

1993 Data Analysis

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Part I. Variance of Responses

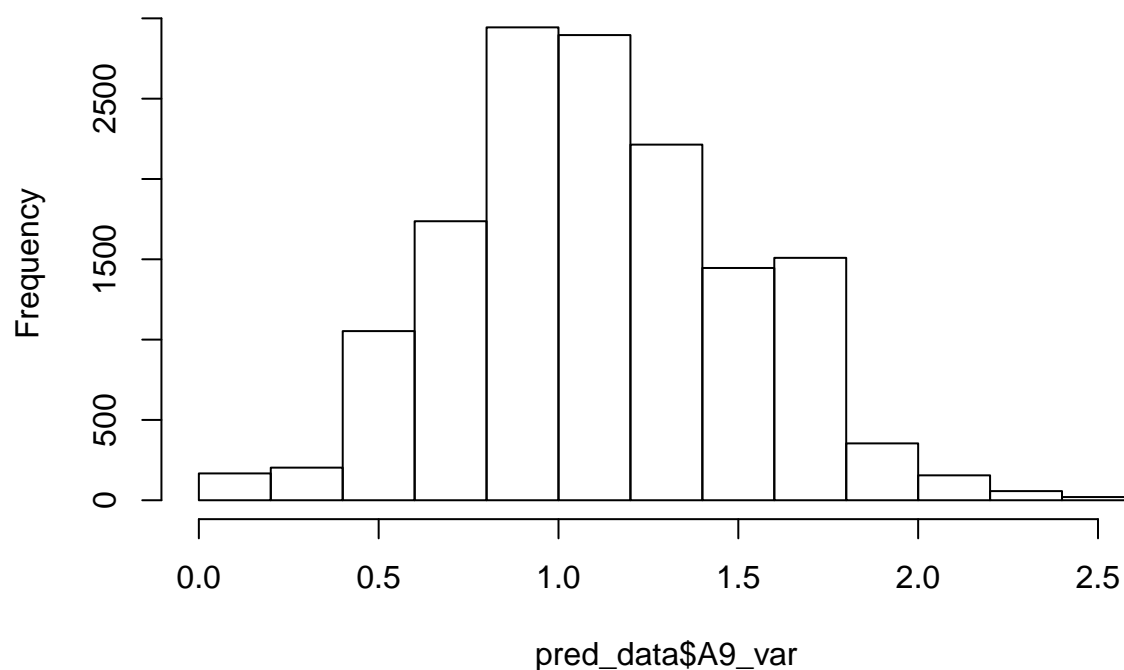
Useful Functions

```
colvar <- function(x){  
  rowSums((x - rowMeans(x))^2)/(dim(x)[2]-1)  
}  
  
find_colvar <- function(str){  
  x <- dat93 %>% select(starts_with(str))  
  colvar(x)  
}  
  
'%!in%' <- function(x,y)!('%in%'(x,y))
```

Extract Important Predictor Variables - Importance and Support (Variance)

```
predictor_vars <- c("A9", "B1", "B15", "B16", "B17", "C16", "C18", "C22", "D2")  
pred_data <- matrix(NA, dim(dat93)[1], length(predictor_vars))  
  
for (i in 1:length(predictor_vars)){  
  pred_data[,i] <- find_colvar(predictor_vars[i])  
}  
pred_data <- data.frame(pred_data)  
names(pred_data) <- c("A9_var", "B1_var", "B15_var", "B16_var", "B17_var",  
  "C16_var", "C18_var", "C22_var", "D2_var")  
  
#View(pred_data)  
  
#corrgram(pred_data)  
hist(pred_data$A9_var)
```

Histogram of pred_data\$A9_var



```
final_pred_data <- pred_data
```

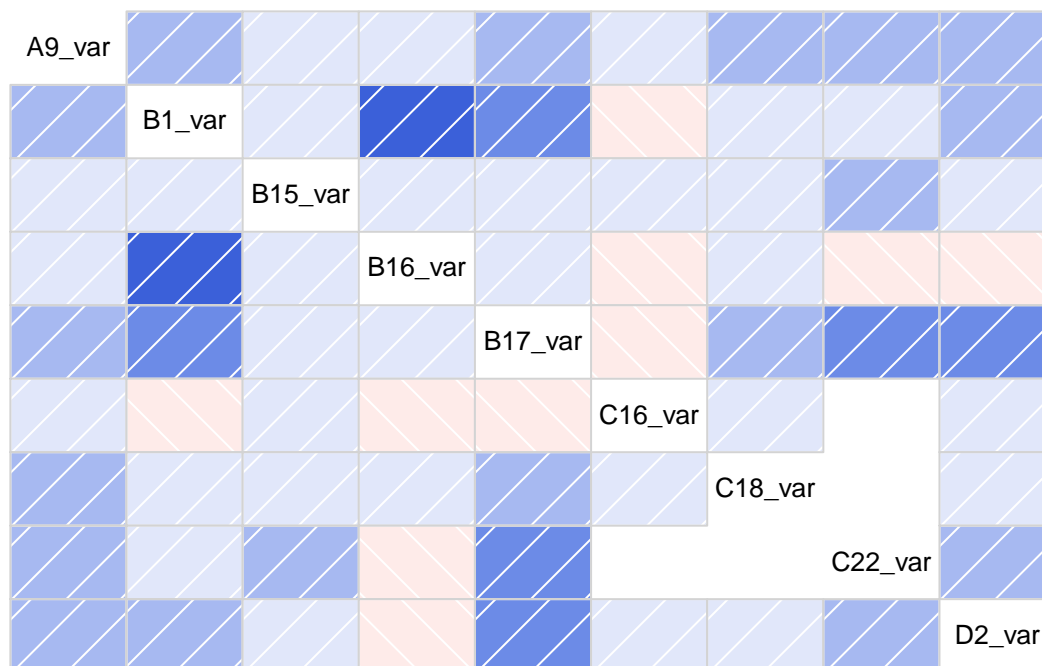
```
corrgram(final_pred_data)
```

```
## Warning in lower.panel(...): Need at least 2 complete cases for cor()
```

```
## Warning in lower.panel(...): Need at least 2 complete cases for cor()
```

```
## Warning in upper.panel(...): Need at least 2 complete cases for cor()
```

```
## Warning in upper.panel(...): Need at least 2 complete cases for cor()
```



Comment variable is not found in 1993 dataset.

Social Change Variables

```
data <- dat93
data<- data %>% mutate(change_alc_pol = as.numeric(B6 == 2 | B6 == 3) ) # approach to student drinking
data<- data %>% mutate(min_drink_age = as.numeric(B18 != 6) ) # min age below 22
# data<- data %>% mutate(change_tob_pol = as.numeric(B16 != 4 & B17 != 4 & B17 != B16) )
```

Create Final Model Data Set

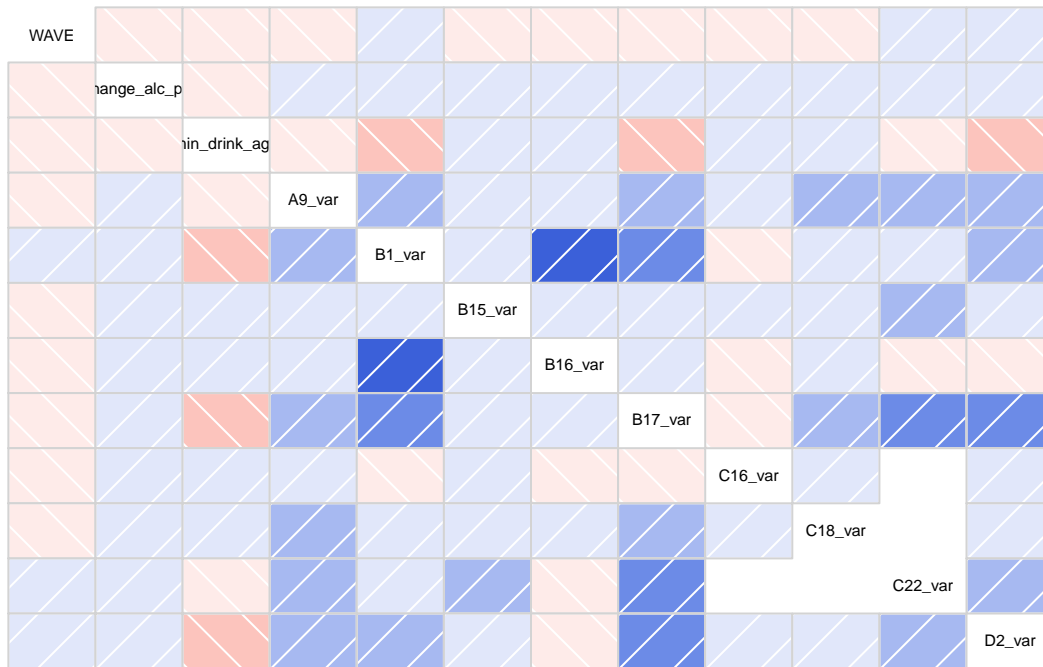
```
final_model_data <- cbind(data[,405:407], pred_data)
corrgram(final_model_data)
```

```
## Warning in lower.panel(...): Need at least 2 complete cases for cor()
```

```
## Warning in lower.panel(...): Need at least 2 complete cases for cor()
```

```
## Warning in upper.panel(...): Need at least 2 complete cases for cor()
```

```
## Warning in upper.panel(...): Need at least 2 complete cases for cor()
```



Model Gradient Variances as predictors of Social Change Variables

```
#CHANGE ALC POLICY
```

```
# Full model
```

```
model <- glm(data= final_model_data, change_alc_pol~ A9_var+ B1_var + B15_var + B16_var +
  B17_var + C16_var + C18_var + D2_var , family = "binomial")
```

```
#C22 removed -> too many NA's
```

```
summary(model)
```

```
##
```

```
## Call:
```

```
## glm(formula = change_alc_pol ~ A9_var + B1_var + B15_var + B16_var +
```

```
## B17_var + C16_var + C18_var + D2_var, family = "binomial",
```

```
## data = final_model_data)
```

```
##
```

```
## Deviance Residuals:
```

```
##      Min       1Q   Median       3Q      Max
```

```
## -1.5830 -0.9741 -0.8535  1.3133  1.7649
```

```
##
```

```
## Coefficients:
```

```
##              Estimate Std. Error z value Pr(>|z|)
```

```
## (Intercept) -1.06289    0.18031  -5.895 3.75e-09 ***
```

```
## A9_var      -0.10998    0.10751  -1.023  0.3063
```

```
## B1_var      -0.11508    0.06598  -1.744  0.0811 .
```

```
## B15_var      0.08761    0.06384   1.372  0.1699
```

```
## B16_var      0.02160    0.02840    0.761    0.4469
## B17_var      0.61110    0.10619    5.755 8.67e-09 ***
## C16_var      0.37912    0.08570    4.424 9.70e-06 ***
## C18_var     -0.12659    0.07600   -1.666    0.0958 .
## D2_var       0.19114    0.08804    2.171    0.0299 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##    Null deviance: 3794.8  on 2857  degrees of freedom
## Residual deviance: 3716.9  on 2849  degrees of freedom
## (12424 observations deleted due to missingness)
## AIC: 3734.9
##
## Number of Fisher Scoring iterations: 4
```

```
# Significant variables from full model
```

```
model <- glm(data= final_model_data, change_alc_pol~ B17_var+ C16_var + D2_var, family = "binomial")
summary(model)
```

```
##
## Call:
## glm(formula = change_alc_pol ~ B17_var + C16_var + D2_var, family = "binomial",
##      data = final_model_data)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -1.6294  -0.9232  -0.8164   1.3667   1.7821
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept) -1.43459    0.05637 -25.450 < 2e-16 ***
## B17_var      0.47407    0.04836   9.802 < 2e-16 ***
## C16_var      0.34486    0.04298   8.023 1.03e-15 ***
## D2_var       0.22708    0.04245   5.350 8.82e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##    Null deviance: 14335  on 11153  degrees of freedom
## Residual deviance: 14099  on 11150  degrees of freedom
## (4128 observations deleted due to missingness)
## AIC: 14107
##
## Number of Fisher Scoring iterations: 4
```

```
#MINIMUM DRINKING AGE
```

```
# Full model
```

```
model <- glm(data= final_model_data, min_drink_age ~ A9_var+ B1_var + B15_var + B16_var +
B17_var + C16_var + C18_var + D2_var , family = "binomial")
```

```
#C22 removed -> too many NA's
summary(model)
```

```
##
## Call:
## glm(formula = min_drink_age ~ A9_var + B1_var + B15_var + B16_var +
##       B17_var + C16_var + C18_var + D2_var, family = "binomial",
##       data = final_model_data)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -3.4987   0.0613   0.0906   0.1371   1.1538
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)   3.7808     0.8830   4.282 1.85e-05 ***
## A9_var         0.7605     0.5311   1.432  0.15216
## B1_var        -0.3927     0.1482  -2.649  0.00807 **
## B15_var         0.3170     0.3002   1.056  0.29102
## B16_var         0.4318     0.1606   2.689  0.00717 **
## B17_var        -1.3263     0.4759  -2.787  0.00532 **
## C16_var         1.4270     0.5384   2.650  0.00804 **
## C18_var         0.3777     0.2949   1.281  0.20018
## D2_var         -0.6139     0.3367  -1.823  0.06828 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 314.94  on 2866  degrees of freedom
## Residual deviance: 262.28  on 2858  degrees of freedom
## (12415 observations deleted due to missingness)
## AIC: 280.28
##
## Number of Fisher Scoring iterations: 8
```

```
# Important variables from full model
```

```
model <- glm(data= final_model_data, min_drink_age~ B1_var+ B16_var + B17_var + C16_var, family = "binomial",
summary(model)
```

```
##
## Call:
## glm(formula = min_drink_age ~ B1_var + B16_var + B17_var + C16_var,
##       family = "binomial", data = final_model_data)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -3.4863   0.0663   0.0955   0.1362   0.8864
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)   5.1698     0.6060   8.531 < 2e-16 ***
## B1_var        -0.3722     0.1416  -2.629  0.008561 **
```

```
## B16_var      0.4415      0.1542      2.862 0.004208 **
## B17_var     -1.4798      0.4223     -3.505 0.000457 ***
## C16_var      1.4882      0.5028      2.960 0.003077 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 337.10  on 3054  degrees of freedom
## Residual deviance: 289.92  on 3050  degrees of freedom
## (12227 observations deleted due to missingness)
## AIC: 299.92
##
## Number of Fisher Scoring iterations: 8
```

```
#WAVE (Early/Late Response)
```

```
# Full model
```

```
final_model_data <- final_model_data %>% mutate(WAVE1 = ifelse(is.na(WAVE), NA, ifelse(WAVE==1, 0, 1)))
model <- glm(data= final_model_data, WAVE1 ~ A9_var + B1_var + B15_var + B16_var +
  B17_var + C16_var + C18_var + D2_var , family = "binomial")
#C22 removed -> too many NA's
summary(model)
```

```
##
## Call:
## glm(formula = WAVE1 ~ A9_var + B1_var + B15_var + B16_var + B17_var +
##      C16_var + C18_var + D2_var, family = "binomial", data = final_model_data)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -0.9244  -0.6637  -0.5964  -0.5038   2.2230
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept) -0.93510    0.27855  -3.357 0.000788 ***
## A9_var       0.21403    0.17070   1.254 0.209905
## B1_var       0.10060    0.08938   1.126 0.260371
## B15_var     -0.20145    0.10058  -2.003 0.045200 *
## B16_var     -0.02340    0.04122  -0.568 0.570226
## B17_var     -0.11721    0.17094  -0.686 0.492930
## C16_var     -0.44558    0.14693  -3.033 0.002424 **
## C18_var     -0.15258    0.11623  -1.313 0.189269
## D2_var      -0.11409    0.14482  -0.788 0.430825
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 1694.8  on 1801  degrees of freedom
## Residual deviance: 1671.7  on 1793  degrees of freedom
## (13480 observations deleted due to missingness)
## AIC: 1689.7
##
```

```
## Number of Fisher Scoring iterations: 4
```

```
# Important variables from full model
```

```
model <- glm(data= final_model_data, WAVE1~ B15_var + C16_var, family = "binomial")  
summary(model)
```

```
##  
## Call:  
## glm(formula = WAVE1 ~ B15_var + C16_var, family = "binomial",  
##      data = final_model_data)  
##  
## Deviance Residuals:  
##      Min       1Q   Median       3Q      Max   
## -0.8010  -0.6686  -0.6217  -0.5422   2.1328   
##  
## Coefficients:  
##              Estimate Std. Error z value Pr(>|z|)      
## (Intercept) -0.97217    0.15066  -6.453  1.1e-10 ***  
## B15_var      -0.18818    0.08752  -2.150  0.03154 *     
## C16_var      -0.36261    0.12447  -2.913  0.00358 **    
## ---  
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1  
##  
## (Dispersion parameter for binomial family taken to be 1)  
##  
##      Null deviance: 2102.1  on 2194  degrees of freedom  
## Residual deviance: 2087.5  on 2192  degrees of freedom  
## (13087 observations deleted due to missingness)  
## AIC: 2093.5  
##  
## Number of Fisher Scoring iterations: 4
```

From the above results, we decide to use B1_var, B15_var, B16_var, B17_var, C16_var and D2_var as measurement of engagement in our predictors.

