Installation Evaluation Methodology

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Background

Secretary of Defense issued Memorandum, "Immediate Actions to Counter Sexual Assault and Harassment and the Establishment of a 90-Day Independent Review Commission on Sexual Assault in the Military," February 26, 2021, which directed immediate actions to address sexual assault and harassment. Immediate Action 2 directed OSD to conduct Installation Evaluations and to provide quarterly command climate updates.

To support identification of installations for the FY21 evaluations, USD(P&R) directed a force-wide Defense Organizational Climate Survey (DEOCS) to be completed. Command climate updates in FY22 and beyond, as well as subsequent installation evaluations will leverage additional data sources to identify locations. The DEOCS was selected as the primary data source for the FY21 installation evaluations because it serves as the most timely and sensitive DoD-wide measure of command climate and because other relevant data, such as the Workplace Gender Relations Surveys and Status of Forces Surveys, were delayed due to COVID, which precluded timely data from those data sources being included in the FY21 HRIE.

DEOCS 5.0 is comprised of 19 factors, 9 of which depict risk factors and 10 of which depict protective factors for readiness detracting behaviors, such as sexual assault, harassment, and suicide. However, for the purposes of this analysis, transformational leadership ratings, passive leadership ratings, and toxic leadership ratings are treated as separate factors for the unit/organization leader, commander, and the Senior NCO, if applicable. As a result, this analysis includes 22 total factors: 11 risk and 11 protective (see Appendix).

Data Transfer

All DEOCS data files are produced through an automated process. Each time data files are transferred to other systems, files are validated by confirming that record counts match; in addition, individual values are compared to the original file for select number of registrations. All variables are verified to ensure they are transferred properly and contain valid values.

Data Ingestion and Inclusion/Exclusion Criteria

We ingested DEOCS 5.0 data into Advana from the contractor across three data file transfers: January-March data was comprised of 237,104 survey respondent, April data was comprised of 482,745 respondent, and May data was still pending ingestion as of the time of publishing. In total, we received DEOCS 5.0 surveys from 719,849 respondents across 7,142 units (as of January-April 2021).

Table 1 shows the total survey counts by Component and Service branch.

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Table 1: DEOCS 5.0 Survey Respondents, by Component and Service Branch (as of January-April 2021)			
	Active	Reserve	Total
Service Branch			
Army	229,825	21,629	254,750
Navy	138,696	2,272	142,289
Air Force	125,916	3,138	130,946
Marine Corps	85,034	3,204	88,238
National Guard	--	34,183	34,183
Space Force	2,730	--	2,730
Coast Guard	8,428	164	8,592
Joint Service	--	--	9,814
DoD	--	--	48,307
Total	590,629	64,590	719,849

Matching Units with Installations. Using data collected by the Services, we were able to match 5,589 out of 7,142 units with their respective installations for a match rate of 78%.

Installations for On-Site Evaluation

We employ a multi-measure approach in identifying military installations that are outliers in terms of risk and protective factors. The identified locations will undergo an on-site evaluation (methods for on-site not included in this document).

Installation Protective and Risk Percentile Scores. Using DEOCS 5.0 data collected at the unit level, we aggregate to the installation level using mappings provided by the Services. We then categorize installations within Service branch according to their Protective Percentile Score and Risk Percentile Score.[1] This was useful for reducing the total number of installations in each Service into more manageable groupings for closer inspection.

Computing Percentile Scores. We calculate Protective and Risk Percentile Scores in four steps. To help illustrate this computational process, we use as an example, the survey results from the 399 respondents across five units (3 Army and 2 Air Force) at an anonymized installation, Installation X (see Table 2).

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[1] Protective and Risk Percentile Scores were strongly negatively correlated across installations (r = -0.90). This result was expected given that higher Protective Percentile Scores correspond to positive behaviors and lower Risk Percentile Scores correspond to negative behaviors.

