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# Force Health Protection- Gulf War Illnesses Program

## Air Force Garrison

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## Purpose

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Report results obtained from Air Force personnel at Ramstein Air Force Base on the Department of Defense Force Health Protection screening instrument.



## Summary of Key Findings

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- 1,404 Air Force personnel completed the Department of Defense Force Health Protection screening instrument at Ramstein Air Force Base between July and December 1999.
- Overall, the psychological health of Air Force personnel in garrison at Ramstein is extremely good.
- Gender, marital status, rank, and education level were associated with differences on the primary screening instrument results. There was no association with deployment history.
- Overall, Air Force personnel exceed criteria on the primary screening scales at lower rates than Army personnel.
- Air Force personnel report more psychological distress in garrison environments than deployed environments. This is also true for Army personnel.



## Background

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- The Air Force Garrison Study was authorized and funded in FY 99 by USAFE. The project was initially coordinated by Lt Col Rex Brennan.
- The study planned a two site design with full implementation of the psychological screening protocol. Resource constraints dictated a more limited execution: only the primary screening instrument is used, and at only one site.
- Data collection commenced at Ramstein Air Force Base in July 1999, and concluded in December 1999. The primary screening instrument was included as part of the annual Preventive Health Assessment (PHA).
- In this report comparisons are made to other Air Force and Army psychological screening datasets. Comparative datasets were developed from USAMRU-E's 1998 Army Garrison Study and the DoD Bosnia redeployment screening program conducted from FEB 96 to OCT 99.



# Psychological Screening Procedures (Full Protocol)

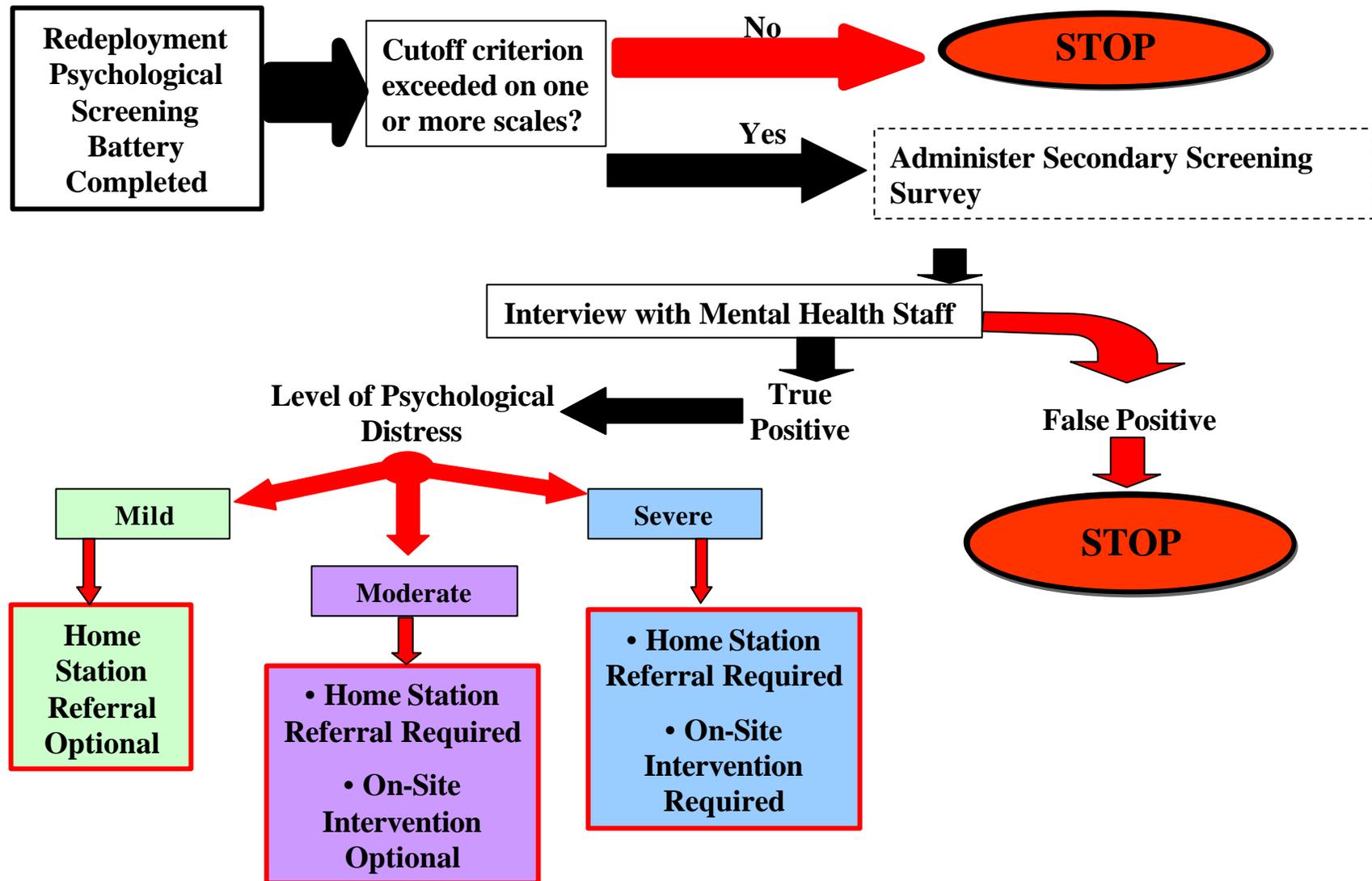
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## Three Components

- **Primary Screen:** Administered to all redeploying military personnel. Measures three psychological symptom categories:
  - post-traumatic stress
  - depression
  - alcohol problems
- **Secondary Screen Interview:** Personnel whose scores exceed established criteria on any indicator are interviewed by a mental health clinician.
- **Home station referral:** Based on the interview, military personnel may be referred for home station or in-theater consultation. Referrals are documented on the medical SF600 and placed in service members' medical records.



# Psychological Screening Flowchart





## Comparison Datasets

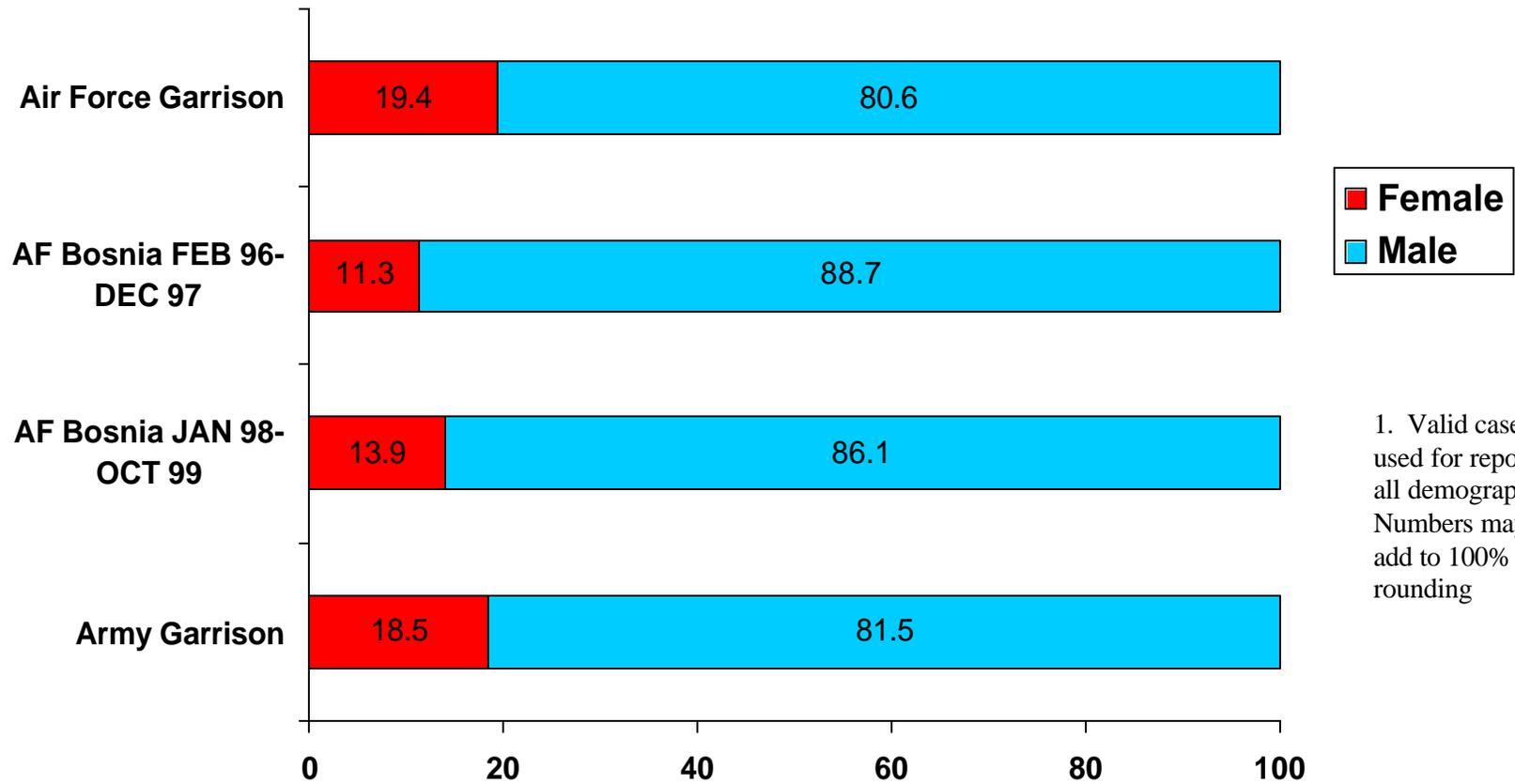
<b>Datasets</b>	<b>Location</b>	<b>Period</b>	<b>Size</b>
1) Air Force Garrison	Ramstein AFB	JUL-DEC 1999	N=1404
2) Army Garrison*	Germany	APR-JUL 1998	N=790
3) Bosnia Redeployment Screening Program a) Air Force FEB 96 – DEC 97 b) Air Force JAN 98 – OCT 99	Bosnia and Hungary	FEB 1996 – OCT 1999	N=74957 a) N=1090 b) N=1757