Part II. Full Model Specification

```
dat93_model <- dat93
dat93_model <- cbind(dat93_model, final_model_data[,names(final_model_data) %in%
  c("change_alc_pol", # exclude B1, B15, too many NA's
    "B16_var", "B17_var", "C16_var", "D2_var")])
```

```
# check missingness
nrow(dat93_model)
```

```
## [1] 15282
```

```
na_count <- apply(dat93_model, 2, function(x) sum(is.na(x)))
na_count[na_count > 10000]
```

```
## COLL_ID  B15_A  B15_B  B15_C  B15_D  B15_E  C3_A  C11_A  C11_B  C11_C
##   15282  10716  10726  10739  10934  10767  10062  10784  10791  10774
##   C11_D  C11_E  C22_A  C22_B  C22_C  C22_D  C22_E  C22_F  C22_G  C22_H
##   10785  10789  13076  13069  13092  13093  13083  13092  13087  13091
##   C22_I  C22_J  C22_K  C22_L  C22_M  C22_N      E4  SERIAL
##   13074  13090  13101  13091  13114  13090  15105  15282
```

Convert categorical variables into factors

```
col_num <- c("NUMPROB", "STWGT_93", "VOL30", "var_response")
dat93_model[,names(dat93_model) %!in% col_num] <- lapply(dat93_model[,names(dat93_model) %!in% col_num]
```

```
var_excl <- c(1:282, 312:337, 343:354, 356:357, 359:366,
  369:377, 392:394, 399:404)
```

```
# change alcohol policy
alc_pol_model <- glm(data = dat93_model[, -var_excl], change_alc_pol ~ ., family = "binomial")
summary(alc_pol_model)
```

```
##
## Call:
## glm(formula = change_alc_pol ~ ., family = "binomial", data = dat93_model[,
##   -var_excl])
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -2.1496  -0.8797  -0.6374   1.1159   2.4223
##
## Coefficients: (12 not defined because of singularities)
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)   1.063e+00  1.310e+00  0.812  0.417025
## SEX1          2.809e-01  8.270e-02  3.396  0.000683 ***
## DRINKCAT2     2.035e-03  1.161e-01  0.018  0.986017
## DRINKCAT3     2.378e-01  2.154e-01  1.104  0.269666
## OCCALC1       2.969e-03  1.428e-01  0.021  0.983408
```

## USUALBIN1	-1.564e-01	1.066e-01	-1.468	0.142077
## DRUNKN301	2.519e-01	1.225e-01	2.056	0.039744 *
## DR2DRUNK1	-6.128e-02	9.395e-02	-0.652	0.514221
## DRPROBA1	9.101e-02	9.611e-02	0.947	0.343711
## DRPROBB1	1.427e+00	1.301e+00	1.097	0.272463
## DRPROBC1	1.299e+00	1.301e+00	0.998	0.318049
## DRPROBD1	1.357e+00	1.299e+00	1.045	0.296056
## DRPROBE1	1.379e+00	1.302e+00	1.059	0.289738
## DRPROBF1	1.212e+00	1.301e+00	0.932	0.351437
## DRPROBG1	1.681e+00	1.297e+00	1.296	0.195031
## DRPROBH1	1.299e+00	1.300e+00	0.999	0.317906
## DRPROBI1	1.204e+00	1.299e+00	0.927	0.354042
## DRPROBJ1	1.752e+00	1.302e+00	1.345	0.178513
## DRPROBK1	1.581e+00	1.295e+00	1.221	0.222085
## DRPROBL1	-1.206e+00	1.584e+00	-0.761	0.446642
## DRDRIVE1	1.321e+00	1.286e+00	1.027	0.304520
## BNGDRIVE1	-1.987e-02	1.280e-01	-0.155	0.876632
## PASSDRDV1	-1.250e-01	1.019e-01	-1.227	0.219895
## SECALC_A1	2.354e-01	9.362e-02	2.514	0.011930 *
## SECALC_B1	1.376e-01	1.056e-01	1.304	0.192375
## SECALC_C1	-2.033e-01	1.190e-01	-1.709	0.087477 .
## SECALC_D1	3.130e-02	1.167e-01	0.268	0.788539
## SECALC_E1	8.322e-02	8.762e-02	0.950	0.342228
## SECALC_G1	2.252e-01	8.657e-02	2.602	0.009274 **
## SECALC_H1	9.391e-02	9.849e-02	0.954	0.340314
## SECALC_I1	5.988e-02	3.203e-01	0.187	0.851704
## HSUBINGE1	8.310e-02	1.002e-01	0.829	0.407024
## BINGE1	NA	NA	NA	NA
## DRIVE1	NA	NA	NA	NA
## NUMPROB	-1.673e+01	1.552e+01	-1.077	0.281278
## PROBGULP2	NA	NA	NA	NA
## PROBGULP3	-2.734e-01	1.753e-01	-1.559	0.118949
## PROBGULP4	NA	NA	NA	NA
## RACE2	3.070e-01	2.295e-01	1.338	0.180999
## RACE3	2.548e-01	1.894e-01	1.345	0.178600
## RACE4	7.791e-02	1.589e-01	0.490	0.623859
## NEVERMAR1	-1.124e-01	1.470e-01	-0.765	0.444488
## FREQBING1	NA	NA	NA	NA
## FREQBING2	NA	NA	NA	NA
## MEMGREEK1	1.624e-02	1.011e-01	0.161	0.872402
## DORMS1	8.857e-02	2.417e-01	0.366	0.714039
## OFFCAMP1	-2.332e-01	2.336e-01	-0.998	0.318128
## FRATHOUS1	1.822e-02	2.899e-01	0.063	0.949896
## OTHRHOUS1	NA	NA	NA	NA
## PARDRK1	8.038e-02	8.220e-02	0.978	0.328120
## PARAPRV1	1.506e-02	8.720e-02	0.173	0.862873
## GRADE1	5.705e-02	7.602e-02	0.750	0.453000
## GIVEUP1	3.817e-02	1.673e-01	0.228	0.819512
## NOBINGE1	NA	NA	NA	NA
## UPTAKE1	NA	NA	NA	NA
## CONTBING1	NA	NA	NA	NA
## DD_11	NA	NA	NA	NA
## DD_51	NA	NA	NA	NA
## AGEGROUP2	-2.133e-03	8.974e-02	-0.024	0.981042

## AGEGROUP3	-4.495e-01	1.439e-01	-3.124	0.001785	**
## SELFRATE1	4.257e-01	9.253e-01	0.460	0.645489	
## SELFEVER1	9.714e-02	1.167e-01	0.832	0.405210	
## STWGT_93	5.202e-02	6.907e-02	0.753	0.451325	
## VOL30	1.586e-03	1.645e-03	0.964	0.334843	
## WAVE2	-2.088e-01	9.360e-02	-2.231	0.025658	*
## B16_var0.125	-1.940e-02	5.154e-01	-0.038	0.969979	
## B16_var0.214285714285714	-1.101e+00	4.558e-01	-2.415	0.015721	*
## B16_var0.267857142857143	-6.404e-01	4.170e-01	-1.536	0.124598	
## B16_var0.285714285714286	-4.704e-01	4.374e-01	-1.075	0.282256	
## B16_var0.410714285714286	-4.203e-01	4.586e-01	-0.917	0.359400	
## B16_var0.5	-3.378e-01	4.039e-01	-0.836	0.402911	
## B16_var0.553571428571429	-5.415e-01	3.880e-01	-1.396	0.162754	
## B16_var0.571428571428571	-5.053e-01	3.939e-01	-1.283	0.199549	
## B16_var0.696428571428571	-6.192e-01	3.935e-01	-1.573	0.115625	
## B16_var0.785714285714286	-6.360e-01	3.871e-01	-1.643	0.100411	
## B16_var0.839285714285714	-2.566e-01	3.973e-01	-0.646	0.518371	
## B16_var0.857142857142857	-6.360e-01	3.953e-01	-1.609	0.107667	
## B16_var0.982142857142857	-3.913e-01	3.983e-01	-0.982	0.325890	
## B16_var1.07142857142857	-6.291e-01	4.035e-01	-1.559	0.119014	
## B16_var1.125	-2.258e-01	4.097e-01	-0.551	0.581623	
## B16_var1.14285714285714	-2.479e-01	4.025e-01	-0.616	0.537951	
## B16_var1.26785714285714	-4.573e-01	4.086e-01	-1.119	0.262996	
## B16_var1.35714285714286	-9.131e-01	4.276e-01	-2.135	0.032734	*
## B16_var1.41071428571429	-1.751e-01	4.497e-01	-0.389	0.697072	
## B16_var1.42857142857143	-4.002e-01	4.362e-01	-0.917	0.358902	
## B16_var1.55357142857143	-3.720e-01	4.814e-01	-0.773	0.439666	
## B16_var1.64285714285714	-3.079e-01	4.698e-01	-0.655	0.512175	
## B16_var1.69642857142857	-4.646e-01	4.920e-01	-0.944	0.344988	
## B16_var1.71428571428571	-7.384e-01	5.185e-01	-1.424	0.154421	
## B16_var1.83928571428571	-1.349e-01	5.365e-01	-0.252	0.801414	
## B16_var1.92857142857143	-4.205e-01	5.472e-01	-0.768	0.442226	
## B16_var1.98214285714286	3.710e-01	6.531e-01	0.568	0.570034	
## B16_var2	-4.813e-01	5.443e-01	-0.884	0.376555	
## B16_var2.125	2.301e-01	7.547e-01	0.305	0.760448	
## B16_var2.21428571428571	1.454e-01	5.836e-01	0.249	0.803225	
## B16_var2.26785714285714	-4.942e-01	5.675e-01	-0.871	0.383890	
## B16_var2.28571428571429	3.610e-01	7.987e-01	0.452	0.651330	
## B16_var2.41071428571429	-2.161e-01	5.879e-01	-0.368	0.713193	
## B16_var2.5	-3.832e-01	8.467e-01	-0.453	0.650875	
## B16_var2.55357142857143	-3.600e-01	5.988e-01	-0.601	0.547740	
## B16_var2.57142857142857	-8.424e-01	5.783e-01	-1.457	0.145191	
## B16_var2.69642857142857	-6.180e-01	6.715e-01	-0.920	0.357382	
## B16_var2.78571428571429	-6.664e-01	6.247e-01	-1.067	0.286026	
## B16_var2.83928571428571	-4.439e-01	5.587e-01	-0.795	0.426850	
## B16_var2.85714285714286	-8.102e-01	5.636e-01	-1.438	0.150534	
## B16_var2.98214285714286	-3.523e-01	5.156e-01	-0.683	0.494352	
## B16_var3.07142857142857	9.255e-02	5.694e-01	0.163	0.870871	
## B16_var3.125	2.363e-02	5.187e-01	0.046	0.963668	
## B16_var3.14285714285714	-9.161e-01	6.654e-01	-1.377	0.168620	
## B16_var3.26785714285714	-2.202e+00	8.649e-01	-2.546	0.010905	*
## B16_var3.35714285714286	1.109e-01	5.227e-01	0.212	0.832005	
## B16_var3.41071428571429	-1.244e+00	6.341e-01	-1.962	0.049783	*
## B16_var3.42857142857143	-1.010e+00	7.114e-01	-1.420	0.155545	

## B16_var3.55357142857143	-4.500e-01	5.415e-01	-0.831	0.405982
## B16_var3.64285714285714	-1.016e+00	5.964e-01	-1.704	0.088460 .
## B16_var3.69642857142857	-1.159e+00	5.907e-01	-1.962	0.049806 *
## B16_var3.71428571428571	2.288e-01	5.399e-01	0.424	0.671680
## B16_var3.83928571428571	-8.961e-02	6.546e-01	-0.137	0.891122
## B16_var3.92857142857143	-1.106e+00	5.675e-01	-1.949	0.051346 .
## B16_var3.98214285714286	-2.339e-01	5.682e-01	-0.412	0.680545
## B16_var4	-6.419e-01	8.091e-01	-0.793	0.427605
## B16_var4.125	-7.605e-01	6.224e-01	-1.222	0.221751
## B16_var4.21428571428571	-4.301e-01	6.964e-01	-0.618	0.536802
## B16_var4.26785714285714	-3.272e-01	6.147e-01	-0.532	0.594543
## B16_var4.28571428571429	-3.424e-01	5.950e-01	-0.575	0.564994
## B16_var4.41071428571429	-7.166e-01	5.762e-01	-1.244	0.213597
## B16_var4.5	-5.534e-01	5.537e-01	-0.999	0.317596
## B16_var4.55357142857143	-6.531e-01	6.439e-01	-1.014	0.310442
## B16_var4.57142857142857	-1.310e+00	7.361e-01	-1.779	0.075248 .
## B16_var4.69642857142857	-9.040e-02	6.158e-01	-0.147	0.883285
## B16_var4.78571428571429	-1.425e+00	7.517e-01	-1.895	0.058078 .
## B16_var4.83928571428571	-7.882e-01	5.665e-01	-1.391	0.164132
## B16_var4.85714285714286	-8.161e-01	9.562e-01	-0.854	0.393364
## B16_var4.98214285714286	-2.400e-01	5.635e-01	-0.426	0.670149
## B16_var5.07142857142857	-6.380e-01	7.953e-01	-0.802	0.422423
## B16_var5.125	-1.042e+00	9.098e-01	-1.146	0.251998
## B16_var5.14285714285714	-3.046e-01	5.710e-01	-0.533	0.593727
## B16_var5.26785714285714	-1.630e-01	5.785e-01	-0.282	0.778128
## B16_var5.35714285714286	-1.983e+00	8.613e-01	-2.303	0.021302 *
## B16_var5.41071428571429	4.069e-01	6.852e-01	0.594	0.552588
## B16_var5.42857142857143	-1.195e+00	6.751e-01	-1.770	0.076766 .
## B16_var5.55357142857143	-3.133e-01	9.538e-01	-0.329	0.742528
## B16_var5.64285714285714	-1.214e-01	6.309e-01	-0.192	0.847417
## B16_var5.69642857142857	-8.761e-01	7.324e-01	-1.196	0.231635
## B16_var5.71428571428571	-1.556e+00	1.173e+00	-1.327	0.184529
## B16_var5.83928571428571	-8.699e-01	8.093e-01	-1.075	0.282477
## B16_var5.92857142857143	-5.261e-02	9.616e-01	-0.055	0.956364
## B16_var5.98214285714286	-6.433e-01	7.395e-01	-0.870	0.384362
## B16_var6	-1.348e+00	9.804e-01	-1.375	0.169147
## B16_var6.125	7.625e-01	7.148e-01	1.067	0.286113
## B16_var6.21428571428571	-1.248e+00	1.201e+00	-1.039	0.298816
## B16_var6.26785714285714	-4.159e-01	7.673e-01	-0.542	0.587789
## B16_var6.28571428571429	-3.185e-01	6.949e-01	-0.458	0.646725
## B16_var6.41071428571429	-5.247e-01	1.304e+00	-0.402	0.687320
## B16_var6.5	-7.538e-01	8.090e-01	-0.932	0.351448
## B16_var6.55357142857143	-1.737e+00	1.142e+00	-1.522	0.128082
## B16_var6.57142857142857	6.655e-02	7.033e-01	0.095	0.924612
## B16_var6.69642857142857	-2.281e-02	8.664e-01	-0.026	0.978991
## B16_var6.78571428571429	-2.364e-01	1.045e+00	-0.226	0.821065
## B16_var6.83928571428571	2.701e-01	1.138e+00	0.237	0.812399
## B16_var6.85714285714286	-6.126e-01	9.853e-01	-0.622	0.534153
## B16_var6.98214285714286	-1.243e+00	1.401e+00	-0.887	0.374944
## B16_var7.07142857142857	-2.028e-01	1.135e+00	-0.179	0.858237
## B16_var7.125	-6.577e-01	1.012e+00	-0.650	0.515858
## B16_var7.14285714285714	-1.579e+01	6.915e+02	-0.023	0.981781
## B16_var7.26785714285714	1.344e+00	1.506e+00	0.893	0.372063
## B16_var7.35714285714286	3.486e-01	1.038e+00	0.336	0.736923

## B16_var7.41071428571429	-7.796e-01	1.466e+00	-0.532	0.594892
## B16_var7.42857142857143	-1.542e+01	1.455e+03	-0.011	0.991549
## B16_var7.55357142857143	1.944e-01	1.099e+00	0.177	0.859594
## B16_var7.64285714285714	-1.512e+01	7.128e+02	-0.021	0.983074
## B16_var7.69642857142857	1.545e+01	1.455e+03	0.011	0.991530
## B16_var7.71428571428571	6.506e-01	8.836e-01	0.736	0.461567
## B16_var7.83928571428571	-4.953e-01	9.999e-01	-0.495	0.620325
## B16_var7.92857142857143	-1.505e+01	1.455e+03	-0.010	0.991750
## B16_var7.98214285714286	-1.253e+00	1.466e+00	-0.855	0.392793
## B16_var8	1.496e+01	1.455e+03	0.010	0.991801
## B16_var8.125	-1.538e+01	1.020e+03	-0.015	0.987970
## B16_var8.21428571428571	1.520e+01	7.026e+02	0.022	0.982737
## B16_var8.26785714285714	-1.559e+01	5.477e+02	-0.028	0.977292
## B16_var8.41071428571429	1.644e+01	1.455e+03	0.011	0.990986
## B16_var8.5	-1.499e+01	9.198e+02	-0.016	0.986998
## B16_var8.55357142857143	-1.456e+01	1.455e+03	-0.010	0.992019
## B16_var8.57142857142857	7.742e-01	1.432e+00	0.541	0.588690
## B16_var8.69642857142857	-1.552e+01	1.455e+03	-0.011	0.991491
## B16_var8.83928571428571	4.768e-01	1.096e+00	0.435	0.663495
## B16_var8.85714285714286	-1.536e+01	8.021e+02	-0.019	0.984722
## B16_var9.71428571428571	-1.578e+01	1.455e+03	-0.011	0.991347
## B16_var9.92857142857143	1.578e+01	1.455e+03	0.011	0.991348
## B16_var10.5	1.481e+01	1.455e+03	0.010	0.991878
## B16_var10.7857142857143	1.398e+01	1.455e+03	0.010	0.992334
## B17_var0.0909090909090909	-2.492e+00	1.490e+00	-1.672	0.094456
## B17_var0.163636363636364	-1.779e+00	1.314e+00	-1.354	0.175799
## B17_var0.2	-8.355e-01	1.470e+00	-0.569	0.569660
## B17_var0.218181818181818	-2.421e+00	1.283e+00	-1.887	0.059146
## B17_var0.254545454545455	-1.645e+00	1.255e+00	-1.310	0.190134
## B17_var0.272727272727273	-1.650e+00	1.247e+00	-1.323	0.185992
## B17_var0.290909090909091	-1.571e+00	1.337e+00	-1.176	0.239711
## B17_var0.363636363636364	-1.873e+00	1.277e+00	-1.467	0.142480
## B17_var0.4	-1.528e+00	1.402e+00	-1.091	0.275457
## B17_var0.418181818181818	-1.709e+00	1.258e+00	-1.358	0.174458
## B17_var0.454545454545454	-2.447e+00	1.396e+00	-1.753	0.079567
## B17_var0.454545454545455	-1.794e+00	1.253e+00	-1.431	0.152358
## B17_var0.472727272727273	-1.564e+00	1.250e+00	-1.252	0.210633
## B17_var0.490909090909091	-2.035e+00	1.284e+00	-1.586	0.112778
## B17_var0.563636363636364	-1.368e+00	1.259e+00	-1.087	0.277254
## B17_var0.6	-2.076e+00	1.326e+00	-1.565	0.117508
## B17_var0.618181818181818	-1.795e+00	1.256e+00	-1.429	0.153124
## B17_var0.654545454545455	-1.495e+00	1.253e+00	-1.193	0.232979
## B17_var0.672727272727273	-1.305e+00	1.250e+00	-1.043	0.296768
## B17_var0.690909090909091	-1.216e+00	1.267e+00	-0.960	0.337123
## B17_var0.763636363636363	-1.001e+00	1.905e+00	-0.526	0.599082
## B17_var0.763636363636364	-1.254e+00	1.258e+00	-0.997	0.318734
## B17_var0.8	-1.278e+00	1.310e+00	-0.976	0.329236
## B17_var0.818181818181818	-1.786e+00	1.263e+00	-1.415	0.157149
## B17_var0.854545454545454	-1.254e+00	1.255e+00	-0.999	0.317861
## B17_var0.854545454545455	1.369e+01	1.455e+03	0.009	0.992497
## B17_var0.872727272727273	-1.461e+00	1.253e+00	-1.166	0.243681
## B17_var0.890909090909091	-1.827e+00	1.266e+00	-1.443	0.149160
## B17_var0.963636363636364	-1.789e+00	1.263e+00	-1.417	0.156531
## B17_var1	-8.791e-01	1.278e+00	-0.688	0.491713

