Psychiatric Symptoms of Veterans Surveyed Through Facebook Ads

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# Read data

**Most of this code was developed in Phase 1.** Results will be suppressed for brevity.

**Use only the REDCap survey data**

Notes on the REDCap identifier variables:

* If [consent] == 1, they started the eligibility survey;
* if == 0 or == NA, they didn't.
* If [consent\_and\_eligibility\_complete] == 2, they finished the screener (whether eligible or ineligible);
* if == 0, they dropped out or never started.
* If [eligible] == 1, they completed the screener and were eligible;
* if == 0, they completed and were ineligible;
* if == NA , they dropped out or never started.
* If [veterans\_and\_social\_media\_use\_co] == 2, they finished the survey;
* if == 0, they dropped out or never started (this includes people who were ineligible or didn't consent).
* If [analytic\_sample] == 0, they completed the survey but were disqualified for data quality reasons;
* if == 1, they completed survey and was not disqualified for data quality reasons;
* if == NA, they didn't complete the survey.

Inclusion criteria

* Respondents who consented
* Eligible, ineligible, or missing eligibility indicator

**Number included: n = 1329**

Cleaning

* Parse out fba into 2 separate variables for image and text
* Assign indicator for survey participation, indSurveyParticipation
* analytic\_sample == 1: Participant completed survey and was not disqualified for data quality reasons
* Assign indicator for eligibility screener participation, indScreenerParticipation
* eligible == 1: Participant completed eligibility screener and was eligible to participate in full survey