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Table 2: Survey Respondents Completing DEOCS 5.0 at Installation X (Example)			
Unit Name	**Component**	**Service**	**Number of Respondents**
Unit A	Active	Air Force	189
Unit B	Active	Air Force	105
Unit C	Reserve	Army	57
Unit D	Reserve	Army	27
Unit E	Reserve	Army	21
Total			399

Step 1: We compute an average unit score for each factor, ranging from -1 to 1, by weighting the proportion of responses in each category. Specifically, each negative category for a protective factor is assigned a value of -1 (e.g., non-cohesive organization, low connectedness, etc.), each neutral category is assigned a value of 0 (e.g., neutral, moderate, etc.), and each positive category is assigned a value of 1 (e.g., cohesive organization, high connectedness, etc.). For risk factor scores, we use the opposite coding structure: each negative category is assigned a value of 1 (e.g., frequent binge drinking, passive NCO leadership etc.), each neutral category is assigned a value of 0 (e.g., some binge drinking, neutral, etc.), and each positive category is assigned a value of -1 (e.g., no binge drinking, non-passive leadership, etc.).[2]

Installation X (Example): One hundred eighty-nine respondents completed the survey in Unit A, the most of any of the five units at Installation X. For the factor Cohesion, this unit had a non-cohesive score of 12.2%, a neutrally cohesive score of 14.9%, and a cohesive score of 72.9%. As a result, the composite Cohesion factor score for Unit A is 0.61 (-1* .122 + 0*.149 + 1*.729 = 0.61). We repeat this calculation for all Protective and Risk factors for this unit as shown below in Table 3.

Table 3: Factor Score Calculation for Unit A at Installation X (Example)				
Unit Name	**Factor Response Category**			**Factor Score**
	A	**B**	**C**	
Protective Factors				
Cohesion	72.9%	14.9%	12.2%	0.61
Connectedness	81.5%	10.6%	7.8%	0.74
Engagement & Commitment	78.8%	15.0%	6.2%	0.73
Fairness	56.0%	21.8%	22.3%	0.34
Inclusion	69.8%	14.1%	16.1%	0.54
Morale	47.5%	36.6%	15.9%	0.32
Safe Storage for Lethal Means	65.7%	3.4%	30.9%	0.35
Work-life Balance	86.8%	7.9%	5.3%	0.81
Leadership Support (Immediate Supervisor)	77.7%	11.6%	10.7%	0.67
Transformational Leadership (Commander)	68.1%	24.4%	7.5%	0.61
Transformational Leadership (Senior NCO)	66.0%	31.0%	3.0%	0.63
Risk Factors				

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[2] For factors with only two response categories, each positive category is assigned a value of 3 (e.g., no presence of racially harassing behaviors, no presence of sexist behaviors) and each negative category is assigned a value of 1 (e.g., presence of racially harassing behaviors, presence of sexist behaviors).

Alcohol Impairing Memory	0.0%	2.8%	97.2%	-0.97
Binge Drinking	6.7%	29.6%	63.7%	-0.57
Stress	31.7%	--	68.3%	-0.37
Passive Leadership (Commander)	8.5%	27.1%	64.4%	-0.56
Passive Leadership (Senior NCO)	2.5%	33.0%	64.5%	-0.62
Toxic Leadership (Immediate Supervisor)	8.5%	11.0%	80.5%	-0.72
Toxic Leadership (Senior NCO)	2.0%	30.7%	67.3%	-0.65
Racially Harassing Behaviors	19.0%	--	81.0%	-0.62
Sexist Behaviors	6.3%	--	93.7%	-0.87
Sexually Harassing Behaviors	24.9%	--	75.1%	-0.50
Workplace Hostility	88.4%	--	11.6%	0.77

Note: Stress, Racially Harassing Behaviors, Sexist Behaviors, Sexually Harassing Behaviors, and Workplace Hostility do not have neutral categories. Factor Scores range from -1 to 1. 'A' response is favorable for Protective factors and unfavorable for Risk factors; 'B' response is neutral; 'C' response is unfavorable for Protective factors and favorable for Risk factors.