## B17_var1.01818181818182	-1.472e+00	1.257e+00	-1.171	0.241498
## B17_var1.05454545454545	-1.835e+00	1.266e+00	-1.450	0.147167
## B17_var1.07272727272727	-2.403e+00	1.276e+00	-1.883	0.059759
## B17_var1.09090909090909	-9.008e-01	1.262e+00	-0.714	0.475414
## B17_var1.16363636363636	-1.061e+00	1.261e+00	-0.842	0.399953
## B17_var1.2	-1.580e+00	1.282e+00	-1.233	0.217595
## B17_var1.21818181818182	-1.523e+00	1.266e+00	-1.202	0.229254
## B17_var1.25454545454545	-1.713e+00	1.273e+00	-1.345	0.178471
## B17_var1.27272727272727	-1.724e+00	1.286e+00	-1.341	0.179835
## B17_var1.29090909090909	-1.144e+00	1.259e+00	-0.909	0.363444
## B17_var1.36363636363636	-1.248e+00	1.259e+00	-0.991	0.321530
## B17_var1.4	-1.120e+00	1.277e+00	-0.877	0.380346
## B17_var1.41818181818182	-1.138e+00	1.262e+00	-0.902	0.366939
## B17_var1.45454545454545	-9.738e-01	1.267e+00	-0.769	0.441950
## B17_var1.47272727272727	-6.081e-01	1.256e+00	-0.484	0.628169
## B17_var1.49090909090909	-1.449e+00	1.282e+00	-1.130	0.258584
## B17_var1.56363636363636	-8.051e-01	1.276e+00	-0.631	0.528194
## B17_var1.6	-1.183e+00	1.339e+00	-0.883	0.376992
## B17_var1.61818181818182	-1.471e+00	1.302e+00	-1.130	0.258554
## B17_var1.65454545454545	-8.971e-01	1.345e+00	-0.667	0.504705
## B17_var1.67272727272727	-1.266e+00	1.421e+00	-0.891	0.372869
## B17_var1.69090909090909	-9.668e-01	1.369e+00	-0.706	0.479947
## B17_var1.76363636363636	-7.915e-01	1.505e+00	-0.526	0.598907
## B17_var1.8	-1.683e+00	1.732e+00	-0.972	0.331118
## B17_var1.81818181818182	-1.802e+00	1.617e+00	-1.115	0.265039
## B17_var1.85454545454545	-1.090e+00	1.426e+00	-0.764	0.444761
## B17_var1.87272727272727	-2.343e+00	1.753e+00	-1.337	0.181241
## B17_var1.89090909090909	-5.350e-02	1.423e+00	-0.038	0.970009
## B17_var1.96363636363636	-1.340e+00	1.422e+00	-0.942	0.346019
## B17_var2	-1.727e+01	1.455e+03	-0.012	0.990534
## B17_var2.01818181818182	-1.651e+01	1.455e+03	-0.011	0.990948
## B17_var2.05454545454545	-1.613e+01	1.455e+03	-0.011	0.991158
## B17_var2.07272727272727	-2.154e+00	2.074e+00	-1.038	0.299189
## B17_var2.16363636363636	-1.056e+00	1.851e+00	-0.570	0.568519
## B17_var2.21818181818182	-1.297e+00	1.492e+00	-0.869	0.384761
## B17_var2.27272727272727	1.466e+01	1.007e+03	0.015	0.988382
## B17_var2.29090909090909	-8.914e-01	1.674e+00	-0.532	0.594458
## B17_var2.45454545454545	1.466e+01	6.944e+02	0.021	0.983151
## C16_var0.09090909090909	-3.607e-01	3.147e-01	-1.146	0.251780
## C16_var0.16363636363636	-1.872e-01	2.900e-01	-0.646	0.518533
## C16_var0.21818181818181	-4.271e-01	2.864e-01	-1.491	0.135842
## C16_var0.25454545454545	-3.169e-01	2.864e-01	-1.106	0.268593
## C16_var0.27272727272727	-3.189e-01	2.920e-01	-1.092	0.274816
## C16_var0.29090909090909	-6.379e-01	1.177e+00	-0.542	0.587802
## C16_var0.36363636363636	-5.243e-01	4.151e-01	-1.263	0.206613
## C16_var0.4	-9.823e-01	8.848e-01	-1.110	0.266902
## C16_var0.41818181818181	-3.355e-01	3.291e-01	-1.020	0.307876
## C16_var0.45454545454545	-1.620e-01	3.143e-01	-0.516	0.606201
## C16_var0.45454545454545	-5.763e-01	3.680e-01	-1.566	0.117354
## C16_var0.47272727272727	-4.496e-01	2.796e-01	-1.608	0.107843
## C16_var0.49090909090909	1.892e-01	4.028e-01	0.470	0.638476
## C16_var0.56363636363636	-3.478e-01	3.708e-01	-0.938	0.348294
## C16_var0.6	-1.354e-01	4.452e-01	-0.304	0.761124
## C16_var0.61818181818181	-3.940e-01	3.387e-01	-1.164	0.244618

## C16_var0.654545454545455	-4.600e-01	3.103e-01	-1.483	0.138148	
## C16_var0.672727272727273	-8.443e-01	3.075e-01	-2.746	0.006035	**
## C16_var0.690909090909091	-2.404e-01	3.424e-01	-0.702	0.482607	
## C16_var0.763636363636364	-3.249e-01	3.251e-01	-0.999	0.317567	
## C16_var0.8	3.955e-01	3.628e-01	1.090	0.275719	
## C16_var0.818181818181818	-2.348e-01	3.166e-01	-0.742	0.458329	
## C16_var0.854545454545454	-3.521e-01	3.458e-01	-1.018	0.308499	
## C16_var0.854545454545455	-5.868e-01	6.330e-01	-0.927	0.353930	
## C16_var0.872727272727273	-1.119e+00	3.825e-01	-2.924	0.003452	**
## C16_var0.890909090909091	-1.974e-01	3.238e-01	-0.610	0.542081	
## C16_var0.963636363636364	-3.406e-01	3.538e-01	-0.963	0.335731	
## C16_var1	-5.973e-01	4.036e-01	-1.480	0.138893	
## C16_var1.018181818181818	-3.371e-01	3.493e-01	-0.965	0.334406	
## C16_var1.054545454545454	-3.450e-01	3.746e-01	-0.921	0.357010	
## C16_var1.072727272727272	-4.813e-03	3.997e-01	-0.012	0.990391	
## C16_var1.090909090909090	-1.015e-01	3.327e-01	-0.305	0.760322	
## C16_var1.163636363636363	-4.501e-01	3.563e-01	-1.263	0.206578	
## C16_var1.2	4.823e-01	4.342e-01	1.111	0.266653	
## C16_var1.218181818181818	-5.479e-01	4.284e-01	-1.279	0.200881	
## C16_var1.254545454545454	-1.613e-02	4.829e-01	-0.033	0.973364	
## C16_var1.272727272727272	-8.579e-01	5.768e-01	-1.487	0.136901	
## C16_var1.290909090909090	-4.585e-01	4.204e-01	-1.090	0.275515	
## C16_var1.363636363636363	-6.320e-02	4.044e-01	-0.156	0.875799	
## C16_var1.4	2.185e-01	5.807e-01	0.376	0.706701	
## C16_var1.418181818181818	-3.257e-01	4.296e-01	-0.758	0.448315	
## C16_var1.454545454545454	-1.495e-01	5.067e-01	-0.295	0.768007	
## C16_var1.472727272727272	-3.657e-01	5.967e-01	-0.613	0.540002	
## C16_var1.490909090909090	-9.480e-02	4.148e-01	-0.229	0.819206	
## C16_var1.563636363636363	-2.197e-01	5.266e-01	-0.417	0.676507	
## C16_var1.6	-1.039e-01	5.111e-01	-0.203	0.838857	
## C16_var1.618181818181818	-3.640e-02	7.006e-01	-0.052	0.958564	
## C16_var1.654545454545454	3.410e-01	5.681e-01	0.600	0.548375	
## C16_var1.672727272727272	7.427e-01	6.707e-01	1.107	0.268129	
## C16_var1.690909090909090	-7.645e-01	7.288e-01	-1.049	0.294187	
## C16_var1.763636363636363	-5.846e-01	6.341e-01	-0.922	0.356586	
## C16_var1.8	-1.115e+00	9.651e-01	-1.155	0.248124	
## C16_var1.818181818181818	8.305e-02	8.120e-01	0.102	0.918534	
## C16_var1.854545454545454	8.159e-01	8.381e-01	0.974	0.330289	
## C16_var1.872727272727272	7.808e-01	9.078e-01	0.860	0.389714	
## C16_var1.890909090909090	8.166e-01	5.939e-01	1.375	0.169099	
## C16_var1.963636363636363	5.691e-01	7.321e-01	0.777	0.436935	
## C16_var2	-5.368e-01	1.400e+00	-0.384	0.701330	
## C16_var2.018181818181818	1.575e+01	6.087e+02	0.026	0.979360	
## C16_var2.054545454545454	3.260e-01	9.177e-01	0.355	0.722443	
## C16_var2.072727272727272	-3.475e-01	9.989e-01	-0.348	0.727925	
## C16_var2.218181818181818	1.425e+00	1.367e+00	1.043	0.297139	
## C16_var2.272727272727272	-1.955e+00	1.216e+00	-1.609	0.107721	
## C16_var2.290909090909090	1.596e+01	7.004e+02	0.023	0.981821	
## C16_var2.454545454545454	1.572e+01	9.142e+02	0.017	0.986277	
## D2_var0.2	1.934e-01	1.537e-01	1.258	0.208261	
## D2_var0.3	1.114e-01	1.528e-01	0.729	0.466185	
## D2_var0.5	3.518e-01	1.877e-01	1.874	0.060936	.
## D2_var0.7	3.783e-01	1.685e-01	2.245	0.024745	*
## D2_var0.8	1.975e-01	1.681e-01	1.175	0.239924	

```

## D2_var1                4.839e-01  2.421e-01  1.999 0.045622 *
## D2_var1.2              7.129e-01  2.551e-01  2.795 0.005191 **
## D2_var1.3              2.296e-01  2.648e-01  0.867 0.385826
## D2_var1.5              1.213e+00  4.189e-01  2.897 0.003773 **
## D2_var1.7              5.101e-01  3.074e-01  1.660 0.097002 .
## D2_var1.8              5.084e-01  2.873e-01  1.770 0.076770 .
## D2_var2                6.804e-01  5.058e-01  1.345 0.178582
## D2_var2.3             -1.891e-01  8.028e-01 -0.236 0.813765
## D2_var2.7             -4.011e-01  6.971e-01 -0.575 0.564994
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
## Null deviance: 5292.2 on 4126 degrees of freedom
## Residual deviance: 4693.0 on 3801 degrees of freedom
## (11155 observations deleted due to missingness)
## AIC: 5345
##
## Number of Fisher Scoring iterations: 14

# remove singularities
var_excl <- c(var_excl, 340, 367, 381, 386:390)
alc_pol_model <- glm(data = dat93_model[, -var_excl], change_alc_pol ~ ., family = "binomial")
summary(alc_pol_model) # not optimal

##
## Call:
## glm(formula = change_alc_pol ~ ., family = "binomial", data = dat93_model[,
## -var_excl])
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -2.1956  -0.8832  -0.6556   1.1399   2.4200
##
## Coefficients: (3 not defined because of singularities)
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)   -3.865e-01  9.464e-01  -0.408 0.682951
## SEX1          3.820e-01  7.137e-02  5.352 8.69e-08 ***
## DRINKCAT2     1.052e-02  9.841e-02  0.107 0.914855
## DRINKCAT3     1.418e-01  1.817e-01  0.780 0.435176
## OCCALC1       2.690e-02  1.230e-01  0.219 0.826946
## USUALBIN1    -7.803e-02  9.062e-02 -0.861 0.389162
## DRUNKN301     1.290e-01  1.023e-01  1.260 0.207608
## DR2DRUNK1     7.572e-03  7.963e-02  0.095 0.924245
## DRPROBA1      1.242e-01  8.210e-02  1.513 0.130322
## DRPROBB1      1.305e+00  1.109e+00  1.177 0.239137
## DRPROBC1      1.334e+00  1.109e+00  1.203 0.228891
## DRPROBD1      1.277e+00  1.107e+00  1.153 0.248759
## DRPROBE1      1.424e+00  1.109e+00  1.284 0.199080
## DRPROBF1      1.211e+00  1.108e+00  1.093 0.274404
## DRPROBG1      1.479e+00  1.106e+00  1.337 0.181099
## DRPROBH1      1.085e+00  1.106e+00  0.981 0.326647
## DRPROBI1      1.139e+00  1.107e+00  1.028 0.303777

```


## DRPROBJ1	1.685e+00	1.111e+00	1.517	0.129208	
## DRPROBK1	1.533e+00	1.104e+00	1.389	0.164745	
## DRPROBL1	1.697e-01	1.246e+00	0.136	0.891679	
## DRDRIVE1	1.325e+00	1.097e+00	1.207	0.227352	
## BNGDRIVE1	1.307e-02	1.176e-01	0.111	0.911534	
## PASSDRDV1	-9.531e-02	8.566e-02	-1.113	0.265862	
## SECALC_A1	2.162e-01	7.841e-02	2.758	0.005817	**
## SECALC_B1	7.676e-02	8.883e-02	0.864	0.387534	
## SECALC_C1	-1.277e-01	9.891e-02	-1.292	0.196515	
## SECALC_D1	8.100e-02	9.739e-02	0.832	0.405606	
## SECALC_E1	6.332e-02	7.498e-02	0.845	0.398349	
## SECALC_G1	1.980e-01	7.334e-02	2.700	0.006936	**
## SECALC_H1	1.642e-01	8.254e-02	1.990	0.046613	*
## SECALC_I1	1.925e-01	2.499e-01	0.770	0.441130	
## HSUBINGE1	6.809e-02	8.524e-02	0.799	0.424398	
## BINGE1	NA	NA	NA	NA	
## NUMPROB	-1.590e+01	1.323e+01	-1.201	0.229593	
## PROBGULP2	NA	NA	NA	NA	
## PROBGULP3	-1.865e-01	1.488e-01	-1.254	0.209954	
## PROBGULP4	NA	NA	NA	NA	
## RACE2	-5.495e-03	1.784e-01	-0.031	0.975431	
## RACE3	1.207e-01	1.546e-01	0.781	0.435003	
## RACE4	1.639e-01	1.336e-01	1.227	0.219841	
## NEVERMAR1	-1.230e-01	1.393e-01	-0.883	0.377313	
## MEMGREEK1	-1.182e-02	8.809e-02	-0.134	0.893298	
## DORMS1	2.690e-01	1.985e-01	1.355	0.175484	
## OFFCAMP1	3.893e-02	1.963e-01	0.198	0.842775	
## FRATHOUS1	3.126e-01	2.444e-01	1.279	0.200985	
## PARDRK1	2.499e-02	7.043e-02	0.355	0.722737	
## PARAPRV1	-4.005e-02	7.424e-02	-0.539	0.589572	
## GRADE1	4.160e-02	6.549e-02	0.635	0.525258	
## GIVEUP1	9.635e-02	1.474e-01	0.654	0.513186	
## AGEGROUP2	-1.903e-02	7.744e-02	-0.246	0.805856	
## AGEGROUP3	-4.763e-01	1.315e-01	-3.622	0.000292	***
## SELFRATE1	6.071e-04	7.043e-01	0.001	0.999312	
## SELFEVER1	4.405e-02	9.957e-02	0.442	0.658182	
## STWGT_93	4.605e-02	6.200e-02	0.743	0.457647	
## VOL30	1.615e-03	1.395e-03	1.158	0.247018	
## WAVE2	-1.930e-01	8.158e-02	-2.366	0.017969	*
## B16_var0.125	-2.151e-01	4.500e-01	-0.478	0.632590	
## B16_var0.214285714285714	-8.103e-01	3.818e-01	-2.122	0.033814	*
## B16_var0.267857142857143	-4.891e-01	3.560e-01	-1.374	0.169503	
## B16_var0.285714285714286	-4.174e-01	3.740e-01	-1.116	0.264420	
## B16_var0.410714285714286	-3.687e-01	3.819e-01	-0.966	0.334252	
## B16_var0.5	-2.499e-01	3.392e-01	-0.737	0.461323	
## B16_var0.553571428571429	-5.977e-01	3.265e-01	-1.831	0.067174	.
## B16_var0.571428571428571	-5.535e-01	3.304e-01	-1.675	0.093946	.
## B16_var0.696428571428571	-6.863e-01	3.306e-01	-2.076	0.037882	*
## B16_var0.785714285714286	-6.306e-01	3.259e-01	-1.935	0.053008	.
## B16_var0.839285714285714	-2.259e-01	3.343e-01	-0.676	0.499134	
## B16_var0.857142857142857	-5.685e-01	3.305e-01	-1.720	0.085467	.
## B16_var0.982142857142857	-4.866e-01	3.341e-01	-1.456	0.145284	
## B16_var1.07142857142857	-4.322e-01	3.365e-01	-1.284	0.198998	
## B16_var1.125	-3.623e-01	3.435e-01	-1.055	0.291517	

## B16_var1.14285714285714	-4.695e-01	3.392e-01	-1.384	0.166300	
## B16_var1.26785714285714	-5.346e-01	3.406e-01	-1.570	0.116514	
## B16_var1.35714285714286	-7.961e-01	3.583e-01	-2.222	0.026288	*
## B16_var1.41071428571429	-3.509e-01	3.772e-01	-0.930	0.352242	
## B16_var1.42857142857143	-4.925e-01	3.727e-01	-1.321	0.186357	
## B16_var1.55357142857143	-2.992e-01	4.044e-01	-0.740	0.459322	
## B16_var1.64285714285714	-3.481e-01	4.098e-01	-0.849	0.395649	
## B16_var1.69642857142857	-2.767e-01	4.247e-01	-0.652	0.514712	
## B16_var1.71428571428571	-5.420e-01	4.426e-01	-1.225	0.220747	
## B16_var1.83928571428571	1.686e-02	4.552e-01	0.037	0.970455	
## B16_var1.92857142857143	-4.818e-01	4.868e-01	-0.990	0.322293	
## B16_var1.98214285714286	4.513e-01	5.478e-01	0.824	0.409958	
## B16_var2	-4.819e-01	4.658e-01	-1.035	0.300882	
## B16_var2.125	1.167e-01	6.130e-01	0.190	0.849041	
## B16_var2.21428571428571	4.106e-01	4.954e-01	0.829	0.407207	
## B16_var2.26785714285714	-4.131e-01	5.158e-01	-0.801	0.423221	
## B16_var2.28571428571429	3.064e-01	7.499e-01	0.409	0.682809	
## B16_var2.41071428571429	-3.543e-01	5.077e-01	-0.698	0.485285	
## B16_var2.5	-4.924e-01	7.107e-01	-0.693	0.488452	
## B16_var2.55357142857143	-3.915e-01	5.127e-01	-0.763	0.445168	
## B16_var2.57142857142857	-1.267e+00	5.056e-01	-2.507	0.012184	*
## B16_var2.69642857142857	-4.770e-01	5.701e-01	-0.837	0.402781	
## B16_var2.78571428571429	-4.087e-01	5.368e-01	-0.761	0.446414	
## B16_var2.83928571428571	-3.324e-01	4.711e-01	-0.706	0.480499	
## B16_var2.85714285714286	-3.699e-01	4.498e-01	-0.822	0.410842	
## B16_var2.98214285714286	-3.550e-01	4.653e-01	-0.763	0.445503	
## B16_var3.07142857142857	-9.626e-02	4.967e-01	-0.194	0.846326	
## B16_var3.125	-1.111e-01	4.516e-01	-0.246	0.805615	
## B16_var3.14285714285714	-6.380e-01	5.344e-01	-1.194	0.232561	
## B16_var3.26785714285714	-1.491e+00	5.626e-01	-2.649	0.008064	**
## B16_var3.35714285714286	-7.596e-02	4.400e-01	-0.173	0.862927	
## B16_var3.41071428571429	-1.065e+00	4.976e-01	-2.141	0.032301	*
## B16_var3.42857142857143	-9.667e-01	5.584e-01	-1.731	0.083388	.
## B16_var3.55357142857143	-4.119e-01	4.697e-01	-0.877	0.380419	
## B16_var3.64285714285714	-1.117e+00	5.417e-01	-2.062	0.039198	*
## B16_var3.69642857142857	-1.094e+00	5.055e-01	-2.165	0.030399	*
## B16_var3.71428571428571	1.727e-01	4.827e-01	0.358	0.720459	
## B16_var3.83928571428571	-5.673e-01	5.649e-01	-1.004	0.315322	
## B16_var3.92857142857143	-1.205e+00	5.099e-01	-2.363	0.018135	*
## B16_var3.98214285714286	-2.536e-01	5.054e-01	-0.502	0.615849	
## B16_var4	-7.457e-02	5.457e-01	-0.137	0.891301	
## B16_var4.125	-5.413e-01	5.359e-01	-1.010	0.312488	
## B16_var4.21428571428571	-2.165e-01	5.706e-01	-0.379	0.704414	
## B16_var4.26785714285714	-2.961e-01	5.282e-01	-0.560	0.575143	
## B16_var4.28571428571429	-3.097e-01	4.957e-01	-0.625	0.532200	
## B16_var4.41071428571429	-9.059e-01	5.118e-01	-1.770	0.076687	.
## B16_var4.5	-3.940e-01	4.601e-01	-0.857	0.391720	
## B16_var4.55357142857143	-7.789e-01	5.532e-01	-1.408	0.159136	
## B16_var4.57142857142857	-6.565e-01	5.623e-01	-1.168	0.242929	
## B16_var4.69642857142857	-4.409e-01	5.499e-01	-0.802	0.422705	
## B16_var4.78571428571429	-1.012e+00	6.147e-01	-1.646	0.099745	.
## B16_var4.83928571428571	-6.408e-01	4.608e-01	-1.391	0.164301	
## B16_var4.85714285714286	-7.633e-01	7.689e-01	-0.993	0.320890	
## B16_var4.98214285714286	-2.375e-01	4.721e-01	-0.503	0.614848	