## Use of VA health services

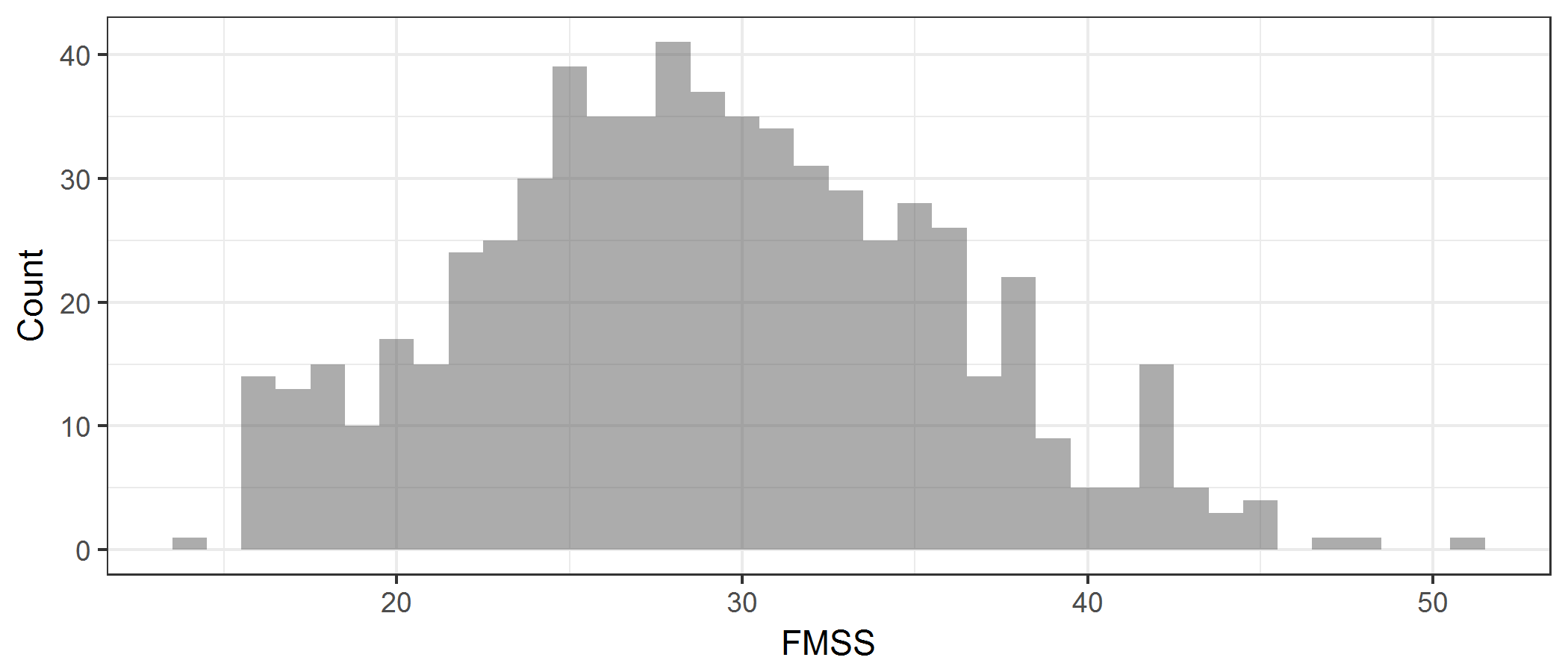
Recoding logic

* Primary analysis will code 9 (not sure) as 0 (No)
* Sensitivity analysis will exclude the 9 values from the analysis
* If va\_ever\_enrolled == FALSE & is.na(va\_use\_12mo), then recode va\_use\_12mo to FALSE
* If va\_use\_12mo == TRUE & va\_ever\_enrolled == FALSE, then recode va\_ever\_enrolled to TRUE
* Code indicators indVANeverEnrolled and indVANotUse12mo as the logical opposites of va\_ever\_enrolled and va\_use\_12mo

## Independent variables

* Score the Modified Facebook Measure of Social Support (FMSS)
* Reverse-scored items are fmss\_r7 through fmss\_r10

Check.



plot of chunk histogramFMSS

## Dependent variables

### Psychiatric symptoms

Code indicators for psychiatric disorder screening scales

* PTSD
  + Name of scale: PC-PTSD
  + Positive screen: ptsd\_intrusive + ptsd\_avoidant + ptsd\_guarded + ptsd\_numb + ptsd\_guilty 3
* Major depression
  + Name of scale: PHQ-2
  + Positive screen: phq\_interest + phq\_mood 3
* Alcohol misuse
  + Name of scale: AUDIT-C
  + Positive screen: auditc\_freq + auditc\_amount + auditc\_binge 4 for men, 3 for women

Presence of suicidality is defined as DSI-SS score 2. This cut-off score was chosen based on recommendations for population-based samples noted in [von Glischinski M Clin Psychol Psychotherapy 2015](http://onlinelibrary.wiley.com/doi/10.1002/cpp.2007/full)

* Score the DSI-SS inventory
* See [Joiner 2002](http://www.sciencedirect.com/science/article/pii/S0005796701000171)
* *Scores on each item range from 0 to 3 and, for the inventory, from 0 to 12, with higher scores reflecting greater severity of suicidal ideation.*

Check.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| yvariable | indPTSD | mean | sd | min | max | n | freq |
| ptsd | FALSE | 0.9 | 0.9 | 0 | 2 | 255 | 47.9% |
| ptsd | TRUE | 4.2 | 0.8 | 3 | 5 | 277 | 52.1% |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| yvariable | indPHQ | mean | sd | min | max | n | freq |
| phq | FALSE | 0.9 | 0.9 | 0 | 2 | 448 | 72.3% |
| phq | TRUE | 4.5 | 1.2 | 3 | 6 | 172 | 27.7% |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| yvariable | indAuditC | mean | sd | min | max | n | freq |
| auditc | FALSE | 1.8 | 0.8 | 1 | 3 | 246 | 49.0% |
| auditc | TRUE | 5.8 | 2.1 | 3 | 12 | 256 | 51.0% |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| yvariable | indDSISS | mean | sd | min | max | n | freq |
| dsiss | FALSE | 0.1 | 0.3 | 0 | 1 | 482 | 78.2% |
| dsiss | TRUE | 3.9 | 1.6 | 2 | 9 | 134 | 21.8% |

