

WeightedLinearEnsemble evaluation

```
library(ggplot2)

## Warning: package 'ggplot2' was built under R version 4.0.5

library(dplyr)

## Warning: package 'dplyr' was built under R version 4.0.5

## 
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
## 
##     filter, lag

## The following objects are masked from 'package:base':
## 
##     intersect, setdiff, setequal, union

library(tidyr)

## Warning: package 'tidyr' was built under R version 4.0.5

library(comprehendr)

## Warning: package 'comprehendr' was built under R version 4.0.5

library(stringr)
library(ungeviz)
library(relayer)

## Note: The package "relayer" is highly experimental. Use at your own risk.

library(patchwork)

## Warning: package 'patchwork' was built under R version 4.0.3
```

```

base_dir <- "D:/skola/1/weighted_ensembles/tests/test_cifar_2021/data/data_tv_5000_c100/0/complete"
net_df <- read.csv(file.path(base_dir, "net_metrics.csv"))
ens_df_cal <- read.csv(file.path(base_dir, "ens_cal_metrics.csv"))
ens_df_pwc <- read.csv(file.path(base_dir, "ens_pwc_metrics.csv"))

net_long <- pivot_longer(net_df, cols=c("accuracy", "nll", "ece"),
  names_to="metric", values_to="value")
ens_cal_long <- pivot_longer(ens_df_cal, cols=c("accuracy", "nll", "ece"),
  names_to="metric", values_to="value")
ens_pwc_long <- pivot_longer(ens_df_pwc, cols=c("accuracy", "nll", "ece"),
  names_to="metric", values_to="value")

networks <- net_df$network

comb_stats_df = data.frame(matrix(ncol=14, nrow=0,
  dimnames=list(NULL, c(