## B16_var5.07142857142857	-9.782e-01	6.559e-01	-1.491	0.135878
## B16_var5.125	-7.549e-01	6.085e-01	-1.241	0.214729
## B16_var5.14285714285714	-5.120e-01	4.951e-01	-1.034	0.301022
## B16_var5.26785714285714	-6.128e-02	5.224e-01	-0.117	0.906619
## B16_var5.35714285714286	-1.574e+00	7.117e-01	-2.212	0.026979 *
## B16_var5.41071428571429	1.244e-01	5.438e-01	0.229	0.819129
## B16_var5.42857142857143	-1.079e+00	5.635e-01	-1.915	0.055460 .
## B16_var5.55357142857143	3.177e-01	6.832e-01	0.465	0.641903
## B16_var5.64285714285714	-4.247e-01	5.478e-01	-0.775	0.438129
## B16_var5.69642857142857	-5.661e-01	6.357e-01	-0.891	0.373152
## B16_var5.71428571428571	-1.938e+00	1.124e+00	-1.724	0.084721 .
## B16_var5.83928571428571	-2.880e-01	6.677e-01	-0.431	0.666235
## B16_var5.92857142857143	-6.235e-01	8.252e-01	-0.756	0.449897
## B16_var5.98214285714286	-6.005e-01	6.506e-01	-0.923	0.356033
## B16_var6	-1.557e+00	8.877e-01	-1.753	0.079523 .
## B16_var6.125	9.853e-01	6.538e-01	1.507	0.131774
## B16_var6.21428571428571	-6.312e-01	7.885e-01	-0.801	0.423384
## B16_var6.26785714285714	-8.064e-01	6.867e-01	-1.174	0.240320
## B16_var6.28571428571429	-3.740e-01	6.202e-01	-0.603	0.546538
## B16_var6.41071428571429	-9.635e-01	1.219e+00	-0.790	0.429270
## B16_var6.5	-3.944e-01	6.269e-01	-0.629	0.529310
## B16_var6.55357142857143	-6.755e-01	7.406e-01	-0.912	0.361743
## B16_var6.57142857142857	-4.787e-01	6.025e-01	-0.795	0.426844
## B16_var6.69642857142857	-4.473e-01	7.872e-01	-0.568	0.569889
## B16_var6.78571428571429	-3.822e-01	9.605e-01	-0.398	0.690674
## B16_var6.83928571428571	-5.010e-02	9.774e-01	-0.051	0.959121
## B16_var6.85714285714286	-8.404e-01	9.149e-01	-0.919	0.358269
## B16_var6.98214285714286	-1.561e+00	1.195e+00	-1.306	0.191611
## B16_var7.07142857142857	-7.012e-01	9.619e-01	-0.729	0.466023
## B16_var7.125	-1.835e-01	8.002e-01	-0.229	0.818599
## B16_var7.14285714285714	-1.541e+01	6.942e+02	-0.022	0.982292
## B16_var7.26785714285714	2.292e-01	1.307e+00	0.175	0.860804
## B16_var7.35714285714286	6.556e-01	8.293e-01	0.791	0.429149
## B16_var7.41071428571429	-1.551e+00	8.671e-01	-1.789	0.073587 .
## B16_var7.42857142857143	-1.514e+01	1.455e+03	-0.010	0.991702
## B16_var7.55357142857143	1.718e-01	9.819e-01	0.175	0.861135
## B16_var7.64285714285714	-2.082e+00	1.388e+00	-1.500	0.133541
## B16_var7.69642857142857	1.500e+01	1.455e+03	0.010	0.991776
## B16_var7.71428571428571	2.375e-01	7.670e-01	0.310	0.756841
## B16_var7.83928571428571	-7.592e-02	8.208e-01	-0.092	0.926304
## B16_var7.92857142857143	-1.467e+01	1.455e+03	-0.010	0.991956
## B16_var7.98214285714286	-1.346e+00	1.227e+00	-1.097	0.272616
## B16_var8	1.503e+01	1.455e+03	0.010	0.991763
## B16_var8.125	-1.528e+01	1.025e+03	-0.015	0.988102
## B16_var8.21428571428571	1.562e+01	7.021e+02	0.022	0.982250
## B16_var8.26785714285714	-1.841e+00	1.161e+00	-1.586	0.112758
## B16_var8.41071428571429	1.602e+01	1.455e+03	0.011	0.991217
## B16_var8.5	-1.490e+01	9.546e+02	-0.016	0.987548
## B16_var8.55357142857143	-1.462e+01	1.455e+03	-0.010	0.991984
## B16_var8.57142857142857	5.561e-01	1.367e+00	0.407	0.684119
## B16_var8.69642857142857	-1.490e+01	1.021e+03	-0.015	0.988354
## B16_var8.78571428571429	1.390e+01	1.455e+03	0.010	0.992379
## B16_var8.83928571428571	6.275e-01	8.614e-01	0.728	0.466341
## B16_var8.85714285714286	-1.800e+00	1.161e+00	-1.550	0.121123

## B16_var8.98214285714286	-1.629e+01	1.455e+03	-0.011	0.991069
## B16_var9.64285714285714	-1.494e+01	1.455e+03	-0.010	0.991811
## B16_var9.69642857142857	-1.564e+01	1.455e+03	-0.011	0.991425
## B16_var9.71428571428571	-1.548e+01	1.455e+03	-0.011	0.991516
## B16_var9.92857142857143	1.609e+01	1.455e+03	0.011	0.991179
## B16_var10.4107142857143	-1.475e+01	1.455e+03	-0.010	0.991912
## B16_var10.5	1.527e+01	1.455e+03	0.010	0.991631
## B16_var10.7857142857143	1.442e+01	1.455e+03	0.010	0.992095
## B17_var0.0909090909090909	-1.356e+00	1.196e+00	-1.133	0.257038
## B17_var0.163636363636364	-5.198e-01	9.645e-01	-0.539	0.589937
## B17_var0.2	2.882e-01	1.178e+00	0.245	0.806707
## B17_var0.218181818181818	-8.446e-01	9.193e-01	-0.919	0.358228
## B17_var0.254545454545455	-5.296e-01	8.986e-01	-0.589	0.555655
## B17_var0.272727272727273	-6.327e-01	8.931e-01	-0.708	0.478694
## B17_var0.290909090909091	-3.937e-01	9.833e-01	-0.400	0.688912
## B17_var0.363636363636364	-8.566e-01	9.321e-01	-0.919	0.358079
## B17_var0.4	-5.085e-01	1.074e+00	-0.473	0.635857
## B17_var0.418181818181818	-4.173e-01	9.022e-01	-0.463	0.643714
## B17_var0.454545454545454	-1.211e+00	1.048e+00	-1.156	0.247822
## B17_var0.454545454545455	-4.609e-01	8.982e-01	-0.513	0.607821
## B17_var0.472727272727273	-3.427e-01	8.950e-01	-0.383	0.701843
## B17_var0.490909090909091	-6.077e-01	9.255e-01	-0.657	0.511409
## B17_var0.563636363636364	5.025e-02	9.029e-01	0.056	0.955618
## B17_var0.6	-6.040e-01	9.589e-01	-0.630	0.528803
## B17_var0.618181818181818	-5.422e-01	9.015e-01	-0.601	0.547514
## B17_var0.654545454545455	-2.163e-01	8.966e-01	-0.241	0.809333
## B17_var0.672727272727273	-1.938e-01	8.948e-01	-0.217	0.828540
## B17_var0.690909090909091	-5.390e-02	9.123e-01	-0.059	0.952888
## B17_var0.763636363636363	4.434e-01	1.684e+00	0.263	0.792331
## B17_var0.763636363636364	-9.680e-02	9.032e-01	-0.107	0.914645
## B17_var0.8	-3.328e-01	9.588e-01	-0.347	0.728535
## B17_var0.818181818181818	-5.797e-01	9.043e-01	-0.641	0.521487
## B17_var0.854545454545454	-1.816e-01	9.015e-01	-0.201	0.840343
## B17_var0.854545454545455	1.502e+01	1.455e+03	0.010	0.991766
## B17_var0.872727272727273	-1.698e-01	8.975e-01	-0.189	0.849938
## B17_var0.890909090909091	-3.963e-01	9.085e-01	-0.436	0.662670
## B17_var0.963636363636364	-6.502e-01	9.098e-01	-0.715	0.474825
## B17_var1	2.103e-01	9.294e-01	0.226	0.820981
## B17_var1.018181818181818	-2.322e-01	9.006e-01	-0.258	0.796529
## B17_var1.054545454545454	-4.477e-01	9.090e-01	-0.493	0.622358
## B17_var1.072727272727272	-1.088e+00	9.207e-01	-1.182	0.237296
## B17_var1.090909090909090	2.138e-01	9.077e-01	0.236	0.813750
## B17_var1.163636363636363	-1.300e-01	9.104e-01	-0.143	0.886448
## B17_var1.2	-7.141e-02	9.252e-01	-0.077	0.938479
## B17_var1.218181818181818	-3.421e-01	9.171e-01	-0.373	0.709159
## B17_var1.254545454545454	-3.649e-01	9.141e-01	-0.399	0.689770
## B17_var1.272727272727272	-3.814e-01	9.232e-01	-0.413	0.679486
## B17_var1.290909090909090	4.665e-02	9.071e-01	0.051	0.958982
## B17_var1.363636363636363	-2.834e-02	9.071e-01	-0.031	0.975080
## B17_var1.4	2.304e-01	9.249e-01	0.249	0.803235
## B17_var1.418181818181818	1.842e-01	9.076e-01	0.203	0.839183
## B17_var1.454545454545454	3.563e-01	9.128e-01	0.390	0.696292
## B17_var1.472727272727272	5.652e-01	9.038e-01	0.625	0.531697
## B17_var1.490909090909090	1.182e-01	9.220e-01	0.128	0.897973

## B17_var1.56363636363636	5.199e-01	9.279e-01	0.560	0.575297
## B17_var1.6	4.541e-01	9.904e-01	0.458	0.646597
## B17_var1.61818181818182	2.402e-02	9.497e-01	0.025	0.979825
## B17_var1.65454545454545	3.782e-01	1.014e+00	0.373	0.709279
## B17_var1.67272727272727	-5.141e-01	1.074e+00	-0.479	0.632081
## B17_var1.69090909090909	4.364e-01	1.004e+00	0.435	0.663781
## B17_var1.76363636363636	-1.491e-01	1.127e+00	-0.132	0.894783
## B17_var1.8	-1.276e-01	1.280e+00	-0.100	0.920596
## B17_var1.81818181818182	4.896e-01	1.198e+00	0.409	0.682669
## B17_var1.85454545454545	1.378e-01	1.117e+00	0.123	0.901884
## B17_var1.87272727272727	-4.344e-01	1.330e+00	-0.327	0.744021
## B17_var1.89090909090909	1.020e+00	1.093e+00	0.933	0.350787
## B17_var1.96363636363636	3.036e-02	1.085e+00	0.028	0.977684
## B17_var2	-1.589e+01	1.455e+03	-0.011	0.991288
## B17_var2.01818181818182	-1.483e+01	1.455e+03	-0.010	0.991872
## B17_var2.05454545454545	-1.491e+01	1.455e+03	-0.010	0.991825
## B17_var2.07272727272727	-1.037e+00	1.634e+00	-0.634	0.525890
## B17_var2.16363636363636	4.081e-01	1.608e+00	0.254	0.799703
## B17_var2.21818181818182	-7.093e-02	1.174e+00	-0.060	0.951804
## B17_var2.27272727272727	9.419e-01	1.544e+00	0.610	0.541896
## B17_var2.29090909090909	4.686e-01	1.429e+00	0.328	0.743038
## B17_var2.45454545454545	1.607e+01	6.980e+02	0.023	0.981633
## C16_var0.09090909090909	-2.631e-01	2.743e-01	-0.959	0.337408
## C16_var0.16363636363636	-3.591e-01	2.516e-01	-1.428	0.153413
## C16_var0.21818181818181	-3.821e-01	2.441e-01	-1.565	0.117520
## C16_var0.25454545454545	-3.103e-01	2.455e-01	-1.264	0.206230
## C16_var0.27272727272727	-4.065e-01	2.520e-01	-1.613	0.106720
## C16_var0.29090909090909	-9.924e-01	7.447e-01	-1.333	0.182688
## C16_var0.36363636363636	-2.773e-01	3.633e-01	-0.763	0.445193
## C16_var0.4	-1.239e+00	8.481e-01	-1.461	0.144053
## C16_var0.41818181818181	-4.766e-01	2.853e-01	-1.671	0.094790 .
## C16_var0.45454545454545	-9.463e-02	2.694e-01	-0.351	0.725374
## C16_var0.45454545454545	-4.781e-01	3.099e-01	-1.542	0.122963
## C16_var0.47272727272727	-5.474e-01	2.402e-01	-2.279	0.022664 *
## C16_var0.49090909090909	-1.880e-02	3.426e-01	-0.055	0.956240
## C16_var0.56363636363636	-5.001e-01	3.068e-01	-1.630	0.103074
## C16_var0.6	-1.090e-02	3.858e-01	-0.028	0.977466
## C16_var0.61818181818181	-3.774e-01	2.807e-01	-1.344	0.178846
## C16_var0.65454545454545	-5.527e-01	2.664e-01	-2.074	0.038050 *
## C16_var0.67272727272727	-8.802e-01	2.649e-01	-3.322	0.000893 ***
## C16_var0.69090909090909	-2.662e-01	2.888e-01	-0.922	0.356565
## C16_var0.76363636363636	-5.274e-01	2.762e-01	-1.910	0.056190 .
## C16_var0.8	8.958e-02	3.109e-01	0.288	0.773240
## C16_var0.81818181818181	-3.091e-01	2.674e-01	-1.156	0.247690
## C16_var0.85454545454545	-4.532e-01	2.940e-01	-1.541	0.123273
## C16_var0.85454545454545	-6.653e-01	5.964e-01	-1.115	0.264679
## C16_var0.87272727272727	-9.152e-01	3.324e-01	-2.753	0.005904 **
## C16_var0.89090909090909	-4.432e-01	2.766e-01	-1.603	0.109034
## C16_var0.96363636363636	-8.217e-01	3.020e-01	-2.721	0.006516 **
## C16_var1	-7.146e-01	3.464e-01	-2.063	0.039142 *
## C16_var1.01818181818182	-6.072e-01	3.054e-01	-1.988	0.046811 *
## C16_var1.05454545454545	-3.262e-01	3.227e-01	-1.011	0.312014
## C16_var1.07272727272727	1.303e-01	3.414e-01	0.382	0.702753
## C16_var1.09090909090909	-1.226e-01	2.851e-01	-0.430	0.667215

```

## C16_var1.1636363636363636 -3.461e-01 3.069e-01 -1.128 0.259445
## C16_var1.2 2.638e-01 3.778e-01 0.698 0.484931
## C16_var1.21818181818182 -3.895e-01 3.682e-01 -1.058 0.290144
## C16_var1.2545454545454545 -8.946e-02 4.110e-01 -0.218 0.827690
## C16_var1.2727272727272727 -6.741e-01 4.630e-01 -1.456 0.145424
## C16_var1.2909090909090909 -4.027e-01 3.529e-01 -1.141 0.253824
## C16_var1.3636363636363636 -4.236e-01 3.502e-01 -1.209 0.226479
## C16_var1.4 2.833e-01 4.868e-01 0.582 0.560619
## C16_var1.41818181818182 -4.749e-01 3.673e-01 -1.293 0.196042
## C16_var1.4545454545454545 -5.948e-02 4.500e-01 -0.132 0.894831
## C16_var1.4727272727272727 -1.998e-01 4.255e-01 -0.470 0.638592
## C16_var1.4909090909090909 -2.679e-01 3.448e-01 -0.777 0.437259
## C16_var1.5636363636363636 4.919e-02 4.343e-01 0.113 0.909812
## C16_var1.6 -2.943e-01 4.463e-01 -0.659 0.509606
## C16_var1.61818181818182 -3.192e-01 5.433e-01 -0.588 0.556864
## C16_var1.6545454545454545 1.538e-01 5.018e-01 0.306 0.759282
## C16_var1.6727272727272727 7.669e-02 5.132e-01 0.149 0.881214
## C16_var1.6909090909090909 -1.479e-01 5.162e-01 -0.287 0.774482
## C16_var1.7636363636363636 -3.853e-01 5.568e-01 -0.692 0.488969
## C16_var1.8 -1.134e+00 9.247e-01 -1.226 0.220087
## C16_var1.81818181818182 -2.055e-01 6.762e-01 -0.304 0.761224
## C16_var1.8545454545454545 2.595e-01 7.532e-01 0.345 0.730389
## C16_var1.8727272727272727 4.168e-01 6.341e-01 0.657 0.511001
## C16_var1.8909090909090909 8.170e-01 5.223e-01 1.564 0.117765
## C16_var1.9636363636363636 6.071e-02 6.027e-01 0.101 0.919764
## C16_var2 -5.800e-01 1.414e+00 -0.410 0.681580
## C16_var2.01818181818182 2.107e+00 1.145e+00 1.840 0.065754 .
## C16_var2.0545454545454545 2.078e-01 6.942e-01 0.299 0.764715
## C16_var2.0727272727272727 -3.861e-01 9.773e-01 -0.395 0.692766
## C16_var2.1636363636363636 -1.533e+01 1.009e+03 -0.015 0.987879
## C16_var2.21818181818182 7.350e-01 1.122e+00 0.655 0.512474
## C16_var2.2727272727272727 -2.132e+00 1.195e+00 -1.785 0.074323 .
## C16_var2.2909090909090909 1.567e+01 7.124e+02 0.022 0.982454
## C16_var2.4545454545454545 9.243e-01 1.338e+00 0.691 0.489641
## D2_var0.2 2.111e-01 1.321e-01 1.598 0.110079
## D2_var0.3 1.380e-01 1.311e-01 1.053 0.292534
## D2_var0.5 2.472e-01 1.614e-01 1.532 0.125580
## D2_var0.7 2.565e-01 1.440e-01 1.781 0.074962 .
## D2_var0.8 9.577e-02 1.456e-01 0.658 0.510728
## D2_var1 3.128e-01 2.082e-01 1.502 0.133097
## D2_var1.2 5.874e-01 2.137e-01 2.749 0.005984 **
## D2_var1.3 1.126e-02 2.276e-01 0.049 0.960542
## D2_var1.5 9.568e-01 3.616e-01 2.646 0.008147 **
## D2_var1.7 5.676e-01 2.440e-01 2.327 0.019990 *
## D2_var1.8 4.439e-01 2.506e-01 1.771 0.076545 .
## D2_var2 7.244e-01 4.050e-01 1.789 0.073651 .
## D2_var2.3 -2.237e-01 6.257e-01 -0.358 0.720699
## D2_var2.7 -5.867e-01 6.387e-01 -0.919 0.358284
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
## Null deviance: 6933.5 on 5413 degrees of freedom