Step 2: Next, we weight and aggregate all unit-level factor scores to the installation-level according to the number of DEOCS respondents in each unit.[3] This process ensures that the responses of each survey taker in an installation (regardless of unit) are allocated equal weight in the calculation of the overall factor score of the installation.

Installation X (Example): As shown in Table 4, nine times as many Service members in Unit A completed the DEOCS 5.0 as compared with Unit E (n=21). As a result, the factor score for Unit A was weighted nine times as heavily as Unit E. Because of the way scores happen to be distributed across units, the unweighted and weighted factor scores for Cohesion are equivalent (0.72). However, for Alcohol Impairing Memory, the weighted factor score is considerably lower than the unweighted score (-0.94 vs. -0.87).

Table 4: Unit Weights for Cohesion Factor at Installation X (Example)				
Unit Title	**Factor Score (Unweighted)**	**Number of Respondents**	**Unit Weight**	**Factor Score (Weighted)**
Cohesion				
Unit A	0.61	189	2.37	1.44
Unit B	0.89	105	1.32	1.16
Unit C	0.83	57	0.71	0.59
Unit D	0.87	27	0.34	0.29
Unit E	0.38	21	0.26	0.10
Installation X Cohesion Factor Score	0.72		1.00	0.72
Alcohol Impairing Memory				
Unit A	-0.97	189	2.37	-2.30
Unit B	-0.99	105	1.32	-1.30
Unit C	-0.85	57	0.71	-0.60
Unit D	-0.79	27	0.34	-0.27
Unit E	-0.76	21	0.26	-0.20
Installation X Alcohol Impairing Memory Factor Score	-0.87		1.00	-0.94

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[3] Specifically, we weight each of an installation's factor scores by the number of respondents per factor per unit. As such, unit weights could vary slightly for different factors if slightly greater or fewer respondents in a unit completed the items comprising each factor.

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Step 3: After computing scores for each of the factors across all the installations, we compute percentile scores by comparing an installation's score on a given factor to the factor scores of all other installations. We standardize installation scores before averaging across factors because the DEOCS factors have very different factor score distributions. For example, only 2% report (SD = 3%) "frequent memory loss due to alcohol" whereas 84% report a "presence of workplace hostility" (SD = 10%). Thus, converting to percentiles ensures that no risk or protective factor disproportionally contributes to the protective and risk composite measures.

Installation X (Example): There are 744 installations with Cohesion factor score data. Of this total, there are 484 installations with Cohesion factor scores less than Installation X's score of 0.72, and 259 installations with Cohesion factor scores greater than 0.72. Thus, Installation X ranks in the 65th percentile on Cohesion. Similarly, for Alcohol Impairing Memory, there are 142 installations with factor scores less than Installation X's score of -0.94, and 601 installations with Alcohol Impairing Memory factor scores greater than -0.94. We repeat this ranking calculation for all protective and risk factors, so that each installation has a percentile score on each factor (see Table 5).

Step 4: Finally, we compute a Protective Percentile Score for each installation by calculating the average score (equally weighted) across the 11 protective factors percentiles. Similarly, we compute a Risk Percentile Score for each installation by calculating the average score across the 11 risk factors percentiles. Thus, both Protective and Risk Percentile Scores can range from 0 to 100.

Installation X (Example): As shown in Table 4, Installation X's 11 Protective percentiles scores are averaged to create the Protective Percentile Score of 61. Likewise, Installation X's 11 Risk percentiles scores are averaged to create the Risk Percentile Score of 39.

