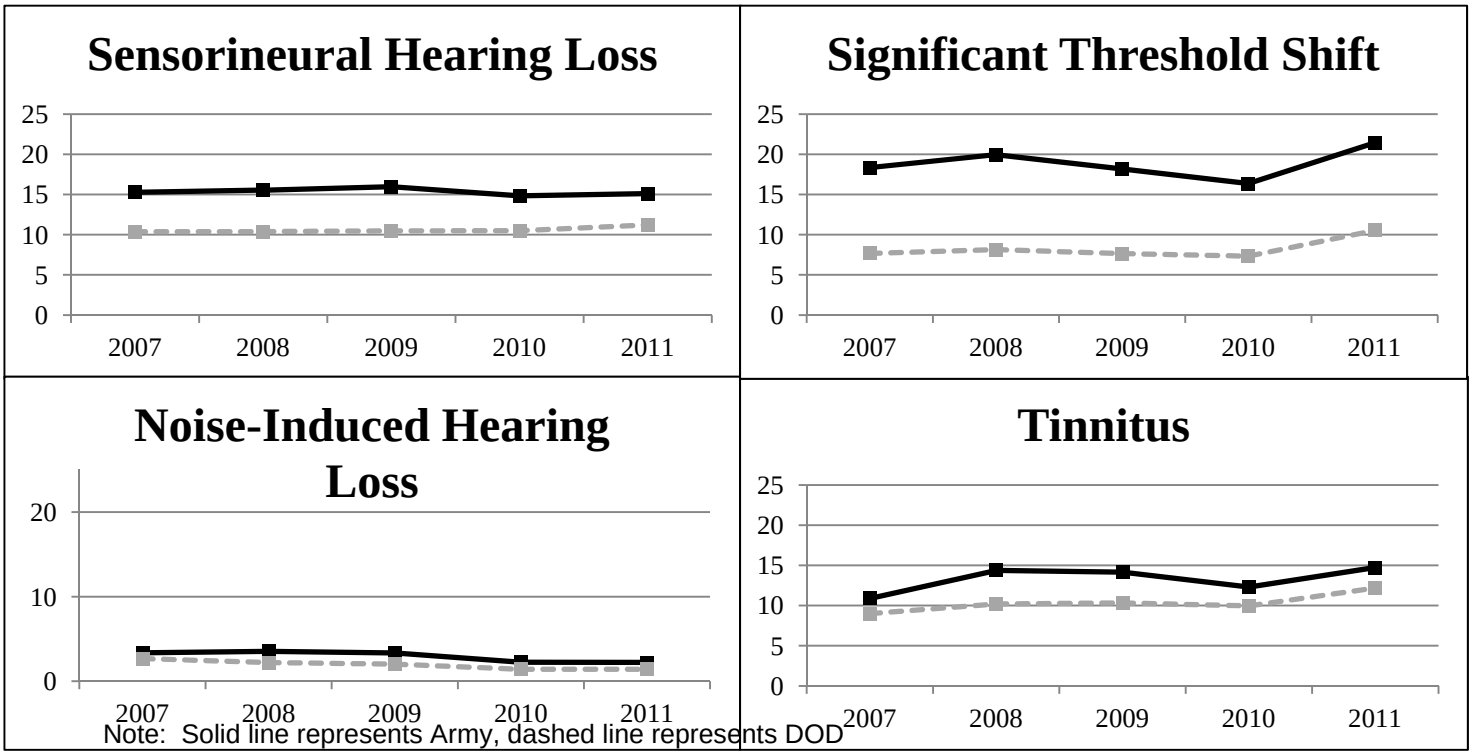
	2007	2008	2009	2010	2011
SNHL	31.4%	28.7%	30.5%	32.1%	28.0%
STS	38.7%	37.5%	35.2%	35.7%	39.8%
NIHL	7.1%	6.7%	6.6%	5.1%	4.3%
Tinnitus	22.8%	27.1%	27.6%	27.2%	27.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

By count, the comparison of Army to DOD by NIHI diagnosis indicates that the Army owns the majority of these diagnoses. In fact, Army STS diagnoses account for the largest majority of DOD diagnoses with approximately 80-90% through the 5 years. However, the Army only accounts for approximately 45-50% of the DOD tinnitus diagnoses. The Army's noise exposure burden are greater than the other services based on the overall numbers of people exposed in training activities and deployment (combat) exposures (with larger number of people). In addition the size of the Army is larger than those of the other Services; a comparison of totals between the DOD services will be highly dependent on the size of the Service and is not advisable.

Table 2. Army Diagnoses Counts as a Percent of DOD Diagnoses Counts

	2007	2008	2009	2010	2011
SNHL	54.9%	57.1%	58.6%	55.0%	52.8%
STS	89.1%	93.1%	90.6%	85.9%	78.6%
NIHL	47.0%	61.5%	64.5%	62.7%	62.6%
Tinnitus	45.3%	54.0%	53.0%	48.3%	47.7%

Compared to DOD, Army incidence rates for each diagnosis were also higher. Linear trend patterns for DOD mirrored those of the Army; increases and decreases over the 2007-2011 period were not statistically significant. Differences in rates are independent of population size.



Note: Solid line represents Army, dashed line represents DOD

Figure 3. NIHI Incident Rate Comparison by Diagnosis: Army versus DOD

Army Demographic Detail:

- DOD Military Occupation Code Groups Data:

The Army occupation groups with the highest 2011 NIHI counts (proportion of total injuries in parenthesis) and rates were infantry, gun crew and seaman (31%); service, transport & supply (12%); communications and intelligence specialists (10%); electrical/mechanical equipment repairers (10%); and functional support and administration (9%). The incidence rate of the infantry, gun crew and seaman occupation group is double that of most of the officer occupation groups and 1.5 to 1.9 times the rate of the other enlisted groups.

- Army Gender Groups Comparisons Data:

The comparison of male to female Soldiers by counts and rates of NIHI are consistent with multiple studies. Males consistently have higher rates than females. Males accounted for approximately 92% of the NIHIs through the five year span, but this may be a function of the military being predominantly male.