\* The Army Garrison Study sample is composed of 11 company-size units located throughout Germany, including combat arms, combat support, and combat service support units.



# Demographics: Gender<sup>1</sup>

- In gender composition, all Air Force comparison groups are significantly different. However, the Air Force and Army garrison samples are not.
- Statistical information for this and succeeding slides are found on page 26-27 of this brief.



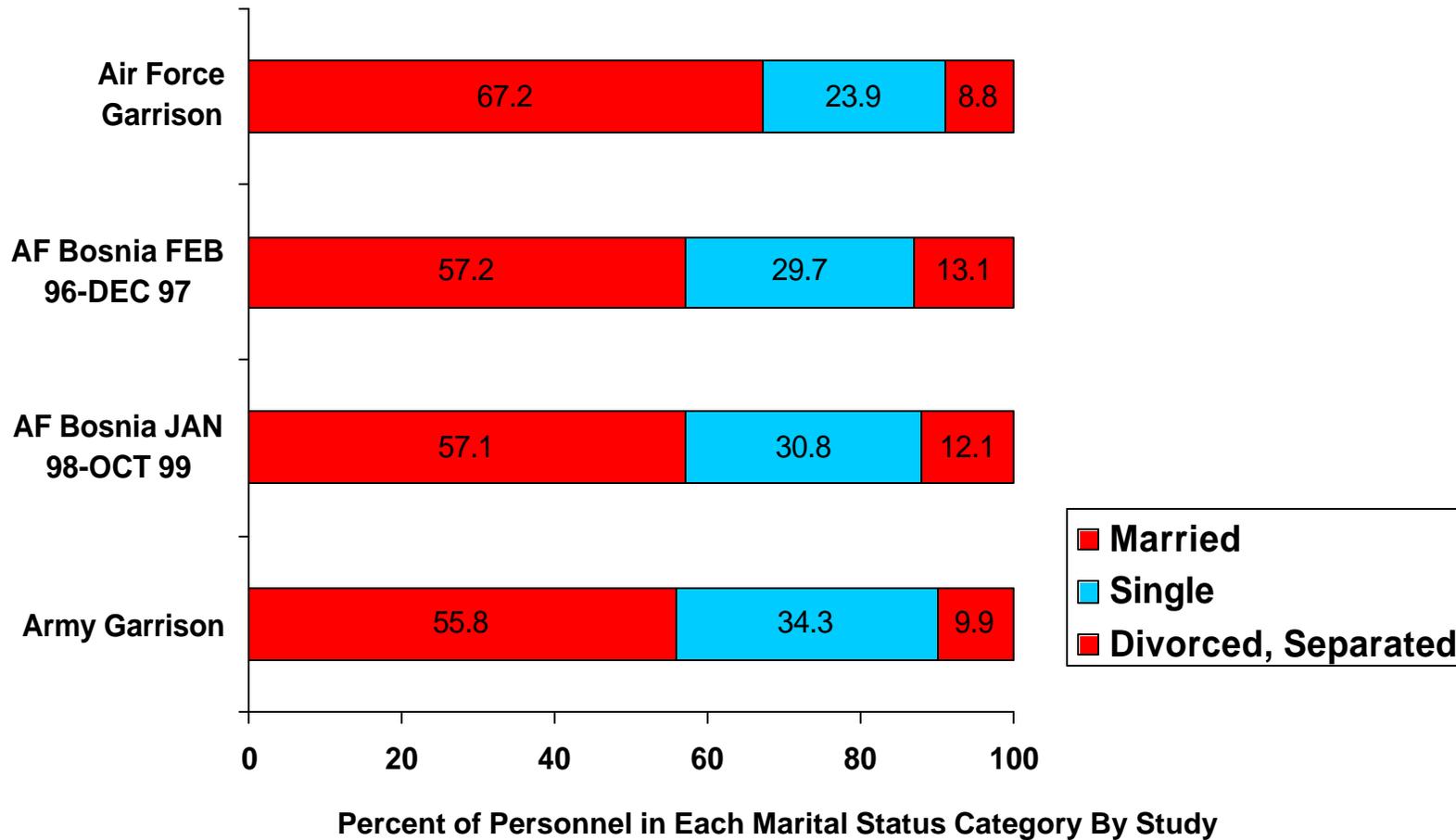
1. Valid cases are used for reports of all demographics. Numbers may not add to 100% due to rounding

Percent of Personnel in Each Gender Category By Study



## Demographics: Marital Status

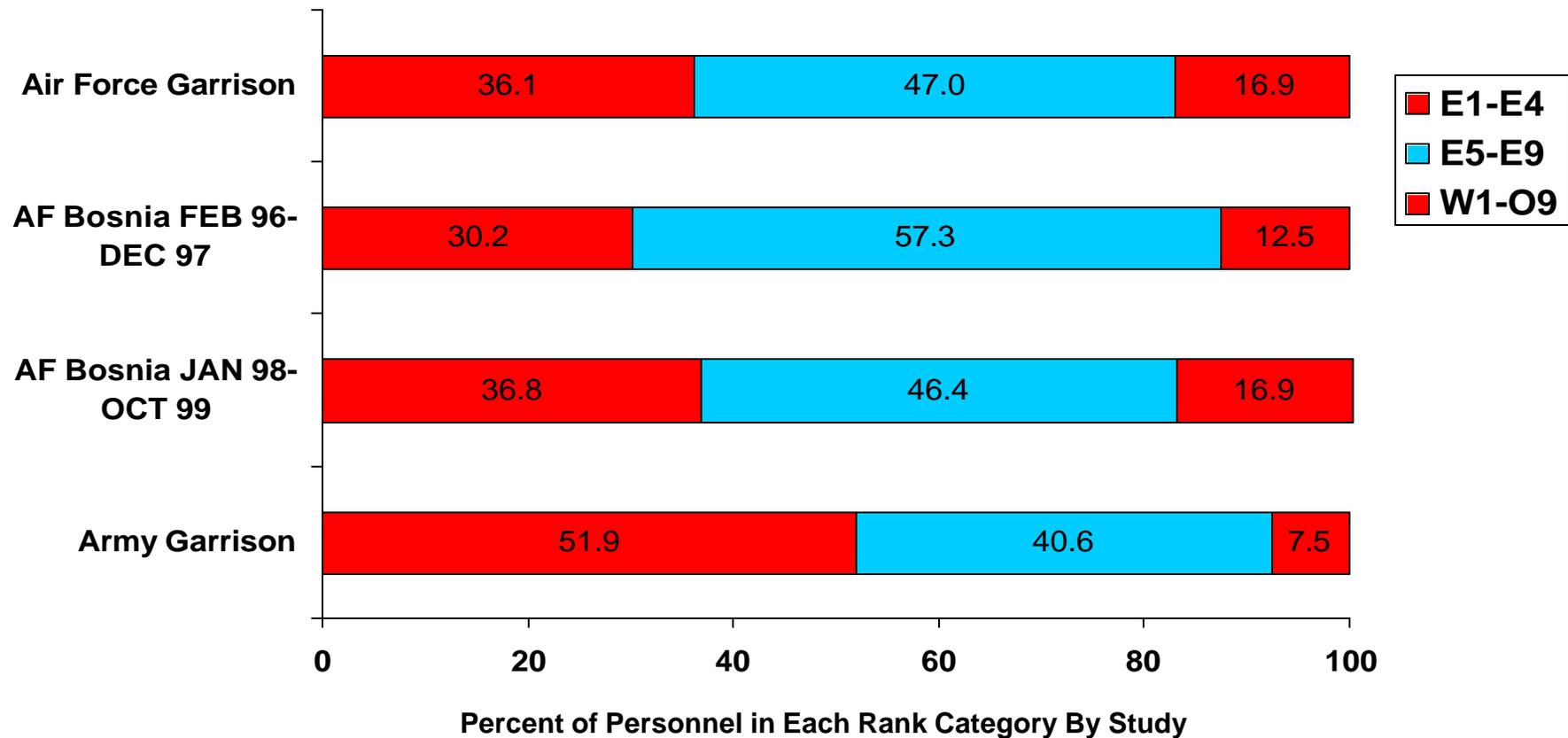
- In marital status composition, the Air Force garrison sample is significantly different from both Air Force Bosnia groups and the Army garrison sample.