## Covariates

* Social media platforms used: sm\_used\_\_\_1, ..., sm\_used\_\_\_7, sm\_used\_\_\_99, sm\_used\_other
* Recode the following sm\_used\_other values such that sm\_used\_\_\_99 = 0
  + I use Wikipedia to read about illnesses I don't have; it's a curiosity/hobby thing.
  + just in person
  + Just plain internet search
  + TV/phone conversations, veterans group meetings
  + google; bing
  + aol
  + e-mail
  + Web MD
  + webmd
* Offline social contact: comm\_inperson
* History of suicidal ideation and suicide attempts
* suicide\_considered\_ever
* suicide\_considered\_12mo
* suicide\_attempts

Check.

|  |  |  |
| --- | --- | --- |
| smOther | sm\_used\_other | n |
| FALSE |  | 1289 |
| FALSE | aol | 1 |
| FALSE | e-mail | 1 |
| FALSE | google; bing | 1 |
| FALSE | I use Wikipedia to read about illnesses I don't have; it's a curiosity/hobby thing. | 1 |
| FALSE | just in person | 1 |
| FALSE | Just plain internet search | 1 |
| FALSE | TV/phone conversations, veterans group meetings | 1 |
| FALSE | Web MD, | 1 |
| FALSE | webmd | 1 |
| TRUE | 4chan | 2 |
| TRUE | Gmail Hangouts; Reddit.com | 1 |
| TRUE | Google+ | 2 |
| TRUE | I used LiveJournal for the majority of my service as well as my deployment to Iraq | 1 |
| TRUE | light fighter | 1 |
| TRUE | Linked In | 1 |
| TRUE | LinkedIn, Snapchat | 1 |
| TRUE | LiveJournal | 1 |
| TRUE | MIL.MIL | 1 |
| TRUE | Ravelry Forums | 1 |
| TRUE | reddit | 4 |
| TRUE | Reddit | 5 |
| TRUE | Reddit, 4Chan | 1 |
| TRUE | Snao Chat | 1 |
| TRUE | snapchat | 3 |
| TRUE | Snapchat | 1 |
| TRUE | SnapChat | 1 |
| TRUE | vetsprevail,patients like me | 1 |
| TRUE | webmd, mayoclinic,wikipedia, va | 1 |
| TRUE | www.coping-with-epilepsy.com | 1 |

|  |  |
| --- | --- |
| countSocialMediaExclFB | n |
| 0 | 1059 |
| 1 | 154 |
| 2 | 80 |
| 3 | 22 |
| 4 | 12 |
| 5 | 2 |

|  |  |
| --- | --- |
| comm\_inperson | n |
| Several times a day | 202 |
| Once a day | 74 |
| A few times a week | 135 |
| Once a week | 80 |
| Every few weeks or less often | 209 |
| NA | 629 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| indSuicideConsideredEver | indSuicideConsidered12mo | indSuicideAttempt | countSuicideAttempts | n |
| NA | NA | NA | NaN | 713 |
| FALSE | FALSE | FALSE | 0 | 350 |
| TRUE | FALSE | FALSE | 0 | 144 |
| TRUE | FALSE | TRUE | 1 | 34 |
| TRUE | TRUE | FALSE | 0 | 29 |
| TRUE | FALSE | TRUE | 2 | 19 |
| TRUE | TRUE | TRUE | 1 | 11 |
| TRUE | FALSE | TRUE | 3 | 9 |
| TRUE | TRUE | TRUE | 3 | 8 |
| TRUE | TRUE | TRUE | 2 | 7 |
| TRUE | FALSE | TRUE | 4 | 2 |
| TRUE | FALSE | TRUE | 5 | 2 |
| TRUE | TRUE | TRUE | 5 | 1 |