- Army Age Groups Comparisons Data

The comparison of age groups shows that the <20 yr old age group had the lowest rate of incident cases, and consistently accounted for less than 5% of the total number of NIHI cases. The 20-24 yr old age group consistently accounted for approximately 30% of the total number of NIHI cases through the five years. Overall, however, the highest incidence rates were in the 40+ age group whose rate was nearly double the other age groups over 20 and triple that of the under 20 group.

- Deployment Data:

The deployment association data are limited. Separate postdeployment NIHI and comorbidities studies are ongoing at the AIPH (See Appendix A).

SUMMARY AND CONCLUSIONS:

This first Army NIHI data summary establishes baselines for counts and rates against which future annual data summaries can be compared. AFHSC and AIPH will continue to provide the data summaries to support NIHI prevention coordination and planning by Army PM assets and unit commanders at multiple levels. The counts and rates of NIHI "incident cases" are the principle prevention performance metrics. Incident cases are important because they represent cases that might have been prevented if prevention strategies and operations plans were effective.

Increasing rates of NIHI incident cases across time indicate the need to modify and adjust prevention strategies, plans, and activities. Decreases in NIHI rates across time or stabilization at constant low levels are positive prevention performance indicators. With such large populations, small changes may be identified as statistically significant. Program managers and PM assets should use these numbers along with professional judgment to determine the actual (meaningful) scope of problems, impact of interventions, etc.

Installations with large Table of Organization and Equipment (TOE) troop unit concentrations that show zero or very low NIHI rates appear to be unrealistic especially compared to other installations with similar troop numbers and unit types. This raises questions about the quality of input (coding accuracy and coding guidance). More investigation would be required to discover the source of these discrepancies. This may also explain why installation totals do not equal total on the summary pages.

The strengths of these data were the following: (1) the data received from AFHSC DMSS consisted of all medical encounters of active duty U.S. military personnel occurring in fixed (i.e., not temporary) military and civilian medical treatment facilities; (2) all medical encounters were subject to standardized and routine recordkeeping and coding; (3) the data collected came from a large patient population (approximately 1.3

million active duty personnel have access to MHS care); and (4) the data captured care received both within and outside the MHS (purchased care).

The limitations of the data included: (1) data on the troops deployed and receiving care in the theater of operations were limited in DMSS; (2) Guard and Reserve troop data are not included in the present data summaries, so prevalence of NIHI in these populations is unknown and the cost and reduced readiness burdens of NIHI in the Guard and Reserve are likewise unknown; (3) there is inability to assess exact causes of NIHI using medical data (i.e., exposure information is not available and cause-coding is not required in the medical data); (4) where the diagnoses were correct, the person entering the ICD-9-CM code(s) may misclassify the ICD-9-CM code(s); (5) the aggregation of NIHI ICD-9-CM codes blurs the distinction of different clinical outcomes tied to different exposures, e.g., steady noise vs. impulse noise of weapons firing or exposure to explosives during war operations.

Counts and rates of NIHI during the surveillance period were influenced by a number of factors. The increase in incident cases of SNHL, STS and tinnitus may be attributed to deployment related noise and blast exposures. The Army deployed the greatest number of troops during this period. Some were deployed multiple times.

For the Army, the increase in STS, though not significant, may tie to changes in hearing thresholds between pre-and post-deployment hearing tests. Pre- deployment monitoring audiometry has been mandated in the Army since September 2006 when the Medical Protection System's (MEDPROS) Hearing Readiness Module (HRM) was implemented and compliance with the required annual hearing tests increased as a result. In September 2006 these tests were recorded in MEDPROS-HRM based on audiometric records fed from the Defense Occupational Environmental Health Readiness System-Hearing Conservation (DOEHRS-HC) central audiometric data repository. At that same time many Soldiers also started receiving postdeployment hearing tests which became mandatory in January 2009.

The increasing incident rates of tinnitus, although not significant, could be due to the deployment exposures during this time period. Increasing rates of tinnitus in troop cohorts returning from deployment have been observed in separate studies of deployment related NIHI since 2005. Tinnitus and hearing loss are the VA's number one and two service related compensable disorders. These two together amount to over $1B per annum in VA compensation costs. The compensation costs do not include the additional costs of hearing services like periodic hearing exams, hearing aids dispensed along with recurring hearing aid batteries supply and hearing aid maintenance and aural rehabilitation therapy.

The decrease in NIHL is not a significant change, yet it does closely approach significance. If the decrease had been significant that change would be viewed as a positive performance indicator; however, the NIHL data has to be viewed critically. Clinicians as first examiners of Soldier hearing loss cases are reported to often use the

broader SNHL diagnosis instead of the more specific NIHL diagnosis associated with etiology of noise exposure.

While the Army's proportion of DOD NIHI counts is large due to its large population size in relation to the other Services, it is unclear why the incidence rates are also greater. This could be due to better and more thorough identification, reporting, and documentation, differentially increased risk experienced by Army SMs compared to SMs in other components, or actual increased rate of injuries. More investigation would be required to determine the cause of the difference.

High counts and rates among the infantry, gun crew and seaman occupation codes is likely due to higher exposures to impulse noise which can be more damaging than steady noise. Preventive measures include targeted health threat briefings, appropriate hearing protection device fittings and monitoring audiometry for changes in hearing.

The higher rates of the 20-24 year group vs. the <20 age group indicates that the earliest years of service mark a critical period for emphasizing to Soldiers the importance of taking personal action to prevent losing their hearing. Higher rates among Service members 40 years of age and older may be partially due to longer exposure than junior Service Members as well as presbycusis in the older cohort.

RECOMMENDATIONS:

Interpretation of surveillance data should provide situational awareness and help identify and characterize hearing health problems as a foundation for NIHI prevention planning and execution at all levels.

PM assets at all levels should periodically review the data tables comparing their installation rates with the total Army and DOD rates. Future years' data can be compared to the baseline period data to help evaluate progress of HCP's in reducing NIHI. Observed future data trends may indicate a need for changes in preventative measures coordination, planning and execution. As changes in operations plans are executed, the data should be monitored to see if those changes lead to decrease in NIHI rates over time (year to year comparison).

