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

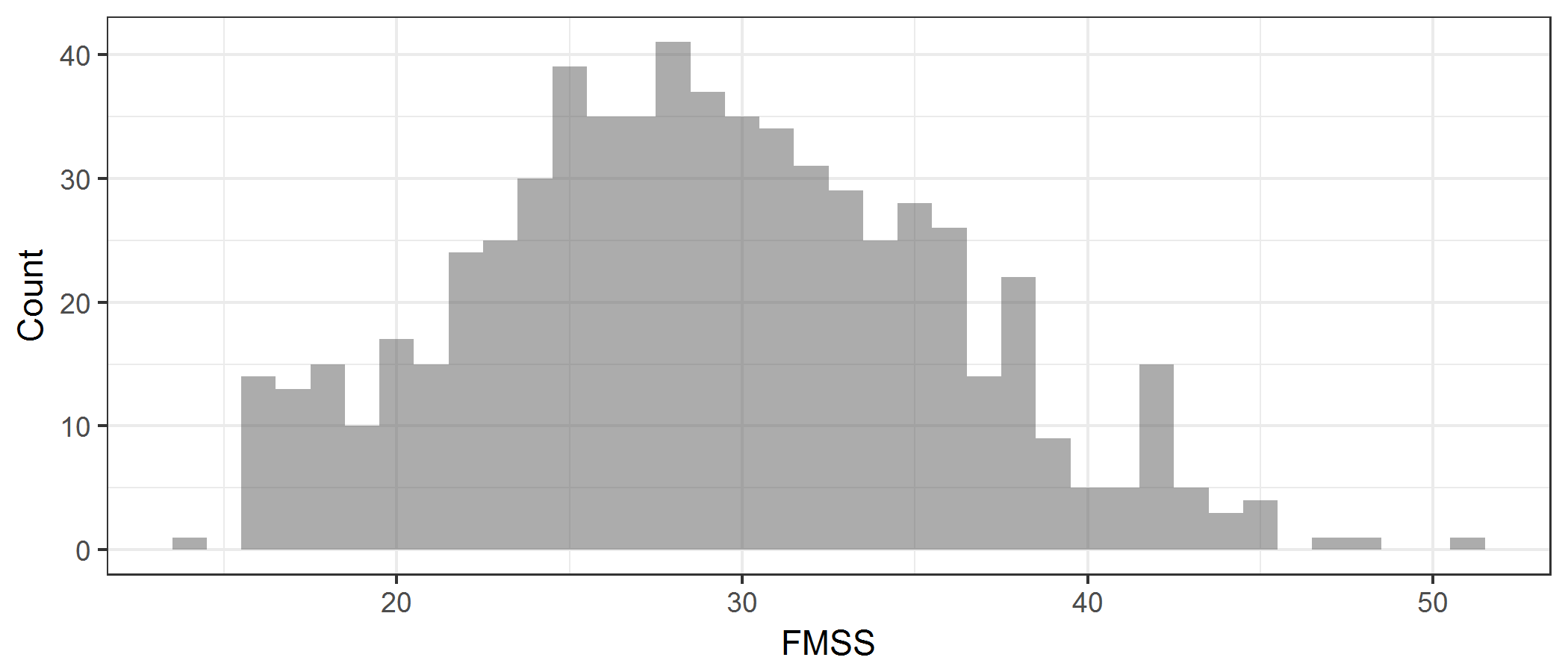
Recoding logic

* 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

## 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

