# APPENDIX A. SEARCH STRATEGIES

## OVID MEDLINE, EMBASE AND PSYCINFO

| | |
|---|---|
| 1 | Suicide/ or Suicide, Attempted/ or suicide.mp. |
| 2 | (suicide$1 or suicidal or suicidality).ti, ab. |
| 3 | (suicide$1 adj (prevent or prevention or preventing or prevents)).ti,ab. |
| 4 | Or/1-3 |
| 5 | Risk Factors/ |
| 6 | Risk.mp. |
| 7 | 5 or 6 |
| 8 | Veterans/ or Military Personnel/ |
| 9 | Veteran$1 or (military adj person*)).ti,ab. |
| 10 | 8 or 9 |
| 11 | 4 and 7 and 10 |
| 12 | Limit 11 to English language |
| 13 | Limit 12 to yr=”2011-current” |
| 14 | Limit 13 to (case reports or clinical conference of comment or editorial or letter or news or newspaper article) |
| 15 | 13 not 14 |
| 16 | (child8 or adolescen*).ti,ab. |
| 17 | 15 not 16 |
| 18 | Limit 17 to humans |
| 19 | Remove duplicates from 18 |

## SOCIOLOGICAL ABSTRACTS

((mainsubject.Exact("veterans" OR "veteran/veterans" OR "military" OR "military personnel")) or (ab(veteran OR military) OR ti(veteran OR military))) and (mainsubject.Exact("suicides & suicide attempts" OR "suicide, attempted" OR "suicide" OR "suicide/suicides/suicidal") OR ab(suicide OR suicidality OR suicidal) OR ti(suicide OR suicidality OR suicidal)) and (mainsubject.Exact("risk factors") OR ab(RISK FACTOR) OR ti(RISK FACTOR))

# APPENDIX B. QUALITY ASSESSMENT FOR ELIGIBLE PUBLICATIONS

| Study, Year | Study Participation | Study Attrition | Prognostic Factor Measurement | Outcome Measurement | Study Confounding | Statistical Analysis and Reporting | Overall Risk of Bias |
|---|---|---|---|---|---|---|---|
| Alexander, 2014[67] | High | Moderate | Low | Low | High | Low | High |
| Barry, 2018[41] | Low | NA | Low | Low | Low | Low | Low |
| Barth, 2016[31] | Low | NA | Moderate | Low | Moderate | Low | Moderate |
| Bernecker, 2019[6] | Moderate | Moderate | Low | Moderate | Moderate | Moderate | Moderate |
| Bishop, 2020[49] | Low | NA | Moderate | Moderate | Low | Low | Moderate |
| Black, 2011[68] | Moderate | NA | High | Low | Moderate | Moderate | High |
| Blow, 2012[50] | Low | NA | Low | Low | Moderate | Low | Moderate |
| Bohnert, 2014[7] | Low | Low | Low | Low | Low | Low | Low |
| Bohnert, 2017[42] | Low | NA | Low | Low | Low | Low | Low |
| Bullman, 2018[12] | Low | NA | Low | Low | Moderate | Low | Moderate |
| Bullman, 2019[51] | Low | NA | Low | Low | Moderate | Low | Moderate |
| Chu, 2020[8] | Moderate | Moderate | Moderate | Moderate | Low | Low | Moderate |
| Conner, 2013[52] | Low | NA | Low | Low | Moderate | Low | Moderate |
| Cooper, 2020[43] | Low | NA | Low | Low | Low | Low | Low |
| Cusack, 2020[30] | Low | NA | Low | Low | Low | Low | Low |
| Dempsey, 2019[53] | Low | Moderate | Low | Low | Low | Low | Moderate |
| Dobscha, 2014[13] | Low | NA | Moderate | Moderate | Low | Low | Moderate |
| Doran, 2016[14] | Low | NA | Low | Low | High | Moderate | Moderate |
| Finley, 2015[15] | Low | NA | Low | Low | Moderate | Moderate | Moderate |
| Goodin, 2019[16] | Low | NA | Low | Low | Moderate | Low | Moderate |
| Gradus, 2013[69] | Low | High | Low | Moderate | High | Low | High |
| Griffith, 2017[17] | Low | NA | Low | Low | Moderate | Low | Moderate |
| Hoffmire, 2015[54] | Moderate | NA | Low | Low | High | Moderate | Moderate |
| Hostetter, 2019[55] | Low | NA | Low | Low | Moderate | Low | Moderate |
| Hyman, 2012[18] | Low | Low | Low | Low | Moderate | High | Moderate |
| Ilgen, 2012[36] | Low | NA | Low | Low | Low | Low | Low |
| Ilgen, 2013[56] | Low | NA | Low | Low | Moderate | Low | Moderate |
| Kang, 2015[19] | Low | NA | Low | Low | Moderate | Low | Moderate |

| Study, Year | Study Participation | Study Attrition | Prognostic Factor Measurement | Outcome Measurement | Study Confounding | Statistical Analysis and Reporting | Overall Risk of Bias |
|---|---|---|---|---|---|---|---|
| Katz, 2012[57] | Moderate | NA | Low | Moderate | High | Moderate | Moderate |
| Kimerling, 2016[20] | Low | NA | Low | Low | Moderate | Low | Moderate |
| LeardMann, 2013[9] | Moderate | Low | Low | Low | Low | Low | Moderate |
| Louzon, 2016[35] | Low | NA | Low | Low | Low | Low | Low |
| Lynch, 2020[44] | Low | NA | Moderate | Low | Moderate | Low | Moderate |
| Martz, 2018[58] | Low | NA | Low | Low | Moderate | Low | Moderate |
| McCarthy, 2014[59] | Moderate | NA | Low | Low | Moderate | Low | Moderate |
| McCarthy, 2019[70] | Low | NA | High | Low | High | Low | High |
| Naifeh, 2017[10] | Low | Moderate | Low | Low | Moderate | Low | Moderate |
| Nock, 2017[71] | Moderate | Moderate | High | Low | High | Low | High |
| Palframan, 2020[27] | Low | NA | Low | Low | Low | Low | Low |
| Phillips, 2017[11] | Low | Low | Low | Low | Low | Low | Low |
| Ravindran, 2020[60] | Low | NA | Low | Low | Moderate | Low | Moderate |
| Reger, 2015[45] | Low | NA | Low | Low | Low | Low | Low |
| Reger, 2017[72] | Moderate | NA | Moderate | Low | High | Moderate | High |
| Riberiro, 2017[61] | Low | NA | Low | Low | Moderate | Moderate | Moderate |
| Rosellini, 2017[21] | Moderate | NA | Low | Low | Low | Low | Moderate |
| Ryan, 2020[62] | Low | NA | Low | Low | Moderate | Low | Moderate |
| Schinka, 2016[63] | Moderate | NA | Moderate | Low | High | Low | Moderate |
| Schinka, 2018[64] | Moderate | NA | Moderate | Low | High | Moderate | Moderate |
| Shen, 2016[28] | Low | NA | Low | Low | Low | Low | Low |
| Shiner, 2020[46] | Low | NA | Low | Low | Low | Low | Low |
| Skopp, 2016[22] | Low | NA | Moderate | Low | High | Moderate | Moderate |
| Thomsen, 2011[73] | Moderate | Moderate | High | High | Low | Low | High |
| Trofimovich, 2013[47] | Low | NA | Low | Low | Low | Low | Low |
| Ursano, 2015[65] | Low | NA | Low | Moderate | Low | Low | Moderate |
| Ursano, 2016[66] | Low | NA | Low | Moderate | Low | Low | Moderate |
| Ursano, 2017a[48] | Low | NA | Low | Low | Low | Low | Low |
| Ursano, 2017b[33] | Low | NA | Low | Moderate | Low | Low | Moderate |
| Ursano, 2017c[32] | Low | NA | Moderate | Moderate | Low | Low | Moderate |

| Study, Year | Study Participation | Study Attrition | Prognostic Factor Measurement | Outcome Measurement | Study Confounding | Statistical Analysis and Reporting | Overall Risk of Bias |
|---|---|---|---|---|---|---|---|
| Ursano, 2018a[23] | Low | NA | Low | Moderate | Low | Low | Moderate |
| Ursano, 2018b[25] | Low | NA | Low | Moderate | High | Low | Moderate |
| Ursano, 2018c[24] | Low | NA | Low | Moderate | Low | Low | Moderate |
| Ursano, 2018d[26] | Low | NA | Moderate | Moderate | Low | Low | Moderate |
| Zuromski, 2019[74] | Moderate | Moderate | High | Low | Low | Moderate | High |