Annual, pre- and post-deployment monitoring audiometry needs to continue for all troops with appropriate referrals for anyone showing significant shifts in hearing or tinnitus symptoms related to individual deployments.

Clinicians need to improve documentation of NIHI and hearing profiles in medical records and encourage precision coding of the ICD-9 data into healthcare databases at the point of service delivery.

As per existing guidelines, NIHI prevention action plans should include the following:

- PM assets should maintain an inventory of noise hazardous areas and the units working in those areas as well as the specific noise hazard types to which troop units are exposed.

- PM should consult with commanders about the units' exposures and the need for monitoring hearing protection use and command emphasis on troops reporting for required annual audiometry and health education.

- TOE unit Soldiers in Active Duty, National Guard, and Reserve units should be fitted and issued the non-linear combat hearing protectors for training. This will allow for building confidence in this protective equipment that also enhances communication, and will provide protection from weapons-fire impulse noise.

- In addition to being issued HPD, Soldiers also need increased awareness, knowledge and encouragement in employing hearing protective behaviors and strategies when noise exposed.

- Hearing conservation and readiness training for Soldiers should cover topics that include hazardous noise types; biological effects of noise hazard exposures; purpose of hearing protection devices (HPD); advantages and disadvantages of various HPDs; how to select, fit and use HPDs; and the importance of periodic audiometric testing. Annual training should also emphasize individual Soldier's responsibility for maintaining their auditory fitness for duty.

- Unit commanders should be held accountable for their units' hearing readiness status.

- Elevation of hearing conservation and readiness needs to be a special interest item to be evaluated during all Command safety assessments and Inspector General inspections.

- Tinnitus screening should be conducted for all Soldiers at the time of annual monitoring audiometry or periodic health assessment (PHA) or via pre- and post-deployment health (re-)assessments. Soldiers reporting tinnitus symptoms should be referred for follow up evaluation and treatment.

Compliance with these preventive measures should be systematically tracked and enforced to support their effectiveness with changes in NIHI trends.

APPENDIX A

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APPENDIX B

INJURY DIAGNOSIS CODES (ICD-9-CM CODES)
CATEGORIZATION BY DIAGNOSTIC GROUPS,
CURRENT PROCEDURE TERMINOLOGY (CPT) CODES
AND DOD OCCUPATION CODES
USED IN THESE DATA SUMMARIES

ICD-9 Codes

	Category	**Code**	**Code Description**
SNHL	Sensorineural hearing loss	38910	SENSORINEURAL HEARING LOSS UNSPECIFIED
SNHL	Sensorineural hearing loss	38911	SENSORY HEARING LOSS
SNHL	Sensorineural hearing loss	38915	SENSORINEURAL HEARING LOSS, UNILATERAL
SNHL	Sensorineural hearing loss	38916	SENSORINEURAL HEARING LOSS, ASYMMETRICAL
SNHL	Sensorineural hearing loss	38917	SENSORY HEARING LOSS, UNILATERAL
SNHL	Sensorineural hearing loss	38918	SENSORINEURAL HEARING LOSS, BILATERAL
NIHL	Noise-induced hearing loss	38810	NOISE EFFECTS ON INNER EAR UNSPECIFIED
NIHL	Noise-induced hearing loss	38811	ACOUSTIC TRAUMA (EXPLOSIVE) TO EAR
NIHL	Noise-induced hearing loss	38812	NOISE-INDUCED HEARING LOSS
SHIFT	Significant threshold shift	79415	NONSPECIFIC ABNORMAL AUDITORY FUNCTION STUDIES
TINN	Tinnitus	38830	TINNITUS UNSPECIFIED
TINN	Tinnitus	38831	SUBJECTIVE TINNITUS
TINN	Tinnitus	38832	OBJECTIVE TINNITUS

CPT Codes Used in the Data Summaries

AUDIO	CPT codes	92552	PURE TONE AUDIOMETRY (THRESHOLD); AIR ONLY
AUDIO	CPT codes	92555	SPEECH AUDIOMETRY THRESHOLD;
AUDIO	CPT codes	92556	SPEECH AUDIOMETRY THRESHOLD; WITH SPEECH RECOGNITION
AUDIO	CPT codes	92557	COMPREHENSIVE AUDIOMETRY THRESHOLD EVALUATION AND SPEECH RECOGNITION
AUDIO	CPT codes	92559	AUDIOMETRIC TESTING OF GROUPS

DOD Occupation Codes used in the data summary

NEW DOD Code	DOD CODE TITLE
10	*Infantry, Gun Crew, and Seaman*
11	*Electronic Equipment Repairers*
12	*Communications and Intelligence Specialists*
13	*Health Care Specialists*
14	*Other Technical and Allied Specialists*
15	*Functional Support and Admin*
16	*Electrical/Mechanical Equipment Repairers*
17	*Craftswork & Construction*
18	*Service, Transport & Supply*
19	*Students & Trainees (Enlisted)*
21	*General/Flag. Officers & Executives*
22	*Tactical Operations Officers*
23	*Intelligence Officers*
24	*Engineering & Maintenance Officers*
25	*Scientists & Professionals*
26	*Health Care Officers*
27	*Administrators*
28	*Supply & Logistics Officers*
29	*Students, Trainees & Other Officers*

APPENDIX C

TOTAL ARMY ANNUAL DATA DETAILS

UPDATED ANNUALLY IN MAY OF THE YEAR FOLLOWING THE LAST YEAR CITED IN THE DATA SUMMARY

TOTAL ARMY DIAGNOSTIC SUMMARY DATA TABLE: Annual Data CY 2007-2011

US Army Noise-Induced Hearing Injuries, by diagnosis, 2007-2011

	2007		2008		2009		2010		2011	
	ANNUAL		ANNUAL		ANNUAL		ANNUAL		ANNUAL	
Count (Rate[1])	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
Sensorineural hearing loss	7,470	15.28	7,878	15.54	8,269	15.96	7,836	14.83	8,005	15.12
Significant threshold shift	9,225	18.35	10,311	19.97	9,553	18.19	8,730	16.37	11,391	21.43
Noise-induced hearing loss	1,682	3.35	1,845	3.53	1,797	3.35	1,238	2.25	1,230	2.22
Tinnitus	5,440	10.89	7,445	14.38	7,495	14.17	6,638	12.30	7,978	14.74