    "combination_size", "combination_id",
    "acc_min", "acc_max", "acc_avg", "acc_var",
    "nll_min", "nll_max", "nll_avg", "nll_var",
    "ece_min", "ece_max", "ece_avg", "ece_var"))))

for (sss in unique(ens_df_cal$combination_size))
{
  for (ssi in unique(ens_df_cal %>%
      filter(combination_size == sss) %>%
      pull(combination_id)))
  {
    cur_nets_vec <- to_vec(
      for (net in networks)
      if (str_replace_all(net, "-", ".") %in% colnames(ens_cal_long) &&
          (ens_cal_long %>%
            filter(combination_size == sss & combination_id == ssi) %>%
            pull(str_replace_all(net, "-", ".")))[1] == "True")
        net)
    cur_nets <- net_df %>% filter(network %in% cur_nets_vec)
    comb_stats_df[nrow(comb_stats_df) + 1, ] = c(sss, ssi,
      min(cur_nets$accuracy), max(cur_nets$accuracy), mean(cur_nets$accuracy), var(cur_nets$accuracy),
      min(cur_nets$nll), max(cur_nets$nll), mean(cur_nets$nll), var(cur_nets$nll),
      min(cur_nets$ece), max(cur_nets$ece), mean(cur_nets$ece), var(cur_nets$ece))

  }
}

ens_df_cal <- merge(ens_df_cal, comb_stats_df)
ens_df_cal$acc_imp_avg = ens_df_cal$accuracy - ens_df_cal$acc_avg
ens_df_cal$acc_imp_max = ens_df_cal$accuracy - ens_df_cal$acc_max

ens_df_pwc <- merge(ens_df_pwc, comb_stats_df)
ens_df_pwc$acc_imp_avg = ens_df_pwc$accuracy - ens_df_pwc$acc_avg
ens_df_pwc$acc_imp_max = ens_df_pwc$accuracy - ens_df_pwc$acc_max

nets_plot <- ggplot(data=net_long) +
  geom_col(mapping=aes(x=network, y=value)) +

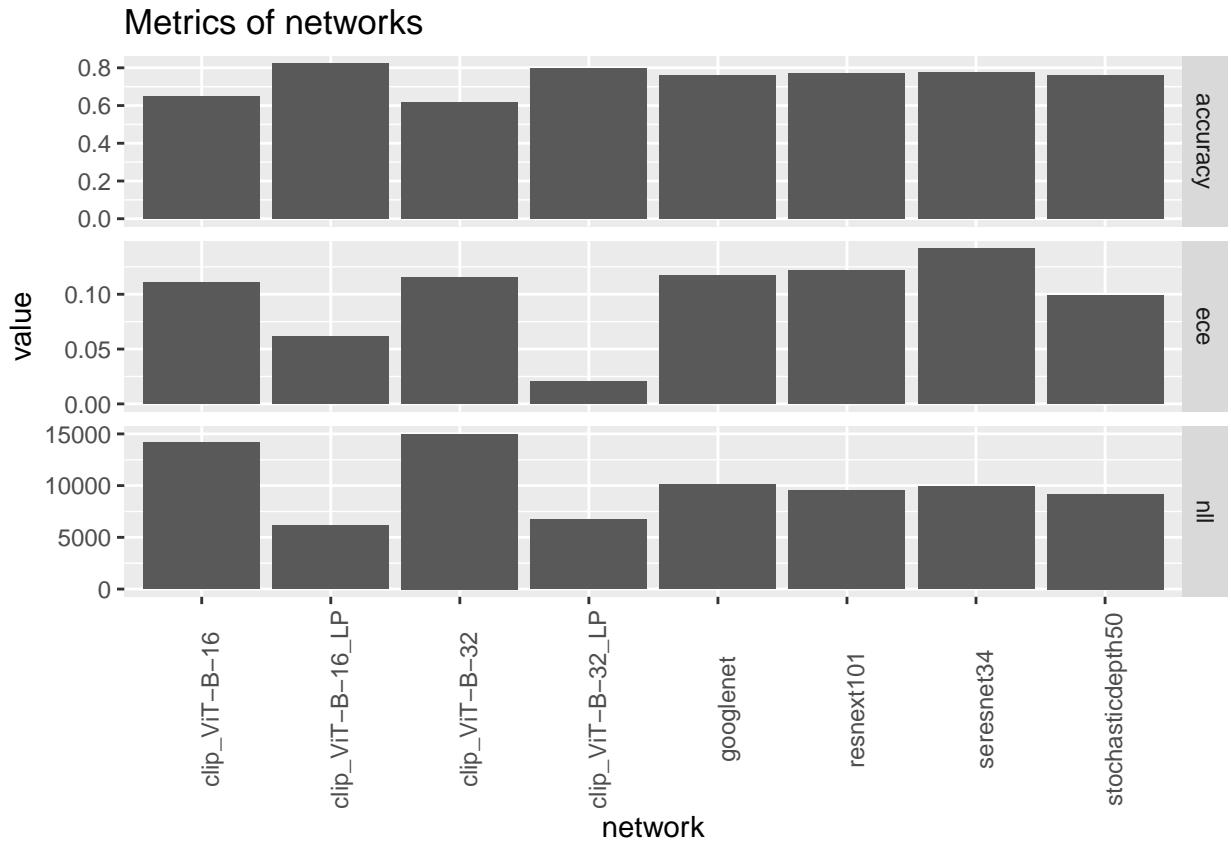
```