## Demographics: Rank

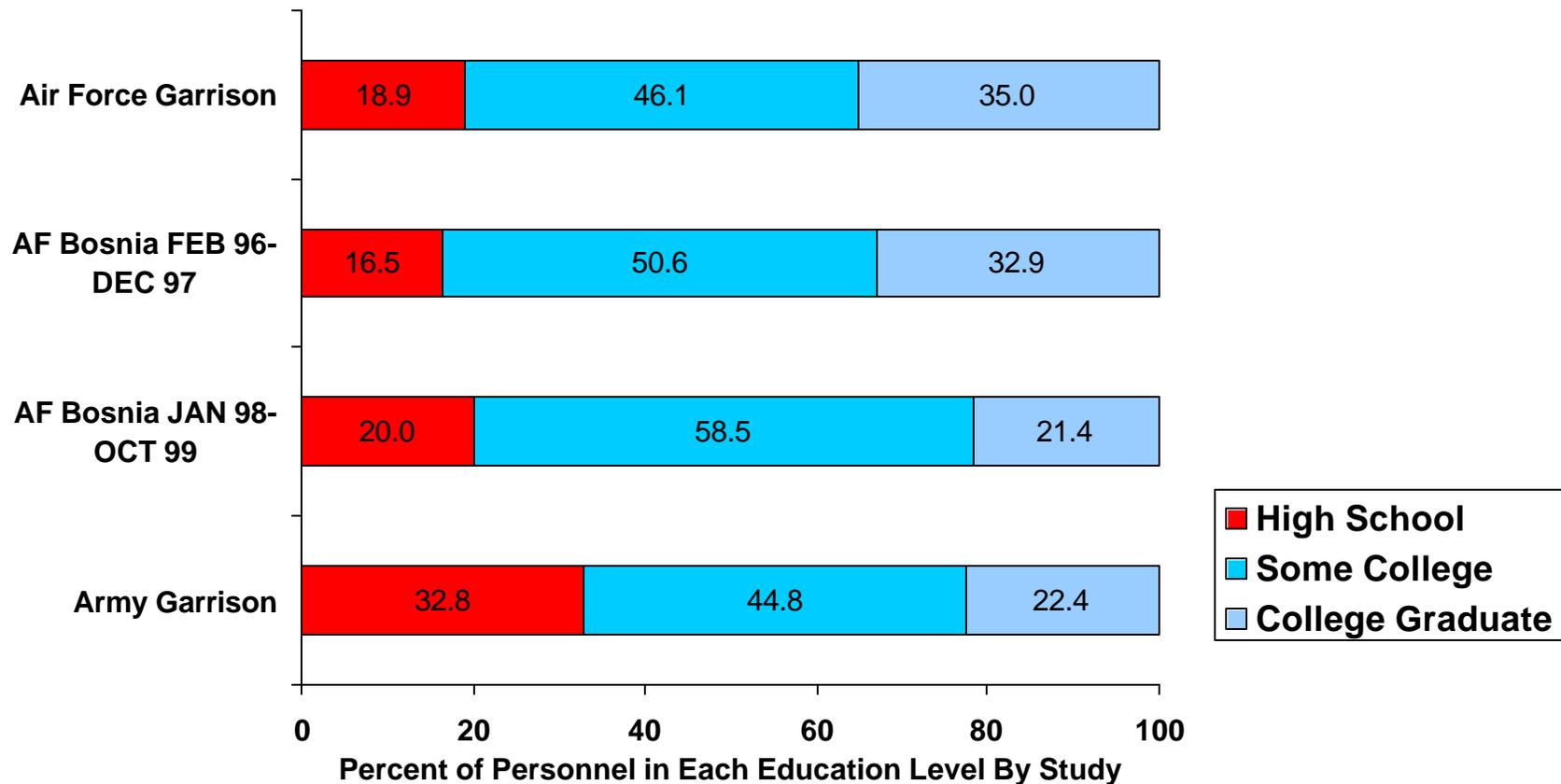
- In rank composition, the Air Force Garrison sample is significantly different from the Army Garrison sample and Air Force personnel screened in Bosnia between FEB 96-DEC 97.





## Demographics: Education

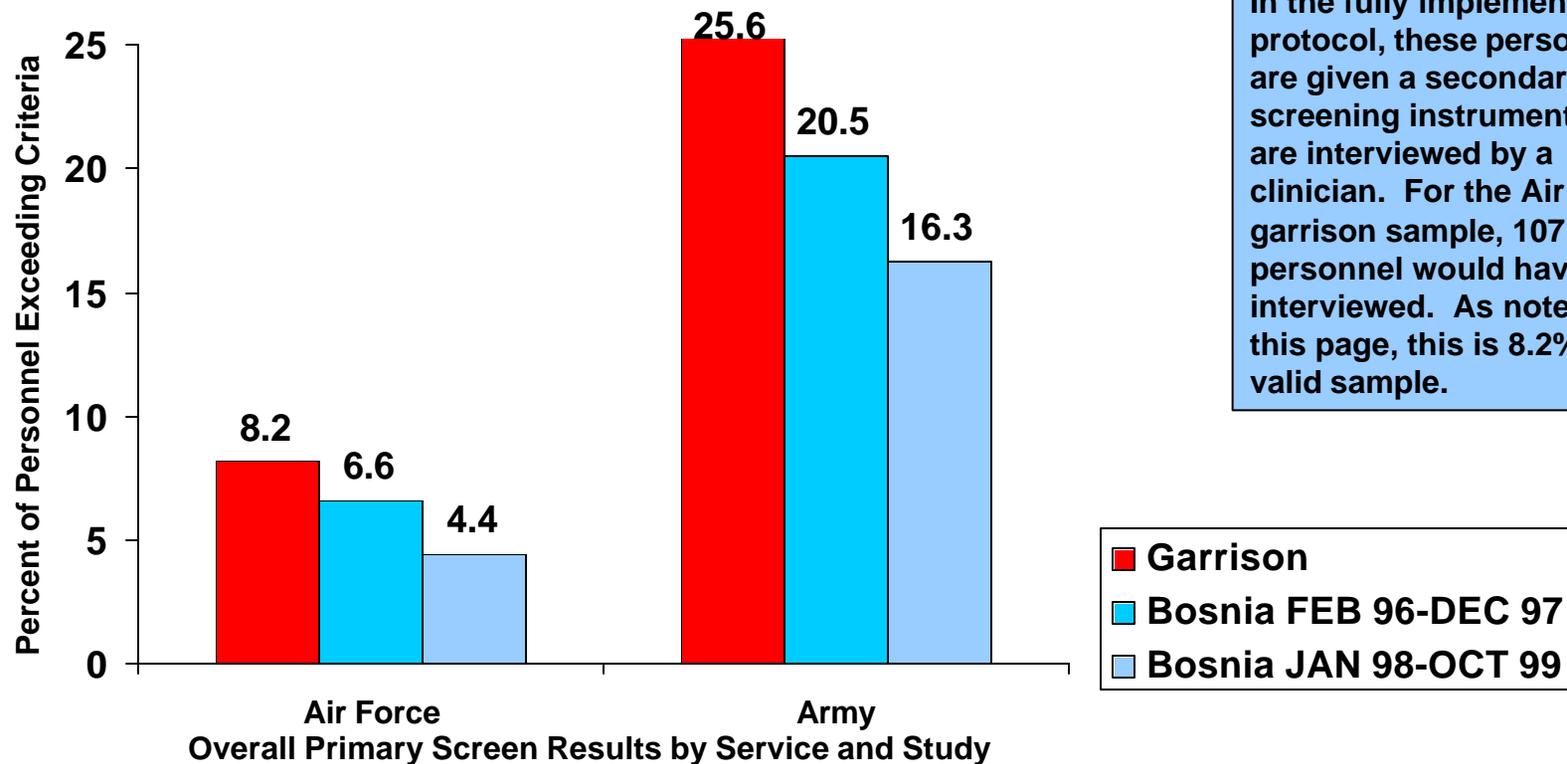
- In educational attainment, the Air Force garrison sample was significantly different from the Army garrison sample and the second Air Force Bosnia group.