US Armed Forces (DoD) Noise-Induced Hearing Injuries, Active Component, by diagnosis, 2007-2012

	2007		2008		2009		2010		2011	
	ANNUAL		ANNUAL		ANNUAL		ANNUAL		ANNUAL	
Count (Rate[1])	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
Sensorineural hearing loss	13,614	10.37	13,789	10.39	14,116	10.48	14,250	10.50	15,159	11.21
Significant threshold shift	10,352	7.67	11,076	8.14	10,544	7.65	10,160	7.33	14,496	10.53
Noise-induced hearing loss	3,575	2.68	3,001	2.22	2,787	2.02	1,975	1.42	1,965	1.41
Tinnitus	12,017	8.99	13,778	10.20	14,147	10.33	13,741	9.97	16,730	12.19

1. A person can be counted in more than one diagnosis type, but only once (life-time) for each. Rate is provided per 1,000 person-years.
2. Includes only data through the last available full quarter

Source: Defense Medical Surveillance System (DMSS) as of 17-OCT-2012

Prepared by Armed Forces Health Surveillance Center (AFHSC)

SNHL Data Table Army Installations: Annual Data CY 2007-2011 (Northern Region)

REGION	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
NORTHERN										
Aberdeen Proving Ground, MD	45	18.39	20	13.89	11	8.33	13	10.79	24	21.65
Fort Belvoir, VA	32	16.60	38	21.10	36	19.15	30	13.93	24	9.15
Fort Bragg, NC	68	16.49	38	13.13	28	9.66	35	10.34	72	11.69
Fort Detrick, MD	3	5.01	8	13.78	11	16.32	9	13.37	9	13.91
Fort Dix, NJ	1	14.11	2	20.36	1	12.99	4	27.23	14	53.18
Fort Drum, NY	279	17.59	267	16.29	242	14.22	198	11.53	280	15.35
Fort Eustis, VA	37	6.96	47	8.13	106	17.51	39	6.34	31	5.48
Fort George G Meade, MD	19	7.67	48	16.50	70	24.15	43	14.47	32	11.03
Fort Knox, KY	213	28.05	201	26.65	78	9.87	194	18.02	172	16.69
Fort Lee, VA	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Fort Meyer, VA	17	10.68	13	7.94	25	14.73	13	7.73	10	5.48
Fort Monmouth, NJ	5	10.72	1	2.39	3	7.80	1	3.04	2	10.13
Walter Reed AMC, DC	39	15.34	40	15.26	43	16.38	30	12.06	13	8.38
West Point USMA, NY	15	11.93	19	14.59	30	22.96	16	12.57	15	11.11

1. Rate is provided per 1,000 person-years.

SNHL Data Table Army Installations: Annual Data CY 2007-2011 (Southern Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
SOUTHERN										
Fort Benning, GA	436	23.84	529	28.98	509	24.78	446	21.96	338	15.72
Fort Campbell, KY	392	13.67	315	10.38	399	12.86	392	12.68	583	18.02
Fort Gordon, GA	73	9.29	79	9.46	103	11.53	82	9.25	85	10.78
Fort Hood, TX	1	2.46	6	13.28	8	16.55	4	10.28	4	9.97
Fort Jackson, SC	251	27.08	193	17.25	254	23.89	169	17.65	145	17.61
Fort McPherson, GA	26	18.34	25	17.31	27	17.44	29	19.98	19	35.14
Fort Polk, LA	197	27.99	123	15.52	196	23.77	237	27.43	242	28.56
Fort Rucker, AL	74	19.02	101	26.04	105	27.44	75	20.96	61	17.66
Fort Sam Houston, TX	3	24.66	3	24.26	3	20.73	7	41.93	3	24.74
Fort Sill, OK	51	4.23	122	10.86	158	14.97	192	14.59	103	8.73
Fort Stewart, GA	16	39.46	12	8.49	0	0.00	1	14.51	4	15.95
Redstone Arsenal, AL	1	2.44	1	2.15	2	5.85	2	8.98	1	4.28

1. Rate is provided per 1,000 person-years.

SNHL Data Table Army Installations: Annual Data CY 2007-2011 (Western Region)

REGION	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
WESTERN										
Fort Bliss, TX	4	12.36	4	15.19	5	17.34	10	22.88	22	26.02
Fort Carson, CO	298	19.60	245	14.57	309	15.97	300	12.98	351	13.89
Fort Huachuca, AZ	99	18.84	31	6.76	27	5.93	32	6.30	32	6.54
Fort Irwin, CA	17	4.18	36	9.07	50	12.48	39	9.17	61	14.32
Fort Leavenworth, KS	22	9.13	27	11.26	29	11.13	46	16.04	45	14.91
Fort Leonard Wood, MO	122	12.02	205	19.13	240	22.27	284	27.26	289	28.27
Fort Lewis, WA	16	17.40	52	30.52	24	14.37	18	11.99	13	11.21
Fort Richardson, AK	45	8.82	186	27.42	113	14.65	298	42.38	163	24.58
Fort Riley, KS	416	30.55	493	36.31	355	23.21	438	24.79	439	24.54
Fort Wainwright, AK	58	11.00	70	17.52	68	14.82	79	18.24	98	15.84

1. Rate is provided per 1,000 person-years.

SNHL Data Table Army Installations: Annual Data CY 2007-2011 (Pacific Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
PACIFIC										
Camp Carroll	6	12.30	1	1.40	5	6.70	5	7.25	6	8.86
Camp Casey	31	5.49	18	3.20	40	6.78	15	2.68	23	4.42
Camp Humphreys	3	2.03	5	3.17	12	7.59	14	7.70	17	5.68
Camp Long	3	13.20	0	0.00	1	14.96	0	0.00	1	60.36
Camp Stanley/Red Cloud	0	0.00	3	10.16	2	5.06	0	0.00	1	9.55
Japan	8	13.95	3	4.03	11	13.46	6	7.52	10	11.30
Schofield Barracks-Wheeler AAF	0	0.00	0	0.00	3	29.79	0	0.00	0	0.00
USA Hawaii	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Yongsan Garrison	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