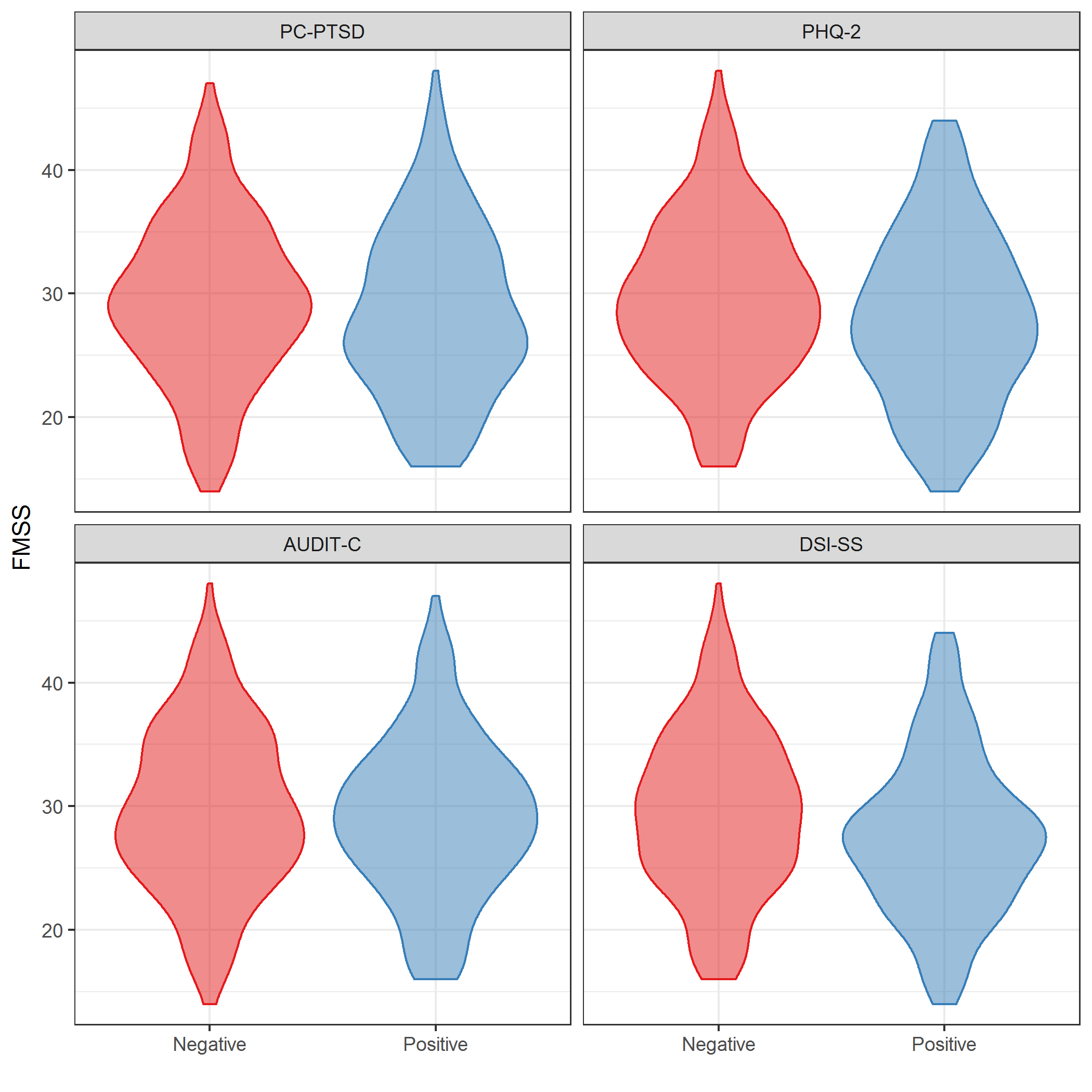
## Unadjusted comparisons

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 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