## Primary Screen: Overall Positive Rates

- Air Force rates are higher in garrison than the latter part of the Bosnia deployment (Jan 98-Oct 99)
- Army rates are significantly higher than Air Force rates. Army rates are higher in garrison than either Bosnia period.
- Clinical referral rates for the Air Force garrison population are not known. Previous data suggest these rates will be in the low end of the program range of .5 - 11.3%.

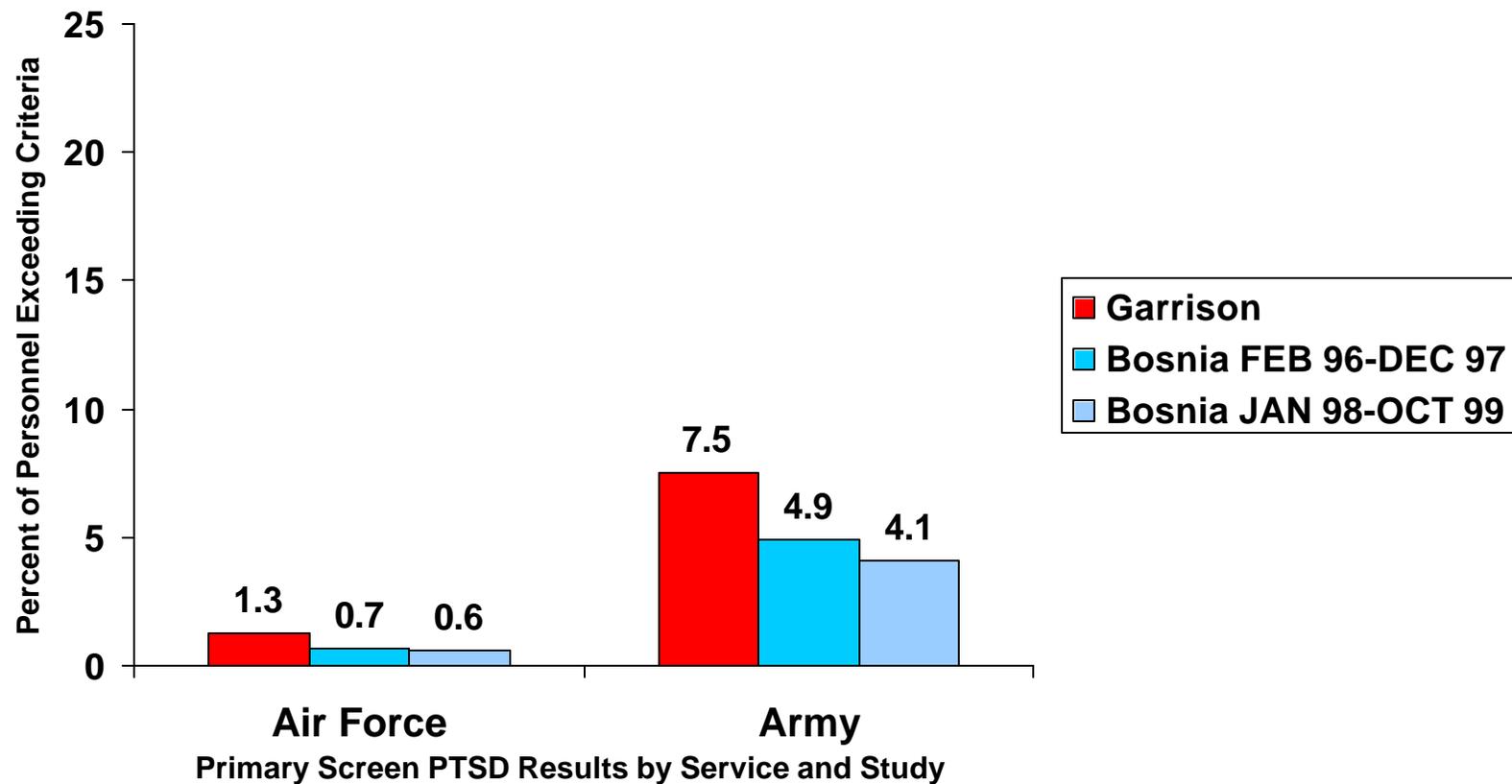


In the fully implemented protocol, these personnel are given a secondary screening instrument and are interviewed by a clinician. For the Air Force garrison sample, 107 personnel would have been interviewed. As noted on this page, this is 8.2% of the valid sample.



## Primary Screen: PTSD

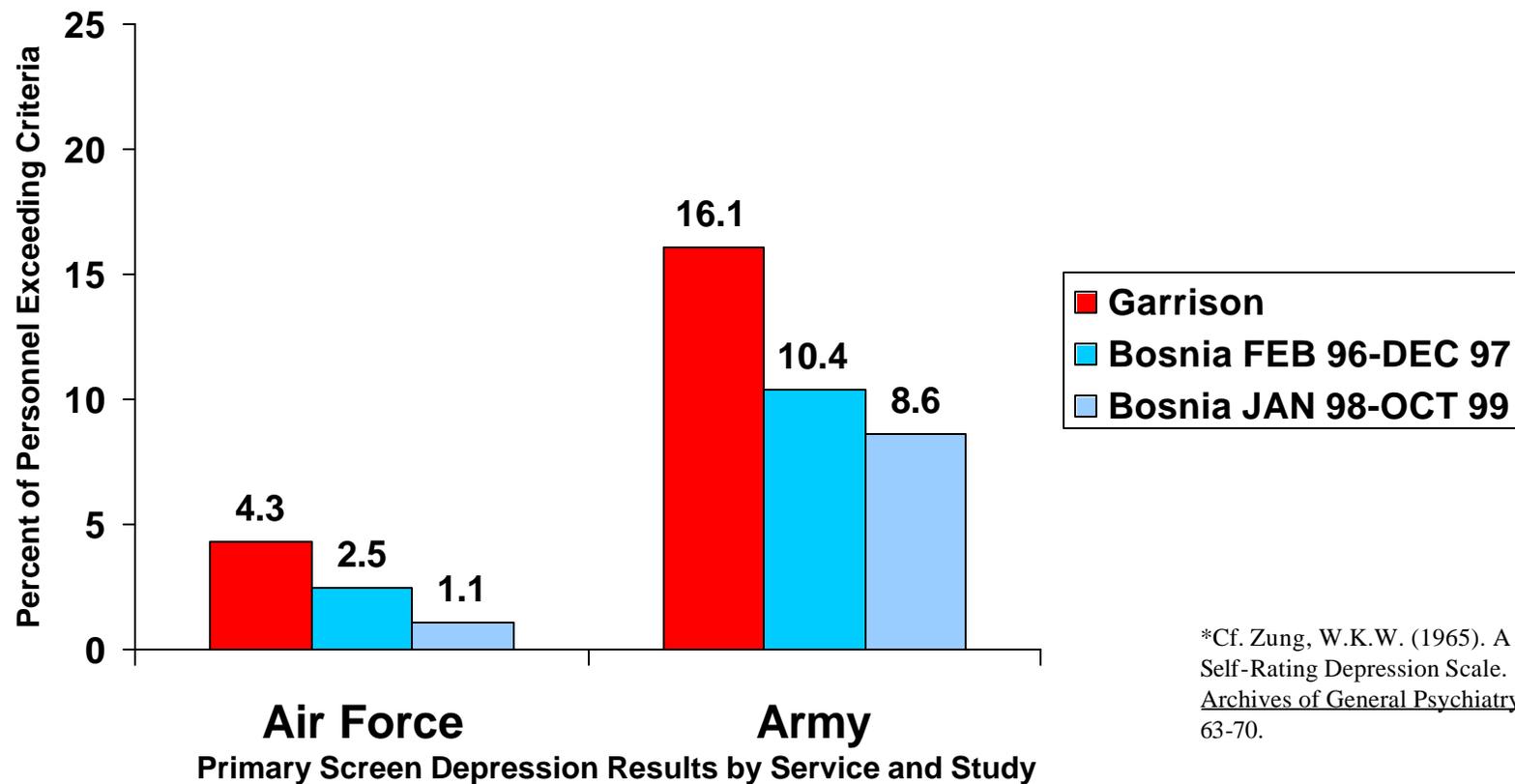
- The seventeen-item USAMRU-E post-traumatic stress disorder (PTSD) scale was used to detect problems related to stress and traumatic events.
- For the Air Force, PTSD primary screen rates were higher in garrison than the second Bosnia period but not the first. Army PTSD rates were higher in garrison than either Bosnia period, and higher than Air Force rates.





