

# Behavioral, Demographic and Proximal Risk Factors for Pathological Gambling in the Military Community

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## Background

- The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* defines gambling disorder as “a preoccupation with gambling and a loss of control.”
- Pathological gambling is associated with a higher risk of suicide attempts, substance-use disorders, and other mental health conditions, as well as financial and legal problems.
- In January 2017, the U.S. Government Accountability Office released a report that examined pathological gambling in the military and recommended that the Department of Defense (DoD) incorporate medical screening questions specific to gambling disorder as part of a systematic screening process across the DoD.
- The DoD did not initially adopt this recommendation due to resource burden concerns. The purpose of this study was to examine the prevalence of pathological gambling among military service members and to identify individual and environmental risk factors associated with this condition.

## Study Objectives

- Estimate the prevalence of pathological gambling across the DoD, by military treatment facility (MTF);
- Identify demographic, military and behavioral risk factors associated with pathological gambling;
- Analyze environmental risk factors through the geographic relationship between proximity of legalized gambling (slot machines at overseas bases) with pathological gambling prevalence.

## Methods

- The data source is a compilation of health services utilization, behavior assessment, deployment, and personnel data relevant to all individuals who have served on active duty in the U.S. Armed Forces.
- The eligible sample for this case-control study included all active duty service members who received care between October 1, 2005 and September 30, 2015; cases received a pathological gambling diagnosis (ICD 312.31) and probability proportionate controls were matched to the cases on entry to service, branch of service and gender.
- Counts, percents and chi-squares were calculated for the following covariates using SAS Statistical Software: prior substance abuse, prior mental health diagnosis, prior deployment, gender, age, race/ethnicity, marital status, education level, religion, service, rank, and occupation.
- An analysis of slot machines present on the post where the cases and controls were stationed, including three years prior to pathological gambling diagnosis, was then conducted.

## Results

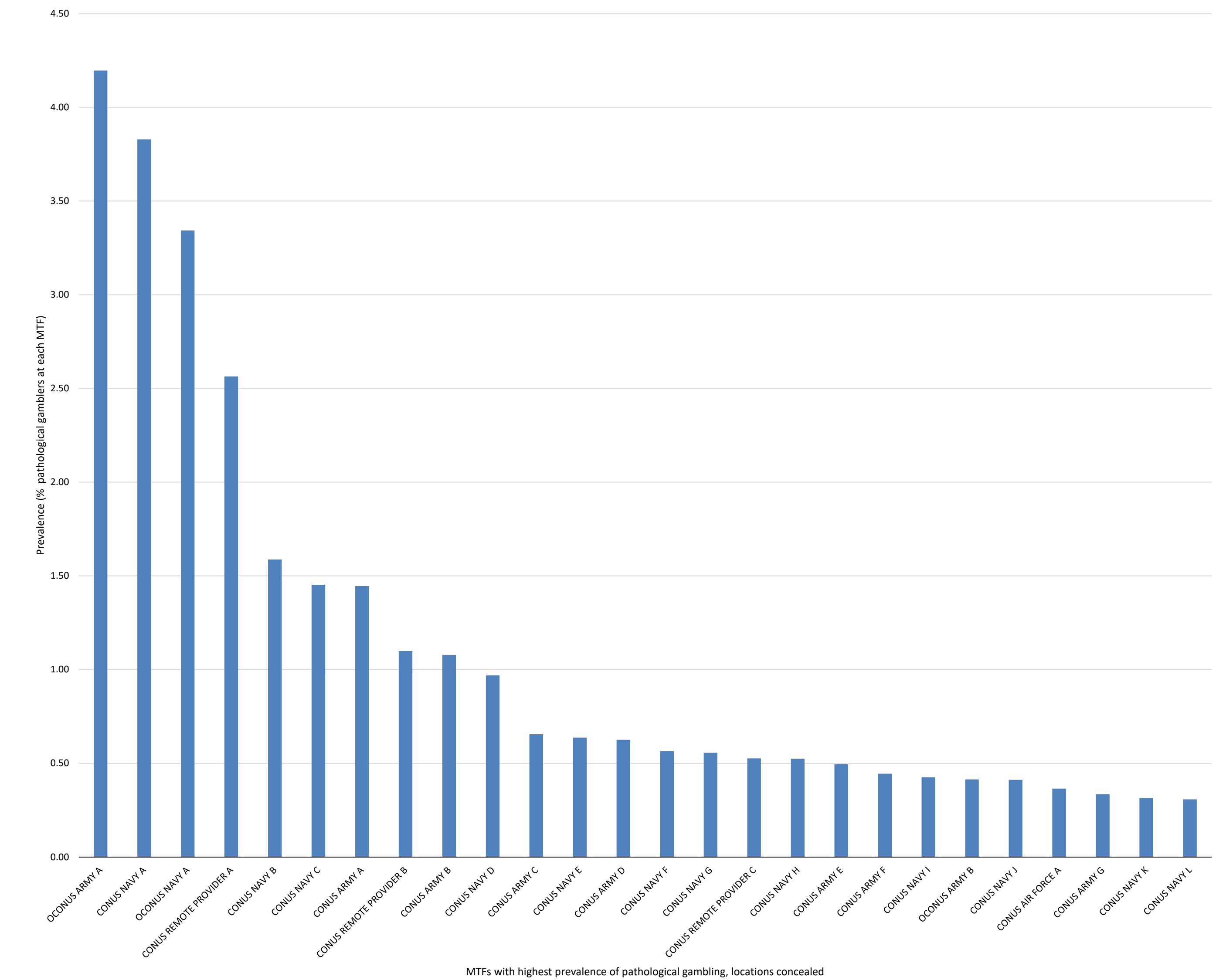
- The MTFs with the prevalence of pathological gambling higher than the US civilian rate of 2% were an OCONUS Army facility (4.2%), a CONUS Navy facility (3.8%), an OCONUS Navy facility (3.3%), and a CONUS remote provider (2.6%). Of note, there are slot machines on OCONUS military bases.
- Compared to contemporaneous controls, cases were more likely to be stationed on a base with slot machines.
- Pathological gamblers were also more likely to be women, older, and racial-ethnic minorities.
- Cases were less likely to be soldiers or to work in combat occupations.
- While there were more married and senior over junior enlisted pathological gamblers compared to controls, this was probably due the increased age of cases.
- Cases and controls were similar with respect to religious preference and deployment history.
- Pathological gamblers were more likely to have a history of substance abuse and psychological health diagnoses compared to controls.