# APPENDIX C. PEER REVIEW COMMENTS/AUTHOR RESPONSES

| Question Text | Reviewer Number | Comment | Author Response |
|---|---|---|---|
| Are the objectives, scope, and methods for this review clearly described? | 1 | Yes | Thank you. |
| | 2 | Yes | |
| | 3 | Yes | |
| | 4 | Yes | |
| | 5 | Yes | |
| | 6 | Yes | |
| | 7 | Yes | |
| | 8 | Yes | |
| | 9 | Yes | |
| Is there any indication of bias in our synthesis of the evidence? | 1 | No | Thank you. |
| | 2 | No | |
| | 3 | No | |
| | 4 | No | |
| | 5 | No | |
| | 6 | No | |
| | 7 | No | |
| | 8 | No | |
| | 9 | No | |
| Are there any published or unpublished studies that we may have overlooked? | 1 | No | Thank you. |
| | 2 | No | |
| | 3 | No | |
| | 4 | No | |
| | 5 | Yes - Two articles available here: https://onlinelibrary.wiley.com/doi/abs/10.1111/sltb.12511 and https://www.sciencedirect.com/science/article/abs/pii/S0165032718327757?via%3Dihub | Monteith et al. was excluded from this review as it was conducted in a sub-population; included studies had to investigate risk factors within a general Veteran/armed forces population. Barnes et at. was excluded at abstract level as developing predictive models was outside of the scope of this review. |
| | 6 | No | Thank you. |
| | 7 | No | |

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| | 8 | No | |
| | 9 | Yes - Montgomery, A. E., Dichter, M. E., Byrne, T. H., & Blosnich, J. R. (2021). Intervention to address homelessness and all-cause and suicide mortality among unstably housed U.S. Veterans, 2012–2016. Journal of Epidemiology and Community Health, 75, 380–386. doi:10.1136/jech-2020-214664<br><br>Montgomery, A. E., Dichter, M. E., & Blosnich, J. R. (2021). Gender differences in the predictors of suicide-related morbidity among Veterans reporting current housing instability. Medical Care, 59, S36–S41. doi:10.1097/MLR.0000000000001422<br><br>Cusack, M. C., Montgomery, A. E., Cashy, J., Dichter, M. E., Byrne, T. H., & Blosnich, J. R. Examining Veteran housing instability and mortality by homicide, suicide, and unintentional injury. (2020). Journal of Social Distress and Homelessness, online ahead of print. doi:10.1080/10530789.2020.1801020 | Montgomery et al. was excluded as intervention studies were explicitly excluded from this review.<br><br>Montgomery et al. was excluded from this review as it was conducted in a sub-population; included studies had to investigate risk factors within a general Veteran/armed forces population.<br><br>Thank you, the Cusack et at. was not identified by our search and we have included this article and updated our report to reflect this. |
| Additional suggestions or comments can be provided below. If applicable, please indicate the page and line numbers from the draft report. | 1 | Under the individual section a rich data resource from VA is described. - this is an important note to consider how much information is available<br><br>APA shows Posttraumatic stress disorder (PTSD) as the way it is presented (no hyphen, not 2 words)<br><br>p4, line 36-37, mentioned diverse categorization of deployment status - since this seems foundational information, is it a PI generated issue in what information was collected or another issue in terms of not having common data elements, etc.?<br><br>At the individual level a description of the | Thank you.<br><br>We have updated all instances of this throughout the report to remove the hyphen.<br><br>Many authors defined their deployment variables differently, ie, some used currently vs. previously deployed, while others used ever vs. never and some broke this down further by number of deployments. We have added information into the report for clarity. |

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| | | studies were presented but not for the other levels. this could be a bolstered description to help from level to level, e.g., retrospective data analysis based upon VHA records, vs original prospective data collection, etc. | We've reorganized our report slightly to include these more detailed descriptions in the corresponding sections (ie, low risk of bias or prospective studies). |
| | | ???what is it we can conclude about PTSD and suicide??? | The following sentence was added to the report: Post-traumatic stress disorder (PTSD) was consistently shown to be a risk factor for suicide attempts but results were inconsistent for suicide. |
| | | I am unsure the order of presentation of tables and figures - not alphabetical and not by frequency - mentioning it for considering the best way to present the list of factors on the Y axes. | We thank the author for the suggestion, we grouped factors by socioecological model domains, and within those domains we tried to group like factors near each other. We initially thought we might subcategorize, but there was no foundational framework to do so. |
| | 2 | page line 40 - change to "...than 100,000 individuals, 10 studies enrolled Veterans...." | Thank you, this has been corrected. |
| | | on page 13, line 50; I feel the description of ROB needs more; is there a way to provide any kind of examples in the text (and some in the Executive Summary, too)? It is not clear to me how all of these prognostic factors might indicate bias in a study of suicide prevention. What kind of bias was found within the research that was screened? Knowing that may help inform investigators and improve our new research studies moving forward.<br>page 18, line 27: this sentence was hard to read, could some commas be added? "Other factors at the individual, community or relational level while sometimes found to be associated with suicide and attempts were reported in only 1 or 2 studies thus limiting conclusions." | The prognostic factors themselves do not create bias, it's the methodological decisions made by the authors that may introduce bias into a study. We discuss limitations of study quality in the Limitations section. We also have discussed the issues of risk of bias in our future research needs section: "More refined analytic methods to adjust for known and potential confounders is important and a better understanding of whether results are due to exploratory analyses, chance, or limited statistical power. Additional work is needed to validate and harmonize how factors and confounders are operationalized, measured, and reported as well as the analytic models used."<br><br>This sentence has been edited to for clarity. "Community-level, relational-level, and other individual-level factors were reported in only 1 or 2 studies. These factors were sometimes associated with suicide and attempts, but the few studies limited confidence. Thus, further exploration of factors such as firearm status, marital status, and various forms of interpersonal violence is warranted." |

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| 3 | Page 2 says studies of “nontraditional” risk or protective factors were included, which doesn’t align with Table 2 of inclusion/exclusion criteria. These should be aligned, and if the inclusion criteria of “studies of ‘nontraditional’ risk or protective factors” is retained, it should be clarified/specified. | We’ve changed the term “nontraditional” to “modifiable”. Due to the large amounts of research available on sex, race and age as risk factors for suicidal behaviors, we focused our report on other factors that have the potential to be modified, to align with VAs mission to reduce suicidal behaviors. |
| | Homelessness is not a community level factor. Individual experience of homelessness (i.e., being homeless) is an individual-level factor. If the studies included were indeed evaluating the degree of homelessness in the community as an exposure variable, then this should be specified as such. If they were assessing the association between being homeless and suicide risk, then these studies should be re-categorized into the individual level group. | We agree with the reviewer and have moved homelessness to the individual domain. |
| | It seems overly simplistic to state that the converse of a risk factor could be interpreted as a protective factor (page 8). Protective factors should ideally operate as a buffer – reducing risk despite/in the context of harmful experiences. Recommend removing this statement. | We agree and have removed this statement. |
| | When the data source is specified as “VHA” and “DoD” are these all administrative data? It would be good to specify this so that people know it is admin data vs. simply the study took place at VHA. Specifically Table 3 could say “VHA administrative databases” or similar. | Thank you, we’ve added to Table 3 to clarify that this refers to VHA or DoD administrative data. |
| 4 | There is some discussion related to standardization of risk factors/modeling adjustments -- am wondering if it is worthwhile to mention efforts made by NIH and other mechanisms that fund suicide prevention research to use common data elements | We agree. While not specifically mentioning efforts by NIH we note that future research would benefit from common data elements including measures of risk factors. |

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| | (including measure of risk factors) to increase comparability across studies | |
| 5 | This report is excellent. Some minor comments are noted below. | Thank you. |
| | Excluding studies of populations known to be at high risk by virtue of mental health diagnoses or past suicide attempts likely limits the implications regarding risk and protective factors for those at heightened chronic suicide risk. This may be important to note outright. | We agree that it limits broader implications, the intent was to review risk factors in broad populations, not to look at groups that were otherwise known to be at high-risk. Our goal was to see, in general populations, what risk factors were identified. Language has been added to the report in an attempt to make this more clear. |
| | More description of the operationalization used to define "nontraditional" risk or protective factors and the rationale for excluding these from the review would be useful to include. Also, demographics were listed in Table 4, but weren't these excluded due to being "nontraditional"? | We've changed the term "nontraditional" to "modifiable". Due to the large amounts of research available on sex, race and age as risk factors for suicidal behaviors, we focused our report on other factors that have the potential to be modified.<br>Studies which only reported sex, age, or race were not included in the report. However, if a study reporting other factors also reported sex, race, age, we tallied those up but did not go into detail discussing results of these factors in this report. |
| | For the domains categorized under community-level, it would be helpful to state the rationale for categorizing in this way, particularly for homelessness, which seems to be an individual level factor and also which isn't necessarily bound to a certain region or area. | Categorizing factors was a difficult process as many factors could conceptually fit into multiple categories. The study team, along with content experts and Technical Expert Panel members categorized each factor as best they could, given definitions provided by study authors. We agree with the reviewer and have moved homelessness to the individual domain. |
| | Table 1. Several of the examples would benefit from clarification or additional detail to ensure accurate categorization. For example, the "barriers to health care" example could be revised to ensure it is specific to the community; otherwise, such barriers would likely be at the individual level (e.g., personal stigma, lack of insurance) or societal level (e.g., | We agree, and if specific barriers were judged to be at an individual level, that is where we categorized it in the evidence tables for the review. Table 1 was meant to provide a broad overview of the types of factors that exist, and how they could be categorized based on the Social-Ecological Model. These examples were derived from another systematic review. We have added a footnote to the table to cite where the examples came from. |