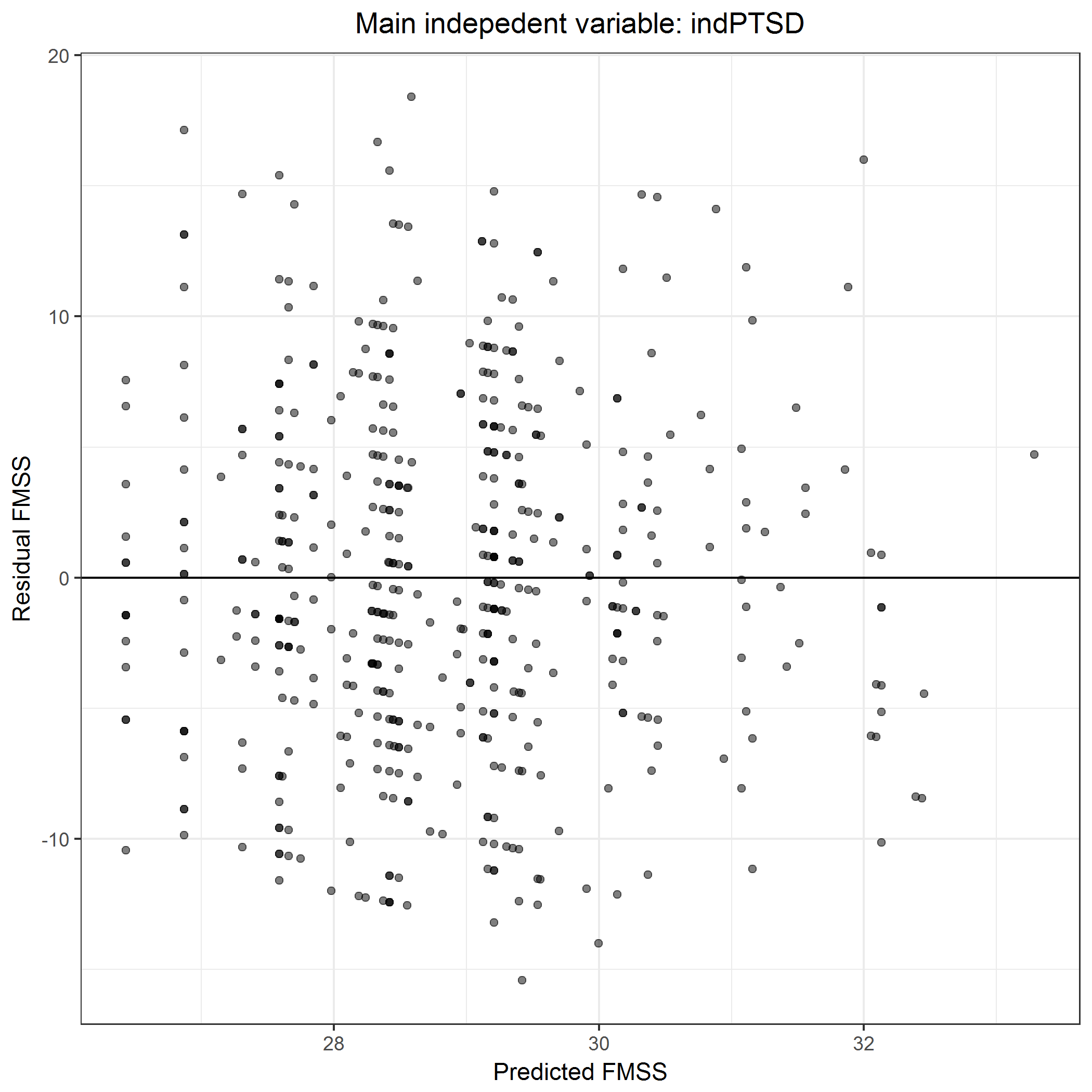
Filter subjects with missing covariates.

### PC-PTSD

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| model | term | estimate | std.error | statistic | p.value |
| Unadjusted | (Intercept) | 29.372 | 0.431 | 68.149 | 0.000 |
| Unadjusted | indPTSDTRUE | -0.994 | 0.595 | -1.670 | 0.096 |
| Adjusted | (Intercept) | 29.207 | 0.664 | 43.998 | 0.000 |
| Adjusted | indPTSDTRUE | -0.834 | 0.629 | -1.326 | 0.185 |
| Adjusted | countSocialMediaExclFB | 0.975 | 0.297 | 3.284 | 0.001 |
| Adjusted | comm\_inpersonOnce a day | -0.081 | 1.110 | -0.073 | 0.942 |
| Adjusted | comm\_inpersonA few times a week | -0.045 | 0.866 | -0.052 | 0.959 |
| Adjusted | comm\_inpersonOnce a week | -1.226 | 1.033 | -1.187 | 0.236 |
| Adjusted | comm\_inpersonEvery few weeks or less often | -0.787 | 0.788 | -0.999 | 0.318 |
| Adjusted | indSuicideConsideredEverTRUE | -0.717 | 0.674 | -1.063 | 0.288 |
| Adjusted | countSuicideAttempts | 0.440 | 0.405 | 1.086 | 0.278 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | r.squared | adj.r.squared | sigma | statistic | p.value | df |
| Unadjusted | 0.005 | 0.004 | 6.705 | 2.788 | 0.096 | 2 |
| Adjusted | 0.035 | 0.019 | 6.651 | 2.251 | 0.023 | 9 |