```

```
## Residual deviance: 6269.6 on 5082 degrees of freedom
## (9868 observations deleted due to missingness)
## AIC: 6933.6
##
## Number of Fisher Scoring iterations: 14
```

```
# step
dat93_model_step <- na.omit(dat93_model[, -var_excl])
alc_pol_model <- glm(data = dat93_model_step, change_alc_pol ~ ., family = "binomial")
summary(alc_pol_model)
```

```
##
## Call:
## glm(formula = change_alc_pol ~ ., family = "binomial", data = dat93_model_step)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -2.1956  -0.8832  -0.6556   1.1399   2.4200
##
## Coefficients: (3 not defined because of singularities)
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)   -3.865e-01  9.464e-01  -0.408  0.682951
## SEX1           3.820e-01  7.137e-02   5.352  8.69e-08 ***
## DRINKCAT2      1.052e-02  9.841e-02   0.107  0.914855
## DRINKCAT3      1.418e-01  1.817e-01   0.780  0.435176
## OCCALC1        2.690e-02  1.230e-01   0.219  0.826946
## USUALBIN1     -7.803e-02  9.062e-02  -0.861  0.389162
## DRUNKN301      1.290e-01  1.023e-01   1.260  0.207608
## DR2DRUNK1      7.572e-03  7.963e-02   0.095  0.924245
## DRPROBA1       1.242e-01  8.210e-02   1.513  0.130322
## DRPROBB1       1.305e+00  1.109e+00   1.177  0.239137
## DRPROBC1       1.334e+00  1.109e+00   1.203  0.228891
## DRPROBD1       1.277e+00  1.107e+00   1.153  0.248759
## DRPROBE1       1.424e+00  1.109e+00   1.284  0.199080
## DRPROBF1       1.211e+00  1.108e+00   1.093  0.274404
## DRPROBG1       1.479e+00  1.106e+00   1.337  0.181099
## DRPROBH1       1.085e+00  1.106e+00   0.981  0.326647
## DRPROBI1       1.139e+00  1.107e+00   1.028  0.303777
## DRPROBJ1       1.685e+00  1.111e+00   1.517  0.129208
## DRPROBK1       1.533e+00  1.104e+00   1.389  0.164745
## DRPROBL1       1.697e-01  1.246e+00   0.136  0.891679
## DRDRIVE1       1.325e+00  1.097e+00   1.207  0.227352
## BNGDRIVE1      1.307e-02  1.176e-01   0.111  0.911534
## PASSDRDV1     -9.531e-02  8.566e-02  -1.113  0.265862
## SECALC_A1       2.162e-01  7.841e-02   2.758  0.005817 **
## SECALC_B1       7.676e-02  8.883e-02   0.864  0.387534
## SECALC_C1     -1.277e-01  9.891e-02  -1.292  0.196515
## SECALC_D1       8.100e-02  9.739e-02   0.832  0.405606
## SECALC_E1       6.332e-02  7.498e-02   0.845  0.398349
## SECALC_G1       1.980e-01  7.334e-02   2.700  0.006936 **
## SECALC_H1       1.642e-01  8.254e-02   1.990  0.046613 *
## SECALC_I1       1.925e-01  2.499e-01   0.770  0.441130
## HSUBINGE1       6.809e-02  8.524e-02   0.799  0.424398
## BINGE1          NA          NA          NA          NA
```

## NUMPROB	-1.590e+01	1.323e+01	-1.201	0.229593	
## PROBGULP2	NA	NA	NA	NA	
## PROBGULP3	-1.865e-01	1.488e-01	-1.254	0.209954	
## PROBGULP4	NA	NA	NA	NA	
## RACE2	-5.495e-03	1.784e-01	-0.031	0.975431	
## RACE3	1.207e-01	1.546e-01	0.781	0.435003	
## RACE4	1.639e-01	1.336e-01	1.227	0.219841	
## NEVERMAR1	-1.230e-01	1.393e-01	-0.883	0.377313	
## MEMGREEK1	-1.182e-02	8.809e-02	-0.134	0.893298	
## DORMS1	2.690e-01	1.985e-01	1.355	0.175484	
## OFFCAMP1	3.893e-02	1.963e-01	0.198	0.842775	
## FRATHOUS1	3.126e-01	2.444e-01	1.279	0.200985	
## PARDRK1	2.499e-02	7.043e-02	0.355	0.722737	
## PARAPRV1	-4.005e-02	7.424e-02	-0.539	0.589572	
## GRADE1	4.160e-02	6.549e-02	0.635	0.525258	
## GIVEUP1	9.635e-02	1.474e-01	0.654	0.513186	
## AGEGROUP2	-1.903e-02	7.744e-02	-0.246	0.805856	
## AGEGROUP3	-4.763e-01	1.315e-01	-3.622	0.000292	***
## SELFRATE1	6.071e-04	7.043e-01	0.001	0.999312	
## SELFEVER1	4.405e-02	9.957e-02	0.442	0.658182	
## STWGT_93	4.605e-02	6.200e-02	0.743	0.457647	
## VOL30	1.615e-03	1.395e-03	1.158	0.247018	
## WAVE2	-1.930e-01	8.158e-02	-2.366	0.017969	*
## B16_var0.125	-2.151e-01	4.500e-01	-0.478	0.632590	
## B16_var0.214285714285714	-8.103e-01	3.818e-01	-2.122	0.033814	*
## B16_var0.267857142857143	-4.891e-01	3.560e-01	-1.374	0.169503	
## B16_var0.285714285714286	-4.174e-01	3.740e-01	-1.116	0.264420	
## B16_var0.410714285714286	-3.687e-01	3.819e-01	-0.966	0.334252	
## B16_var0.5	-2.499e-01	3.392e-01	-0.737	0.461323	
## B16_var0.553571428571429	-5.977e-01	3.265e-01	-1.831	0.067174	.
## B16_var0.571428571428571	-5.535e-01	3.304e-01	-1.675	0.093946	.
## B16_var0.696428571428571	-6.863e-01	3.306e-01	-2.076	0.037882	*
## B16_var0.785714285714286	-6.306e-01	3.259e-01	-1.935	0.053008	.
## B16_var0.839285714285714	-2.259e-01	3.343e-01	-0.676	0.499134	
## B16_var0.857142857142857	-5.685e-01	3.305e-01	-1.720	0.085467	.
## B16_var0.982142857142857	-4.866e-01	3.341e-01	-1.456	0.145284	
## B16_var1.07142857142857	-4.322e-01	3.365e-01	-1.284	0.198998	
## B16_var1.125	-3.623e-01	3.435e-01	-1.055	0.291517	
## B16_var1.14285714285714	-4.695e-01	3.392e-01	-1.384	0.166300	
## B16_var1.26785714285714	-5.346e-01	3.406e-01	-1.570	0.116514	
## B16_var1.35714285714286	-7.961e-01	3.583e-01	-2.222	0.026288	*
## B16_var1.41071428571429	-3.509e-01	3.772e-01	-0.930	0.352242	
## B16_var1.42857142857143	-4.925e-01	3.727e-01	-1.321	0.186357	
## B16_var1.55357142857143	-2.992e-01	4.044e-01	-0.740	0.459322	
## B16_var1.64285714285714	-3.481e-01	4.098e-01	-0.849	0.395649	
## B16_var1.69642857142857	-2.767e-01	4.247e-01	-0.652	0.514712	
## B16_var1.71428571428571	-5.420e-01	4.426e-01	-1.225	0.220747	
## B16_var1.83928571428571	1.686e-02	4.552e-01	0.037	0.970455	
## B16_var1.92857142857143	-4.818e-01	4.868e-01	-0.990	0.322293	
## B16_var1.98214285714286	4.513e-01	5.478e-01	0.824	0.409958	
## B16_var2	-4.819e-01	4.658e-01	-1.035	0.300882	
## B16_var2.125	1.167e-01	6.130e-01	0.190	0.849041	
## B16_var2.21428571428571	4.106e-01	4.954e-01	0.829	0.407207	
## B16_var2.26785714285714	-4.131e-01	5.158e-01	-0.801	0.423221	

## B16_var2.28571428571429	3.064e-01	7.499e-01	0.409	0.682809	
## B16_var2.41071428571429	-3.543e-01	5.077e-01	-0.698	0.485285	
## B16_var2.5	-4.924e-01	7.107e-01	-0.693	0.488452	
## B16_var2.55357142857143	-3.915e-01	5.127e-01	-0.763	0.445168	
## B16_var2.57142857142857	-1.267e+00	5.056e-01	-2.507	0.012184	*
## B16_var2.69642857142857	-4.770e-01	5.701e-01	-0.837	0.402781	
## B16_var2.78571428571429	-4.087e-01	5.368e-01	-0.761	0.446414	
## B16_var2.83928571428571	-3.324e-01	4.711e-01	-0.706	0.480499	
## B16_var2.85714285714286	-3.699e-01	4.498e-01	-0.822	0.410842	
## B16_var2.98214285714286	-3.550e-01	4.653e-01	-0.763	0.445503	
## B16_var3.07142857142857	-9.626e-02	4.967e-01	-0.194	0.846326	
## B16_var3.125	-1.111e-01	4.516e-01	-0.246	0.805615	
## B16_var3.14285714285714	-6.380e-01	5.344e-01	-1.194	0.232561	
## B16_var3.26785714285714	-1.491e+00	5.626e-01	-2.649	0.008064	**
## B16_var3.35714285714286	-7.596e-02	4.400e-01	-0.173	0.862927	
## B16_var3.41071428571429	-1.065e+00	4.976e-01	-2.141	0.032301	*
## B16_var3.42857142857143	-9.667e-01	5.584e-01	-1.731	0.083388	.
## B16_var3.55357142857143	-4.119e-01	4.697e-01	-0.877	0.380419	
## B16_var3.64285714285714	-1.117e+00	5.417e-01	-2.062	0.039198	*
## B16_var3.69642857142857	-1.094e+00	5.055e-01	-2.165	0.030399	*
## B16_var3.71428571428571	1.727e-01	4.827e-01	0.358	0.720459	
## B16_var3.83928571428571	-5.673e-01	5.649e-01	-1.004	0.315322	
## B16_var3.92857142857143	-1.205e+00	5.099e-01	-2.363	0.018135	*
## B16_var3.98214285714286	-2.536e-01	5.054e-01	-0.502	0.615849	
## B16_var4	-7.457e-02	5.457e-01	-0.137	0.891301	
## B16_var4.125	-5.413e-01	5.359e-01	-1.010	0.312488	
## B16_var4.21428571428571	-2.165e-01	5.706e-01	-0.379	0.704414	
## B16_var4.26785714285714	-2.961e-01	5.282e-01	-0.560	0.575143	
## B16_var4.28571428571429	-3.097e-01	4.957e-01	-0.625	0.532200	
## B16_var4.41071428571429	-9.059e-01	5.118e-01	-1.770	0.076687	.
## B16_var4.5	-3.940e-01	4.601e-01	-0.857	0.391720	
## B16_var4.55357142857143	-7.789e-01	5.532e-01	-1.408	0.159136	
## B16_var4.57142857142857	-6.565e-01	5.623e-01	-1.168	0.242929	
## B16_var4.69642857142857	-4.409e-01	5.499e-01	-0.802	0.422705	
## B16_var4.78571428571429	-1.012e+00	6.147e-01	-1.646	0.099745	.
## B16_var4.83928571428571	-6.408e-01	4.608e-01	-1.391	0.164301	
## B16_var4.85714285714286	-7.633e-01	7.689e-01	-0.993	0.320890	
## B16_var4.98214285714286	-2.375e-01	4.721e-01	-0.503	0.614848	
## B16_var5.07142857142857	-9.782e-01	6.559e-01	-1.491	0.135878	
## B16_var5.125	-7.549e-01	6.085e-01	-1.241	0.214729	
## B16_var5.14285714285714	-5.120e-01	4.951e-01	-1.034	0.301022	
## B16_var5.26785714285714	-6.128e-02	5.224e-01	-0.117	0.906619	
## B16_var5.35714285714286	-1.574e+00	7.117e-01	-2.212	0.026979	*
## B16_var5.41071428571429	1.244e-01	5.438e-01	0.229	0.819129	
## B16_var5.42857142857143	-1.079e+00	5.635e-01	-1.915	0.055460	.
## B16_var5.55357142857143	3.177e-01	6.832e-01	0.465	0.641903	
## B16_var5.64285714285714	-4.247e-01	5.478e-01	-0.775	0.438129	
## B16_var5.69642857142857	-5.661e-01	6.357e-01	-0.891	0.373152	
## B16_var5.71428571428571	-1.938e+00	1.124e+00	-1.724	0.084721	.
## B16_var5.83928571428571	-2.880e-01	6.677e-01	-0.431	0.666235	
## B16_var5.92857142857143	-6.235e-01	8.252e-01	-0.756	0.449897	
## B16_var5.98214285714286	-6.005e-01	6.506e-01	-0.923	0.356033	
## B16_var6	-1.557e+00	8.877e-01	-1.753	0.079523	.
## B16_var6.125	9.853e-01	6.538e-01	1.507	0.131774	

## B16_var6.21428571428571	-6.312e-01	7.885e-01	-0.801	0.423384
## B16_var6.26785714285714	-8.064e-01	6.867e-01	-1.174	0.240320
## B16_var6.28571428571429	-3.740e-01	6.202e-01	-0.603	0.546538
## B16_var6.41071428571429	-9.635e-01	1.219e+00	-0.790	0.429270
## B16_var6.5	-3.944e-01	6.269e-01	-0.629	0.529310
## B16_var6.55357142857143	-6.755e-01	7.406e-01	-0.912	0.361743
## B16_var6.57142857142857	-4.787e-01	6.025e-01	-0.795	0.426844
## B16_var6.69642857142857	-4.473e-01	7.872e-01	-0.568	0.569889
## B16_var6.78571428571429	-3.822e-01	9.605e-01	-0.398	0.690674
## B16_var6.83928571428571	-5.010e-02	9.774e-01	-0.051	0.959121
## B16_var6.85714285714286	-8.404e-01	9.149e-01	-0.919	0.358269
## B16_var6.98214285714286	-1.561e+00	1.195e+00	-1.306	0.191611
## B16_var7.07142857142857	-7.012e-01	9.619e-01	-0.729	0.466023
## B16_var7.125	-1.835e-01	8.002e-01	-0.229	0.818599
## B16_var7.14285714285714	-1.541e+01	6.942e+02	-0.022	0.982292
## B16_var7.26785714285714	2.292e-01	1.307e+00	0.175	0.860804
## B16_var7.35714285714286	6.556e-01	8.293e-01	0.791	0.429149
## B16_var7.41071428571429	-1.551e+00	8.671e-01	-1.789	0.073587
## B16_var7.42857142857143	-1.514e+01	1.455e+03	-0.010	0.991702
## B16_var7.55357142857143	1.718e-01	9.819e-01	0.175	0.861135
## B16_var7.64285714285714	-2.082e+00	1.388e+00	-1.500	0.133541
## B16_var7.69642857142857	1.500e+01	1.455e+03	0.010	0.991776
## B16_var7.71428571428571	2.375e-01	7.670e-01	0.310	0.756841
## B16_var7.83928571428571	-7.592e-02	8.208e-01	-0.092	0.926304
## B16_var7.92857142857143	-1.467e+01	1.455e+03	-0.010	0.991956
## B16_var7.98214285714286	-1.346e+00	1.227e+00	-1.097	0.272616
## B16_var8	1.503e+01	1.455e+03	0.010	0.991763
## B16_var8.125	-1.528e+01	1.025e+03	-0.015	0.988102
## B16_var8.21428571428571	1.562e+01	7.021e+02	0.022	0.982250
## B16_var8.26785714285714	-1.841e+00	1.161e+00	-1.586	0.112758
## B16_var8.41071428571429	1.602e+01	1.455e+03	0.011	0.991217
## B16_var8.5	-1.490e+01	9.546e+02	-0.016	0.987548
## B16_var8.55357142857143	-1.462e+01	1.455e+03	-0.010	0.991984
## B16_var8.57142857142857	5.561e-01	1.367e+00	0.407	0.684119
## B16_var8.69642857142857	-1.490e+01	1.021e+03	-0.015	0.988354
## B16_var8.78571428571429	1.390e+01	1.455e+03	0.010	0.992379
## B16_var8.83928571428571	6.275e-01	8.614e-01	0.728	0.466341
## B16_var8.85714285714286	-1.800e+00	1.161e+00	-1.550	0.121123
## B16_var8.98214285714286	-1.629e+01	1.455e+03	-0.011	0.991069
## B16_var9.64285714285714	-1.494e+01	1.455e+03	-0.010	0.991811
## B16_var9.69642857142857	-1.564e+01	1.455e+03	-0.011	0.991425
## B16_var9.71428571428571	-1.548e+01	1.455e+03	-0.011	0.991516
## B16_var9.92857142857143	1.609e+01	1.455e+03	0.011	0.991179
## B16_var10.4107142857143	-1.475e+01	1.455e+03	-0.010	0.991912
## B16_var10.5	1.527e+01	1.455e+03	0.010	0.991631
## B16_var10.7857142857143	1.442e+01	1.455e+03	0.010	0.992095
## B17_var0.0909090909090909	-1.356e+00	1.196e+00	-1.133	0.257038
## B17_var0.1636363636363636	-5.198e-01	9.645e-01	-0.539	0.589937
## B17_var0.2	2.882e-01	1.178e+00	0.245	0.806707
## B17_var0.218181818181818	-8.446e-01	9.193e-01	-0.919	0.358228
## B17_var0.2545454545454545	-5.296e-01	8.986e-01	-0.589	0.555655
## B17_var0.272727272727273	-6.327e-01	8.931e-01	-0.708	0.478694
## B17_var0.290909090909091	-3.937e-01	9.833e-01	-0.400	0.688912
## B17_var0.3636363636363636	-8.566e-01	9.321e-01	-0.919	0.358079