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| | societal norms regarding help-seeking). Similarly, it would be worth specifying for "cultural and religious beliefs" that these are within the community. The societal level examples would also benefit from being refined accordingly (e.g., for stigma and lethal means access, this would presumably be more about broad norms or laws that enable these). | |
| | Table 2, timing- were studies excluded if it was unclear if the risk factor preceded the suicide/suicide attempt? | Yes. |
| | How was quality of the assessment methods of suicide attempt and suicide factored into the risk of bias ratings? Could this information be provided outright for future reviews? | We used the QUIPS tool for prognostic studies to rate risk of bias, which does include a domain for outcome assessment. Specifically, the tool asks: "*A clear definition of outcome is provided; The method of outcome measurement used is adequately valid and reliable to limit misclassification bias; The method and setting of outcome measurement is the same for all study participants."* |
| 6 | • Odd wording p10 ""feeling others' would be better off I was dead", probably easiest fix would be removing the apostrophe for others as it is not possessive and adding and if- "better off if I was dead" | This was a typo that has been edited. |
| | • The first 3 paragraphs on page 11 start with the same structure. It would read better if it did not count the number of studies in each but led with the constructs of interest for each. | Thank you for the suggestion. |
| | • The first time STARRS is mentioned (p 11), there is no full title and no description. Will the reader know what this is? | This has been edited to spell out acronym and describe the STARRS study briefly. |
| | • STARRS is not included in the acronyms list (p 16) | Thank you, this has been added to the table. |
| | • I would suggest you separate out risk from protective factors in table 4 (p 26) as it is | |

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| | confusing to try to quickly determine which variables might be considered risk and which are protective<br><br>• Love appendix C (p 46) but probably needs editing | This table is intended to show a summary of what was reported. It was often uncertain if a factor was a risk or protective factor, as many results were mixed.<br><br>Thank you, you may be the first reviewer to have noticed our template placeholder language (or at least comment on it). Appendix has been edited. |
| 7 | Inconsistent use of 'risk of bias' and 'ROB', not sure it matters, just wanted to point out.<br>some minor grammar issues (see highlights) - pg 3 line 51 - 'better of IF I was dead'. pg 5 line 26 - 'history OF TBI'. pg 6 line 38 - unclear verbiage. pg 7 line 50 - accompany used as adjective here so consider 'accompanying evidence map'; verb tense; 'as well AS'. pg 19 line 10 - perhaps a misplaced 'I'. pg 20 - consider adding box for 'societal level' and denoting 0 studies. pg 26 line 5 - BMI, consider clarify body mass index, only clarified in footnote of table. | Thank you, all of these corrections have been made. |
| 8 | The review is comprehensive and analysis excellent.<br><br>I had the following questions/comments:<br>1) what is the rationale for limiting the studies to the past 10 years? Especially as this will bias results towards studies of OEF/OIF Veterans/soldiers. Valuable information for other cohorts (e.g. Vietnam; which are especially at high risk for suicide death/attempts) may not be fully captured within this time frame<br><br>2) some of the designations for individual, social and community were not clear to me. For example: In the initial description of the model, social isolation is listed as an example of an "individual" factor (pg 10) but in the listing on table 4, is now under social category. Similarly, not sure how homelessness is under | Thank you.<br><br>We limited our search from 2011 because VA ESP conducted a review on suicide risk factors which was published in 2012, which used similar inclusion criteria to this review. Our report does include Veterans from many different service-eras, as age of participants was not an exclusion criterion.<br><br>Thank you for pointing out these discrepancies. Categorizing factors was a difficult process as many factors could conceptually fit into multiple categories. The study team, along with content experts and the Technical Expert Panel members categorized each factor as best they could given the definition provided by study authors. Table 1 is just an example of how factors *could* be categorized. We've |

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| | | community as housing problems seems closer to legal and financial problems; which are individual factors. | added some clarity to the report to indicate that Table 1 is just an example. In our report, the 1 study that reported on "social isolation" grouped it together with "perceived burdensomeness" and "thwarted belongingness"; therefore, we categorized it as a relational factor in this instance. We agree with the reviewer and have move homelessness to the individual domain. |
| | | 3) I struggled conceptually with the decision to limit the review to general population and decision to not include individuals known to be at heightened risk (e.g. depression, mental illness and suicide history). However, the report contains much data exactly on these individuals. For example on, pg 18, "10 studies examined the association of previous suicide attempts or ideation with future attempt or suicide". Plus in table 4, 22 studies looked at "other mental illness". A better clarification of why these studies were included in needed.<br>In essence, the review's finding confirm what we knew about elevated suicide risk pertaining to history of mental illness and previous attempt. I think there needs to be a better synthesis of the findings with what is already known and the decision to exclude these individuals in the review.<br>Also, perhaps its a separate question, but would be extremely important to know what are the risk and protective factors of individuals at risk for suicide (not just general population)... as these are the individuals likely to have suicide event(s). | We were tasked with identifying risk or protective factors in a general population (eg, <50% were already at elevated risk for suicide). However, previous suicide attempt or other well-known risk factors were still reported within the general population, which is why they were included in the review as identified factors. We agree, that it is important to understand risk and protective factors of at-risk individuals, however, that was outside the scope of this review. |
| | | 4) I completely agree with the need for studies examining combination of factors. | Thank you. |
| | 9 | Page 1, line 20 (and throughout): Social-Ecological Model vs. Socio-Ecological Framework. I'm assuming these are the same? | These are the same, we have edited the report to reference the Social-Ecological Model for consistency. |

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| | | Page 4: It should be mentioned (and it may be in the body of the report) that homelessness is the result of both individual and structural factors and can be classified as both an individual- and community-level risk factor (depending on how it is conceptualized in the research). In addition, I think it would be useful to define the societal level of the SEM even if there are no studies that report on this factor. | This is described in the report, as you have noted in your following comment. |
| | | Page 18, line 25: PTSD was not consistently associated with suicide, meaning sometimes it was and sometimes it was not? | Correct. Results were mixed. |
| | | Page 19, line 10: A word seems to be missing? | Thank you, this was corrected. |
| | | Page 19, lines 25-28: I do not understand this sentence. | This sentence was edited for clarity. |
| | | Page 19, Table 4: The authors mention in Table 2 that "studies including >50% participants with increased risk of suicide due to prior suicide attempters or with specific mental or physical health conditions known to increase suicide risk" are excluded. But, clearly, previous suicide attempt/suicidal ideation is an individual-level risk factor included in 10 studies. So, just to be clear: if less than 50% of the sample had that indicator, the study was included; if more than 50%, the study was excluded? | Correct, we were tasked with identifying risk or protective factors in a general population (eg, <50% were already at elevated risk for suicide). However, previous suicide attempt or other well-know risk factors were still reported, which is why they were included in the review as identified factors. |
| | | Table 5 provides a nice snapshot of the results! | Thank you! |
| | | Page 28, line 24: The brief description here of the societal level of the SEM addresses my comment on page 4. | Thank you. |
| | | Table 6: I find it interesting that tobacco use | |

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| | | shows up as particularly “risky” for suicide-related outcomes. I wonder if it would be useful to break out alcohol, tobacco, and other drug use into 3 categories so readers can see which substances are associated with risk as that seems to vary across studies (and certainly has different implications for interventions or explanations/theories for increased suicide risk). | We agree, it would be useful to break out into separate categories, unfortunately, several included studies grouped these together as a generic “substance abuse” or used diagnostic codes for Substance Abuse Disorder, and we didn’t have enough information to make this more granular. |
| | | Page 32, line 54: I wonder if it would be useful to provide a summary of how the outcomes—suicide death and suicide attempt—were reported. Or, at least note what the differences were (e.g., timing of the event, data used to assess the event, etc.). This could be useful for researchers in determining the appropriate way to assess such outcomes in future work. | The vast majority of included studies used administrative data for suicide death (NDI, VA, etc.); suicide attempts were most often captured via self-report survey data. |
| | | Page 35, lines 52-54: When the authors discuss “factor classifications and definitions,” are they referring to risk factors? So, are the authors suggesting that there may need to be a more uniformly agreed upon way to code or categorize variables that may predict suicide? I agree and, if that is the authors’ intent, I think it would be useful to state that in a more concrete and explicit way. | Thank you, we have elaborated on this sentence in the report to adequately convey this thought. |