## Warning: Removed 105 rows containing missing values (geom\_point).



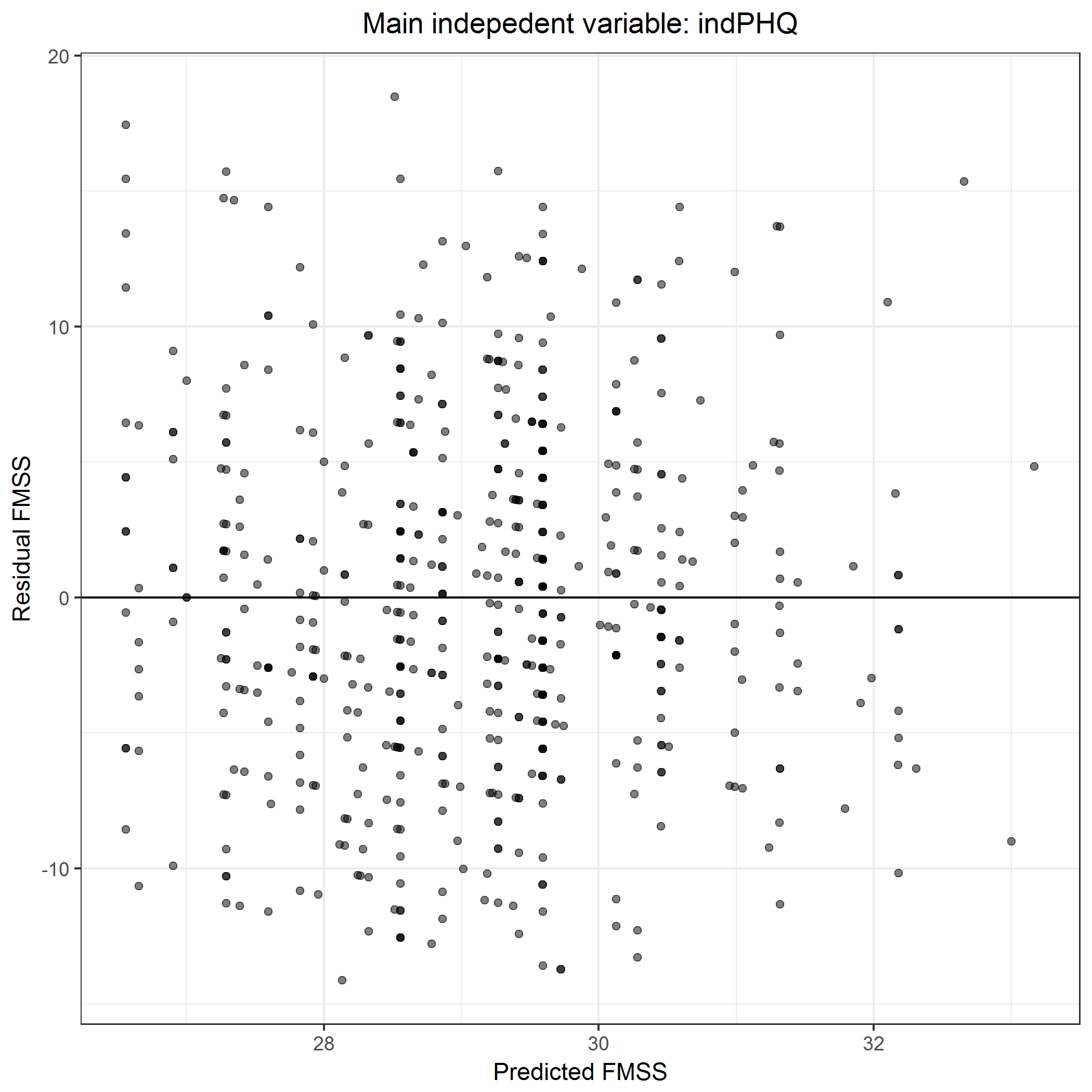
plot of chunk plotResidPTSD

### PHQ-2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| model | term | estimate | std.error | statistic | p.value |
| Unadjusted | (Intercept) | 29.564 | 0.316 | 93.699 | 0.000 |
| Unadjusted | indPHQTRUE | -1.618 | 0.600 | -2.699 | 0.007 |
| Adjusted | (Intercept) | 29.594 | 0.566 | 52.330 | 0.000 |
| Adjusted | indPHQTRUE | -1.266 | 0.637 | -1.987 | 0.047 |
| Adjusted | countSocialMediaExclFB | 0.862 | 0.278 | 3.099 | 0.002 |
| Adjusted | comm\_inpersonOnce a day | -0.003 | 0.974 | -0.003 | 0.997 |
| Adjusted | comm\_inpersonA few times a week | -0.327 | 0.784 | -0.416 | 0.677 |
| Adjusted | comm\_inpersonOnce a week | -0.940 | 0.947 | -0.993 | 0.321 |
| Adjusted | comm\_inpersonEvery few weeks or less often | -1.036 | 0.709 | -1.461 | 0.145 |
| Adjusted | indSuicideConsideredEverTRUE | -0.730 | 0.614 | -1.189 | 0.235 |
| Adjusted | countSuicideAttempts | 0.345 | 0.383 | 0.902 | 0.368 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | r.squared | adj.r.squared | sigma | statistic | p.value | df |
| Unadjusted | 0.012 | 0.010 | 6.550 | 7.283 | 0.007 | 2 |
| Adjusted | 0.036 | 0.022 | 6.511 | 2.704 | 0.006 | 9 |