# Research Question 1

Is perceived social support received from Facebook (FMSS) associated with lower rates of

* Positive screens for psychiatric disorders
* PC-PTSD
* PHQ-2
* AUDIT-C
* Positive screen for suicidality?
* DSI-SS

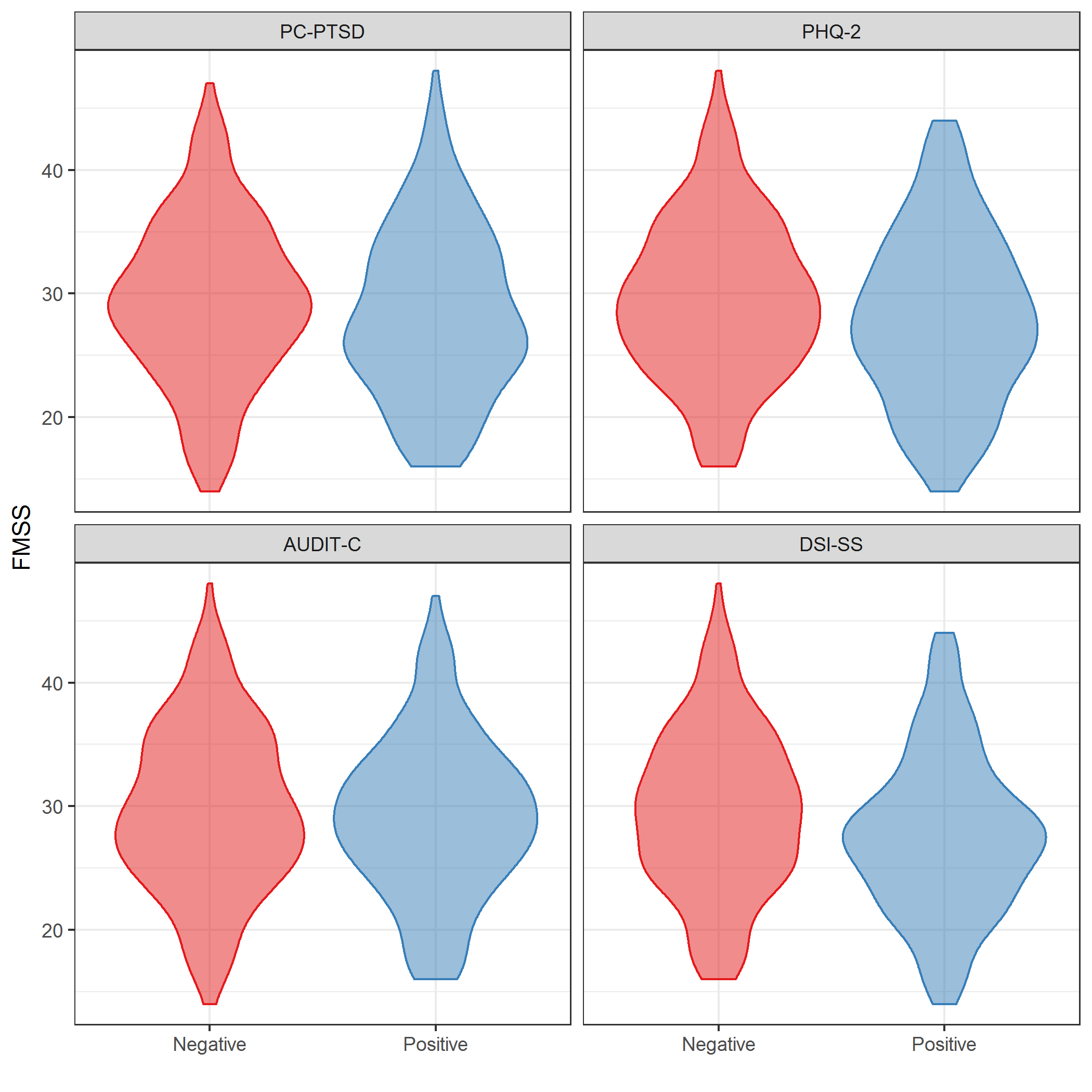
## Unadjusted comparisons

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| yvariable | indPTSD | mean | sd | min | max | n | freq |
| fmss | FALSE | 29.4 | 6.6 | 14 | 47 | 245 | 47.4% |
| fmss | TRUE | 28.4 | 6.8 | 16 | 48 | 272 | 52.6% |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| yvariable | indPHQ | mean | sd | min | max | n | freq |
| fmss | FALSE | 29.5 | 6.4 | 16 | 48 | 436 | 72.3% |
| fmss | TRUE | 28.0 | 6.8 | 14 | 44 | 167 | 27.7% |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| yvariable | indAuditC | mean | sd | min | max | n | freq |
| fmss | FALSE | 29.7 | 6.6 | 14 | 48 | 241 | 49.4% |
| fmss | TRUE | 29.1 | 6.4 | 16 | 47 | 247 | 50.6% |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| yvariable | indDSISS | mean | sd | min | max | n | freq |
| fmss | FALSE | 29.5 | 6.6 | 16 | 48 | 469 | 78.3% |
| fmss | TRUE | 27.6 | 6.4 | 14 | 44 | 130 | 21.7% |



plot of chunk plot2Groups

## Adjusted comparisons

Filter subjects with missing covariates.

### PC-PTSD

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| model | term | oddsratio | std.error | statistic | p.value |
| Unadjusted | (Intercept) | 2.092 | 0.395 | 1.870 | 0.062 |
| Unadjusted | fmss | 0.978 | 0.013 | -1.664 | 0.096 |
| Adjusted | (Intercept) | 0.743 | 0.464 | -0.642 | 0.521 |
| Adjusted | fmss | 0.981 | 0.015 | -1.307 | 0.191 |
| Adjusted | countSocialMediaExclFB | 1.027 | 0.097 | 0.270 | 0.787 |
| Adjusted | comm\_inpersonOnce a day | 1.419 | 0.348 | 1.006 | 0.315 |