**Table 1. Demographics of pathological gambling cases and controls<sup>1</sup>**

	Cases		Controls <sup>1</sup>		Adjusted Odds Ratio <sup>2</sup> (95% CI)
	N	%	N	%	
<b>Total</b>	861	100%	42,764	100%	
<b>Gender</b> ( $\chi^2=70.41, p<0.0001$ )					
Women	69	8%	1,285	3%	0.49
Men	792	92%	41,478	97%	
Missing	0	0%	1	0%	
<b>Age (years)</b> ( $\chi^2=147.00, p<0.0001$ )					
Under 25	225	26%	16,309	38%	1.33
25-29	222	26%	13,372	31%	
30-34	175	20%	6,461	15%	
35-39	119	14%	3,763	9%	
40 or wiser	120	14%	2,859	7%	
Missing	0	0%	0	0%	
<b>Race/Ethnicity</b> ( $\chi^2=58.63, p<0.0001$ )					
Asian	51	6%	982	2%	0.81
Black	144	17%	6,516	15%	
Hispanic	104	12%	5,146	12%	
White	508	59%	28,155	66%	
Other	33	4%	1,166	3%	
Missing	21	2%	799	2%	
<b>Marital status</b> ( $\chi^2=140.51, p<0.0001$ )					
Married	501	58%	20,891	49%	1.04
Single	283	33%	20,489	48%	
Other	77	9%	1,357	3%	
Missing	0	0%	27	0%	
<b>Religion</b> ( $\chi^2=9.16, p<0.0102$ )					
Christian	545	63%	26,058	61%	1.16
No preference	160	19%	9,240	22%	
Unclassified religion	11	1%	282	1%	
Missing	145	17%	7,184	17%	
<b>Education level</b> ( $\chi^2=18.14, p<0.0001$ )					
High school or less	688	80%	33,946	79%	0.92
At least some college	158	18%	7,962	19%	
Missing	15	2%	856	2%	
<b>Occupation</b> ( $\chi^2=39.72, p<0.0001$ )					
Combat	117	14%	8,729	20%	0.42
Healthcare	89	10%	2,765	6%	
Other support	655	76%	31,270	73%	
<b>Rank</b> ( $\chi^2=199.02, p<0.0001$ )					
Junior enlisted	349	41%	24,960	58%	1.81
Senior enlisted	459	53%	13,251	31%	
Warrant officer, Officer	53	6%	4,539	11%	
Missing	0	0%	14	0%	
<b>Service</b> ( $\chi^2=57.85, p<0.0001$ )					
Air force	225	26%	8,471	20%	0.59
Army	292	34%	19,906	47%	
Marines	146	17%	6,598	15%	
Navy	198	23%	7,789	18%	
<b>Prior deployment</b> ( $\chi^2=3.19, p=0.0740$ )					
Yes	484	56%	22,727	53%	1.13
No	377	44%	20,037	47%	
<b>Prior substance abuse</b> ( $\chi^2=1660.4, p<0.0001$ )					
Yes	408	47%	2,477	6%	10.82
No	453	53%	40,287	94%	
<b>Prior psychological health condition<sup>3</sup></b> ( $\chi^2=1550.94, p<0.0001$ )					
Mental disorder	579	67%	5,434	13%	17.43
Other behavioral health	164	19%	4,883	11%	
None	118	14%	32,447	76%	
<b>Stationed on a base with slot machines<sup>4</sup></b> ( $\chi^2= 54.89, p<0.0001$ )					
Yes	256	30%	6,296	15%	0.67
No	605	70%	25,930	61%	
Missing	0	0%	10,538	25%	

1. Matched on gender, service branch, and military entrance date  
 2. Adjusted for race/ethnicity, marital status, religion, occupation, deployment, alcohol abuse, drug abuse, psychological health conditions, and slot machine proximity  
 3. Not related to substance abuse  
 4. Within past three years

**Figure 1. Prevalence (%) of Pathological Gamblers by Obscured Military Treatment Facility\***



\*Denominator of at least 50 or more service members on April 1, 2010.

## Conclusion

- The results from this research inform consideration of selective screening efforts that focus on service members and others with a history of substance abuse or psychological health problems and those living in geographic regions that have greater access to gambling activities.



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