## Warning: Removed 18 rows containing missing values (geom\_point).



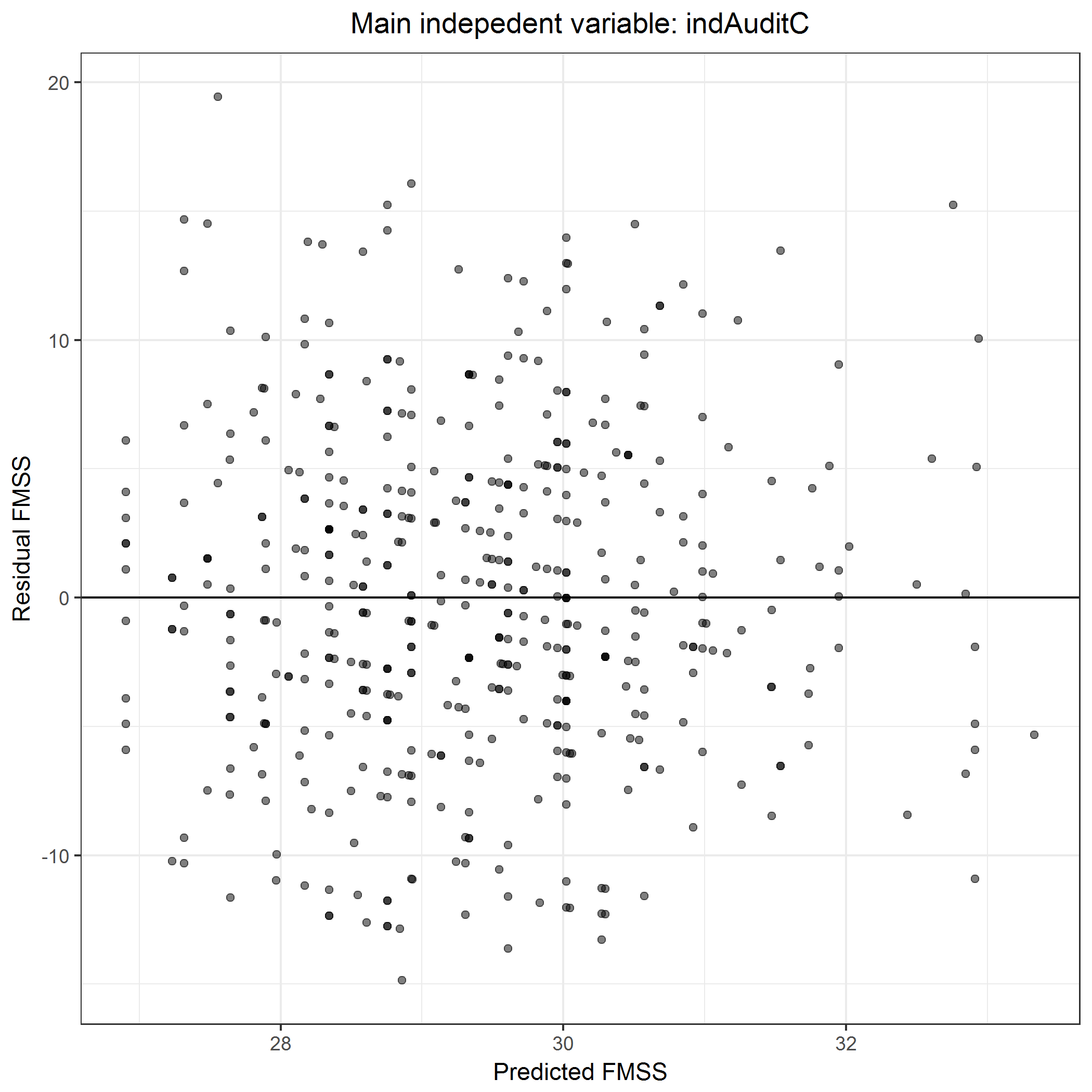
plot of chunk plotResidPHQ

### AUDIT-C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| model | term | estimate | std.error | statistic | p.value |
| Unadjusted | (Intercept) | 29.664 | 0.423 | 70.175 | 0.000 |
| Unadjusted | indAuditCTRUE | -0.570 | 0.593 | -0.962 | 0.337 |
| Adjusted | (Intercept) | 30.022 | 0.673 | 44.599 | 0.000 |
| Adjusted | indAuditCTRUE | -0.411 | 0.593 | -0.693 | 0.489 |
| Adjusted | countSocialMediaExclFB | 0.963 | 0.300 | 3.206 | 0.001 |
| Adjusted | comm\_inpersonOnce a day | -0.064 | 1.083 | -0.059 | 0.953 |
| Adjusted | comm\_inpersonA few times a week | -0.687 | 0.841 | -0.817 | 0.414 |
| Adjusted | comm\_inpersonOnce a week | -0.525 | 1.035 | -0.508 | 0.612 |
| Adjusted | comm\_inpersonEvery few weeks or less often | -1.266 | 0.789 | -1.605 | 0.109 |
| Adjusted | indSuicideConsideredEverTRUE | -1.440 | 0.666 | -2.162 | 0.031 |
| Adjusted | countSuicideAttempts | 0.326 | 0.415 | 0.784 | 0.434 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | r.squared | adj.r.squared | sigma | statistic | p.value | df |
| Unadjusted | 0.002 | 0.000 | 6.521 | 0.925 | 0.337 | 2 |
| Adjusted | 0.037 | 0.021 | 6.451 | 2.306 | 0.020 | 9 |