## B17_var0.4	-5.085e-01	1.074e+00	-0.473	0.635857
## B17_var0.418181818181818	-4.173e-01	9.022e-01	-0.463	0.643714
## B17_var0.454545454545454	-1.211e+00	1.048e+00	-1.156	0.247822
## B17_var0.454545454545455	-4.609e-01	8.982e-01	-0.513	0.607821
## B17_var0.472727272727273	-3.427e-01	8.950e-01	-0.383	0.701843
## B17_var0.490909090909091	-6.077e-01	9.255e-01	-0.657	0.511409
## B17_var0.563636363636364	5.025e-02	9.029e-01	0.056	0.955618
## B17_var0.6	-6.040e-01	9.589e-01	-0.630	0.528803
## B17_var0.618181818181818	-5.422e-01	9.015e-01	-0.601	0.547514
## B17_var0.654545454545455	-2.163e-01	8.966e-01	-0.241	0.809333
## B17_var0.672727272727273	-1.938e-01	8.948e-01	-0.217	0.828540
## B17_var0.690909090909091	-5.390e-02	9.123e-01	-0.059	0.952888
## B17_var0.763636363636363	4.434e-01	1.684e+00	0.263	0.792331
## B17_var0.763636363636364	-9.680e-02	9.032e-01	-0.107	0.914645
## B17_var0.8	-3.328e-01	9.588e-01	-0.347	0.728535
## B17_var0.818181818181818	-5.797e-01	9.043e-01	-0.641	0.521487
## B17_var0.854545454545454	-1.816e-01	9.015e-01	-0.201	0.840343
## B17_var0.854545454545455	1.502e+01	1.455e+03	0.010	0.991766
## B17_var0.872727272727273	-1.698e-01	8.975e-01	-0.189	0.849938
## B17_var0.890909090909091	-3.963e-01	9.085e-01	-0.436	0.662670
## B17_var0.963636363636364	-6.502e-01	9.098e-01	-0.715	0.474825
## B17_var1	2.103e-01	9.294e-01	0.226	0.820981
## B17_var1.018181818181818	-2.322e-01	9.006e-01	-0.258	0.796529
## B17_var1.054545454545454	-4.477e-01	9.090e-01	-0.493	0.622358
## B17_var1.072727272727272	-1.088e+00	9.207e-01	-1.182	0.237296
## B17_var1.090909090909090	2.138e-01	9.077e-01	0.236	0.813750
## B17_var1.163636363636363	-1.300e-01	9.104e-01	-0.143	0.886448
## B17_var1.2	-7.141e-02	9.252e-01	-0.077	0.938479
## B17_var1.218181818181818	-3.421e-01	9.171e-01	-0.373	0.709159
## B17_var1.254545454545454	-3.649e-01	9.141e-01	-0.399	0.689770
## B17_var1.272727272727272	-3.814e-01	9.232e-01	-0.413	0.679486
## B17_var1.290909090909090	4.665e-02	9.071e-01	0.051	0.958982
## B17_var1.363636363636363	-2.834e-02	9.071e-01	-0.031	0.975080
## B17_var1.4	2.304e-01	9.249e-01	0.249	0.803235
## B17_var1.418181818181818	1.842e-01	9.076e-01	0.203	0.839183
## B17_var1.454545454545454	3.563e-01	9.128e-01	0.390	0.696292
## B17_var1.472727272727272	5.652e-01	9.038e-01	0.625	0.531697
## B17_var1.490909090909090	1.182e-01	9.220e-01	0.128	0.897973
## B17_var1.563636363636363	5.199e-01	9.279e-01	0.560	0.575297
## B17_var1.6	4.541e-01	9.904e-01	0.458	0.646597
## B17_var1.618181818181818	2.402e-02	9.497e-01	0.025	0.979825
## B17_var1.654545454545454	3.782e-01	1.014e+00	0.373	0.709279
## B17_var1.672727272727272	-5.141e-01	1.074e+00	-0.479	0.632081
## B17_var1.690909090909090	4.364e-01	1.004e+00	0.435	0.663781
## B17_var1.763636363636363	-1.491e-01	1.127e+00	-0.132	0.894783
## B17_var1.8	-1.276e-01	1.280e+00	-0.100	0.920596
## B17_var1.818181818181818	4.896e-01	1.198e+00	0.409	0.682669
## B17_var1.854545454545454	1.378e-01	1.117e+00	0.123	0.901884
## B17_var1.872727272727272	-4.344e-01	1.330e+00	-0.327	0.744021
## B17_var1.890909090909090	1.020e+00	1.093e+00	0.933	0.350787
## B17_var1.963636363636363	3.036e-02	1.085e+00	0.028	0.977684
## B17_var2	-1.589e+01	1.455e+03	-0.011	0.991288
## B17_var2.018181818181818	-1.483e+01	1.455e+03	-0.010	0.991872
## B17_var2.054545454545454	-1.491e+01	1.455e+03	-0.010	0.991825

## B17_var2.07272727272727	-1.037e+00	1.634e+00	-0.634	0.525890
## B17_var2.16363636363636	4.081e-01	1.608e+00	0.254	0.799703
## B17_var2.21818181818182	-7.093e-02	1.174e+00	-0.060	0.951804
## B17_var2.27272727272727	9.419e-01	1.544e+00	0.610	0.541896
## B17_var2.29090909090909	4.686e-01	1.429e+00	0.328	0.743038
## B17_var2.45454545454545	1.607e+01	6.980e+02	0.023	0.981633
## C16_var0.0909090909090909	-2.631e-01	2.743e-01	-0.959	0.337408
## C16_var0.163636363636364	-3.591e-01	2.516e-01	-1.428	0.153413
## C16_var0.218181818181818	-3.821e-01	2.441e-01	-1.565	0.117520
## C16_var0.254545454545455	-3.103e-01	2.455e-01	-1.264	0.206230
## C16_var0.272727272727273	-4.065e-01	2.520e-01	-1.613	0.106720
## C16_var0.290909090909091	-9.924e-01	7.447e-01	-1.333	0.182688
## C16_var0.363636363636364	-2.773e-01	3.633e-01	-0.763	0.445193
## C16_var0.4	-1.239e+00	8.481e-01	-1.461	0.144053
## C16_var0.418181818181818	-4.766e-01	2.853e-01	-1.671	0.094790 .
## C16_var0.454545454545454	-9.463e-02	2.694e-01	-0.351	0.725374
## C16_var0.454545454545455	-4.781e-01	3.099e-01	-1.542	0.122963
## C16_var0.472727272727273	-5.474e-01	2.402e-01	-2.279	0.022664 *
## C16_var0.490909090909091	-1.880e-02	3.426e-01	-0.055	0.956240
## C16_var0.563636363636364	-5.001e-01	3.068e-01	-1.630	0.103074
## C16_var0.6	-1.090e-02	3.858e-01	-0.028	0.977466
## C16_var0.618181818181818	-3.774e-01	2.807e-01	-1.344	0.178846
## C16_var0.654545454545455	-5.527e-01	2.664e-01	-2.074	0.038050 *
## C16_var0.672727272727273	-8.802e-01	2.649e-01	-3.322	0.000893 ***
## C16_var0.690909090909091	-2.662e-01	2.888e-01	-0.922	0.356565
## C16_var0.763636363636364	-5.274e-01	2.762e-01	-1.910	0.056190 .
## C16_var0.8	8.958e-02	3.109e-01	0.288	0.773240
## C16_var0.818181818181818	-3.091e-01	2.674e-01	-1.156	0.247690
## C16_var0.854545454545454	-4.532e-01	2.940e-01	-1.541	0.123273
## C16_var0.854545454545455	-6.653e-01	5.964e-01	-1.115	0.264679
## C16_var0.872727272727273	-9.152e-01	3.324e-01	-2.753	0.005904 **
## C16_var0.890909090909091	-4.432e-01	2.766e-01	-1.603	0.109034
## C16_var0.963636363636364	-8.217e-01	3.020e-01	-2.721	0.006516 **
## C16_var1	-7.146e-01	3.464e-01	-2.063	0.039142 *
## C16_var1.018181818181818	-6.072e-01	3.054e-01	-1.988	0.046811 *
## C16_var1.054545454545454	-3.262e-01	3.227e-01	-1.011	0.312014
## C16_var1.072727272727272	1.303e-01	3.414e-01	0.382	0.702753
## C16_var1.090909090909090	-1.226e-01	2.851e-01	-0.430	0.667215
## C16_var1.163636363636363	-3.461e-01	3.069e-01	-1.128	0.259445
## C16_var1.2	2.638e-01	3.778e-01	0.698	0.484931
## C16_var1.218181818181818	-3.895e-01	3.682e-01	-1.058	0.290144
## C16_var1.254545454545454	-8.946e-02	4.110e-01	-0.218	0.827690
## C16_var1.272727272727272	-6.741e-01	4.630e-01	-1.456	0.145424
## C16_var1.290909090909090	-4.027e-01	3.529e-01	-1.141	0.253824
## C16_var1.363636363636363	-4.236e-01	3.502e-01	-1.209	0.226479
## C16_var1.4	2.833e-01	4.868e-01	0.582	0.560619
## C16_var1.418181818181818	-4.749e-01	3.673e-01	-1.293	0.196042
## C16_var1.454545454545454	-5.948e-02	4.500e-01	-0.132	0.894831
## C16_var1.472727272727272	-1.998e-01	4.255e-01	-0.470	0.638592
## C16_var1.490909090909090	-2.679e-01	3.448e-01	-0.777	0.437259
## C16_var1.563636363636363	4.919e-02	4.343e-01	0.113	0.909812
## C16_var1.6	-2.943e-01	4.463e-01	-0.659	0.509606
## C16_var1.618181818181818	-3.192e-01	5.433e-01	-0.588	0.556864
## C16_var1.654545454545454	1.538e-01	5.018e-01	0.306	0.759282

```
## C16_var1.67272727272727 7.669e-02 5.132e-01 0.149 0.881214
## C16_var1.69090909090909 -1.479e-01 5.162e-01 -0.287 0.774482
## C16_var1.76363636363636 -3.853e-01 5.568e-01 -0.692 0.488969
## C16_var1.8 -1.134e+00 9.247e-01 -1.226 0.220087
## C16_var1.81818181818182 -2.055e-01 6.762e-01 -0.304 0.761224
## C16_var1.85454545454545 2.595e-01 7.532e-01 0.345 0.730389
## C16_var1.87272727272727 4.168e-01 6.341e-01 0.657 0.511001
## C16_var1.89090909090909 8.170e-01 5.223e-01 1.564 0.117765
## C16_var1.96363636363636 6.071e-02 6.027e-01 0.101 0.919764
## C16_var2 -5.800e-01 1.414e+00 -0.410 0.681580
## C16_var2.01818181818182 2.107e+00 1.145e+00 1.840 0.065754 .
## C16_var2.05454545454545 2.078e-01 6.942e-01 0.299 0.764715
## C16_var2.07272727272727 -3.861e-01 9.773e-01 -0.395 0.692766
## C16_var2.16363636363636 -1.533e+01 1.009e+03 -0.015 0.987879
## C16_var2.21818181818182 7.350e-01 1.122e+00 0.655 0.512474
## C16_var2.27272727272727 -2.132e+00 1.195e+00 -1.785 0.074323 .
## C16_var2.29090909090909 1.567e+01 7.124e+02 0.022 0.982454
## C16_var2.45454545454545 9.243e-01 1.338e+00 0.691 0.489641
## D2_var0.2 2.111e-01 1.321e-01 1.598 0.110079
## D2_var0.3 1.380e-01 1.311e-01 1.053 0.292534
## D2_var0.5 2.472e-01 1.614e-01 1.532 0.125580
## D2_var0.7 2.565e-01 1.440e-01 1.781 0.074962 .
## D2_var0.8 9.577e-02 1.456e-01 0.658 0.510728
## D2_var1 3.128e-01 2.082e-01 1.502 0.133097
## D2_var1.2 5.874e-01 2.137e-01 2.749 0.005984 **
## D2_var1.3 1.126e-02 2.276e-01 0.049 0.960542
## D2_var1.5 9.568e-01 3.616e-01 2.646 0.008147 **
## D2_var1.7 5.676e-01 2.440e-01 2.327 0.019990 *
## D2_var1.8 4.439e-01 2.506e-01 1.771 0.076545 .
## D2_var2 7.244e-01 4.050e-01 1.789 0.073651 .
## D2_var2.3 -2.237e-01 6.257e-01 -0.358 0.720699
## D2_var2.7 -5.867e-01 6.387e-01 -0.919 0.358284
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
## Null deviance: 6933.5 on 5413 degrees of freedom
## Residual deviance: 6269.6 on 5082 degrees of freedom
## AIC: 6933.6
##
## Number of Fisher Scoring iterations: 14
```

```
# step(alc_pol_model, direction = "both", trace = 0)
```

```
# model_test <- glm(data = dat93_model[, -var_excl], change_alc_pol~SEX+DRINKCAT+B17_var, family = "binom"
# summary(model_test)
```

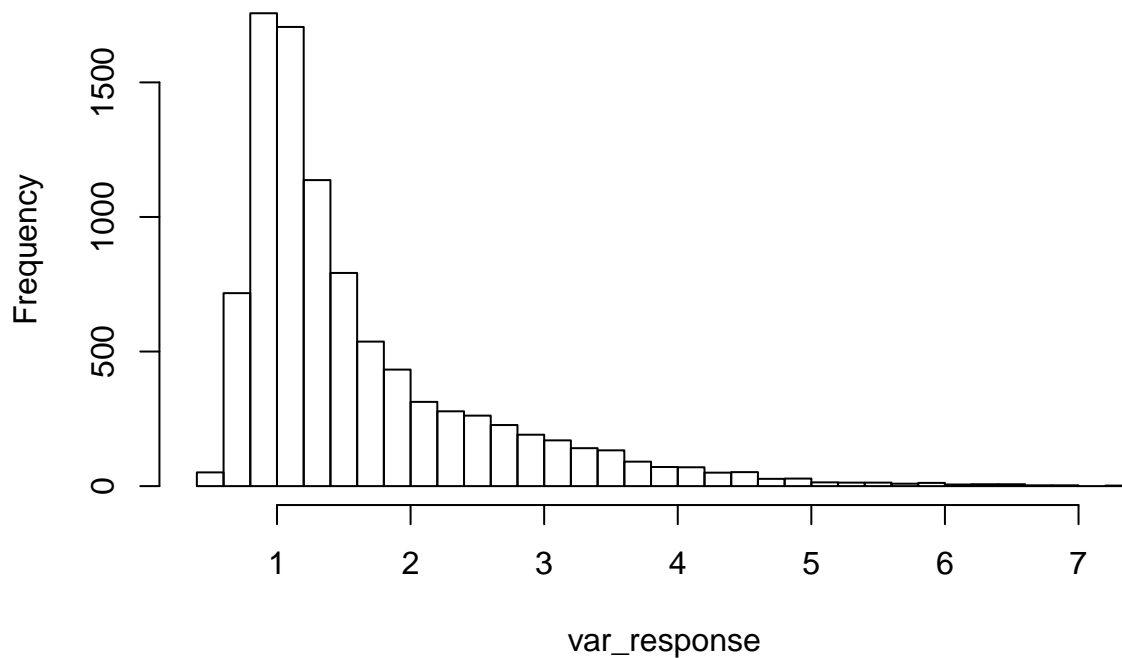
Use variance as response -> exclude question B15 (too many NA's)

```
dat93_varmodel <- cbind(dat93, final_model_data$change_alc_pol, final_model_data$min_drink_age)
var_str <- c("B1", "B15", "B16", "B17", "C16", "D2")
Y <- dat93_varmodel %>% select(starts_with(var_str[1]))
for (i in 2:length(var_str)){
  Y <- cbind(Y, dat93_varmodel %>% select(starts_with(var_str[i])))
}
# summary(Y)
# remove columns with too many NA's
Y <- Y[, names(Y) %!in% c("B15_A", "B15_B", "B15_C", "B15_D", "B15_E")]
var_response <- colvar(Y)
summary(var_response)
```

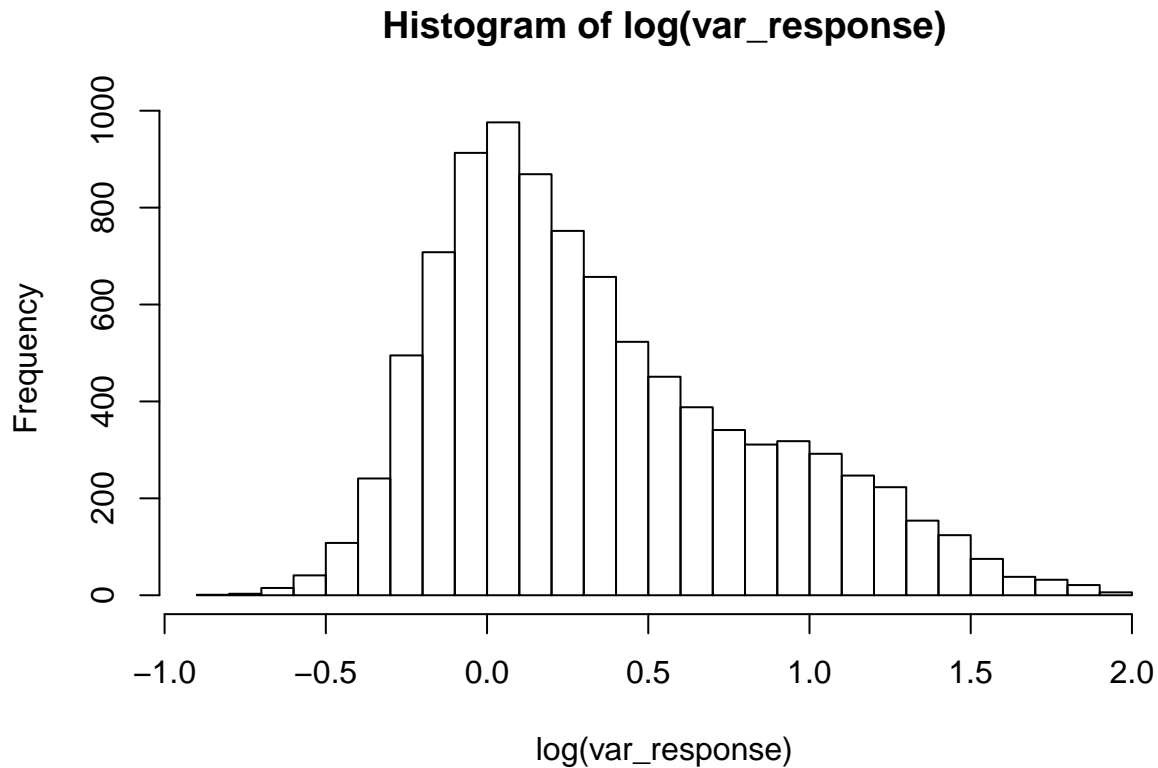
```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.   NA's
##    0.428  0.977   1.266   1.618  1.931   7.324  5959
```

```
hist(var_response, breaks = 30)
```

Histogram of var_response



```
hist(log(var_response), breaks = 30)
```



Fit linear model on log(variance):

```
col_num <- c("NUMPROB", "STWGT_93", "VOL30", "var_response")
dat93_varmodel[, names(dat93_varmodel) %!in% col_num] <- lapply(dat93_varmodel[, names(dat93_varmodel) %!
var_excl <- c(1:282, 312:337, 343:354, 356:357, 359:366,
              369:377, 392:394, 399:404)

dat93_varmodel <- cbind(dat93_varmodel[, -var_excl], var_response)
# include change_alc_pol and min_drink_age as predictors
var_model <- glm(data = dat93_varmodel, log(var_response) ~ ., family = "gaussian")
summary(var_model)
```

```
##
## Call:
## glm(formula = log(var_response) ~ ., family = "gaussian", data = dat93_varmodel)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -1.1579  -0.3390  -0.1057   0.2867   1.5541
##
## Coefficients: (12 not defined because of singularities)
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.6122717  0.0917845   6.671 2.95e-11 ***
## SEX1          -0.0734611  0.0172924  -4.248 2.21e-05 ***
## DRINKCAT2     -0.0769698  0.0246132  -3.127 0.001780 **
```