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facet_grid(rows = vars(metric), scales="free") +
theme(axis.text.x = element_text(angle=90)) +
ggtitle("Metrics of networks")

nets_plot

```



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ens_pwc_plt_df <- ens_df_pwc %>% filter(combining_method != "lda")
ens_cal_plt_df <- ens_df_cal

ens_pwc_plt_df$combining_method <- factor(ens_pwc_plt_df$combining_method,
levels=c(
"average", "prob_average",
"cal_average", "cal_prob_average",
"logreg", "logreg_sweep_C",
"logreg_no_interc", "logreg_no_interc_sweep_C"))

for (sss in unique(ens_cal_plt_df$combination_size))
{
  for (ssi in unique(ens_cal_plt_df %>%
                      filter(combination_size == sss) %>%
                      pull(combination_id)))
  {
    cur_ens_cal <- ens_cal_plt_df %>% filter(combination_size == sss &
                                                combination_id == ssi)
    cur_ens_pwc <- ens_pwc_plt_df %>% filter(combination_size == sss &
                                                combination_id == ssi)
  }
}

```

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combination_id == ssi)

cur_nets_vec <- to_vec(
  for (net in networks)
    if (str_replace_all(net, "-", ".") %in% colnames(cur_ens_cal) &&
        cur_ens_cal[[str_replace_all(net, "-", ".")]][1] == "True")
      net)
cur_nets <- net_df %>% filter(network %in% cur_nets_vec)

acc_plot <- ggplot() +
  (
    geom_hline(
      data=cur_nets,
      mapping=aes(yintercept=accuracy, colour1=network),
      linetype="dashed") %>%
      rename_geom_aes(new_aes = c("colour" = "colour1"))
  ) +
  geom_hline(
    data=cur_ens_cal,
    mapping=aes(yintercept=accuracy, color="cal ensemble")) +
  (
    geom_hpline(
      data=cur_ens_pwc,
      mapping=aes(x=combining_method, y=accuracy,
                  colour2=coupling_method),
      size=0.8, width=0.11,
      position=position_dodge(width=0.65)) %>%
      rename_geom_aes(new_aes = c("colour" = "colour2"))
  ) +
  scale_colour_brewer(aesthetics="colour1", palette=1,
    name="network", type="qual") +
  scale_colour_brewer(aesthetics="colour2", palette=2,
    name="coupling method", type="qual") +
  scale_color_manual(values=c("black"), name="averaging ensemble") +
  theme(
    axis.text.x = element_blank(),
    axis.title.x = element_blank())

y_limits <- layer_scales(acc_plot)$y$get_limits()
x_limits <- layer_scales(acc_plot)$x$get_limits()
all_y_lim <- c(y_limits[1], cur_ens_cal$all_cor)

acc_plot <- acc_plot +
  geom_rect(
    data=cur_ens_cal,
    mapping=aes(
      xmin=0.5,
      xmax=length(x_limits) + 0.5,
      ymin=max(all_cor, y_limits[1]), ymax=all_cor + err_incons),
    fill="orange",
    alpha=0.3, color=NA)

if (all_y_lim[1] < all_y_lim[2])
{

```

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acc_plot <- acc_plot +
  geom_rect(
    data=cur_ens_cal,
    mapping=aes(
      xmin=0.5,
      xmax=length(x_limits) + 0.5,
      ymin=all_y_lim[1], ymax=all_y_lim[2]), fill="green",
      alpha=0.3, color=NA)
}

nll_plot <- ggplot() +
(
  geom_hline(
    data=cur_nets,
    mapping=aes(yintercept=nll, colour1=network),
    linetype="dashed") %>%
  rename_geom_aes(new_aes = c("colour" = "colour1"))
) +
  geom_hline(
    data=cur_ens_cal,
    mapping=aes(yintercept=nll, color="cal ensemble")) +
(
  geom_hpline(
    data=cur_ens_pwc,
    mapping=aes(x=combining_method, y=nll,
                colour2=coupling_method),
    size=0.8, width=0.11,
    position=position_dodge(width=0.65)) %>%
  rename_geom_aes(new_aes = c("colour" = "colour2"))
) +
  scale_colour_brewer(aesthetics="colour1", palette=1,
    name="network", type="qual") +
  scale_colour_brewer(aesthetics="colour2", palette=2,
    name="coupling method", type="qual") +
  scale_color_manual(values=c("black"), name="averaging ensemble") +
  scale_y_reverse() +
  theme(
    axis.text.x = element_blank(),
    axis.title.x = element_blank())

ece_plot <- ggplot() +
(
  geom_hline(
    data=cur_nets,
    mapping=aes(yintercept=ece, colour1=network),
    linetype="dashed") %>%
  rename_geom_aes(new_aes = c("colour" = "colour1"))
) +
  geom_hline(
    data=cur_ens_cal,
    mapping=aes(yintercept=ece, color="cal ensemble")) +
(
  geom_hpline(