1. Rate is provided per 1,000 person-years.

SNHL Data Table Army Installations: Annual Data CY 2007-2011 (European Region)

REGION	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
EUROPEAN										
Ansbach	2	16.86	0	0.00	0	0.00	0	0.00	2	63.00
Baden-Wuerttemberg	13	16.33	16	15.69	16	15.65	9	12.17	16	21.36
Bamberg	29	11.25	4	2.08	24	11.51	54	24.85	79	22.39
BeNeLux	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Grafenwoehr	0	0.00	1	22.35	0	0.00	0	0.00	1	28.67
Schweinfurt	19	5.78	17	7.30	16	4.17	50	16.67	61	17.14
Stuttgart	1	1.67	1	2.06	5	10.98	5	9.92	9	14.38
Vicenza	2	10.45	2	24.93	0	0.00	0	0.00	0	0.00
Wiesbaden	7	32.26	2	11.89	1	8.71	0	0.00	1	34.36

1. Rate is provided per 1,000 person-years.

STS Data Table Army Installations: Annual Data CY 2007-2011 (Northern Region)

REGION	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
NORTHERN										
Aberdeen Proving Ground, MD	38	15.13	15	10.19	11	8.14	37	30.30	53	46.98
Fort Belvoir, VA	2	0.98	2	1.05	2	1.00	1	0.44	9	3.24
Fort Bragg, NC	61	14.28	45	14.99	54	18.17	45	12.99	111	17.81
Fort Detrick, MD	0	0.00	0	0.00	4	5.60	0	0.00	0	0.00
Fort Dix, NJ	0	0.00	0	0.00	0	0.00	1	6.28	6	21.49
Fort Drum, NY	0	0.00	2	0.12	8	0.45	8	0.45	13	0.69
Fort Eustis, VA	141	26.06	0	0.00	4	0.64	3	0.47	2	0.34
Fort George G Meade, MD	45	17.94	98	33.21	86	29.71	67	22.69	24	8.25
Fort Knox, KY	282	35.92	20	2.56	25	3.08	23	2.12	16	1.52
Fort Lee, VA	1	161.33	0	0.00	1	66.34	0	0.00	0	0.00
Fort Meyer, VA	2	1.21	0	0.00	9	5.13	14	8.09	9	4.82
Fort Monmouth, NJ	0	0.00	0	0.00	0	0.00	1	2.97	0	0.00
Walter Reed AMC, DC	2	0.74	1	0.36	2	0.72	2	0.76	2	1.22
West Point USMA, NY	20	15.05	2	1.47	0	0.00	0	0.00	1	0.72

1. Rate is provided per 1,000 person-years.

STS Data Table Army Installations: Annual Data CY 2007-2011 (Southern Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
SOUTHERN										
Fort Benning, GA	6	0.32	2	0.11	154	7.22	39	1.85	9	0.41
Fort Campbell, KY	1	0.03	5	0.16	173	5.37	234	7.31	683	20.49
Fort Gordon, GA	0	0.00	0	0.00	9	0.98	0	0.00	138	17.13
Fort Hood, TX	16	39.30	66	154.83	49	112.40	8	24.70	8	22.26
Fort Jackson, SC	3	0.32	9	0.79	11	1.01	2	0.20	5	0.59
Fort McPherson, GA	0	0.00	1	0.65	4	2.46	0	0.00	3	5.19
Fort Polk, LA	2	0.27	3	0.36	5	0.57	6	0.66	3	0.34
Fort Rucker, AL	3	0.73	136	33.47	299	77.40	99	27.86	14	4.02
Fort Sam Houston, TX	1	7.76	2	15.54	5	33.40	4	23.57	4	34.15
Fort Sill, OK	226	18.52	59	5.19	7	0.65	4	0.30	3	0.25
Fort Stewart, GA	15	36.28	36	25.31	0	0.00	2	28.65	26	110.33
Redstone Arsenal, AL	0	0.00	0	0.00	1	2.85	0	0.00	0	0.00

1. Rate is provided per 1,000 person-years.

STS Data Table Army Installations: Annual Data CY 2007-2011 (Western Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
WESTERN										
Fort Bliss, TX	7	21.06	4	14.87	3	10.23	12	27.36	74	88.69
Fort Carson, CO	15	0.93	8	0.45	15	0.74	32	1.34	152	5.82
Fort Huachuca, AZ	28	5.19	0	0.00	4	0.86	6	1.16	23	4.64
Fort Irwin, CA	2	0.48	0	0.00	4	0.98	5	1.16	5	1.16
Fort Leavenworth, KS	0	0.00	2	0.79	13	4.77	3	1.00	8	2.56
Fort Leonard Wood, MO	12	1.15	6	0.54	18	1.62	14	1.30	12	1.12
Fort Lewis, WA	15	15.64	26	14.71	14	8.09	10	6.46	62	53.26
Fort Richardson, AK	4	0.76	0	0.00	1	0.12	2	0.27	87	12.42
Fort Riley, KS	12	0.83	4	0.28	2	0.12	2	0.11	36	1.90
Fort Wainwright, AK	10	1.87	0	0.00	2	0.42	7	1.56	12	1.87

1. Rate is provided per 1,000 person-years.

STS Data Table Army Installations: Annual Data CY 2007-2011 (Pacific Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
PACIFIC										
Camp Carroll	1	2.00	0	0.00	1	1.31	3	4.28	5	7.26
Camp Casey	0	0.00	0	0.00	35	5.85	4	0.71	3	0.57
Camp Humphreys	0	0.00	0	0.00	2	1.24	1	0.54	2	0.66
Camp Long	6	26.01	0	0.00	0	0.00	0	0.00	0	0.00
Camp Stanley/Red Cloud	0	0.00	0	0.00	2	5.00	0	0.00	0	0.00
Japan	12	20.58	2	2.63	5	6.05	0	0.00	4	4.44
Schofield Barracks-Wheeler AAF	0	0.00	0	0.00	1	9.59	0	0.00	0	0.00
USA Hawaii	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Yongsan Garrison	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