## Primary Screen: Depression

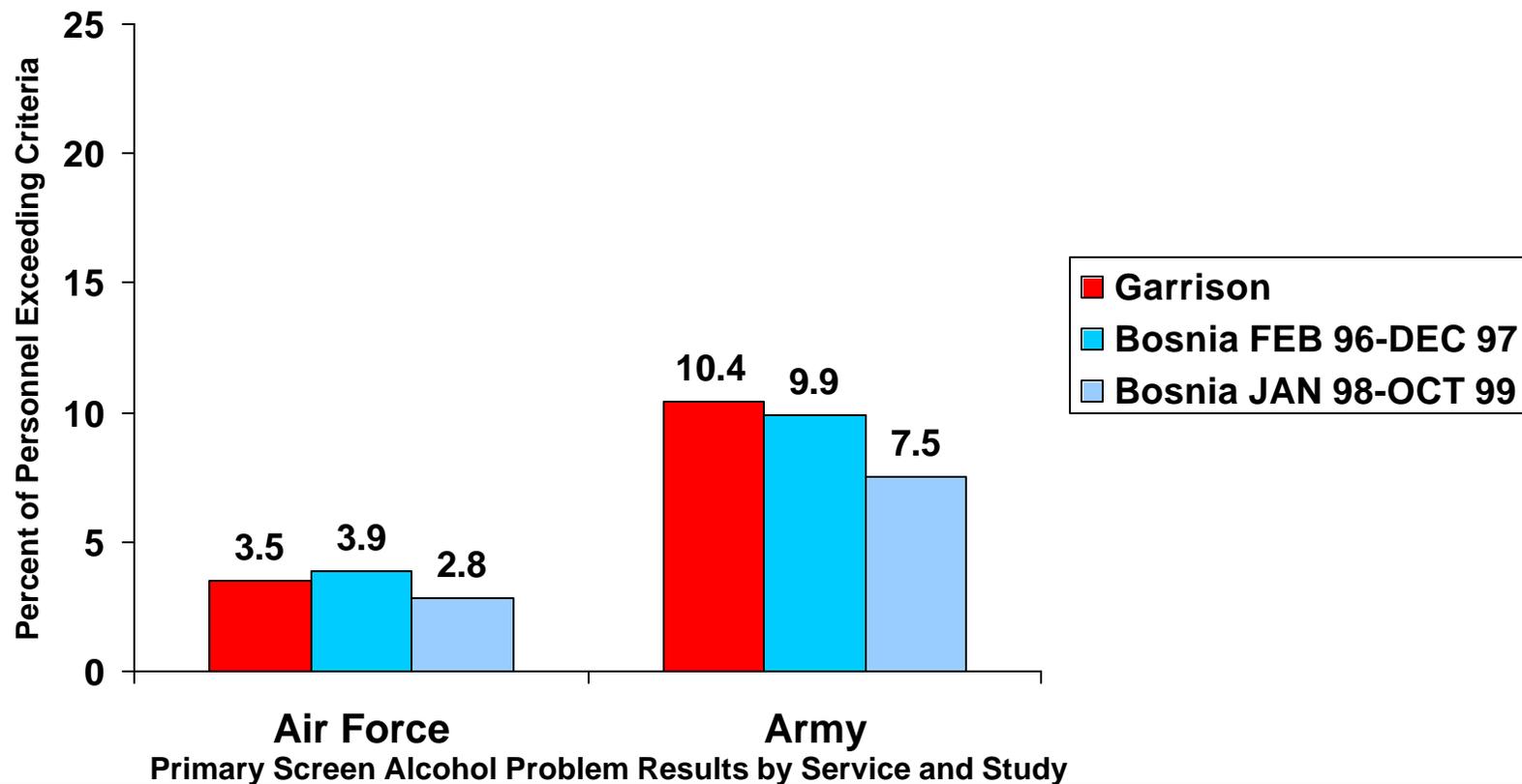
- The twenty-item Zung Self-Rating Depression Scale scale was used to detect problems related to depression (Zung 1965).\*
- For the Air Force, positive rates on the Zung scale are similar in garrison and during the first Bosnia period. Garrison rates are higher when compared with the second Bosnia period (JAN 98-OCT 99).
- Army depression rates are higher in garrison than either Bosnia period.





## Primary Screen: Alcohol Problems

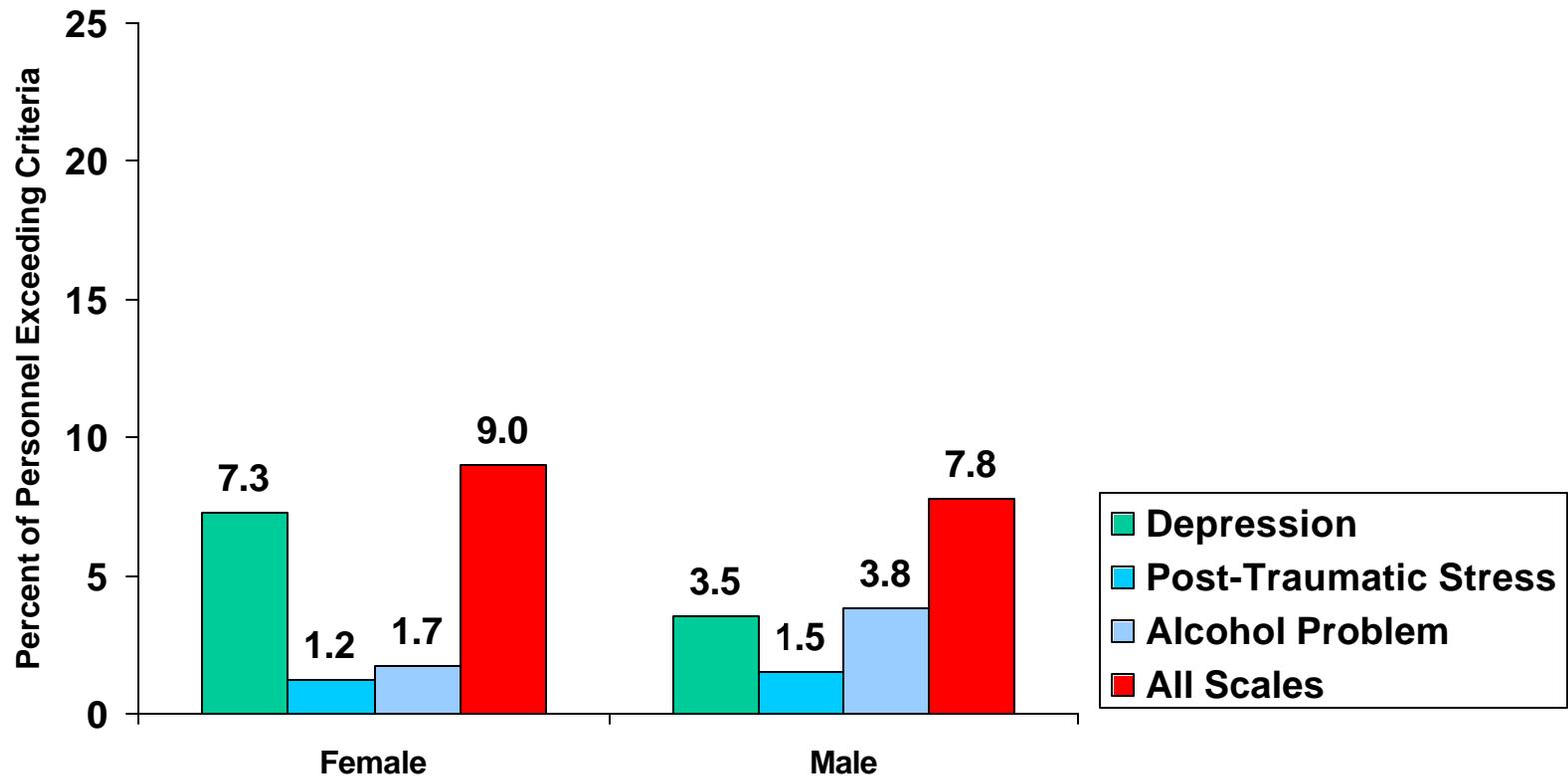
- The four-item Cage questionnaire was used to detect alcohol problems.
- Because Bosnia is an alcohol-free environment, in Bosnia the primary screen addressed the year prior to deployment.
- Air Force rates in garrison were not significantly different from either period in Bosnia. Army rates were higher than Air Force rates.





## Air Force Garrison: Gender

- Women presented higher levels of depression than men. There was no significant gender difference for post-traumatic stress and alcohol problem indicators.