```

```

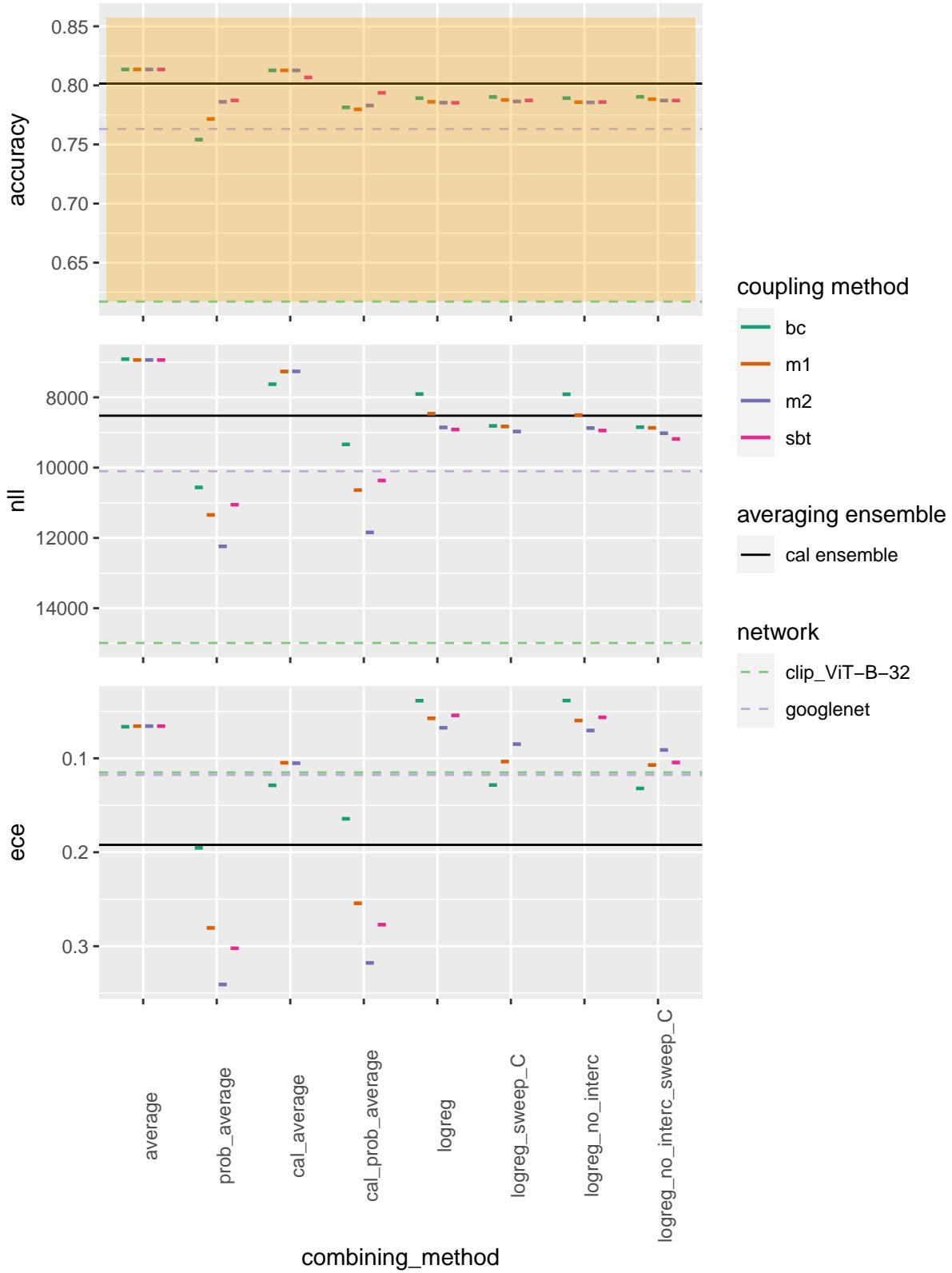
    data=cur_ens_pwc,
    mapping=aes(x=combining_method, y=ece,
                colour2=coupling_method),
    size=0.8, width=0.11,
    position=position_dodge(width=0.65)) %>%
  rename_geom_aes(new_aes = c("colour" = "colour2"))
) +
scale_colour_brewer(aesthetics="colour1", palette=1,
  name="network", type="qual") +
scale_colour_brewer(aesthetics="colour2", palette=2,