1. Rate is provided per 1,000 person-years.

STS Data Table Army Installations: Annual Data CY 2007-2011 (European Region)

REGION	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
EUROPEAN										
Ansbach	0	0.00	1	3.97	0	0.00	3	34.81	0	0.00
Baden-Wuerttemberg	4	4.75	2	1.88	5	4.70	0	0.00	0	0.00
Bamberg	12	4.55	43	22.05	1	0.48	0	0.00	2	0.55
BeNeLux	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Grafenwoehr	0	0.00	0	0.00	0	0.00	0	0.00	1	24.15
Schweinfurt	0	0.00	0	0.00	1	0.26	3	0.98	0	0.00
Stuttgart	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Vicenza	1	4.98	0	0.00	0	0.00	0	0.00	0	0.00
Wiesbaden	1	4.32	0	0.00	0	0.00	0	0.00	0	0.00

1. Rate is provided per 1,000 person-years.

Tinnitus Data Table Army Installations: Annual Data CY 2007-2011 (Northern Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
NORTHERN										
Aberdeen Proving Ground, MD	38	15.27	13	8.87	12	8.88	19	15.39	13	11.32
Fort Belvoir, VA	35	17.72	55	29.85	46	23.95	52	23.52	34	12.64
Fort Bragg, NC	76	18.06	60	20.24	47	15.93	44	12.74	88	14.00
Fort Detrick, MD	3	4.83	10	16.60	17	24.44	6	8.73	9	13.64
Fort Dix, NJ	1	13.46	2	19.58	0	0.00	0	0.00	4	14.57
Fort Drum, NY	194	11.96	158	9.42	143	8.17	253	14.37	135	7.22
Fort Eustis, VA	37	6.83	50	8.49	84	13.56	78	12.45	53	9.23
Fort George G Meade, MD	16	6.30	61	20.49	64	21.70	44	14.57	48	16.24
Fort Knox, KY	212	27.32	213	27.71	104	12.92	201	18.39	227	21.72
Fort Lee, VA	0	0.00	1	73.74	0	0.00	0	0.00	0	0.00
Fort Meyer, VA	19	11.79	23	13.88	17	9.92	10	5.87	9	4.85
Fort Monmouth, NJ	5	10.49	3	7.03	4	10.20	2	5.99	1	4.95
Walter Reed AMC, DC	27	10.27	23	8.53	34	12.58	26	10.21	11	6.89
West Point USMA, NY	12	9.19	16	11.97	20	15.02	18	13.89	17	12.41

1. Rate is provided per 1,000 person-years.

Tinnitus Data Table Army Installations: Annual Data CY 2007-2011 (Southern Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
SOUTHERN										
Fort Benning, GA	380	20.45	460	24.88	362	17.38	237	11.47	241	11.02
Fort Campbell, KY	420	14.43	378	12.25	496	15.75	375	11.92	813	24.69
Fort Gordon, GA	44	5.49	63	7.40	54	5.92	46	5.08	65	8.06
Fort Hood, TX	0	0.00	7	15.31	4	8.09	6	15.15	3	7.32
Fort Jackson, SC	41	4.36	53	4.67	72	6.67	78	8.01	52	6.19
Fort McPherson, GA	18	12.32	29	19.55	21	13.20	32	21.35	20	35.87
Fort Polk, LA	98	13.41	102	12.44	233	27.48	198	22.37	344	39.69
Fort Rucker, AL	47	11.67	81	20.10	99	25.00	97	26.26	96	27.05
Fort Sam Houston, TX	5	40.49	3	24.37	5	33.35	0	0.00	10	79.47
Fort Sill, OK	135	11.07	166	14.63	225	21.13	186	13.95	142	11.88
Fort Stewart, GA	11	26.42	10	6.84	1	27.11	1	14.25	4	15.51
Redstone Arsenal, AL	2	4.83	2	4.25	4	11.57	3	13.17	5	20.64

1. Rate is provided per 1,000 person-years.

Tinnitus Data Table Army Installations: Annual Data CY 2007-2011 (Western Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
WESTERN										
Fort Bliss, TX	3	9.02	3	11.09	5	17.08	7	15.64	24	27.56
Fort Carson, CO	363	23.51	328	19.25	359	18.33	360	15.37	443	17.33
Fort Huachuca, AZ	47	8.81	51	10.93	43	9.34	35	6.81	46	9.32
Fort Irwin, CA	37	8.96	60	14.91	64	15.79	58	13.50	92	21.29
Fort Leavenworth, KS	23	9.28	27	10.88	42	15.61	50	16.99	58	18.71
Fort Leonard Wood, MO	34	3.29	69	6.31	83	7.49	75	6.98	82	7.70
Fort Lewis, WA	23	24.61	63	36.34	32	18.75	19	12.41	21	17.90
Fort Richardson, AK	65	12.58	135	19.64	101	12.83	126	17.41	185	27.09
Fort Riley, KS	48	3.36	152	10.64	132	8.16	92	4.95	79	4.19
Fort Wainwright, AK	95	17.71	53	13.08	60	12.85	62	14.02	95	15.04

1. Rate is provided per 1,000 person-years.

Tinnitus Data Table Army Installations: Annual Data CY 2007-2011 (Pacific Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
PACIFIC										
Camp Carroll	2	4.03	1	1.39	4	5.31	3	4.30	5	7.27
Camp Casey	17	2.97	12	2.11	16	2.67	8	1.41	13	2.45
Camp Humphreys	6	4.01	4	2.49	4	2.49	3	1.63	11	3.61
Camp Long	3	13.01	0	0.00	0	0.00	0	0.00	0	0.00
Camp Stanley/Red Cloud	0	0.00	3	10.03	2	5.04	0	0.00	1	9.47
Japan	4	6.90	7	9.28	4	4.83	2	2.46	7	7.72
Schofield Barracks-Wheeler AAF	0	0.00	1	10.83	1	9.72	0	0.00	0	0.00
USA Hawaii	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Yongsan Garrison	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