# APPENDIX D. EVIDENCE TABLE

## Appendix Table D1. Study Characteristics and Outcomes for All Low and Moderate Risk of Bias Studies (k=54)

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| **Barry, 2018**[41]<br>Retrospective Cohort<br>Low | Veteran<br>10,000-99,999<br>VHA, CMS, VA SPAN, SDR | **Transition from prison to civilian life**<br>(Reentry vs never incarcerated) | ↔ | ↑ | Homelessness, sum of 13 medical conditions, TBI, and any psychiatric disorder |
| **Barth, 2016**[31]<br>Retrospective Cohort<br>Moderate | Veteran (Gulf War)<br>≥100,000<br>VHA, DoD, NDI, Social Security | **Exposure to nerve gas**<br>(1- or 2-days vs no/unknown exposure) | ↔ | NR | Race, branch of service, type of unit, and age |
| | | **Gulf War Veteran status**<br>(compared to non-Gulf War Veterans) | ↔ | NR | |
| **Bernecker, 2019**[6]<br>Prospective Cohort<br>Moderate | Active Military<br>10,000-99,999<br>DoD, STARRS, MHSDR | **Ever bullied by unit** | NR | ↑ | Predictors with significant univariate associations with SA were combined to generate within-category multivariate models, which were then trimmed to exclude nonsignificant predictors. The predictors in each of these within-category multivariate models were then combined into a final second-stage model. Also adjusted for seasonality and months since survey. |
| | | **Recent interpersonal problems** | NR | ↔ | |
| | | **Any lifetime mental disorder** | NR | ↔ | |
| | | **More-than-mild TBI in past 5 years** | NR | ↔ | |
| | | **Any other TBI** | NR | ↔ | |
| | | **Spent time in jail** | NR | ↔ | |
| | | **Responsible for death of an enemy** | NR | ↑ | |
| | | **Recent general stressors** | NR | ↔ | |
| | | **Enlisted rank** | NR | ↔ | |
| | | **Number of deployments** | NR | ↑ | |
| **Bishop, 2020**[49]<br>Case-control<br>Moderate | Veteran<br>10,000-99,999<br>VHA | **Depression** | NR | ↑ | Sleep-related breathing disorders, insomnia, nightmares, PTSD, depression, anxiety, schizophrenia, bipolar disorder, |
| | | **Anxiety** | NR | ↑ | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Bipolar** | NR | ↑ | SUD, medical comorbidity, obesity, number of sleep medicine visits in the 180 days prior to the index date |
| | | **Schizophrenia** | NR | ↑ | |
| | | **PTSD** | NR | ↑ | |
| | | **Substance use disorder** | NR | ↑ | |
| | | **Insomnia or nightmares** | NR | ↑ | |
| | | **Obesity** | NR | ↓ | |
| **Blow, 2012**[50]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>VHA, NDI | **VHA users**<br>(compared to general population) | ↑ | NR | Age |
| **Bohnert, 2017**[42]<br>Retrospective Cohort<br>Low | Veteran<br>≥100,000<br>VHA, NDI | **Any SUD** | Male ↑<br>Female ↑ | NR | Age, Charlson Comorbidity Index, and psychiatric diagnoses<br><br>Covariance sandwich estimators were used to adjust for clustering within VHA facilities |
| | | **Alcohol use disorder** | Male ↑<br>Female ↑ | NR | |
| | | **Cocaine use disorder** | Male ↑<br>Female ↔ | NR | |
| | | **Cannabis use disorder** | Male ↑<br>Female ↔ | NR | |
| | | **Opioid use disorder** | Male ↑<br>Female ↑ | NR | |
| | | **Amphetamine or other psychostimulant use disorder** | Male ↑<br>Female ↔ | NR | |
| | | **Sedative, hypnotic, or anxiolytic use disorder** | Male ↑<br>Female ↔ | NR | |
| **Bohnert, 2014**[7]<br>Prospective Cohort<br>Low | Veteran<br>≥100,000<br>VHA, NDI | **Tobacco use disorder** | ↑ | NR | Age group, sex, Charlson score, VHA service connection, substance use disorder, bipolar disorder, depression, other anxiety disorder, posttraumatic stress disorder, and schizophrenia |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| **Bullman, 2018**[12]<br>Retrospective Cohort<br>Moderate | Veteran (OEF/OIF)<br>≥100,000<br>DoD, SDR, NDI | **Single** (compared to married) | ↑ | NR | Race, sex, age at entry to follow-up, and year of death |
| | | **Enlisted rank** | ↑ | NR | |
| | | **Army/Marines** (compared to others) | ↑ | NR | |
| | | **Active duty** (compared to reserves) | ↔ | NR | |
| | | **In first year since discharge** | ↑ | NR | |
| **Bullman, 2019**[51]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>VHA, DoD, SDR, NDI | **Deployment to Bosnia/Kosovo** | ↓ | NR | Age of entry, race, and sex |
| **Chu, 2020**[8]<br>Prospective Cohort<br>Moderate | Active Military<br>1,000-9,999<br>STARRS, Survey | **Perceived burdensomeness** | NR | ↔ | Sociodemographic and Army career characteristics, months in, and survey completion |
| | | **Thwarted belongingness** | NR | ↔ | |
| | | **Hopelessness** | NR | ↔ | |
| **Conner, 2013**[52]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>VHA, DNI | **PTSD** | ↑ | NR | Age |
| | | **Bipolar** | ↑ | NR | |
| | | **Depression** | ↑ | NR | |
| | | **Anxiety** | ↑ | NR | |
| | | **Schizophrenia** | ↑ | NR | |
| | | **Substance use disorder** | ↑ | NR | |
| **Cooper, 2020**[43]<br>Retrospective Cohort<br>Low | Veteran<br>≥100,000<br>VHA, DoD | **Positive score on PC-PTSD screen** | ↑ | NR | Demographic characteristics, mental health diagnoses, treatment, and suicide attempts |
| **Dempsey, 2019**[53]<br>Case-control<br>Moderate | Active Military<br><1,000<br>STARRS, SHOS-B | **Own working gun** | ↔ | NR | Deployment status (never vs previously) and the number of years of active service (1-4, 5-8, or ≥ 9 years) |
| | | **Storing a loaded firearm at home** | ↑ | NR | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Carrying a personal gun in public** | ↑ | NR | |
| **Cusack, 2020**[30]<br>Cross-sectional<br>Low | Veteran<br>≥100,000<br>VHA, NDI | **Housing instability** | ↑ | NR | Age, sex, race, ethnicity, medical co-morbidity, service-connected disability status, and experience of military sexual trauma |
| | | **Military sexual trauma** | ↑ | NR | |
| | | **Service-connected disability** (50-100%) | ↑ | NR | |
| **Dobscha, 2014**[13]<br>Case-control<br>Moderate | Veteran<br><1,000<br>VHA | **Endorsed thoughts or attempts at suicide** | ↑ | NR | Specific adjustments to model not reported |
| | | **Major depressive disorder** | ↑ | NR | |
| | | **Anxiety disorder** | ↑ | NR | |
| | | **Bipolar disorder** | ↔ | NR | |
| | | **Anger** | ↔ | NR | |
| | | **Alcohol of substance use disorder** | ↔ | NR | |
| | | **Relationship problems** | ↔ | NR | |
| | | **Married** | ↔ | NR | |
| | | **Isolation** | ↔ | NR | |
| | | **Grief or loss of a loved one** | ↔ | NR | |
| | | **Sleep problems** | ↔ | NR | |
| | | **Functional decline** | ↑ | NR | |
| | | **Legal problems** | ↔ | NR | |
| | | **Financial problems** | ↔ | NR | |
| | | **Job or school problems** | ↔ | NR | |
| | | **Recently moved or plans to move** | ↔ | NR | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Service connected** | ↓ | NR | |
| **Doran, 2016**[14]<br>Retrospective Cohort<br>Moderate | Veteran (Vietnam, Gulf War)<br>1,000-9,999<br>VHA, Survey | **History of sexual abuse** | NR | ↔ | Age, period of service, and diagnosis (depression, anxiety disorders other than PTSD, and SUDs) |
| | | **History of physical abuse** | NR | ↔ | |
| | | **Previous suicide attempt** | NR | ↑ | |
| | | **Previous self-harm** | NR | ↑ | |
| | | **Depression/anxiety** | NR | ↔ | |
| | | **Motivated for treatment** | NR | ↑ | |
| | | **Good coping skills** | NR | ↓ | |
| | | **Hopelessness** | NR | ↑ | |
| | | **Substance use disorder** | NR | ↔ | |
| **Finley, 2015**[15]<br>Retrospective Cohort<br>Moderate | Veteran (OEF/OIF)<br>≥100,000<br>VHA | **Suicide related behavior** | NR | ↑ | Specific adjustments to model not reported |
| | | **Depression** | NR | ↑ | |
| | | **Anxiety disorder** | NR | ↑ | |
| | | **Bipolar disorder** | NR | ↑ | |
| | | **Schizophrenia** | NR | ↔ | |
| | | **PTSD** | NR | ↑ | |
| | | **Psychiatric hospitalization** | NR | ↔ | |
| | | **Charlson Comorbidity Index score** | NR | ↔ | |
| | | **Insomnia** | NR | ↔ | |
| | | **TBI** | NR | ↔ | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Chronic pain** | NR | ↔ | |
| | | **Enlisted rank** | NR | ↑ | |
| | | **Service component** (guard or reserve compared to active duty) | NR | ↑ | |
| **Goodin, 2019**[16]<br>Case-control<br>Moderate | Active Military<br><1,000<br>DoD | **Failed or failing intimate relationship** | ↑ | ↑ | Age, sex, education, race/ethnicity, marital status, rank, and time since last deployment |
| | | **Prior self-harm or attempt** | ↔ | ↑ | |
| | | **DSM-IV diagnosed mood disorder** | ↑ | ↑ | |
| | | **Substance abuse** | ↑ | ↑ | |
| | | **Court proceedings, nonjudicial punishment, or a civil legal problem** (*eg*, child custody dispute, other litigation) | ↔ | ↔ | |
| | | **Excessive debt or bankruptcy** | ↔ | ↔ | |
| | | **Work difficulties** (hazing, coworker issues) | ↔ | ↔ | |
| **Griffith, 2017**[17]<br>Case-control<br>Moderate | Active Military<br>1,000-9,999<br>Army & National Guard Personnel System | **Unmarried** | ↔ | NR | Specific adjustments to model not reported |
| | | **Military occupation** | ↔ | NR | |
| | | **Enlisted rank** | ↑ | NR | |
| | | **Deployment** | ↔ | NR | |
| | | **Less time in service** | ↑ | NR | |