  name="coupling method", type="qual") +
scale_color_manual(values=c("black"), name="averaging ensemble") +
scale_y_reverse() +
theme(axis.text.x = element_text(angle=90))

print(acc_plot / nll_plot / ece_plot + plot_layout(guides="collect") +
  plot_annotation(title=paste(
    "Ensemble metrics",
    paste(
      c("Error inconsistency", cur_ens_cal$err_incons[[1]]),
      collapse=" "),
      sep="\n")))

}
}

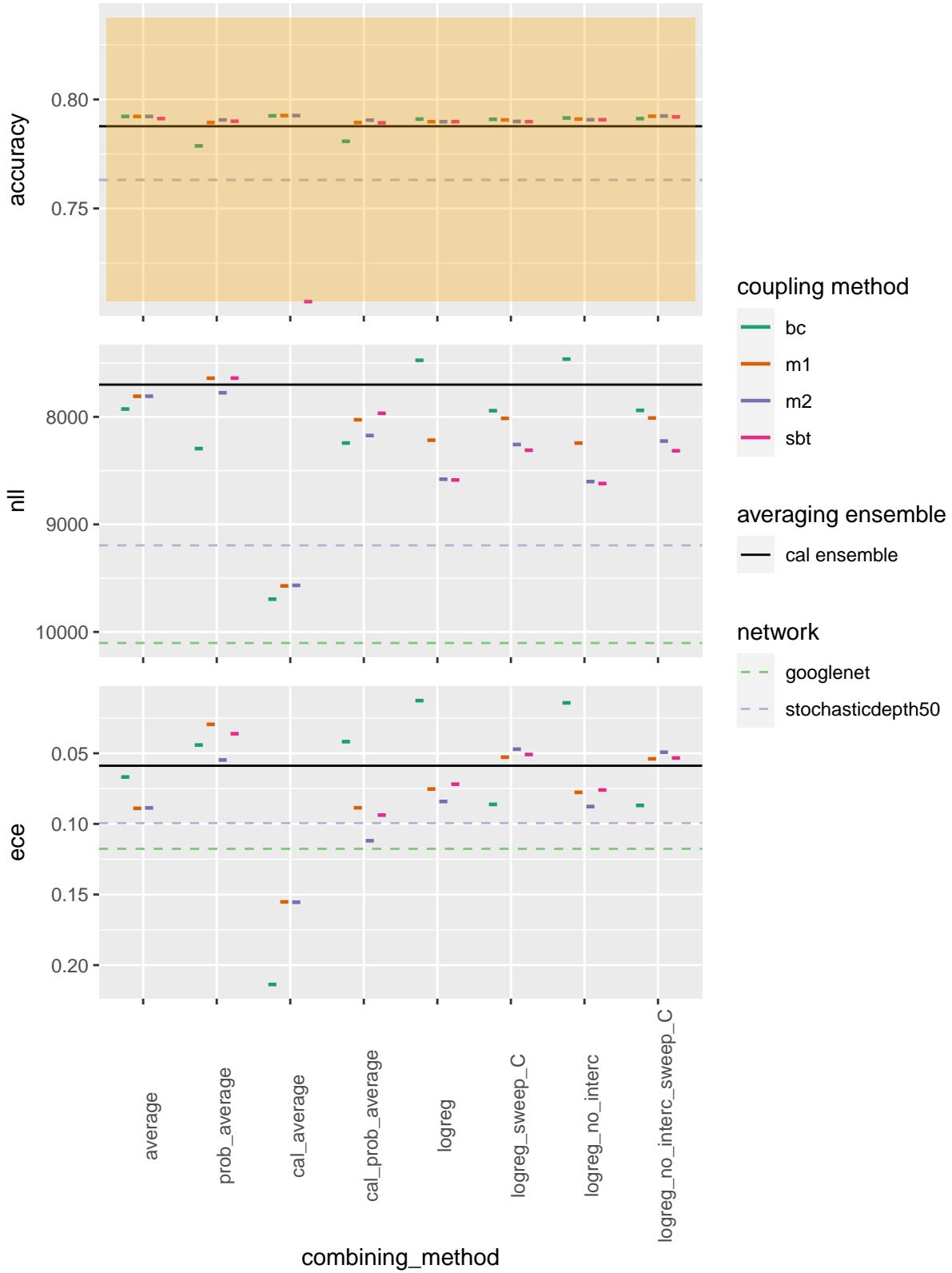
```