1. Rate is provided per 1,000 person-years.

Tinnitus Data Table Army Installations: Annual Data CY 2007-2011 (European Region)

REGION	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
EUROPEAN										
Ansbach	0	0.00	0	0.00	1	8.50	0	0.00	0	0.00
Baden-Wuerttemberg	9	11.00	9	8.59	9	8.57	8	10.48	10	12.82
Bamberg	8	3.06	6	3.09	20	9.52	30	13.57	86	23.91
BeNeLux	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Grafenwoehr	0	0.00	1	22.52	0	0.00	1	23.04	1	26.37
Schweinfurt	29	8.73	23	9.84	12	3.11	43	14.18	38	10.49
Stuttgart	1	1.63	1	2.01	2	4.31	2	3.89	7	10.89
Vicenza	1	5.08	0	0.00	0	0.00	1	23.48	1	14.81
Wiesbaden	3	13.37	4	22.77	0	0.00	1	26.98	1	34.66

1. Rate is provided per 1,000 person-years.

NIHL Data Table Army Installations: Annual Data CY 2007-2011 (Northern Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
NORTHERN										
Aberdeen Proving Ground, MD	7	2.78	1	0.68	0	0.00	0	0.00	2	1.68
Fort Belvoir, VA	2	1.00	3	1.60	3	1.51	4	1.75	2	0.71
Fort Bragg, NC	64	15.40	33	11.16	11	3.70	36	10.37	66	10.44
Fort Detrick, MD	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Fort Dix, NJ	0	0.00	0	0.00	2	23.79	1	6.17	3	10.38
Fort Drum, NY	10	0.61	17	1.00	29	1.63	10	0.56	19	1.00
Fort Eustis, VA	1	0.18	8	1.35	14	2.23	40	6.28	12	2.05
Fort George G Meade, MD	3	1.19	2	0.67	3	1.00	3	0.97	0	0.00
Fort Knox, KY	21	2.67	6	0.76	5	0.60	8	0.71	10	0.92
Fort Lee, VA	0	0.00	0	0.00	1	60.34	0	0.00	0	0.00
Fort Meyer, VA	2	1.25	0	0.00	2	1.17	0	0.00	0	0.00
Fort Monmouth, NJ	0	0.00	1	2.33	0	0.00	1	2.96	0	0.00
Walter Reed AMC, DC	5	1.86	3	1.09	0	0.00	0	0.00	2	1.20
West Point USMA, NY	2	1.52	5	3.69	6	4.43	2	1.51	3	2.13

1. Rate is provided per 1,000 person-years.

NIHL Data Table Army Installations: Annual Data CY 2007-2011 (Southern Region)

REGION	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
SOUTHERN										
Fort Benning, GA	15	0.80	56	2.97	59	2.76	36	1.70	27	1.21
Fort Campbell, KY	197	6.71	169	5.43	265	8.31	216	6.79	11	0.33
Fort Gordon, GA	3	0.37	5	0.58	2	0.22	1	0.11	0	0.00
Fort Hood, TX	1	2.43	2	4.34	2	4.01	1	2.51	0	0.00
Fort Jackson, SC	9	0.95	40	3.51	35	3.22	19	1.93	18	2.12
Fort McPherson, GA	3	2.04	5	3.33	1	0.62	3	1.95	0	0.00
Fort Polk, LA	2	0.27	5	0.60	11	1.26	58	6.36	175	19.45
Fort Rucker, AL	5	1.24	3	0.74	3	0.74	2	0.52	0	0.00
Fort Sam Houston, TX	1	7.74	0	0.00	0	0.00	0	0.00	0	0.00
Fort Sill, OK	57	4.63	14	1.22	64	5.89	43	3.17	5	0.41
Fort Stewart, GA	5	11.99	4	2.74	0	0.00	0	0.00	0	0.00
Redstone Arsenal, AL	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

1. Rate is provided per 1,000 person-years.

NIHL Data Table Army Installations: Annual Data CY 2007-2011 (Western Region)

REGION	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
WESTERN										
Fort Bliss, TX	1	2.99	1	3.66	3	10.13	0	0.00	2	2.21
Fort Carson, CO	35	2.21	58	3.31	51	2.53	44	1.82	102	3.86
Fort Huachuca, AZ	5	0.93	4	0.85	1	0.21	1	0.19	0	0.00
Fort Irwin, CA	9	2.17	13	3.20	19	4.62	8	1.82	5	1.13
Fort Leavenworth, KS	1	0.40	3	1.20	3	1.10	7	2.32	8	2.51
Fort Leonard Wood, MO	176	17.36	181	16.85	278	25.53	31	2.90	144	13.51
Fort Lewis, WA	1	1.03	1	0.55	0	0.00	0	0.00	0	0.00
Fort Richardson, AK	21	4.04	23	3.30	17	2.12	14	1.88	3	0.42
Fort Riley, KS	29	2.03	108	7.52	48	2.96	7	0.37	11	0.58
Fort Wainwright, AK	24	4.45	13	3.16	10	2.10	9	1.99	12	1.85

1. Rate is provided per 1,000 person-years.

NIHL Data Table Army Installations: Annual Data CY 2007-2011 (Pacific Region)

REGION	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
PACIFIC										
Camp Carroll	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Camp Casey	2	0.35	6	1.05	0	0.00	2	0.35	7	1.31
Camp Humphreys	0	0.00	1	0.62	2	1.24	1	0.54	5	1.62
Camp Long	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Camp Stanley/Red Cloud	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Japan	0	0.00	1	1.31	0	0.00	1	1.21	0	0.00
Schofield Barracks-Wheeler AAF	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
USA Hawaii	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Yongsan Garrison	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

1. Rate is provided per 1,000 person-years.

NIHL Data Table Army Installations: Annual Data CY 2007-2011 (European Region)