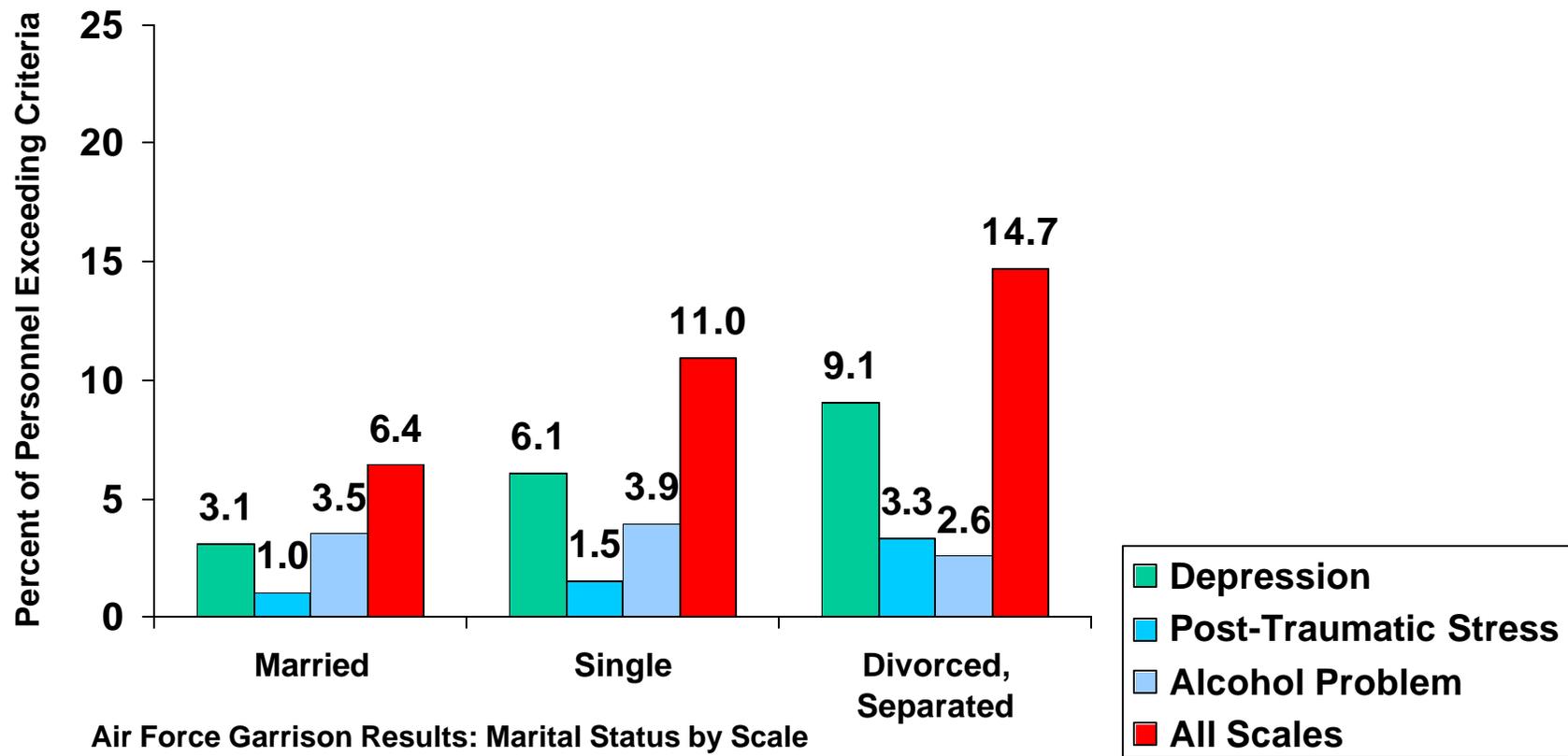


**Air Force Garrison Results: Gender by Scale**



## Air Force Garrison: Marital Status

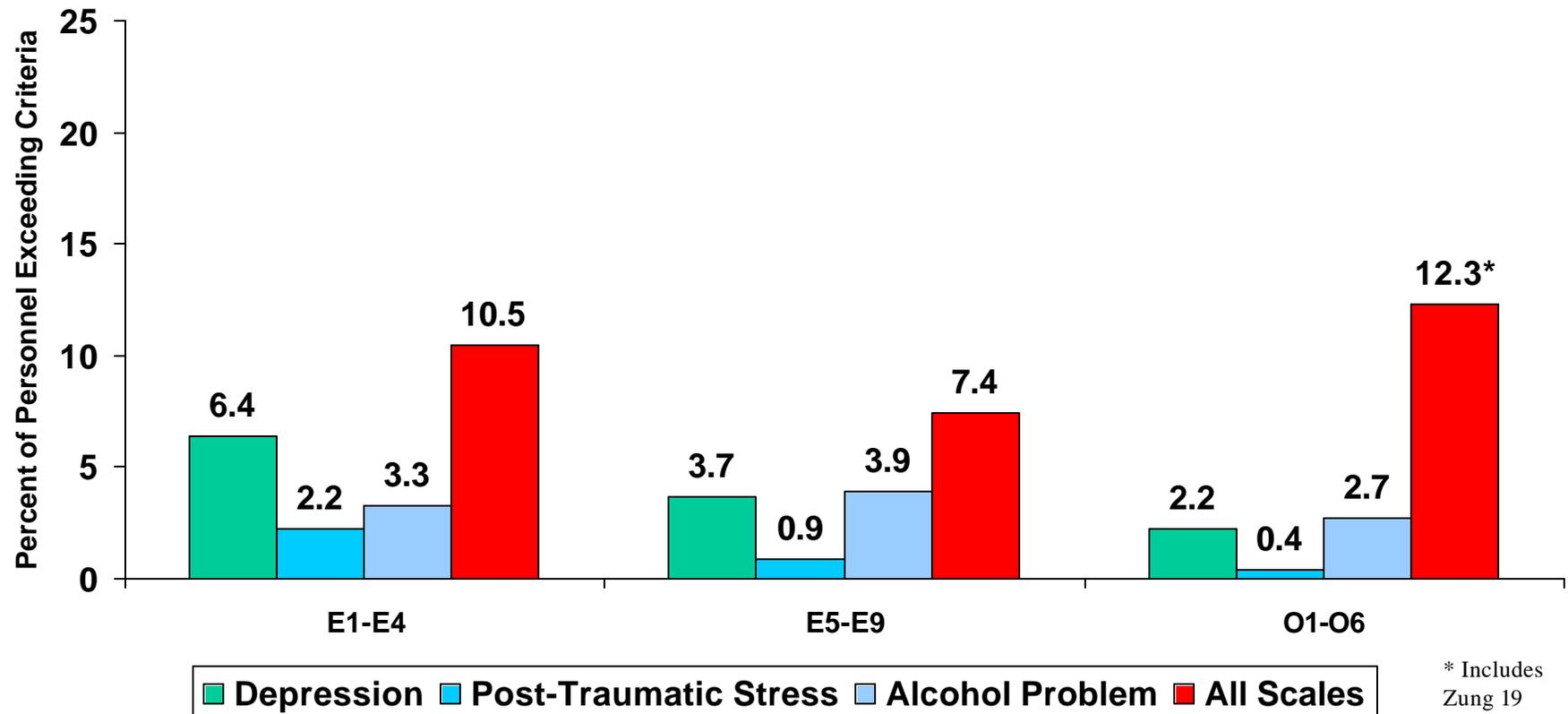
- Airmen presented different results on the depression screen when grouped by married, single, and divorced-separated marital status categories.. There were no differences on PTSD and Alcohol Problem indicators.
- Overall, married airmen had the lowest positive rates on the primary screen.





## Air Force Garrison: Rank

- Rank was significantly related to depression only. There were no significant differences by rank for the post-traumatic stress nor alcohol problems scales.