Ensemble metrics
Error inconsistency 0.334399998188019



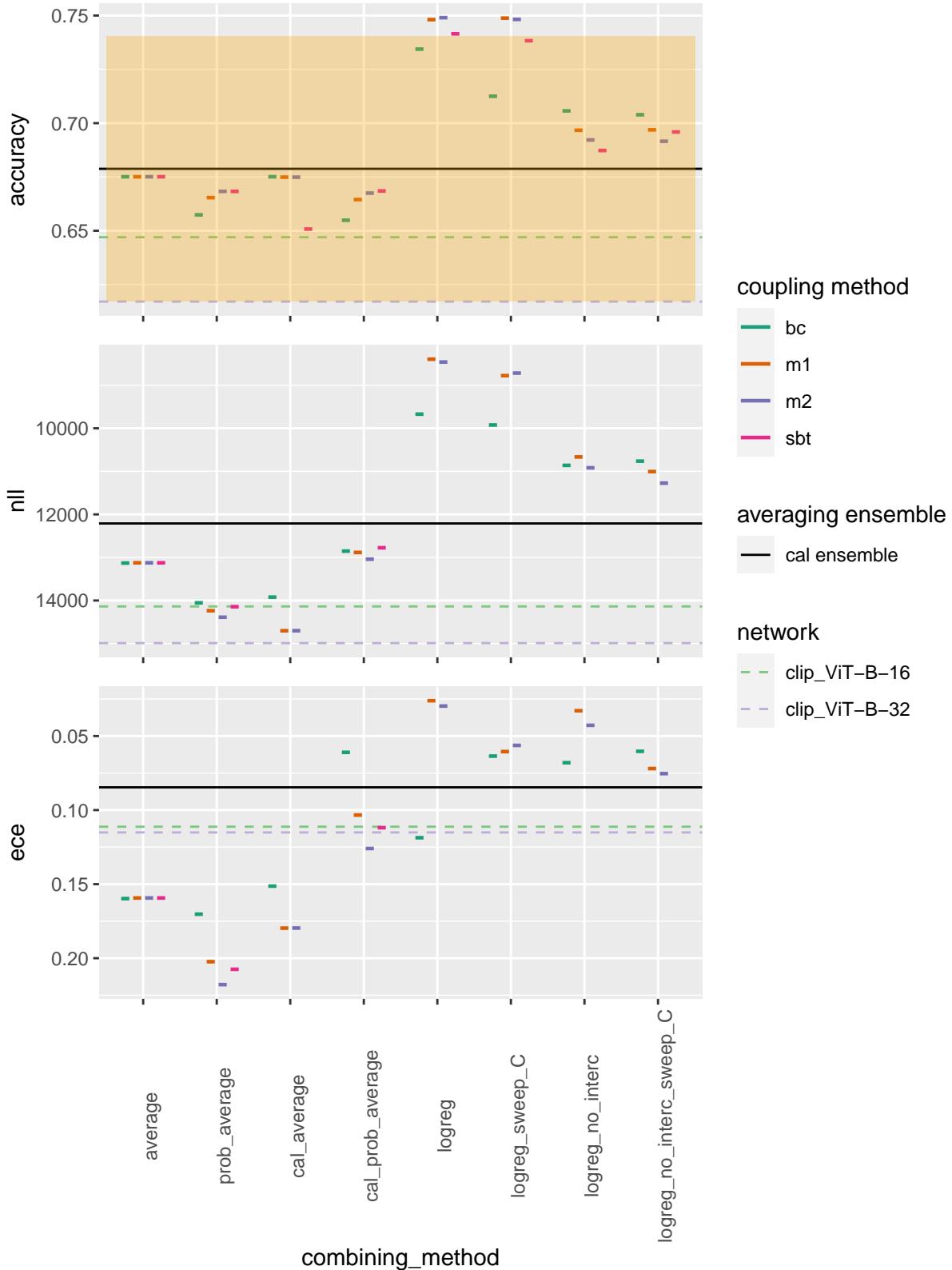