REGION	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
EUROPEAN										
Ansbach	0	0.00	0	0.00	1	8.51	0	0.00	0	0.00
Baden-Wuerttemberg	3	3.64	3	2.86	1	0.95	1	1.29	0	0.00
Bamberg	2	0.76	3	1.53	3	1.41	1	0.44	5	1.35
BeNeLux	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Grafenwoehr	0	0.00	0	0.00	0	0.00	1	21.10	0	0.00
Schweinfurt	6	1.79	6	2.53	0	0.00	2	0.65	1	0.27
Stuttgart	0	0.00	2	3.95	0	0.00	1	1.92	1	1.53
Vicenza	1	5.02	2	23.96	0	0.00	0	0.00	0	0.00
Wiesbaden	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

1. Rate is provided per 1,000 person-years.

Total Army Demographic Detail Data Table: Annual Data CY 2007-2011 (Occupation)

OCCUPATION	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
Infantry, Gun Crew, and Seaman	5,275	51.87	5,822	57.63	5,522	54.21	4,899	46.77	5,904	56.49
Electronic Equipment Repairers	606	27.42	619	26.36	668	26.67	688	23.87	749	29.08
Communications and Intelligence Specialists	1,590	33.53	1,848	39.08	1,701	37.05	1,505	32.58	1,881	38.92
Health Care Specialists	799	24.42	898	27.37	797	24.07	844	23.76	993	29.99
Other Technical and Allied Specialists	435	29.50	481	32.06	478	31.20	464	28.97	582	36.94
Functional Support and Admin	1,567	27.32	1,513	24.95	1,597	26.11	1,403	23.50	1,712	29.70
Electrical/Mechanical Equip. Repairers	1,862	33.62	1,935	34.77	1,848	33.64	1,528	29.25	1,855	33.69
Craftswork & Construction	352	37.99	382	39.13	419	38.69	396	35.26	513	44.92
Service, Transport & Supply	1,847	32.88	2,103	34.99	2,048	33.22	1,858	31.30	2,242	38.64
Students & Trainees	82	37.04	132	50.75	130	45.57	125	37.80	56	19.69
General/Flag. Off. & Executives	16	85.87	20	105.95	21	111.68	17	87.70	18	96.59
Tactical Operations Officers	720	27.40	800	30.21	842	31.68	819	30.32	827	30.17
Intelligence Officers	148	27.97	163	30.07	182	32.92	154	26.21	191	31.91
Engineering & Maintenance Officers	387	31.15	332	28.08	368	30.24	389	31.07	392	30.83
Scientists & Professionals	160	30.67	150	27.72	215	38.89	161	29.17	171	31.86
Health Care Officers	360	27.69	328	24.61	337	24.65	352	25.17	374	26.19
Administrators	158	30.21	157	27.81	187	30.96	194	30.96	201	31.48
Supply & Logistics Officers	196	30.66	222	28.83	218	26.93	300	35.47	290	33.84
Students, Trainees & Other Officers	51	20.08	64	27.25	68	31.14	58	26.83	67	22.87

1. Rate is provided per 1,000 person-years.

Total Army Demographic Detail Data Table: Annual Data CY 2007-2011 (Diagnosis)

DIAGNOSIS	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
DoD - SNHL	9,786	7.64	9,368	7.27	9,491	7.29	9,820	7.50	10,054	7.74
DoD - STS	8,745	6.83	9,340	7.25	8,961	6.88	8,619	6.59	12,570	9.68
DoD - NIHL	2,518	1.97	1,820	1.41	1,606	1.23	1,111	0.85	1,055	0.81
DoD - Tinnitus	6,724	5.25	7,631	5.92	8,036	6.17	8,361	6.39	9,630	7.42
Army - SNHL	5,422	11.40	5,117	10.51	5,308	10.77	5,097	10.21	4,778	9.63
Army - STS	7,777	16.35	8,694	17.86	8,132	16.51	7,408	14.84	9,894	19.94
Army - NIHL	996	2.09	995	2.04	971	1.97	632	1.27	645	1.30
Army - Tinnitus	2,416	5.08	3,163	6.50	3,235	6.57	3,017	6.04	3,701	7.46

1. Rate is provided per 1,000 person-years.

Total Army Demographic Detail Data Table: Annual Data CY 2007-2011 (Sex)

SEX	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
Male	15,421	37.81	16,704	39.98	16,274	38.49	14,883	34.77	17,396	40.93
Female	1,190	17.57	1,265	18.36	1,372	19.65	1,271	17.89	1,622	22.74

1. Rate is provided per 1,000 person-years.

Total Army Demographic Detail Data Table: Annual Data CY 2007-2011 (Age)

AGE	2007 ANNUAL Count	2007 ANNUAL Rate[1]	2008 ANNUAL Count	2008 ANNUAL Rate[1]	2009 ANNUAL Count	2009 ANNUAL Rate[1]	2010 ANNUAL Count	2010 ANNUAL Rate[1]	2011 ANNUAL Count	2011 ANNUAL Rate[1]
<20	693	16.39	712	17.36	691	19.75	519	14.32	754	21.00
20-24	4,859	29.49	5,628	33.92	5,186	31.73	4,702	28.75	5,755	35.66
25-29	3,727	35.05	4,026	35.58	4,055	33.51	3,815	30.73	4,451	35.90
30-34	2,248	33.19	2,371	34.65	2,380	33.42	2,123	28.83	2,641	35.23
35-39	2,303	41.14	2,358	41.16	2,317	40.26	2,063	36.60	2,215	40.98
>=40	2,781	72.18	2,874	70.23	3,017	67.89	2,932	64.85	3,202	69.56

1. Rate is provided per 1,000 person-years.

Total Army Demographic Detail Data Table: Annual Data CY 2007-2011 (Deployment Association)

DEPLOYMENT ASSOCIATION[2]	2007 ANNUAL		2008 ANNUAL		2009 ANNUAL		2010 ANNUAL		2011 ANNUAL	
	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]	Count	Rate[1]
COUNTS ONLY										
OIF-associated	2,708		5,838		4,869		3,219		2,202	
OEF-associated	351		591		1,059		1,868		2,435	
Not Deployment Associated	13,552		11,540		11,718		11,067		14,381	

1. Rate is provided per 1,000 person-years.
2. The diagnosis occurred during or within 180 days of a deployment.