■ Depression ■ Post-Traumatic Stress ■ Alcohol Problem ■ All Scales

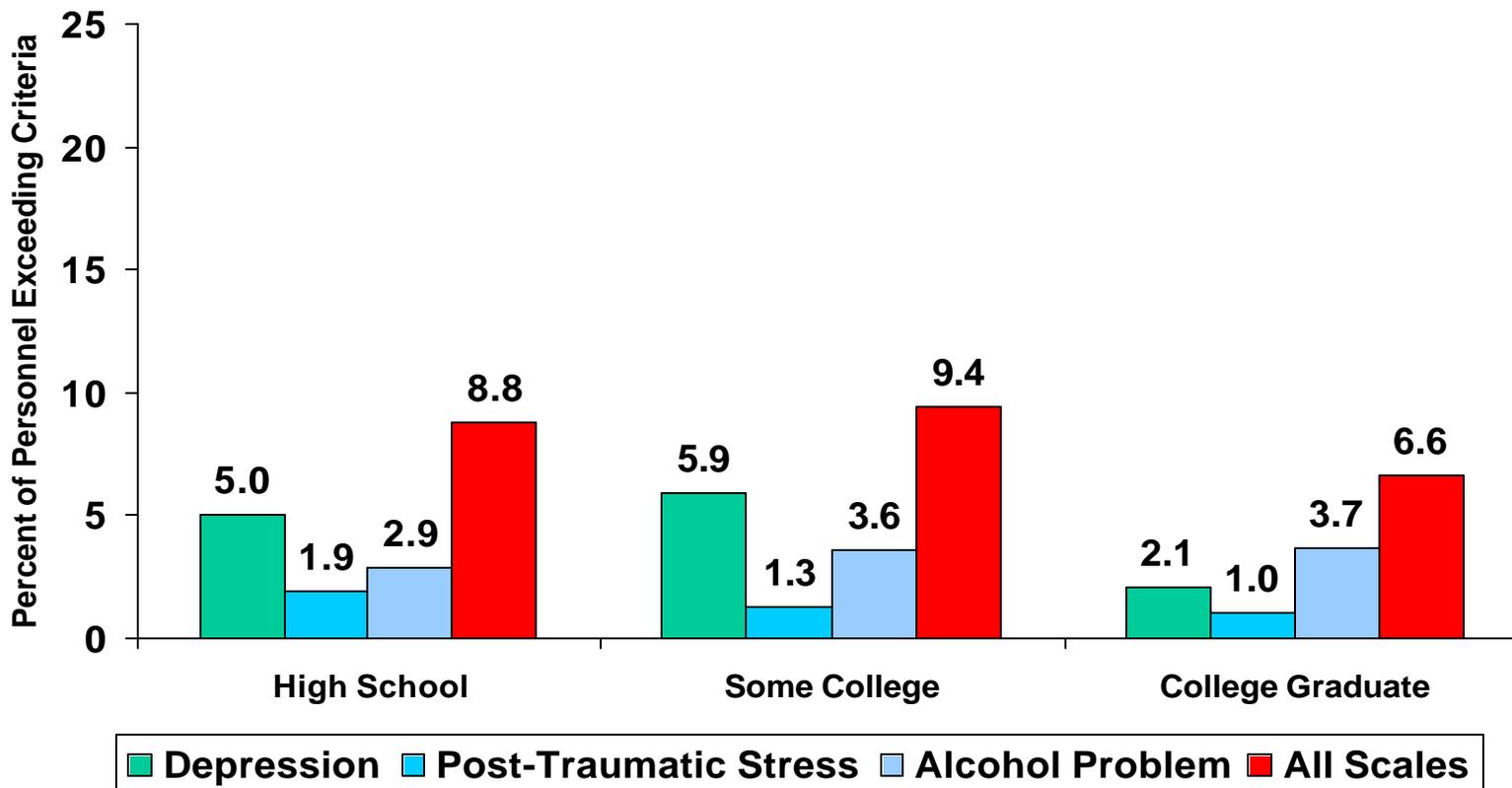
Air Force Garrison Results: Rank Category by Scale

\* Includes Zung 19 (n=2).



## Air Force Garrison: Education

- Education level was significantly related to depression only.
- Airmen with some college had the highest rates of depression

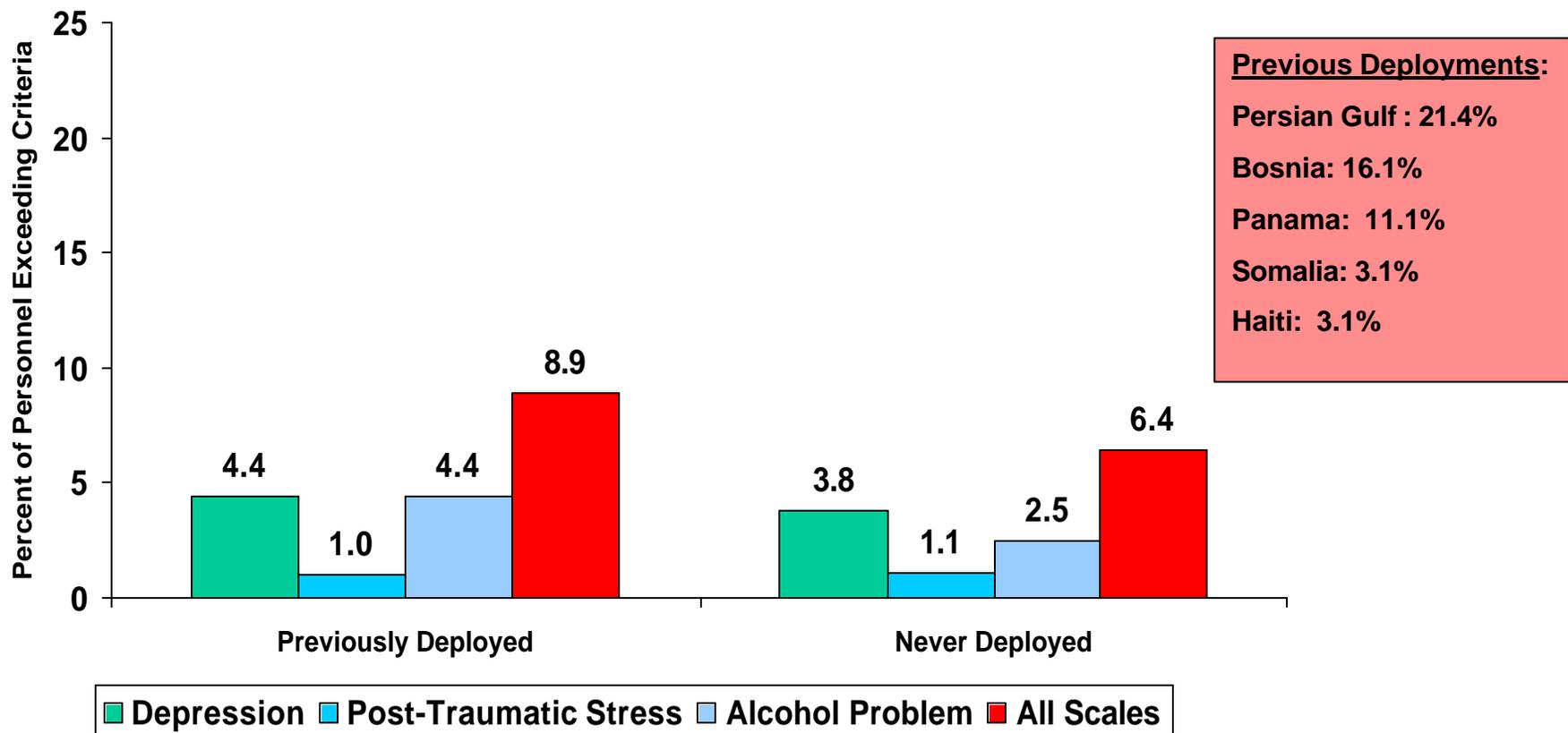


Air Force Garrison Results: Education Level by Scale



## Air Force Garrison: Previous Deployment

- 48.9 percent of the valid sample indicated that they had previously deployed.
- There were no significant differences in positive rates between airmen who had previously deployed and those who had not on any scale on the screening instrument.



**Air Force Garrison Results: Prior Deployment Experience by Scale**



## Garrison vs. Bosnia “Matched” Sub-sample

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- 32 airmen in the Garrison Study also completed the redeployment screening instrument in Bosnia. This allowed comparison of a “matched” Air Force sub-sample in garrison and deployed environments.
- Only one airman in this group was positive on any indicator. Overall, scores for this group are low when compared with other psychological screening datasets. Individual scales are summarized below.
  - Depression: For this matched set, mean scores on the depression scale were higher in garrison than in Bosnia (27.61 vs 25.77 on a scale of 20-80), but overall scores were very low and well below the screening threshold (44+). This difference was statistically significant ( $27.61 v 25.77, t(30)=2.348, p=.026$ ).
  - Alcohol Problems: Mean scores on the alcohol abuse screen were .27 in Bosnia and .13 in garrison (on a scale of 0-4; threshold 2+). This was not a statistically significant difference.
  - Post-Traumatic Stress: Mean scores on the post-traumatic stress scale were 20.4 in garrison and 19.8 in Bosnia (on a scale of 0-68). This difference was not statistically significant.



## Limitations of the Study

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- Air Force garrison data were collected from only one site: Ramstein Air Force Base. These data may not be generalizable to other Air Force sites.
- Referral rates are a more accurate indicator of clinical psychological distress than results of the primary screening instrument. Because the secondary screen and clinical interview were not implemented, clinical referral rates for this garrison group are not known. Although here the exact rate is unknown, the clinical referral rate is always lower than rates on the primary screening instrument.
- The study administration was keyed to the annual PHA encounter rather than operations. Hence, the effects of operational situation, survey administration timing, training cycles, etc. are not known.
- Scope of analyses and conclusions are constrained by the fact that the DoD Force Health Protection instrument was designed as a redeployment psychological screening tool, not a research instrument. Data are collected on only basic demographic categories and the three primary screening scales.