| Adjusted | comm\_inpersonA few times a week | 1.321 | 0.274 | 1.015 | 0.310 |
| Adjusted | comm\_inpersonOnce a week | 1.918 | 0.333 | 1.956 | 0.050 |
| Adjusted | comm\_inpersonEvery few weeks or less often | 2.770 | 0.251 | 4.060 | 0.000 |
| Adjusted | indSuicideConsideredEverTRUE | 2.085 | 0.211 | 3.484 | 0.000 |
| Adjusted | countSuicideAttempts | 1.675 | 0.175 | 2.952 | 0.003 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| model | null.deviance | df.null | logLik | AIC | BIC | deviance | df.residual |
| Unadjusted | 704.395 | 508 | -350.803 | 705.606 | 714.071 | 701.606 | 507 |
| Adjusted | 704.395 | 508 | -318.709 | 655.418 | 693.510 | 637.418 | 500 |

### PHQ-2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| model | term | oddsratio | std.error | statistic | p.value |
| Unadjusted | (Intercept) | 1.147 | 0.416 | 0.330 | 0.741 |
| Unadjusted | fmss | 0.963 | 0.014 | -2.672 | 0.008 |
| Adjusted | (Intercept) | 0.330 | 0.489 | -2.268 | 0.023 |
| Adjusted | fmss | 0.970 | 0.015 | -2.005 | 0.045 |
| Adjusted | countSocialMediaExclFB | 0.972 | 0.103 | -0.278 | 0.781 |
| Adjusted | comm\_inpersonOnce a day | 0.999 | 0.410 | -0.003 | 0.998 |
| Adjusted | comm\_inpersonA few times a week | 0.985 | 0.314 | -0.048 | 0.961 |
| Adjusted | comm\_inpersonOnce a week | 2.073 | 0.329 | 2.216 | 0.027 |
| Adjusted | comm\_inpersonEvery few weeks or less often | 2.642 | 0.259 | 3.752 | 0.000 |
| Adjusted | indSuicideConsideredEverTRUE | 2.969 | 0.218 | 4.998 | 0.000 |
| Adjusted | countSuicideAttempts | 1.232 | 0.123 | 1.699 | 0.089 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| model | null.deviance | df.null | logLik | AIC | BIC | deviance | df.residual |
| Unadjusted | 703.22 | 595 | -347.957 | 699.914 | 708.694 | 695.914 | 594 |
| Adjusted | 703.22 | 595 | -312.064 | 642.127 | 681.639 | 624.127 | 587 |