| | | **Part time military status** (compared to full-time) | ↑ | NR | |
| **Hoffmire, 2015**[54]<br>Cross-sectional<br>Moderate | Veteran<br>≥100,000 | **VHA utilization** (compared to Veterans who do not use VHA) | ↓ | NR | Age, gender |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | VHA, DoD, State death certificate records | | | | |
| **Hostetter, 2019**[55]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>VA, DoD, SDR, NDI | **Traumatic brain injury** | ↑ | NR | Age, gender, psychiatric conditions, comorbidities, and other chronic conditions |
| **Hyman, 2012**[18]<br>Cross-sectional<br>Moderate | Active Military (OEF/OIF)<br>≥100,000<br>DoD, SDR | **Marital change (got married or divorced)** | ↔ | NR | Any mental health diagnosis, number of deployments to OEF/OIF, and selective serotonin reuptake inhibitor prescriptions |
| | | **Prior attempt** | ↑ | NR | |
| | | **Mental health diagnosis** | ↑ | NR | |
| | | **PTSD** | ↑ | NR | |
| | | **Mental health visit** | ↑ | NR | |
| | | **Substance misuse diagnosis** | ↑ | NR | |
| | | **TBI diagnosis** | ↑ | NR | |
| | | **Sleep aid prescription** | ↑ | NR | |
| | | **Change in rank (demotion)** | ↑ | NR | |
| | | **Enlisted rank** | ↑ | NR | |
| | | **Number of deployments** | ↑ | NR | |
| | | **Selective serotonin reuptake inhibitor prescriptions** | ↑ | NR | |
| **Ilgen, 2012**[36]<br>Retrospective Cohort<br>Low | Veteran (OEF/OIF)<br>≥100,000<br>VHA, NDI | **Any psychiatric condition** | ↑ | NR | Cox proportional hazards survival model for time to suicide, controlling for sex, age, and Veterans Integrated Service Networks, adjusted for clustering at the |
| | | **Substance use disorder** | ↑ | NR | |
| | | **Depression** | ↑ | NR | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Schizophrenia** | ↑ | NR | facility level using the covariance sandwich estimator. Separate survival models for each psychiatric diagnosis. |
| **Ilgen, 2013**[56]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>VHA, NDI | **Arthritis** | ↔ | NR | Age, sex, Charlson score, and concomitant psychiatric conditions |
| | | **Back pain** | ↑ | NR | |
| | | **Migraine** | ↑ | NR | |
| | | **Neuropathy** | ↔ | NR | |
| | | **Headache or tension headache** | ↔ | NR | |
| | | **Fibromyalgia** | ↔ | NR | |
| | | **Psychogenic pain** | ↑ | NR | |
| **Kang, 2015**[19]<br>Retrospective Cohort<br>Moderate | Veteran (OEF/OIF)<br>≥100,000<br>VHA, DoD, NDI | **Deployment** | ↓ | NR | Age at the start of follow-up, race, gender, marital status, service branch (Army, Marines/Air Force, and Navy), and rank (enlisted/officer) |
| | | **Ground troops** (Army/Marine compared to others) | ↔ | NR | |
| | | **Enlisted rank** | ↑ | NR | |
| | | **Time since discharge** | ↔ | NR | |
| | | **Unmarried** | ↑ | NR | |
| **Katz, 2012**[57]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>VHA, NDI, National Violent Death Reporting System | **VHA utilization for men under 30** | ↓ | NR | Age, gender |
| **Kimerling, 2016**[20]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>VHA, NDI | **Military sexual trauma** | ↑ | NR | Age, sex, medical morbidity, rurality, and mental health diagnoses |
| **LeardMann, 2013**[9] | | **Depression** | ↑ | NR | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| Prospective Cohort<br>Moderate | Veteran, Active Military<br>≥100,000<br>DoD, NDI, Millennium Cohort Study, Armed Forces Health Surveillance Center | **Manic depressive disorder** | ↑ | NR | Age, sex, depression, manic-depressive disorder, heavy or binge drinking, alcohol-related problems |
| | | **Panic or other anxiety disorder** | ↑ | NR | |
| | | **PTSD** | ↔ | NR | |
| | | **Alcohol related problems** | ↑ | NR | |
| | | **Physical component score** | ↔ | NR | |
| | | **Life stressors** | ↔ | NR | |
| | | **Military occupation** | ↔ | NR | |
| | | **Military rank** | ↔ | NR | |
| | | **Deployed** | ↔ | NR | |
| | | **Deployed with combat** | ↔ | NR | |
| | | **Number deployments** | ↔ | NR | |
| | | **Service branch** | ↔ | NR | |
| | | **Service component** | ↔ | NR | |
| | | **Time deployed** | ↓ | NR | |
| | | **Veteran status** | ↔ | NR | |
| **Louzon, 2016**[35]<br>Retrospective Cohort<br>Low | Veteran<br>≥100,000<br>VHA, NDI | **Suicidal ideation (PHQ9 item 9)** | ↑ | NR | Age, sex, and psychiatric diagnoses, PHQ9 items 1-8 |
| | | **Anxiety** | ↔ | NR | |
| | | **PTSD** | ↓ | NR | |
| | | **Substance use disorder** | ↑ | NR | |
| | | **Depression** | ↔ | NR | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Depressive severity** | ↑ | NR | |
| | | **Type of encounter in which PHQ9 administered** | ↔ | NR | |
| **Lynch, 2020**[44]<br>Retrospective Cohort<br>Moderate | Veteran<br>10,000-99,999<br>VHA | **Sexual minority status** | ↑ | NR | Age |
| **Martz, 2018**[58]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>(OEF/OIF)<br>VHA, DoD, NDI, DMDC | **Tinnitus diagnosis** | ↓ | NR | Tinnitus diagnosis, attempted self-harm encounters, audiology or mental-health clinic visits, co-occurring health conditions, and age at first health encounter |
| | | **Previous attempt or self-harm** | ↑ | NR | |
| | | **Tinnitus with depression and/or anxiety** | ↓ | NR | |
| | | **Audiology or mental health clinic visit** | ↑ | NR | |
| **McCarthy, 2014**[59]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>VHA, NDI | **Major depressive disorder** | ↑ | NR | BMI categories, VHA regional network, sociodemographic measures, and remaining study covariates |
| | | **Other depression** | ↑ | NR | |
| | | **PTSD** | ↓ | NR | |
| | | **Non-PTSD anxiety** | ↑ | NR | |
| | | **Bipolar disorder** | ↑ | NR | |
| | | **Schizophrenia** | ↑ | NR | |
| | | **Eating disorder** | ↔ | NR | |
| | | **Dementia** | ↔ | NR | |
| | | **Any VHA mental health treatment** | ↑ | NR | |
| | | **Substance use disorder** | ↑ | NR | |
| | | **COPD** | ↑ | NR | |
| | | **Head cancer** | ↑ | NR | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Hypertension** | ↓ | NR | |
| | | **Diabetes** | ↓ | NR | |
| | | **Autoimmune disease** | ↔ | NR | |
| | | **Hemi/paraplegia** | ↔ | NR | |
| | | **Overweight/obese** (compared to normal body mass index) | ↓ | NR | |
| **Naifeh, 2017**[10]<br>Prospective Cohort<br>Moderate | Active Military<br>10,000-99,999<br>DoD, STARRS, MHSDR, Theater Medical Data Store, TRANSCOM | **General neurocognitive factor score** | ↑ | ↑ | Gender, age at neurocognitive testing, education, race/ethnicity, and history of mental health diagnosis at testing |
| **Palframan, 2020**[27]<br>Retrospective Cohort<br>Low | Veteran<br>≥100,000<br>VHA, DoD, NDI | **Use of Health Care for Reentry Veterans** | ↔ | ↔ | Demographic and clinical characteristics |
| | | **Use of Veterans Justice Outreach** | ↔ | ↔ | |
| | | **Unmarried/single/divorced** | ↑ | ↑ | |
| | | **Homelessness** | ↔ | ↑ | |
| | | **Prior attempt** | ↑ | ↑ | |
| | | **Alcohol and/or drug use** | ↑ | ↑ | |
| | | **Anxiety** | ↑ | ↑ | |
| | | **Bipolar** | ↑ | ↑ | |
| | | **Depression** | ↑ | ↑ | |
| | | **PTSD** | ↑ | ↑ | |
| | | **Schizophrenia** | ↑ | ↑ | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| **Phillips, 2017**[11]<br>Prospective Cohort<br>Low | Active Military (OEF/OIF)<br>≥100,000<br>DoD, MHSDR, DMDC, Recruit Assessment Program survey | **High school nongraduate** | ↑ | NR | "Given the interest in mental health conditions (depression, PTSD, and adjustment disorder) and deployment, these were maintained a priori in the final main model. All other factors were manually removed sequentially until the final model included only those that were significant (P < 0.05) or that caused a change in the hazard ratio (10% or greater) for the main exposure, TBI." |
| | | **Smoking** | ↑ | NR | |
| | | **Military occupation** (in-service) | ↑ | NR | |
| | | **TBI** | ↑ | NR | |
| | | **Depression** | ↑ | NR | |
| | | **Relationship counseling** | ↑ | NR | |
| | | **PTSD** | ↓ | NR | |
| | | **Time deployed** | ↑ | NR | |
| | | **Adverse Childhood Experiences score** | ↑ | NR | |
| | | **No social support** | ↑ | NR | |
| **Ravindran, 2020**[60]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>DoD | **Army/Marines** (compared to others) | ↑ | NR | Sex, age, race, and ethnicity |
| | | **Service component** (active duty compared to reserves/guard) | ↑ | NR | |
| | | **Shorter time in service** | ↑ | NR | |
| **Reger, 2015**[45]<br>Retrospective Cohort<br>Low | Veteran (OEF/OIF)<br>Active Military<br>≥100,000<br>DoD, NDI | **Characterization of service at separation (not honorable or uncharacterized)** | ↑ | NR | Sex, age at cohort entry, educational attainment at cohort entry, race/ethnicity, and service branch at cohort entry |
| | | **Shorter time since separation from military service** | ↑ | | |
| **Riberiro, 2017**[61]<br>Retrospective Cohort<br>Moderate | Active Military<br>1,000-9,999<br>STARRS | **Inpatient, outpatient, or specialist mental health encounters 52 and 4 weeks prior to death** | ↑ | NR | Specific adjustments to model not reported |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| **Rosellini, 2017**[21]<br>Retrospective Cohort<br>Moderate | Active Military<br>10,000-99,999<br>STARRS | **Sexual assault victim status** | NR | ↑ | Number of follow-up months between the month of the assault and the month of starting treatment |