## Conclusions

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- These indicators suggest that the overall psychological health of Air Force personnel is extremely good.
- Air Force personnel have higher rates of psychological distress in garrison (Ramstein) than Bosnia.
- Air Force personnel have lower rates of psychological distress than Army personnel.
- Although positive rates are very low overall, demographic categories that are relatively “at risk” in the Air Force garrison population at Ramstein include: women (depression), junior enlisted and officers (depression), unmarried, and those with some college or less educational attainment (depression).
- In a matched sub-sample, there is a statistically detectable difference in depression rates when in garrison and when deployed to Bosnia. However, the level is so low that these are likely not meaningful.



## Point of Contact

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# Statistical Information 1

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- Statistical information referenced in this presentation is summarized below. Statistically significant associations ( $p < .05$ ) are boldfaced.

## Demographics: Gender (p. 9)

AF Gar X AF Bos1 ( $c^2(1, N=2364) = 29.44, p < .000$ )  
AF Gar X AF Bos2 ( $c^2(1, N=2889) = 16.05, p < .000$ )  
AF Bos1 X AF Bos2 ( $c^2(1, N=2689) = 3.91, p = .048$ )  
AF Gar X Army Gar ( $c^2(1, N=2070) = .253, p = .615$ )

## Demographics: Marital Status (p. 10):

AF Gar X AF Bos1 ( $c^2(2, N=2474) = 28.29, p < .000$ )  
AF Gar X AF Bos2 ( $c^2(2, N=3156) = 34.33, p < .000$ )  
AF Bos1 X AF Bos2 ( $c^2(2, N=2830) = .774, p = .679$ )  
AF Gar X Army Gar ( $c^2(2, N=2190) = 30.81, p < .000$ )

## Demographics: Rank (p. 11)

AF Gar X AF Bos1 ( $c^2(2, N=2437) = 25.832, p < .000$ )  
AF Gar X AF Bos2 ( $c^2(2, N=3118) = .160, p = .923$ )  
AF Bos1 X AF Bos2 ( $c^2(2, N=2791) = 31.723, p < .000$ )  
AF Gar X Army Gar ( $c^2(2, N=2172) = 67.53, p < .000$ )

## Demographics: Education (p. 12)

AF Gar X AF Bos1 ( $c^2(2, N=2408) = 5.19, p = .075$ )  
AF Gar X AF Bos2 ( $c^2(2, N=3094) = 73.12, p < .000$ )  
AF Bos1 X AF Bos2 ( $c^2(2, N=2736) = 44.02, p < .000$ )  
AF Gar X Army Gar ( $c^2(2, N=2167) = 65.80, p < .000$ )

## Primary Screen: Overall Positive Rates (p. 13):

AF Gar X AF Bos1 ( $c^2(1, N=2539) = 1.65, p = .199$ )  
AF Gar X AF Bos2 ( $c^2(1, N=3041) = 17.83, p < .000$ )  
AF Bos1 X AF Bos2 ( $c^2(1, N=2804) = 6.82, p = .009$ )  
AF Gar X Army Gar ( $c^2(1, N=2087) = 119.96, p < .000$ )  
AF Bos1 X Army Bos1 ( $c^2(1, N=44456) = 122.30, p < .000$ )  
AF Bos2 X Army Bos2 ( $c^2(1, N=26970) = 174.63, p < .000$ )  
Army Gar X Army Bos1 ( $c^2(1, N=44184) = 12.47, p < .000$ )  
Army Gar X Army Bos2 ( $c^2(1, N=26016) = 48.36, p < .000$ )  
Army Bos1 X Army Bos2 ( $c^2(1, N=68622) = 184.66, p < .000$ )

## Primary Screen: PTSD (p. 14):

AF Gar X AF Bos1 ( $c^2(1, N=2467) = 1.52, p = .218$ )  
AF Gar X AF Bos2 ( $c^2(1, N=3133) = 4.00, p = .046$ )  
AF Bos1 X AF Bos2 ( $c^2(1, N=2846) = .289, p = .591$ )  
AF Gar X Army Gar ( $c^2(1, N=2167) = 57.64, p < .000$ )  
AF Bos1 X Army Bos1 ( $c^2(1, N=45167) = 40.80, p < .000$ )  
AF Bos2 X Army Bos2 ( $c^2(1, N=27016) = 54.74, p < .000$ )  
Army Gar X Army Bos1 ( $c^2(1, N=44867) = 10.53, p = .001$ )  
Army Gar X Army Bos2 ( $c^2(1, N=26050) = 21.85, p < .000$ )  
Army Bos1 X Army Bos2 ( $c^2(1, N=69337) = 26.24, p < .000$ )



## Statistical Information 2

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### **Primary Screen: Depression (p. 15):**

AF Gar X AF Bos1 ( $c^2(1, N=2467) = 1.52, p=.218$ )  
AF Gar X AF Bos2 ( $c^2(1, N=3133) = 4.00, p=.046$ )  
AF Bos1 X AF Bos2 ( $c^2(1, N=2846) = .289, p=.591$ )  
AF Gar X Army Gar ( $c^2(1, N=2167) = 57.64, p<.000$ )  
AF Bos1 X Army Bos1 ( $c^2(1, N=45167) = 40.80, p<.000$ )  
AF Bos2 X Army Bos2 ( $c^2(1, N=27016) = 54.74, p<.000$ )  
Army Gar X Army Bos1 ( $c^2(1, N=44867) = 10.53, p=.001$ )  
Army Gar X Army Bos2 ( $c^2(1, N=26050) = 21.85, p<.000$ )  
Army Bos1 X Army Bos2 ( $c^2(1, N=69337) = 26.24, p<.000$ )

### **Primary Screen: Alcohol Problems (p. 16)**

AF Gar X AF Bos1 ( $c^2(1, N=2367) = .284, p=.594$ )  
AF Gar X AF Bos2 ( $c^2(1, N=3052) = 1.24, p=.265$ )  
AF Bos1 X AF Bos2 ( $c^2(1, N=2809) = 2.67, p=.102$ )  
AF Gar X Army Gar ( $c^2(1, N=2095) = 41.52, p<.000$ )  
AF Bos1 X Army Bos1 ( $c^2(1, N=44542) = 43.03, p<.000$ )  
AF Bos2 X Army Bos2 ( $c^2(1, N=26986) = 55.55, p<.000$ )  
Army Gar X Army Bos1 ( $c^2(1, N=44270) = .193, p=.660$ )  
Army Gar X Army Bos2 ( $c^2(1, N=26029) = 8.94, p=.003$ )  
Army Bos1 X Army Bos2 ( $c^2(1, N=68719) = 111.22, p<.000$ )

### **Air Force Garrison: Gender (p. 17)**

Gender X All Scales ( $c^2(1, N=1195) = .349, p=.555$ )  
Gender X PTSD ( $c^2(1, N=1266) = .084, p=.771$ )  
Gender X Zung ( $c^2(1, N=1266) = 6.96, p=.008$ )  
Gender X Cage ( $c^2(1, N=1202) = 2.59, p=.108$ )

### **Air Force Garrison: Marital Status (p. 18)**

MarStat X All Scales ( $c^2(2, N=1300) = 13.37, p=.001$ )  
MarStat X PTSD ( $c^2(2, N=1379) = 4.77, p=.092$ )  
MarStat X Zung ( $c^2(2, N=1379) = 12.33, p=.002$ )  
MarStat X Cage ( $c^2(2, N=1307) = .435, p=.804$ )

### **Air Force Garrison: Rank (p. 19)**

Rank X All Scales ( $c^2(2, N=1285) = 5.42, p=.067$ )  
Rank X PTSD ( $c^2(2, N=1363) = 5.37, p=.068$ )  
Rank X Zung ( $c^2(2, N=1362) = 7.82, p=.02$ )  
Rank X Cage ( $c^2(2, N=1291) = .891, p=.641$ )

### **Air Force Garrison: Education (p. 20)**

Edu X All Scales ( $c^2(2, N=1282) = 2.56, p=.240$ )  
Edu X PTSD ( $c^2(2, N=1361) = 1.02, p=.601$ )  
Edu X Zung ( $c^2(2, N=1361) = 9.65, p=.008$ )  
Edu X Cage ( $c^2(2, N=1289) = .287, p=.866$ )

### **Air Force Garrison: Previous Deployment (p. 21)**

Deploy X All Scales ( $c^2(1, N=1184) = 2.62, p=.105$ )  
Deploy X PTSD ( $c^2(1, N=1257) = .48, p=.827$ )  
Deploy X Zung ( $c^2(1, N=1257) = .303, p=.582$ )  
Deploy X Cage ( $c^2(1, N=1191) = 3.04, p=.081$ )