## Warning: Removed 130 rows containing missing values (geom\_point).



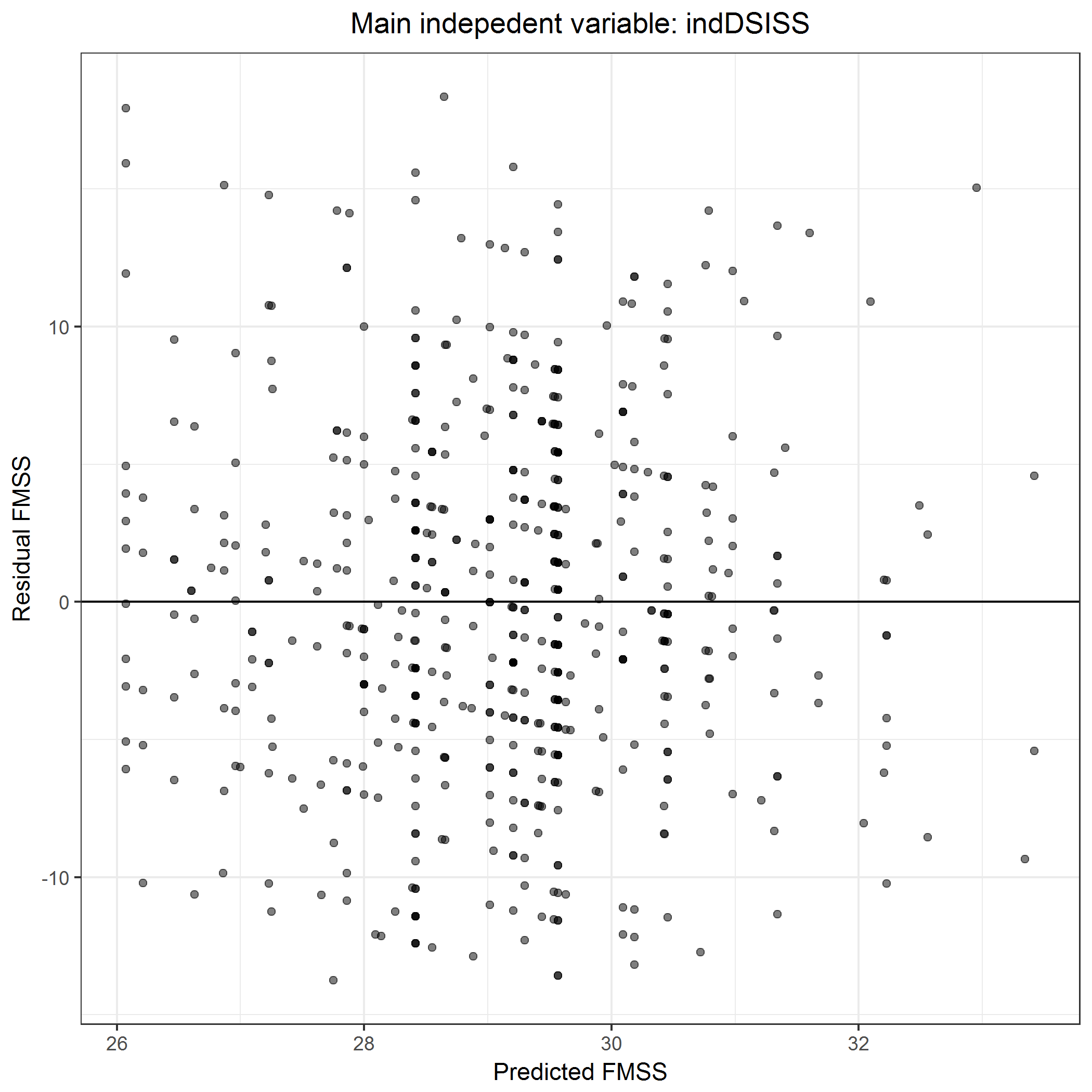
plot of chunk plotResidAuditC

### DSI-SS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| model | term | estimate | std.error | statistic | p.value |
| Unadjusted | (Intercept) | 29.525 | 0.303 | 97.437 | 0.000 |
| Unadjusted | indDSISSTRUE | -1.935 | 0.651 | -2.972 | 0.003 |
| Adjusted | (Intercept) | 29.568 | 0.564 | 52.456 | 0.000 |
| Adjusted | indDSISSTRUE | -1.787 | 0.703 | -2.543 | 0.011 |
| Adjusted | countSocialMediaExclFB | 0.886 | 0.277 | 3.193 | 0.001 |
| Adjusted | comm\_inpersonOnce a day | -0.025 | 0.973 | -0.025 | 0.980 |
| Adjusted | comm\_inpersonA few times a week | -0.361 | 0.782 | -0.462 | 0.644 |
| Adjusted | comm\_inpersonOnce a week | -1.017 | 0.943 | -1.079 | 0.281 |
| Adjusted | comm\_inpersonEvery few weeks or less often | -1.155 | 0.701 | -1.647 | 0.100 |
| Adjusted | indSuicideConsideredEverTRUE | -0.553 | 0.627 | -0.883 | 0.378 |
| Adjusted | countSuicideAttempts | 0.393 | 0.383 | 1.026 | 0.305 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| model | r.squared | adj.r.squared | sigma | statistic | p.value | df |
| Unadjusted | 0.015 | 0.013 | 6.548 | 8.831 | 0.003 | 2 |
| Adjusted | 0.040 | 0.027 | 6.501 | 3.067 | 0.002 | 9 |

## Warning: Removed 18 rows containing missing values (geom\_point).



plot of chunk plotResidDSISS