## DRINKCAT3	-0.1587897	0.0462760	-3.431	0.000608	***
## OCCALC1	-0.0609828	0.0301565	-2.022	0.043231	*
## USUALBIN1	0.0279619	0.0227017	1.232	0.218143	
## DRUNKN301	-0.0071569	0.0265706	-0.269	0.787672	
## DR2DRUNK1	-0.0844255	0.0190861	-4.423	1.00e-05	***
## DRPROBA1	-0.0528234	0.0202338	-2.611	0.009076	**
## DRPROBB1	-0.2005258	0.2787171	-0.719	0.471906	
## DRPROBC1	-0.1572265	0.2782348	-0.565	0.572052	
## DRPROBD1	-0.1457389	0.2780105	-0.524	0.600158	
## DRPROBE1	-0.1671974	0.2783434	-0.601	0.548087	
## DRPROBF1	-0.1356602	0.2781412	-0.488	0.625766	
## DRPROBG1	-0.1887757	0.2770529	-0.681	0.495682	
## DRPROBH1	-0.1958643	0.2784052	-0.704	0.481777	
## DRPROBI1	-0.2048508	0.2772282	-0.739	0.460002	
## DRPROBJ1	-0.1450980	0.2783009	-0.521	0.602142	
## DRPROBK1	-0.1812105	0.2771119	-0.654	0.513203	
## DRPROBL1	-0.1148669	0.3188625	-0.360	0.718690	
## DRDRIVE1	-0.1812225	0.2746290	-0.660	0.509374	
## BNGDRIVE1	-0.0098476	0.0270763	-0.364	0.716106	
## PASSDRDV1	-0.0331905	0.0217129	-1.529	0.126452	
## SECALC_A1	0.0573609	0.0204612	2.803	0.005085	**
## SECALC_B1	0.0102416	0.0227490	0.450	0.652595	
## SECALC_C1	0.0783906	0.0258594	3.031	0.002452	**
## SECALC_D1	0.0100922	0.0254858	0.396	0.692134	
## SECALC_E1	-0.0261709	0.0186582	-1.403	0.160812	
## SECALC_G1	0.0469876	0.0186022	2.526	0.011584	*
## SECALC_H1	0.0125642	0.0213463	0.589	0.556175	
## SECALC_I1	-0.0304606	0.0719205	-0.424	0.671934	
## HSUBINGE1	-0.0335504	0.0216516	-1.550	0.121340	
## BINGE1	NA	NA	NA	NA	
## DRIVE1	NA	NA	NA	NA	
## NUMPROB	1.9930148	3.3191720	0.600	0.548242	
## PROBGULP2	NA	NA	NA	NA	
## PROBGULP3	0.0641418	0.0379690	1.689	0.091248	.
## PROBGULP4	NA	NA	NA	NA	
## RACE2	0.0775065	0.0506726	1.530	0.126218	
## RACE3	0.0116960	0.0408244	0.286	0.774516	
## RACE4	-0.0099531	0.0348821	-0.285	0.775405	
## NEVERMAR1	-0.0460094	0.0303598	-1.515	0.129744	
## FREQBING1	NA	NA	NA	NA	
## FREQBING2	NA	NA	NA	NA	
## MEMGREEK1	-0.0371017	0.0218023	-1.702	0.088895	.
## DORMS1	0.0524030	0.0536649	0.976	0.328892	
## OFFCAMP1	0.0523719	0.0518350	1.010	0.312394	
## FRATHOUS1	0.0734713	0.0645428	1.138	0.255059	
## OTHRHOUS1	NA	NA	NA	NA	
## PARDRK1	0.0266864	0.0175182	1.523	0.127763	
## PARAPRV1	0.0261026	0.0186094	1.403	0.160808	
## GRADE1	0.0163040	0.0161367	1.010	0.312389	
## GIVEUP1	-0.0268816	0.0357053	-0.753	0.451576	
## NOBINGE1	NA	NA	NA	NA	
## UPTAKE1	NA	NA	NA	NA	
## CONTBING1	NA	NA	NA	NA	
## DD_11	NA	NA	NA	NA	


```
## DD_51 NA NA NA NA
## AGEGROUP2 0.0767748 0.0192263 3.993 6.65e-05 ***
## AGEGROUP3 0.1196764 0.0292382 4.093 4.35e-05 ***
## SELFRATE1 0.1589588 0.2141725 0.742 0.458016
## SELFEVER1 0.0878316 0.0252829 3.474 0.000519 ***
## STWGT_93 -0.0185257 0.0145782 -1.271 0.203892
## VOL30 0.0002269 0.0003428 0.662 0.508054
## WAVE2 -0.0363508 0.0195820 -1.856 0.063490 .
## `final_model_data$change_alc_pol`1 0.0629707 0.0168615 3.735 0.000191 ***
## `final_model_data$min_drink_age`1 -0.2290260 0.0654587 -3.499 0.000473 ***
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.2137125)
##
## Null deviance: 828.66 on 3528 degrees of freedom
## Residual deviance: 742.44 on 3474 degrees of freedom
## (11753 observations deleted due to missingness)
## AIC: 4625.8
##
## Number of Fisher Scoring iterations: 2
```

```
# remove singularities
```

```
varname_excl <- c("BINGE", "PROBGULP", "DRIVE", "FREQBING", "OTHRHOUS", "NOBINGE", "UPTAKE", "CONTBING", "DD_1")
dat93_varmodel <- dat93_varmodel[,names(dat93_varmodel) %!in% varname_excl]
var_model <- glm(data = dat93_varmodel, log(var_response)~., family = "gaussian")
summary(var_model)
```

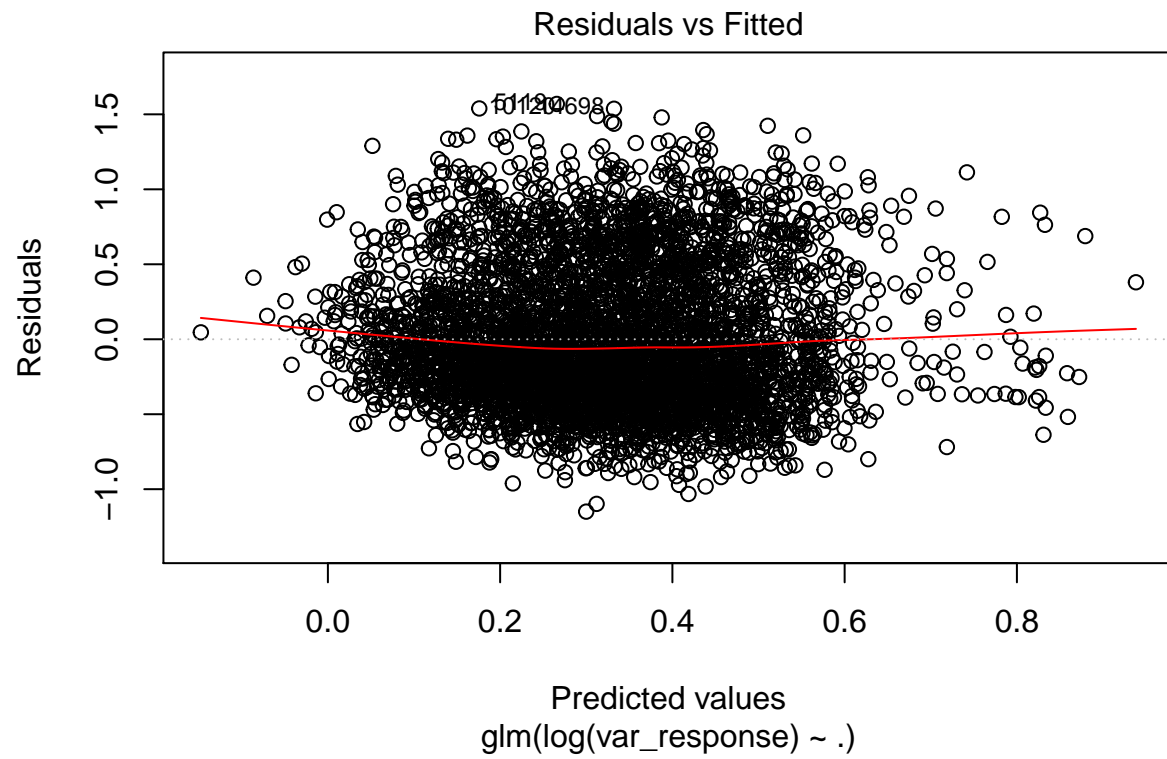
```
##
## Call:
## glm(formula = log(var_response) ~ ., family = "gaussian", data = dat93_varmodel)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -1.1496  -0.3392  -0.1061   0.2914   1.5692
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    0.7410588  0.0807775   9.174 < 2e-16 ***
## SEX1          -0.0706104  0.0152906  -4.618 3.98e-06 ***
## DRINKCAT2     -0.0593537  0.0209793  -2.829 0.004687 **
## DRINKCAT3     -0.1048477  0.0291575  -3.596 0.000327 ***
## OCCALC1       -0.0526750  0.0268756  -1.960 0.050062 .
## USUALBIN1      0.0171188  0.0197706   0.866 0.386604
## DRUNKN301      0.0063557  0.0226768   0.280 0.779281
## DR2DRUNK1     -0.0746568  0.0165407  -4.514 6.54e-06 ***
## DRPROBA1      -0.0598627  0.0176050  -3.400 0.000679 ***
## DRPROBB1      -0.0769077  0.2415575  -0.318 0.750209
## DRPROBC1      -0.0398543  0.2410204  -0.165 0.868671
## DRPROBD1      -0.0237946  0.2408108  -0.099 0.921293
## DRPROBE1      -0.0608491  0.2411010  -0.252 0.800759
## DRPROBF1      -0.0350680  0.2408853  -0.146 0.884260
## DRPROBG1      -0.0771261  0.2402775  -0.321 0.748234
## DRPROBH1      -0.0587735  0.2409923  -0.244 0.807334
```

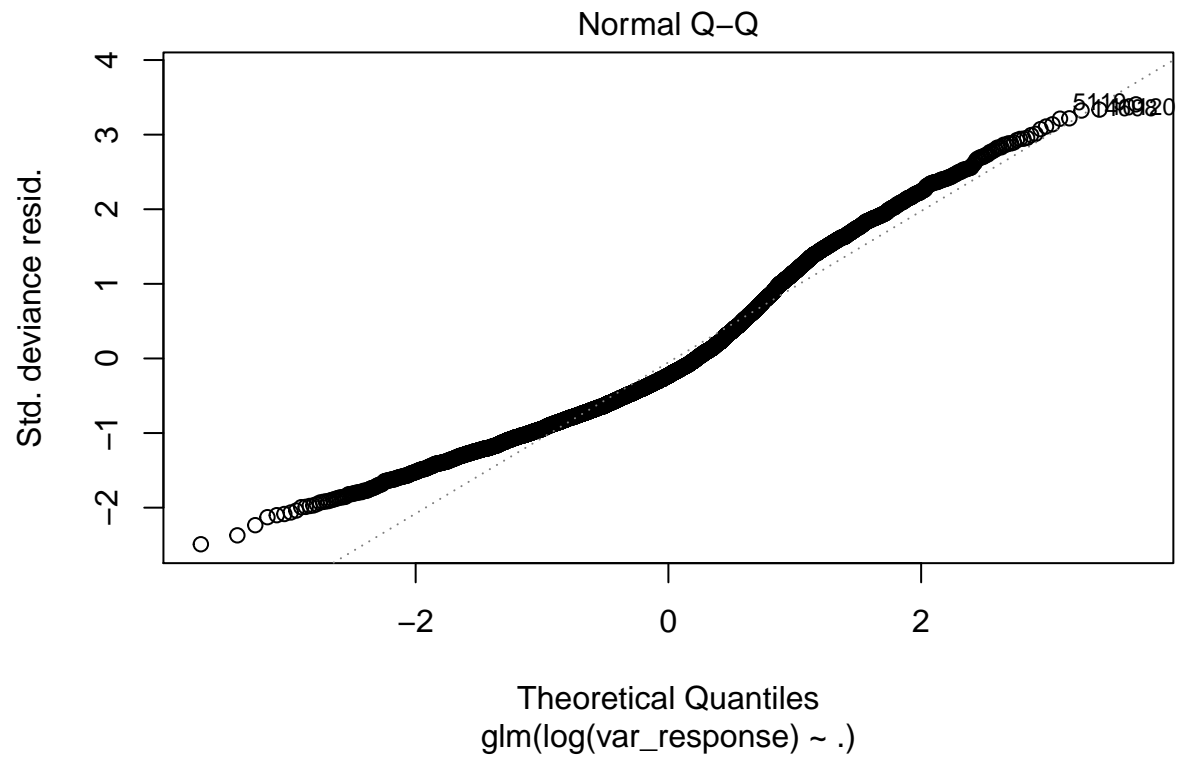
```

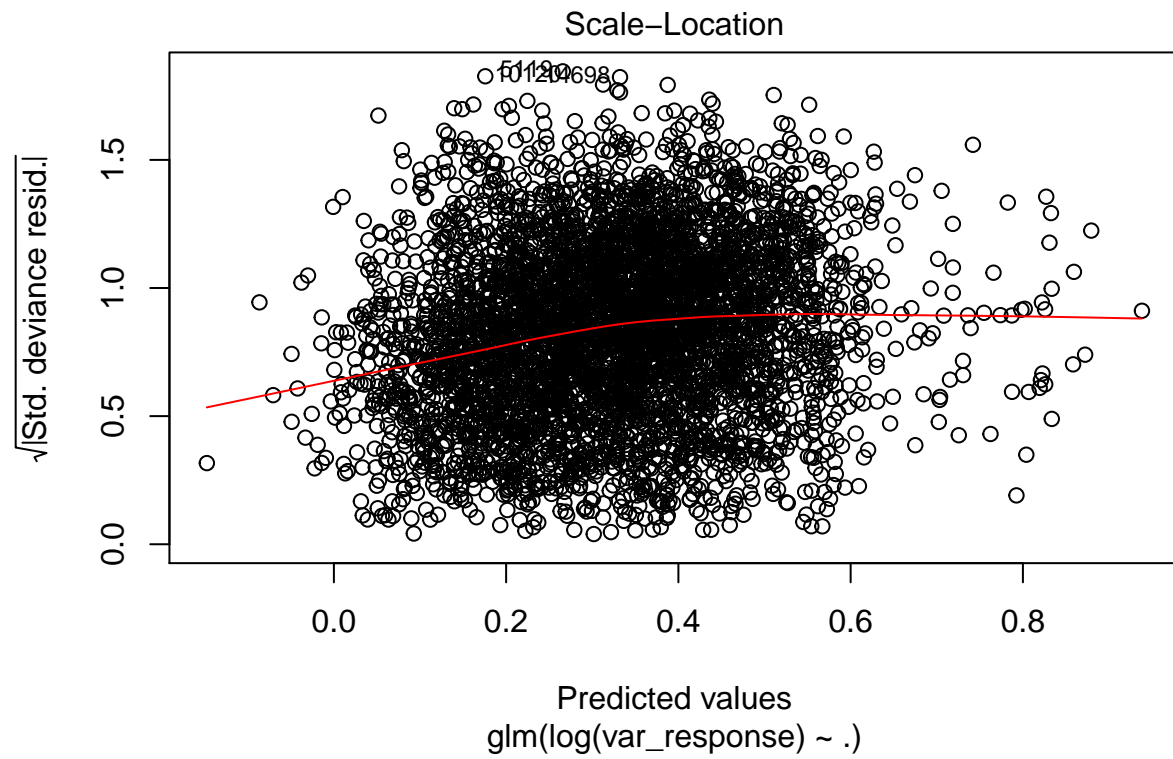
## DRPROBI1          -0.0862788  0.2405848  -0.359  0.719895
## DRPROBJ1          -0.0405299  0.2415857  -0.168  0.866775
## DRPROBK1          -0.0649593  0.2401722  -0.270  0.786811
## DRPROBL1           0.0382610  0.2693972   0.142  0.887067
## DRDRIVE1          -0.0497488  0.2381143  -0.209  0.834513
## BNGDRIVE1         -0.0048694  0.0256898  -0.190  0.849673
## PASSDRDV1         -0.0263499  0.0187635  -1.404  0.160293
## SECALC_A1           0.0334628  0.0175153   1.910  0.056133 .
## SECALC_B1           0.0082106  0.0197531   0.416  0.677677
## SECALC_C1           0.0392431  0.0220024   1.784  0.074558 .
## SECALC_D1           0.0089936  0.0219166   0.410  0.681565
## SECALC_E1          -0.0299659  0.0163060  -1.838  0.066168 .
## SECALC_G1           0.0511721  0.0160652   3.185  0.001456 **
## SECALC_H1           0.0312591  0.0182826   1.710  0.087376 .
## SECALC_I1          -0.0016687  0.0589194  -0.028  0.977407
## HSUBINGE1         -0.0353569  0.0187621  -1.884  0.059562 .
## NUMPROB            0.5391785  2.8731787   0.188  0.851152
## RACE2              0.0697564  0.0389592   1.790  0.073440 .
## RACE3              0.0070721  0.0337282   0.210  0.833927
## RACE4              0.0031157  0.0301081   0.103  0.917583
## NEVERMAR1         -0.0634316  0.0293535  -2.161  0.030750 *
## MEMGREEK1         -0.0175322  0.0192777  -0.909  0.363157
## DORMS1            -0.0100692  0.0432039  -0.233  0.815723
## OFFCAMP1          -0.0094278  0.0425997  -0.221  0.824859
## FRATHOUS1         -0.0078410  0.0539740  -0.145  0.884502
## PARDRK1           0.0235862  0.0153891   1.533  0.125429
## PARAPRV1           0.0091012  0.0161474   0.564  0.573032
## GRADE1            0.0065307  0.0141758   0.461  0.645040
## GIVEUP1           -0.0133354  0.0320314  -0.416  0.677193
## AGEGROUP2          0.0607386  0.0170035   3.572  0.000358 ***
## AGEGROUP3          0.0849876  0.0273076   3.112  0.001868 **
## SELFRATE1          0.0471151  0.1711531   0.275  0.783113
## SELFEVER1          0.0455673  0.0222726   2.046  0.040824 *
## STWGT_93          -0.0140174  0.0136307  -1.028  0.303827
## VOL30              0.0002009  0.0003060   0.656  0.511601
## WAVE2             -0.0335275  0.0174553  -1.921  0.054823 .
## `final_model_data$change_alc_pol`1  0.0473271  0.0147279   3.213  0.001321 **
## `final_model_data$min_drink_age`1 -0.2594319  0.0591975  -4.382  1.20e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.2154303)
##
## Null deviance: 1078.29 on 4631 degrees of freedom
## Residual deviance: 986.24 on 4578 degrees of freedom
## (10650 observations deleted due to missingness)
## AIC: 6090.1
##
## Number of Fisher Scoring iterations: 2

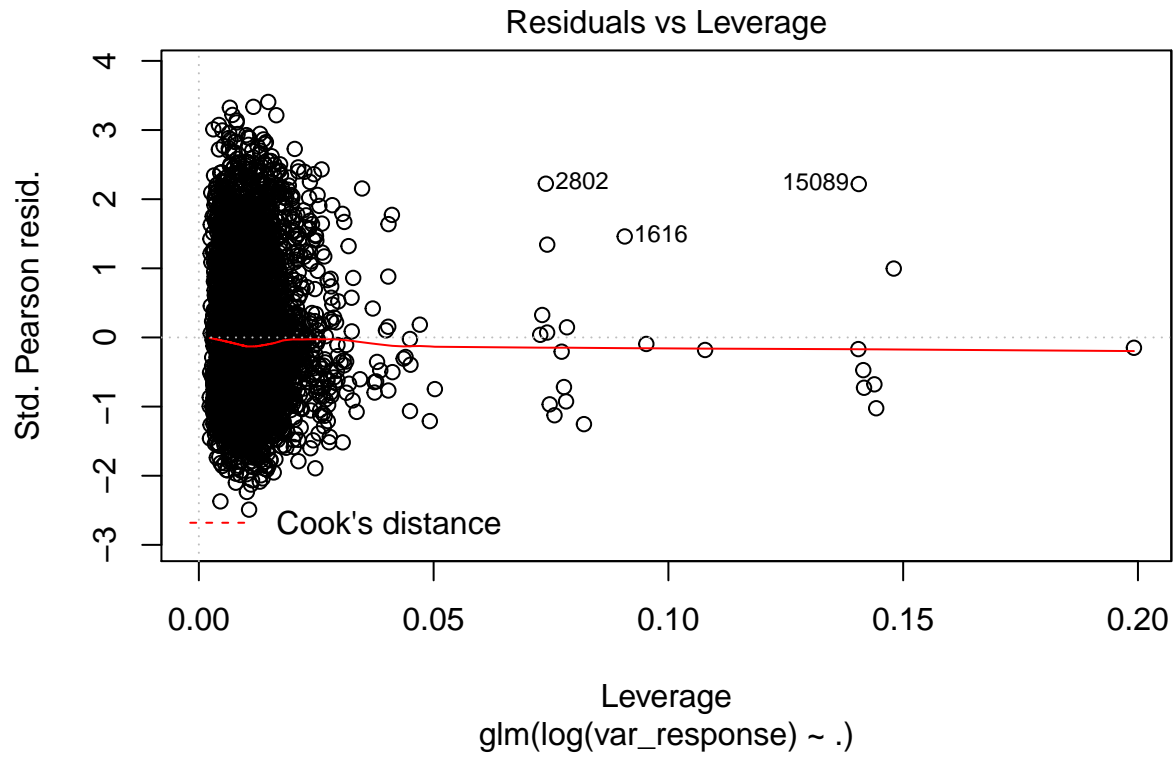
```

```
plot(var_model,ask=F)
```









The residual plots look ok, but too many observations were removed due to missingness. Some significant variables are: change alcohol policy, minimum drinking age, age group, gender, drinking category.