Table 5: Converting from Factor Scores to Protective and Risk Percentile Scores for Installation X (Example)			
	Total Number of Installations	**Installation X Factor Score**	**Installation X Percentile Score**
Protective Factors			
Cohesion	744	0.72	65
Connectedness	744	0.73	65
Engagement & Commitment	744	0.71	72
Fairness	744	0.44	52
Inclusion	744	0.61	52
Morale	744	0.38	64
Safe Storage for Lethal Means	744	0.26	81
Work-life Balance	744	0.73	85
Leadership Support (Immediate Supervisor)	744	0.75	47
Transformational Leadership (Commander)	744	0.68	43
Transformational Leadership (Senior NCO)	738	0.67	42
Protective Percentile Score			61
Risk Factors			
Alcohol Impairing Memory	744	-0.94	19
Binge Drinking	744	-0.56	32
Stress	744	-0.37	43
Passive Leadership (Commander)	744	-0.66	49
Passive Leadership (Senior NCO)	738	-0.68	49

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Toxic Leadership (Immediate Supervisor)	744	-0.73	27
Toxic Leadership (Senior NCO)	738	-0.65	32
Racially Harassing Behaviors	744	-0.64	44
Sexist Behaviors	744	-0.89	26
Sexually Harassing Behaviors	744	-0.44	58
Workplace Hostility	744	0.68	61
Risk Percentile Score			39
Note: Because not all units contain senior non-commissioned officers (NCO), these factors on the DEOCS were omitted for some installations.			

Further Analysis. Once installations have been identified according to their Protective and Risk Percentile Scores, a more granular evaluation approach can be undertaken. This includes 1) examining individual factors comprising the percentiles to determine whether some installations score especially low or high on a few protective or risk factors; 2) considering the distribution of Protective and Risk Percentile Scores across units to determine the potential influence of unit-level microclimates; and 3) analyzing demographic differences (male vs. female, non-Hispanic White vs. minority, and enlisted vs. officer) on select factors.

Suppression Rules

To protect the anonymity of survey respondents, data from units with fewer than 16 total respondents are not included in this analysis. In addition, units with fewer than 5 respondents for any factor are suppressed from data visualization. However, data suppressed at the unit-level are included in the calculation of installation-level Protective and Risk Percentile Scores by combining these results with the results of other units at the same installation. This level of aggregation addresses concerns regarding small sample size and therefore any concerns regarding anonymity.

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Appendix: Background on DEOCS 5.0

The redesigned DEOCS (Defense Organizational Climate Survey) 5.0 assesses 19 protective and risk factors that can impact a unit/organization's climate and ability to achieve its mission.

Protective Factors are attitudes, beliefs, and behaviors associated with positive outcomes for organizations or units. Higher favorable scores on protective factors are linked to a higher likelihood of positive outcomes, such as improved performance or readiness and higher retention and are also linked to a lower likelihood of negative outcomes, such as suicide, sexual harassment, and sexual assault. The DEOCS 5.0 identifies 10 Protective Factors. However, for the purposes of this analysis, transformational leadership ratings for the unit/organization leader and the Senior NCO, if applicable, are treated as two separate factors.

- **Cohesion** assesses whether individuals in a workplace care about each other, share the same goals, and work together effectively. Cohesive organizations are linked to improved readiness and retention, and a lower likelihood of sexual assault, sexual harassment, and suicide.
- **Connectedness** measures perceptions of closeness to a group and satisfaction with one's relationship to others in the group. Higher connectedness is linked to a lower likelihood of suicidal ideation.
- **Engagement & Commitment** measures one's vigor, dedication, and absorption in work and commitment to the job and organization. Higher levels of engagement and commitment are linked to higher levels of readiness, performance, and retention, and a lower likelihood of suicide.
- **Fairness** is the perception that organizational policies, practices, and procedures, both formal and informal, regarding information sharing, job opportunities, promotions, and discipline are based on merit, inclusion, equality, and respect. Fair organizations are linked to higher retention and lower levels of racial and ethnic discrimination.
- **Inclusion** indicates whether organization members feel valued and respected by their peers and leadership, and if they feel involved in decision-making and information-sharing. Inclusive organizations are linked to lower rates of discrimination and higher readiness.
- **Morale** measures whether organizations or units complete tasks with enthusiasm and confidence in the mission. Organizations with high morale are linked to improved readiness, higher retention, and a lower likelihood of sexual assault.
- **Safe Storage for Lethal Means** measures how often one keeps objects that can be used to hurt themselves or others, such as firearms and medication, safely stored in their living space. Keeping lethal means safely stored more often is linked to a lower likelihood of suicide.
- **Work-Life Balance** measures one's perception that the demands of their work and personal life are compatible. A work-life balance is linked to higher retention, improved readiness, and a lower likelihood of suicidal ideation.
- **Leadership Support** is the perception of support for individual goals (including career goals), perceptions about leadership communication, and trust in leadership. Respondents rate their immediate supervisor on this factor. Organizations with supportive leaders are linked to improved readiness, higher retention, and a lower likelihood of suicidal ideation.
- **Transformational Leadership** is a leadership style that inspires staff by providing motivation and meaning to their work, giving attention to individuals' unique needs, and directing their focus to higher goals, such as those of the mission. Respondents rate their unit/organization leader and their Senior NCO, if applicable, on this factor. Organizations with transformational leaders are linked to improved job performance, job satisfaction scores, and leadership satisfaction scores.