Ensemble metrics

Error inconsistency 0.148800000548363

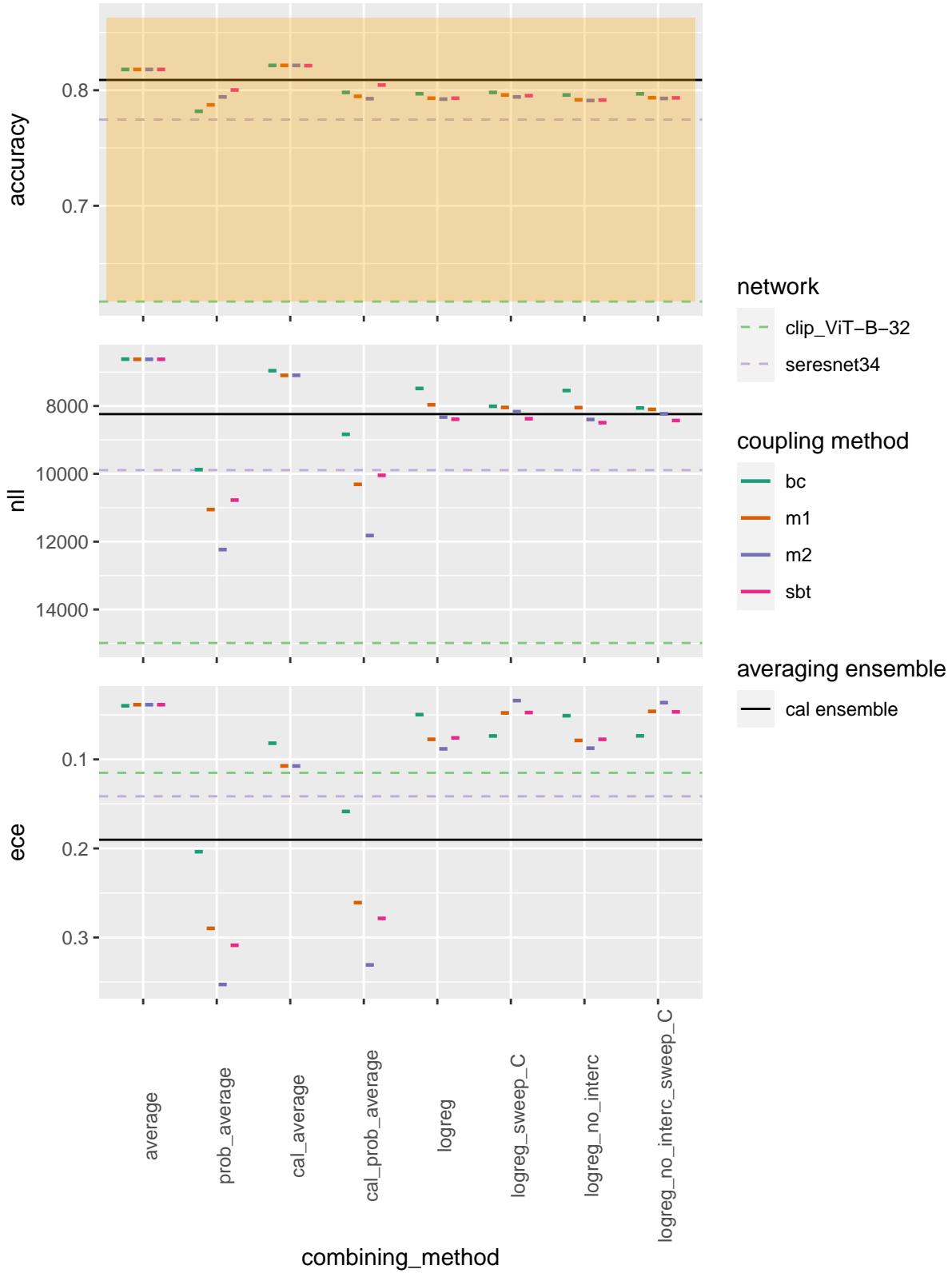