| **Ryan, 2020**[62]<br>Case-control<br>Moderate | Active Military<br>1,000-9,999<br>DoD | **Depression or bipolar disorder** | ↑ | NR | Bipolar disorders, depression disorders, adjustment disorders and unspecified mental disorders |
| | | **≥ 1 outpatient or inpatient encounter** | ↑ | NR | |
| **Schinka, 2016**[63]<br>Retrospective Cohort<br>Moderate | Veteran<br>10,000-99,999<br>VHA, NDI | **Homelessness** | ↑ | NR | Specific adjustments to model not reported |
| **Schinka, 2018**[64]<br>Retrospective Cohort<br>Moderate | Veteran<br>10,000-99,999<br>VHA, NDI | **Homelessness** | ↑ | NR | Diagnosed medical and psychiatric comorbidities, substance abuse, and use of VA |
| **Shen, 2016**[28]<br>Retrospective Cohort<br>Low | Veteran (OEF/OIF)<br>Active Military<br>≥100,000<br>NDI, TRICARE, DMDC | **Recently divorced** | ↑ | NR | All variables in table, plus sex, race, age, marital status, dependent quantity, rank, Armed Forces Qualifying Test percentile, and military occupational specialty |
| | | **Prior self-inflicted injuries** | ↑ | NR | |
| | | **Major depression** | ↑ | NR | |
| | | **Bipolar disorder** | ↑ | NR | |
| | | **Anxiety disorder** | ↑ | NR | |
| | | **Other psychotic disorder** | ↑ | NR | |
| | | **PTSD** | ↓ | NR | |
| | | **Substance use disorder** | ↑ | NR | |
| | | **Major non-drug related offense** | ↑ | NR | |
| | | **Demotion** | ↑ | NR | |
| | | **Military rank** | ↔ | NR | |
| | | **Deployed** | ↑ | NR | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Service branch** | ↔ | NR | |
| | | **Service component (reserves vs active duty)** | ↓ | NR | |
| | | **Time since separation from service** | ↑ | NR | |
| **Shiner, 2020**[46]<br>Retrospective Cohort<br>Low | Veteran<br>(Vietnam, OEF/OIF)<br>≥100,000<br>VHA, DoD, NDI | **Demographics** (age, sex, race, rurality) | ↔ | NR | Age, race, sex rurality |
| **Skopp, 2016**[22]<br>Case-control<br>Moderate | Active Military<br>10,000-99,999<br>DoD | **Failed intimate relationship w/in last 90 days** | ↑ | ↑ | Age, sex, education, race/ethnicity, marital status, rank, year, deployment to Iraq, deployment to Afghanistan, duration of last deployment, and time since last deployment |
| | | **Prior history of self-harm, anytime in the past** | ↔ | ↑ | |
| | | **Any DSM-IV mood disorder any time in the past** | ↑ | ↑ | |
| | | **History of substance abuse, last 90 days** | ↑ | ↑ | |
| | | **Military or civilian legal problems, last 90 days** | ↑ | ↔ | |
| **Trofimovich, 2013**[47]<br>Retrospective Cohort<br>Low | Active Military<br>(OEF/OIF)<br>1,000-9,999<br>DoD, DMDC | **Combined infantry, gun crews, and seamanship specialists** | ↑ | NR | Sex, age group, and history of deployment to OEF/OIF |
| **Ursano, 2015**[65]<br>Retrospective Cohort<br>Moderate | Active Military<br>(OEF/OIF)<br>≥100,000<br>DoD, STARRS | **Gender** (female) | NR | ↑ | Sociodemographic characteristics (sex, age at entry into Army service, current age, race, educational level, and marital status) with suicide attempts, followed by separate models evaluating incremental predictive effects of the length of service, |
| | | **Age at Army entry** (≥ 25 years) | NR | ↑ | |
| | | **Current age** (< 21) | NR | ↑ | |
| | | **Education level** (< high school) | NR | ↑ | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Length of service** (1-2 years) | NR | ↑ | deployment status, and the presence or recency of a mental health diagnosis |
| | | **Deployment status** (never or previously) | NR | ↑ | |
| | | **Time since most recent mental health diagnosis** (1 month) | NR | ↑ | |
| **Ursano, 2016**[66]<br>Retrospective Cohort<br>Moderate | Active Military (OEF/OIF)<br>≥100,000<br>DoD, STARRS | **Gender** (female) | NR | ↑ | Logistic regression models included a dummy predictor for calendar month and year to control for increasing rates of suicide attempt from 2004 to 2009. Coefficients of other predictors were averaged within-month associations based on the assumption that effects of other predictors do not vary over time. |
| | | **Education** (< high school) | NR | ↑ | |
| | | **Time in Service** (1-2, 3-4 years) | NR | ↑ | |
| | | **Mental health diagnosis** (depression, PTSD, SUD) | NR | ↑ | |
| **Ursano, 2017a**[48]<br>Retrospective Cohort<br>Low | Active Military<br>≥100,000<br>VHA, DoD, STARRS | **Combat arms or combat medic** | ↑ | NR | Logistic regression models include gender, age, age at Army entry, current age, race/ethnicity, education, marital status, time in service (≤ 1 year, 2 years, 3-4 years, 5-10 years, > 10 years), deployment status (never, currently, or previously deployed), and military occupation. The model also included a dummy predictor variable for calendar month and year to control for secular trends |
| **Ursano, 2017b**[33]<br>Retrospective Cohort<br>Moderate | Active Military<br>10,000-99,999<br>DoD, STARRS | **Military occupation** (combat arms) | NR | ↑ | Logistic regression models that included basic sociodemographic and service-related variables (sex, age at entry into the Army, current age, race/ethnicity, educational level, marital status, time in service, deployment status, unit size, and number of past-suicide attempts) and included a dummy predictor variable for calendar month and year to control for secular trends |
| | | **Unit suicide attempts in the past year** (>1) | NR | ↑ | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| **Ursano, 2017c**[32]<br>Retrospective Cohort<br>Moderate | Active Military (OEF/OIF)<br>≥100,000<br>DoD, STARRS | **IED frequency per month** | NR | ↑ | The multivariate model included sociodemographic variables (gender, current age, race, education, marital status), service-related variables (rank, time in service, deployment status), historical time (January 2004 to May 2007 vs June 2007 to December 2009), and combat operational variables (IED frequency [scaled in multiples of 1,000], combat deaths and injuries [scaled in multiples of 100], soldiers deployed and redeployed [scaled in multiples of 100,000]. |
| | | **Deployment status** (never) | NR | ↑ | |
| | | **Time in service** (< 2 years) | NR | ↑ | |
| **Ursano, 2018a**[23]<br>Retrospective Cohort<br>Moderate | Active Military<br>≥100,000<br>DoD, STARRS | **Gender** (female) | NR | ↑ | Each 2-way interaction was examined separately in a model that included all of the sociodemographic and service-related variables but not the other 2-way interactions |
| | | **Education** (< High school) | NR | ↑ | |
| | | **Age at army entry** (< 21) | NR | ↑ | |
| | | **Time in service** (1, 2, 3-4 years) | NR | ↑ | |
| | | **Deployment status** (never or previously deployed) | NR | ↑ | |
| | | **Delayed Promotion** (late) | NR | ↑ | |
| | | **Demotion in past year** | NR | ↑ | |
| | | **Military occupation** (combat arms or combat medic) | NR | ↑ | |
| | | **Marital Status** | NR | ↔ | |
| **Ursano, 2018b**[25]<br>Retrospective Cohort<br>Moderate | Active Military<br>10,000-99,999<br>STARRS | **Marital status (never married)** | NR | ↑ | Univariate associations |
| | | **Education (high school, some college, and ≥ college)** | NR | ↓ | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Risk Factors Reported | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Race (black, Hispanic, Asian, and other)** | NR | ↓ | |
| | | **Military Rank (E1 – E2, E3)** | NR | ↑ | |
| **Ursano, 2018c**[24]<br>Retrospective Cohort<br>Moderate | Active Military<br>10,000-99,999<br>DoD, STARRS | **Never or previously married** | NR | ↔ | Sociodemographic characteristics (sex, race/ethnicity, educational level, and marital status), age at US Army entry, time in service before first deployment, duration of first deployment, dwell time, a dummy predictor variable for calendar month and year to control for secular trends, deployment status, and previous mental health diagnosis before second deployment |
| | | **Previously deployed** | NR | ↑ | |
| | | **Previous mental health diagnosis before second deployment** | NR | ↑ | |
| | | **Duration of first deployment, >13 months** | NR | ↑ | |
| | | **Dwell Time, <6 months** | NR | ↑ | |
| | | **Deployment status (previously deployed)** | NR | ↑ | |
| | | **Time in service before first deployment (≤ 12 months)** | NR | ↑ | |
| **Ursano, 2018d**[26]<br>Retrospective Cohort<br>Moderate | Active Military<br>≥100,000<br>DoD, STARRS | **Any history of family violence** | NR | ↑ | Socio-demographics (current age, race/ethnicity, education, marital status) and service-related variables (age at Army entry, time in service [1-2 years, 3-4 years, 5+ years], deployment status [never, currently, or previously deployed], and military occupation [combat arms vs. others]). Models also included a dummy predictor variable for calendar month and year to control for secular trends. |

