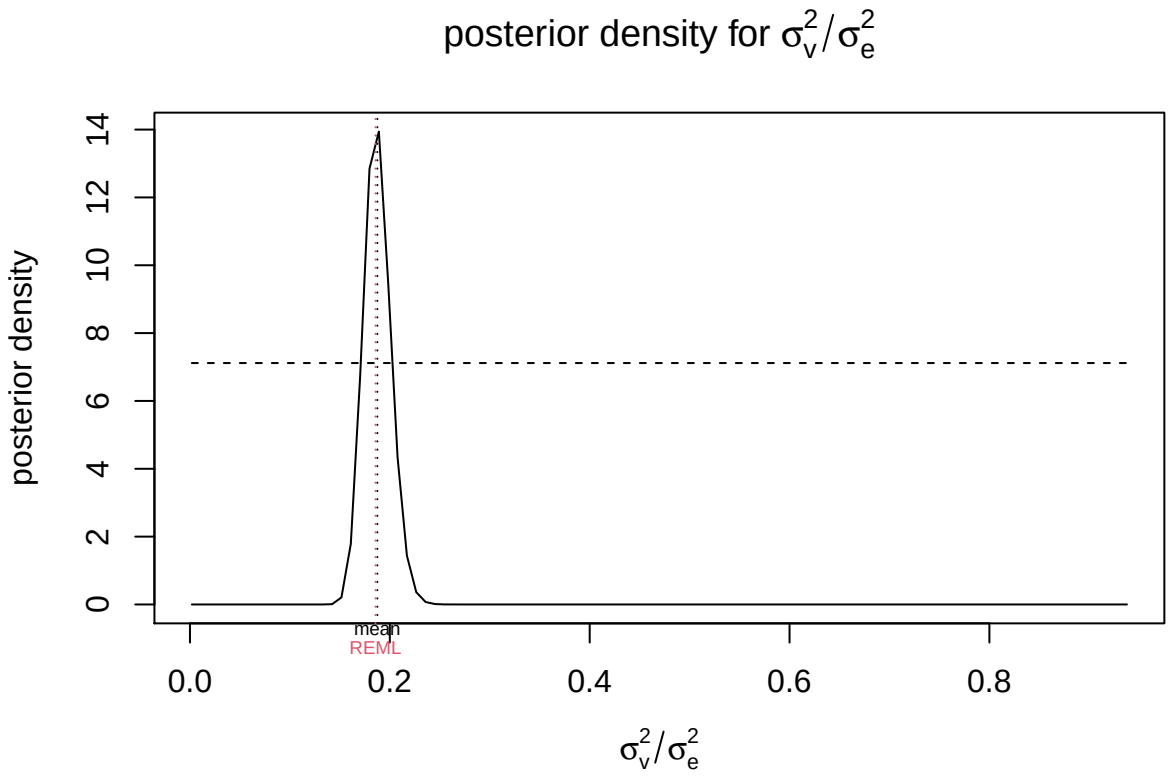
Creating models

```
dat_small <- read_csv("../data/subsets/dat_small.csv")

mod_hb <- fSAE.Unit(
  y = dat_small$BIOLIVE_TPA,
  X = dat_small %>% select(forbio),
  area = dat_small$subsection
)
```

```
## numerical integration of f(x) (normalization constant): 7.594e+29 with absolute error < 6.3e+21
## numerical integration of x*f(x): 1.424e+29 with absolute error < 1.3e+19
```




```
# figure out what lambda0 should be:

within <- dat_small %>%
  group_by(subsection) %>%
  summarize(var = sd(BIOLIVE_TPA, na.rm = TRUE)^2) %>%
  summarize(mean(var, na.rm = TRUE)) %>%
  pull()

between <- dat_small %>%
  summarize(var = sd(BIOLIVE_TPA, na.rm = TRUE)) %>%
  summarize(mean(var, na.rm = TRUE)) %>%
```

```
  pull()

lambda0 <- between / within

mod_freq <- fSAE.Unit(
  y = dat_small$BIOLIVE_TPA,
  X = dat_small %>% select(forbio),
  area = dat_small$subsection,
  method = "BLUP",
  lambda0 = lambda0
)

print(mod_hb)
```

```
## Summaries:
##                 Min.         1st Qu.     Median      Mean         3rd Qu.
## gamma weights     0.157916    0.903628    0.948143    0.921638    0.976569
## random effects  -22.571111    0.004768    0.728063    1.602218    3.019427
##                 Max.
## gamma weights     0.997582
## random effects   25.677051
##
## posterior mean sv2/se2   REML estimate sv2/se2            se2 estimate
##                 0.1875                   0.1857                126.8014
##
## Coefficients:
##        coefficient standard error t value
## forbio     0.72494        0.00393     184
##
## Model selection measures:
##     CV   p.eff    cAIC
##  128.3   443.3  661621
```

```
print(mod_freq)
```

```
## Summaries:
##                 Min.        1st Qu.    Median     Mean        3rd Qu.
## gamma weights     0.05784    0.75426    0.85684    0.82002    0.93171
## random effects  -17.63287    0.00000    0.56457    1.31068    2.51707
##                 Max.
## gamma weights     0.99265
## random effects   23.75881
##
## se2 estimate
##        127.9
##
## Coefficients:
##        coefficient standard error t value
## forbio     0.73998        0.00369     200
##
## Model selection measures:
##     CV   p.eff    cAIC
##  128.4   394.4  661750
```