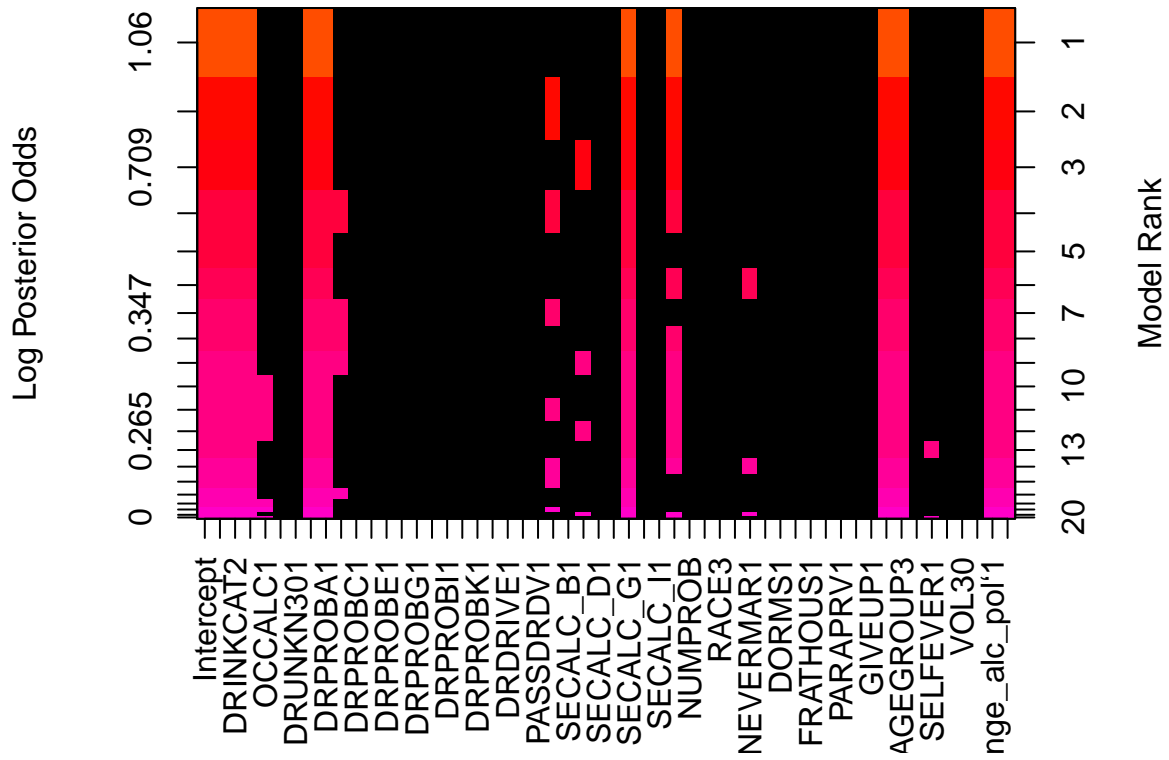
Now we try BMA:

```
library(BAS)
```

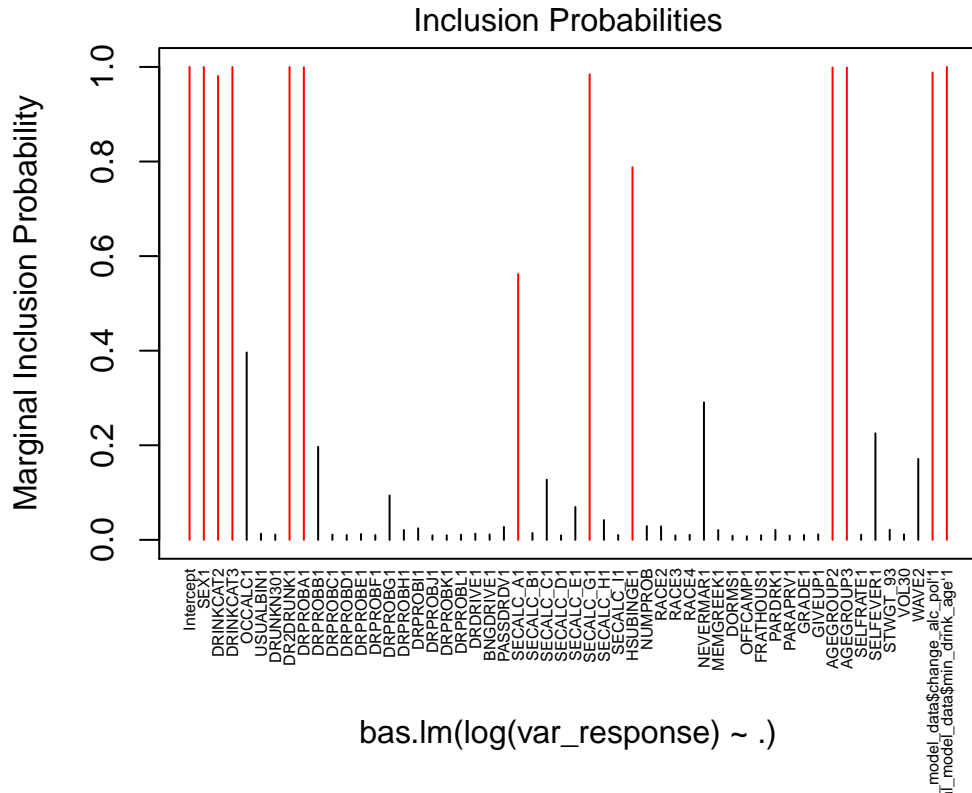
```
var_bma <- bas.lm(log(var_response) ~ ., data = dat93_varmodel,
                  modelprior = uniform(), n.models = 10000)
```

```
## Warning in bas.lm(log(var_response) ~ ., data = dat93_varmodel, modelprior =
## uniform(), : dropping 10650 rows due to missing data
```

```
# Model diagnostics
image(var_bma, rotate = TRUE)
```



```
plot(var_bma, which = 4, ask = FALSE, cex.lab = 0.5)
```



```
summary(var_bma)
```

	P(B != 0 Y)	model 1	model 2
## Intercept	1.000000000	1.0000	1.0000000
## SEX1	0.999999845	1.0000	1.0000000
## DRINKCAT2	0.980823029	1.0000	1.0000000
## DRINKCAT3	0.999794637	1.0000	1.0000000
## OCCALC1	0.396231966	0.0000	0.0000000
## USUALBIN1	0.013087732	0.0000	0.0000000
## DRUNKN301	0.011203985	0.0000	0.0000000
## DR2DRUNK1	0.999980639	1.0000	1.0000000
## DRPROBA1	0.999433882	1.0000	1.0000000
## DRPROBB1	0.196709157	0.0000	0.0000000
## DRPROBC1	0.010997935	0.0000	0.0000000
## DRPROBD1	0.010243019	0.0000	0.0000000
## DRPROBE1	0.012195603	0.0000	0.0000000
## DRPROBF1	0.010119345	0.0000	0.0000000
## DRPROBG1	0.093755754	0.0000	0.0000000
## DRPROBH1	0.020693026	0.0000	0.0000000
## DRPROBI1	0.024383822	0.0000	0.0000000
## DRPROBJ1	0.009454709	0.0000	0.0000000
## DRPROBK1	0.009617991	0.0000	0.0000000
## DRPROBL1	0.010995344	0.0000	0.0000000
## DRDRIVE1	0.013030490	0.0000	0.0000000
## BNGDRIVE1	0.011297103	0.0000	0.0000000

## PASSDRDV1	0.027228736	0.0000	0.0000000
## SECALC_A1	0.562096959	0.0000	1.0000000
## SECALC_B1	0.014432687	0.0000	0.0000000
## SECALC_C1	0.127124598	0.0000	0.0000000
## SECALC_D1	0.009404952	0.0000	0.0000000
## SECALC_E1	0.069328773	0.0000	0.0000000
## SECALC_G1	0.984417669	1.0000	1.0000000
## SECALC_H1	0.041763425	0.0000	0.0000000
## SECALC_I1	0.010143578	0.0000	0.0000000
## HSUBINGE1	0.787929462	1.0000	1.0000000
## NUMPROB	0.028958813	0.0000	0.0000000
## RACE2	0.028487815	0.0000	0.0000000
## RACE3	0.009209683	0.0000	0.0000000
## RACE4	0.010564898	0.0000	0.0000000
## NEVERMAR1	0.290754275	0.0000	0.0000000
## MEMGREEK1	0.020707355	0.0000	0.0000000
## DORMS1	0.008529845	0.0000	0.0000000
## OFFCAMP1	0.007567066	0.0000	0.0000000
## FRATHOUS1	0.009705515	0.0000	0.0000000
## PARDRK1	0.021023182	0.0000	0.0000000
## PARAPRV1	0.008966948	0.0000	0.0000000
## GRADE1	0.010056944	0.0000	0.0000000
## GIVEUP1	0.011643344	0.0000	0.0000000
## AGEGROUP2	0.998950093	1.0000	1.0000000
## AGEGROUP3	0.998888865	1.0000	1.0000000
## SELFRATE1	0.010886626	0.0000	0.0000000
## SELFEVER1	0.225204695	0.0000	0.0000000
## STWGT_93	0.021278255	0.0000	0.0000000
## VOL30	0.011647620	0.0000	0.0000000
## WAVE2	0.171087051	0.0000	0.0000000
## `final_model_data\$change_alc_pol`1	0.988252115	1.0000	1.0000000
## `final_model_data\$min_drink_age`1	0.999959448	1.0000	1.0000000
## BF	NA	1.0000	0.7610333
## PostProbs	NA	0.0166	0.0126000
## R2	NA	0.0740	0.0751000
## dim	NA	12.0000	13.0000000
## logmarg	NA	139.0623	138.7891944
##	model 3	model 4	model 5
## Intercept	1.0000000	1.0000000	1.0000000
## SEX1	1.0000000	1.0000000	1.0000000
## DRINKCAT2	1.0000000	1.0000000	1.0000000
## DRINKCAT3	1.0000000	1.0000000	1.0000000
## OCCALC1	0.0000000	0.0000000	0.0000000
## USUALBIN1	0.0000000	0.0000000	0.0000000
## DRUNKN301	0.0000000	0.0000000	0.0000000
## DR2DRUNK1	1.0000000	1.0000000	1.0000000
## DRPROBA1	1.0000000	1.0000000	1.0000000
## DRPROBB1	0.0000000	1.0000000	0.0000000
## DRPROBC1	0.0000000	0.0000000	0.0000000
## DRPROBD1	0.0000000	0.0000000	0.0000000
## DRPROBE1	0.0000000	0.0000000	0.0000000
## DRPROBF1	0.0000000	0.0000000	0.0000000
## DRPROBG1	0.0000000	0.0000000	0.0000000
## DRPROBH1	0.0000000	0.0000000	0.0000000

## DRPROBI1	0.0000000	0.0000000	0.0000000
## DRPROBJ1	0.0000000	0.0000000	0.0000000
## DRPROBK1	0.0000000	0.0000000	0.0000000
## DRPROBL1	0.0000000	0.0000000	0.0000000
## DRDRIVE1	0.0000000	0.0000000	0.0000000
## BNGDRIVE1	0.0000000	0.0000000	0.0000000
## PASSDRDV1	0.0000000	0.0000000	0.0000000
## SECALC_A1	0.0000000	1.0000000	0.0000000
## SECALC_B1	0.0000000	0.0000000	0.0000000
## SECALC_C1	1.0000000	0.0000000	0.0000000
## SECALC_D1	0.0000000	0.0000000	0.0000000
## SECALC_E1	0.0000000	0.0000000	0.0000000
## SECALC_G1	1.0000000	1.0000000	1.0000000
## SECALC_H1	0.0000000	0.0000000	0.0000000
## SECALC_I1	0.0000000	0.0000000	0.0000000
## HSUBINGE1	1.0000000	1.0000000	0.0000000
## NUMPROB	0.0000000	0.0000000	0.0000000
## RACE2	0.0000000	0.0000000	0.0000000
## RACE3	0.0000000	0.0000000	0.0000000
## RACE4	0.0000000	0.0000000	0.0000000
## NEVERMAR1	0.0000000	0.0000000	0.0000000
## MEMGREEK1	0.0000000	0.0000000	0.0000000
## DORMS1	0.0000000	0.0000000	0.0000000
## OFFCAMP1	0.0000000	0.0000000	0.0000000
## FRATHOUS1	0.0000000	0.0000000	0.0000000
## PARDRK1	0.0000000	0.0000000	0.0000000
## PARAPRV1	0.0000000	0.0000000	0.0000000
## GRADE1	0.0000000	0.0000000	0.0000000
## GIVEUP1	0.0000000	0.0000000	0.0000000
## AGEGROUP2	1.0000000	1.0000000	1.0000000
## AGEGROUP3	1.0000000	1.0000000	1.0000000
## SELFRATE1	0.0000000	0.0000000	0.0000000
## SELFEVER1	0.0000000	0.0000000	0.0000000
## STWGT_93	0.0000000	0.0000000	0.0000000
## VOL30	0.0000000	0.0000000	0.0000000
## WAVE2	0.0000000	0.0000000	0.0000000
## `final_model_data\$change_alc_pol`1	1.0000000	1.0000000	1.0000000
## `final_model_data\$min_drink_age`1	1.0000000	1.0000000	1.0000000
## BF	0.7041401	0.5849938	0.5708981
## PostProbs	0.0117000	0.0097000	0.0095000
## R2	0.0751000	0.0762000	0.0726000
## dim	13.0000000	14.0000000	11.0000000
## logmarg	138.7114947	138.5261185	138.5017281

Extract parameters

```
coef_bma <- coef(var_bma, n.models = 5)
ci <- confint(coef_bma, order(confint(coef_bma)[,3], decreasing=TRUE))
ci
```

##	2.5%	97.5%	beta
## Intercept	0.31111196	0.33730346	0.324546241
## AGEGROUP3	0.07146887	0.15658848	0.115140669
## AGEGROUP2	0.03092158	0.08827965	0.059909412
## SECALC_G1	0.02217128	0.07987482	0.050802621

```

## `final_model_data$change_alc_pol`1 0.02042528 0.07620215 0.049202772
## SECALC_A1 0.00000000 0.05643583 0.014267145
## SECALC_C1 0.00000000 0.05988704 0.009058323
## OCCALC1 0.00000000 0.00000000 0.000000000
## USUALBIN1 0.00000000 0.00000000 0.000000000
## DRUNKN301 0.00000000 0.00000000 0.000000000
## DRPROBC1 0.00000000 0.00000000 0.000000000
## DRPROBD1 0.00000000 0.00000000 0.000000000
## DRPROBE1 0.00000000 0.00000000 0.000000000
## DRPROBF1 0.00000000 0.00000000 0.000000000
## DRPROBG1 0.00000000 0.00000000 0.000000000
## DRPROBH1 0.00000000 0.00000000 0.000000000
## DRPROBI1 0.00000000 0.00000000 0.000000000
## DRPROBJ1 0.00000000 0.00000000 0.000000000
## DRPROBK1 0.00000000 0.00000000 0.000000000
## DRPROBL1 0.00000000 0.00000000 0.000000000
## DRDRIVE1 0.00000000 0.00000000 0.000000000
## BNGDRIVE1 0.00000000 0.00000000 0.000000000
## PASSDRDV1 0.00000000 0.00000000 0.000000000
## SECALC_B1 0.00000000 0.00000000 0.000000000
## SECALC_D1 0.00000000 0.00000000 0.000000000
## SECALC_E1 0.00000000 0.00000000 0.000000000
## SECALC_H1 0.00000000 0.00000000 0.000000000
## SECALC_I1 0.00000000 0.00000000 0.000000000
## NUMPROB 0.00000000 0.00000000 0.000000000
## RACE2 0.00000000 0.00000000 0.000000000
## RACE3 0.00000000 0.00000000 0.000000000
## RACE4 0.00000000 0.00000000 0.000000000
## NEVERMAR1 0.00000000 0.00000000 0.000000000
## MEMGREEK1 0.00000000 0.00000000 0.000000000
## DORMS1 0.00000000 0.00000000 0.000000000
## OFFCAMP1 0.00000000 0.00000000 0.000000000
## FRATHOUS1 0.00000000 0.00000000 0.000000000
## PARDRK1 0.00000000 0.00000000 0.000000000
## PARAPRV1 0.00000000 0.00000000 0.000000000
## GRADE1 0.00000000 0.00000000 0.000000000
## GIVEUP1 0.00000000 0.00000000 0.000000000
## SELFRATE1 0.00000000 0.00000000 0.000000000
## SELFEVER1 0.00000000 0.00000000 0.000000000
## STWGT_93 0.00000000 0.00000000 0.000000000
## VOL30 0.00000000 0.00000000 0.000000000
## WAVE2 0.00000000 0.00000000 0.000000000
## DRPROBB1 -0.05123096 0.00000000 -0.006647282
## HSUBINGE1 -0.06370972 0.00000000 -0.033617573
## DRINKCAT2 -0.09306106 -0.02528642 -0.057397277
## DRPROBA1 -0.10665092 -0.04134917 -0.072339121
## DR2DRUNK1 -0.11016841 -0.05006546 -0.078727673
## SEX1 -0.11351307 -0.05969626 -0.086811532
## DRINKCAT3 -0.16211257 -0.07938052 -0.121144024
## `final_model_data$min_drink_age`1 -0.39044828 -0.16942677 -0.277729167
## attr("Probability")
## [1] 0.95
## attr("class")
## [1] "confint.bas"

```