### AUDIT-C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| model | term | oddsratio | std.error | statistic | p.value |
| Unadjusted | (Intercept) | 1.535 | 0.421 | 1.018 | 0.309 |
| Unadjusted | fmss | 0.987 | 0.014 | -0.962 | 0.336 |
| Adjusted | (Intercept) | 0.897 | 0.472 | -0.231 | 0.818 |
| Adjusted | fmss | 0.990 | 0.014 | -0.701 | 0.484 |
| Adjusted | countSocialMediaExclFB | 1.061 | 0.095 | 0.616 | 0.538 |
| Adjusted | comm\_inpersonOnce a day | 1.268 | 0.338 | 0.704 | 0.482 |
| Adjusted | comm\_inpersonA few times a week | 1.150 | 0.263 | 0.532 | 0.595 |
| Adjusted | comm\_inpersonOnce a week | 1.828 | 0.327 | 1.846 | 0.065 |
| Adjusted | comm\_inpersonEvery few weeks or less often | 1.656 | 0.247 | 2.041 | 0.041 |
| Adjusted | indSuicideConsideredEverTRUE | 1.481 | 0.210 | 1.876 | 0.061 |
| Adjusted | countSuicideAttempts | 0.876 | 0.131 | -1.009 | 0.313 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| model | null.deviance | df.null | logLik | AIC | BIC | deviance | df.residual |
| Unadjusted | 670.834 | 483 | -334.953 | 673.906 | 682.270 | 669.906 | 482 |
| Adjusted | 670.834 | 483 | -329.692 | 677.384 | 715.023 | 659.384 | 475 |

### DSI-SS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| model | term | oddsratio | std.error | statistic | p.value |
| Unadjusted | (Intercept) | 1.025 | 0.450 | 0.056 | 0.956 |
| Unadjusted | fmss | 0.955 | 0.016 | -2.933 | 0.003 |
| Adjusted | (Intercept) | 0.250 | 0.547 | -2.533 | 0.011 |
| Adjusted | fmss | 0.958 | 0.017 | -2.544 | 0.011 |
| Adjusted | countSocialMediaExclFB | 1.056 | 0.109 | 0.501 | 0.616 |
| Adjusted | comm\_inpersonOnce a day | 0.950 | 0.463 | -0.111 | 0.911 |
| Adjusted | comm\_inpersonA few times a week | 1.097 | 0.333 | 0.277 | 0.782 |
| Adjusted | comm\_inpersonOnce a week | 1.432 | 0.358 | 1.004 | 0.315 |
| Adjusted | comm\_inpersonEvery few weeks or less often | 1.572 | 0.290 | 1.557 | 0.119 |
| Adjusted | indSuicideConsideredEverTRUE | 5.764 | 0.254 | 6.898 | 0.000 |
| Adjusted | countSuicideAttempts | 1.258 | 0.121 | 1.893 | 0.058 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| model | null.deviance | df.null | logLik | AIC | BIC | deviance | df.residual |
| Unadjusted | 622.664 | 595 | -306.892 | 617.784 | 626.565 | 613.784 | 594 |
| Adjusted | 622.664 | 595 | -262.037 | 542.074 | 581.586 | 524.074 | 587 |