CMS=Centers for Medicare and Medicaid Services; DMDC= Defense Manpower Data Center; DoD=Department of Defense; IED=improvised explosive device; NDI=National Death Index; OEF/OIF=Operation Enduring Freedom/Operation Iraqi Freedom; MHSDR=Military Health System Data Repository; NR=not reported; PC-PTSD=Primary Care Posttraumatic Stress Disorder Screen; PTSD=Posttraumatic Stress Disorder; SHOS-B=Soldiers Health Outcomes Study; STARRS=Study to Assess Risk and Resilience in Servicemembers; SDR=VA/DoD National Suicide Data Repository; TBI=traumatic brain injury; VHA=Veteran's Health Administration; VA SPAN=Veteran's Administration's Suicide Prevention Applications Network

## Appendix Table D2. Study Characteristics and Outcomes Related to Military Occupation as a Risk Factor Among Low and Moderate Risk of Bias Studies (k=7)

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Military Occupational Categories (Risk Factor) | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| **Griffith, 2017**[17]<br>Case-control<br>Moderate | Active Military<br>1,000-9,999<br>Army & National Guard Personnel System | **Combat military occupation (yes/no)** | ↔ | NR | Specific adjustments to model not reported |
| **LeardMann, 2013**[9]<br>Prospective Cohort<br>Moderate | Veteran, Active Military<br>≥100,000<br>DoD, NDI, Millennium Cohort Study, Armed Forces Health Surveillance Center | **Combat specialist** | ↔ | NR | Age, sex, depression, manic-depressive disorder, heavy or binge drinking, alcohol-related problems |
| | | **Health care** | ↔ | NR | |
| | | **Functional support, service and supply** | ↔ | NR | |
| | | **Mechanical or electrical repair** | ↔ | NR | |
| | | **Other** | ↔ | NR | |
| **Phillips, 2017**[11]<br>Prospective Cohort<br>Low | Active Military (OEF/OIF)<br>≥100,000<br>DoD, MHSDR, DMDC, Recruit Assessment Program survey | **Occupational Grade E01 – E03 (reference group)** | ↔ | NR | "Given the interest in mental health conditions (depression, PTSD, and adjustment disorder) and deployment, these were maintained a priori in the final main model. All other factors were manually removed sequentially until the final model included only those that were significant (P < 0.05) or that caused a change in the hazard ratio (10% or greater) for the main exposure, TBI." |
| | | **Occupational Grade E04 – E07** | ↓ | NR | |
| **Trofimovich, 2013**[47]<br>Retrospective Cohort<br>Low | Active Military (OEF/OIF)<br>1,000-9,999<br>DoD, DMDC | **Infantry, gun crews, and seamanship specialists** | ↔ | NR | Sex, age group, and history of deployment to OEF/OIF |
| | | **Electrical/mechanical equipment repairers** | ↔ | NR | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Military Occupational Categories (Risk Factor) | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | **Functional support and administration** | ↔ | NR | |
| | | **Service and supply handlers** | ↔ | NR | |
| | | **Communications and intelligence specialists** | ↔ | NR | |
| | | **Electronic equipment repairers** | ↔ | NR | |
| | | **Health care specialists** | ↔ | NR | |
| | | **Other technical and allied specialists** | ↔ | NR | |
| | | **Craftsworkers** | ↔ | NR | |
| | | **Tactical operations officers** | ↔ | NR | |
| | | **Health care officers** | ↔ | NR | |
| | | **Groups with < 25** | ↔ | NR | |
| **Ursano, 2017a**[48]<br>Retrospective Cohort<br>Low | Active Military<br>≥100,000<br>VHA, DoD, STARRS | **Combat arms** | ↑ | NR | Logistic regression models include gender, age, age at Army entry, current age, race/ethnicity, education, marital status, time in service (≤ 1 year, 2 years, 3-4 years, 5-10 years, >10 years), deployment status (never, currently, or previously deployed), and military occupation. The model also included a dummy predictor variable for calendar month and year to control for secular trends. |
| | | **Special Forces** | ↔ | NR | |
| | | **Combat medic** | ↑ | NR | |
| | | **Other** | ↔ | NR | |
| **Ursano, 2017b**[33] | Active Military | **Combat arms** | NR | ↑ | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Military Occupational Categories (Risk Factor) | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| Retrospective Cohort<br>Moderate | 10,000-99,999<br>DoD, STARRS | **Other** | NR | ↔ | Logistic regression models that included basic sociodemographic and service-related variables (sex, age at entry into the Army, current age, race/ethnicity, educational level, marital status, time in service, deployment status, unit size, and number of past-suicide attempts) and included a dummy predictor variable for calendar month and year to control for secular trends |
| **Ursano, 2018a**[23]<br>Retrospective Cohort<br>Moderate | Active Military<br>≥100,000<br>DoD, STARRS | Combat arms | NR | ↑ | Each 2-way interaction was examined separately in a model that included all of the sociodemographic and service-related variables but not the other 2-way interactions |
| | | Special forces | NR | ↔ | |
| | | Combat medic | NR | ↑ | |
| | | Other | NR | ↔ | |