Risk Factors are attitudes, beliefs, and behaviors associated with negative outcomes for organizations or units. Higher unfavorable scores on risk factors are linked to a higher likelihood of negative outcomes, such as suicide, sexual harassment, and sexual assault and are also linked to a lower likelihood of positive outcomes, such as higher performance, readiness, and retention. The DEOCS 5.0 identifies 9 Risk Factors. However, for the purposes of this analysis, passive leadership ratings and toxic leadership ratings for the unit/organization leader and the Senior NCO, if applicable, were treated as separate factors.

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- **Alcohol Impairing Memory** measures how often, during the last 12 months, one was unable to remember what happened the night before due to drinking alcohol. Frequent memory loss due to alcohol is linked to a higher likelihood of sexual assault and suicide.
- **Binge Drinking** measures how often one consumes four or more drinks (for females) and five or more drinks (for males) on one occasion. Frequent binge drinking is linked to a higher likelihood of sexual assault and suicide.
- **Stress** measures the feeling of emotional strain or pressure. Higher levels of stress are linked to higher likelihood of suicide and suicidal ideation, and lower levels of readiness and retention.
- **Passive Leadership** is a leadership style that avoids and neglects mistakes or problems until they can no longer be ignored. Respondents rate their unit/organization leader and their Senior NCO, if applicable, on this factor. Organizations with passive leaders are linked to lower levels of readiness and a higher likelihood of sexual harassment.
- **Toxic Leadership** behaviors include disregard for subordinate input, defiance of logic or predictability, and self-promoting tendencies. Respondents rate their immediate supervisor and their Senior NCO, if applicable, on this factor. Organizations with toxic leaders are linked to lower organizational commitment, lower retention, and fewer respectful behaviors between members.
- **Racially Harassing Behaviors** describe unwelcome or offensive experiences of organization members based on their race or ethnicity. The presence of racially harassing behaviors in organizations is linked to higher rates of legally-defined racial/ethnic harassment as well as lower levels of readiness and retention.
- **Sexually Harassing Behaviors** assesses the presence of unwelcome sexual advances, requests for sexual favors, and offensive comments or gestures of a sexual nature. The presence of sexually harassing behaviors in organizations is linked to a higher likelihood of legally-defined sexual harassment (in which the behaviors are sufficiently persistent and severe), gender discrimination, sexual assault, suicide, and lower levels of readiness.
- **Sexist Behaviors** describe situations where someone is mistreated or excluded based on their sex or gender. The presence of sexist behaviors in organizations is linked to higher rates of legally-defined gender discrimination (in which the experiences harmed or limited their career) and sexual assault, as well as lower levels of readiness.
- **Workplace Hostility** measures the presence of aggressive behaviors directed at another individual while at work. This aggression includes physical intimidation, verbal intimidation, spreading rumors or negative comments about a person to undermine their status, and persistent criticism of work or effort. Organizations with workplace hostility are linked to lower performance, lower levels of readiness, and a higher likelihood of sexual harassment, sexual assault, and racial/ethnic discrimination.

For more information on the DEOCS 5.0, see https://www.defenseculture.mil/Assessment-to-Solutions/A2S-Home/