DMDC= Defense Manpower Data Center; DoD=Department of Defense; NDI=National Death Index; OEF/OIF=Operation Enduring Freedom/Operation Iraqi Freedom; MHSDR=Military Health System Data Repository; NR=not reported; PTSD=Posttraumatic Stress Disorder; STARRS=Study to Assess Risk and Resilience in Servicemembers; TBI=traumatic brain injury; VHA=Veteran's Health Administration;

## Appendix Table D3. Study Characteristics and Outcomes Related to Deployment Status Among Low and Moderate Risk of Bias Studies (k=14)

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Deployment Status Variable<br>(study categories) | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| **Barth, 2016**[31]<br>Retrospective Cohort<br>Moderate | Veteran (Gulf War)<br>≥100,000<br>VHA, DoD, NDI, Social Security | **Gulf War Veteran status**<br>(compared to non-Gulf War Veterans) | ↔ | NR | Race, branch of service, type of unit, and age |
| **Bernecker, 2019**[6]<br>Prospective Cohort<br>Moderate | Active Military<br>10,000-99,999<br>DoD, STARRS, MHSDR | **Number of prior deployments (range 0 – 4)** | NR | ↑ | Predictors with significant univariate associations with SA were combined to generate within-category multivariate models, which were then trimmed to exclude nonsignificant predictors. The predictors in each of these within-category multivariate models were then combined into a final second-stage model. Also adjusted for seasonality and months since survey. |
| **Bullman, 2019**[51]<br>Retrospective Cohort<br>Moderate | Veteran<br>≥100,000<br>VHA, DoD, SDR, NDI | **Deployment to Bosnia/Kosovo (never deployed is referent)** | ↓ | NR | Age of entry, race, and sex |
| **Griffith, 2017**[17]<br>Case-control<br>Moderate | Active Military<br>1,000-9,999<br>Army & National Guard Personnel System | **Deployed (yes/no)** | ↔ | NR | Specific adjustments to model not reported |
| **Hyman, 2012**[18]<br>Cross-sectional<br>Moderate | Active Military (OEF/OIF)<br>≥100,000<br>DoD, SDR | **Number of deployments to OEF/OIF: 0** | ↔ | NR | Any mental health diagnosis, number of deployments to OEF/OIF, and selective serotonin reuptake inhibitor prescriptions |
| | | **Number of deployments to OEF/OIF: 1** | ↑ | NR | |
| | | **Number of deployments to OEF/OIF: ≥ 2** | ↑ | NR | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Deployment Status Variable<br>(study categories) | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| **Ilgen, 2012**[36]<br>Retrospective Cohort<br>Low | Veteran (OEF/OIF)<br>≥100,000<br>VHA, NDI | **Deployment to OEF/OIF (yes/no) (no referent group)** | ↑ | NR | Cox proportional hazards survival model for time to suicide, controlling for sex, age, and Veterans Integrated Service Networks, adjusted for clustering at the facility level using the covariance sandwich estimator. Separate survival models for each psychiatric diagnosis. |
| **Kang, 2015**[19]<br>Retrospective Cohort<br>Moderate | Veteran (OEF/OIF)<br>≥100,000<br>VHA, DoD, NDI | **Deployment (yes/no) (no referent group)** | ↓ | NR | Age at the start of follow-up, race, gender, marital status, service branch (Army, Marines/Air Force, and Navy), and rank (enlisted/officer) |
| **LeardMann, 2013**[9]<br>Prospective Cohort<br>Moderate | Veteran, Active Military<br>≥100,000<br>DoD, NDI, Millennium Cohort Study, Armed Forces Health Surveillance Center | **OEF/OIF not deployed (referent)** | | NR | Age, sex, depression, manic-depressive disorder, heavy or binge drinking, alcohol-related problems |
| | | **OEF/OIF deployed without combat** | ↔ | NR | |
| | | **OEF/OIF deployed with combat** | ↔ | NR | |
| | | **Number of deployments: 0 (referent)** | ↔ | NR | |
| | | **Number of deployments: 1** | ↔ | NR | |
| | | **Number of deployments: >1** | ↔ | NR | |
| **Phillips, 2017**[11]<br>Prospective Cohort<br>Low | Active Military (OEF/OIF)<br>≥100,000<br>DoD, MHSDR, DMDC, Recruit Assessment Program survey | **OIF/OEF deployment: never (referent)** | | NR | "Given the interest in mental health conditions (depression, PTSD, and adjustment disorder) and deployment, these were maintained a priori in the final main model. All other factors were manually removed sequentially until the final model included only those that were significant (P < 0.05) or that caused a change in the hazard ratio (10% or greater) for the main exposure, TBI." |
| | | **OIF/OEF deployment: deployed** | ↓ | NR | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Deployment Status Variable<br>(study categories) | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| **Shen, 2016**[28]<br>Retrospective Cohort<br>Low | Veteran (OEF/OIF)<br>Active Military<br>≥100,000<br>NDI, TRICARE, DMDC | **Not deployed (referent)** | | NR | All variables in table, plus sex, race, age, marital status, dependent quantity, rank, Armed Forces Qualifying Test percentile, and military occupational specialty |
| | | **Deployed during the current quarter** | ↓ | NR | |
| | | **Deployed in the previous 3 quarters** | ↑ | NR | |
| | | **Deployed in the previous 4 to 7 quarters** | ↑ | NR | |
| | | **Deployed in the previous 8 to 11 quarters** | ↑ | NR | |
| | | **Deployed in the previous 12 to fifteen quarters** | ↑ | NR | |
| | | **Deployed in the previous 16 or more quarters** | ↔ | NR | |
| **Ursano, 2015**[65]<br>Retrospective Cohort<br>Moderate | Active Military (OEF/OIF)<br>≥100,000<br>DoD, STARRS | **Deployment status: never** | NR | ↑ | Sociodemographic characteristics (sex, age at entry into Army service, current age, race, educational level, and marital status) with suicide attempts, followed by separate models evaluating incremental predictive effects of the length of service, deployment status, and the presence or recency of a mental health diagnosis |
| | | **Deployment status: currently (referent)** | NR | | |
| | | **Deployment status: previously** | NR | ↑ | |
| **Ursano, 2017c**[32]<br>Retrospective Cohort<br>Moderate | Active Military (OEF/OIF)<br>≥100,000<br>DoD, STARRS | **Never deployed** | NR | ↑ | The multivariate model included sociodemographic variables (gender, current age, race, education, marital status), service-related variables (rank, time in service, deployment status), historical time (January 2004 to May 2007 vs June 2007 to December 2009), and combat operational variables (IED frequency [scaled in |
| | | **Currently deployed (referent)** | NR | | |
| | | **Previously deployed** | NR | ↑ | |

| Author, Year<br>Study Design<br>Sample Size | Population<br>Sample Size<br>Data Source(s) | Deployment Status Variable<br>(study categories) | Outcome and Direction of Effect* | | Adjustments to Model |
|---|---|---|---|---|---|
| | | | Deaths | Attempts | |
| | | | | | multiples of 1,000], combat deaths and injuries [scaled in multiples of 100], soldiers deployed and redeployed [scaled in multiples of 100,000]. |
| **Ursano, 2018a**[23]<br>Retrospective Cohort<br>Moderate | Active Military<br>≥100,000<br>DoD, STARRS | **Deployment status: Never** | NR | ↑ | Each 2-way interaction was examined separately in a model that included all of the sociodemographic and service-related variables but not the other 2-way interactions |
| | | **Deployment status: currently (referent)** | NR | | |
| | | **Deployment status: previously deployed** | NR | ↑ | |
| **Ursano, 2018c**[24]<br>Retrospective Cohort<br>Moderate | Active Military<br>10,000-99,999<br>DoD, STARRS | **Currently deployed (referent)** | NR | | Sociodemographic characteristics (sex, race/ethnicity, educational level, and marital status), age at US Army entry, time in service before first deployment, duration of first deployment, dwell time, a dummy predictor variable for calendar month and year to control for secular trends, deployment status, and previous mental health diagnosis before second deployment |
| | | **Previously deployed** | NR | ↑ | |

DMDC=Defense Manpower Data Center; DoD=Department of Defense; IED=improvised explosive device; NDI=National Death Index; OEF/OIF=Operation Enduring Freedom/Operation Iraqi Freedom; MHSDR=Military Health System Data Repository; NR=not reported; PTSD=Posttraumatic Stress Disorder; STARRS=Study to Assess Risk and Resilience in Servicemembers; SDR=VA/DoD National Suicide Data Repository; TBI=traumatic brain injury; VHA=Veteran's Health Administration