Ensemble metrics

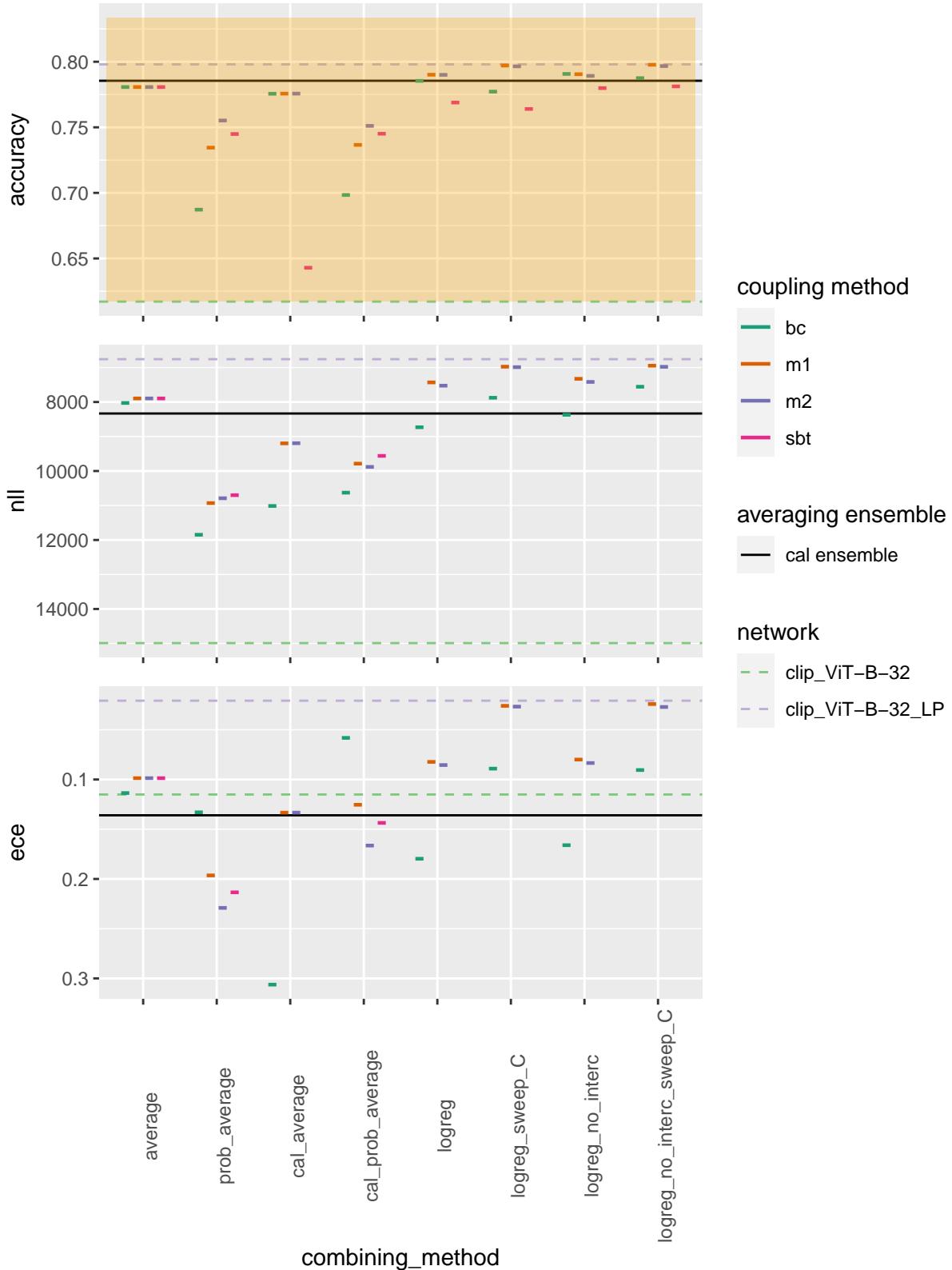
Error inconsistency 0.216699987649918



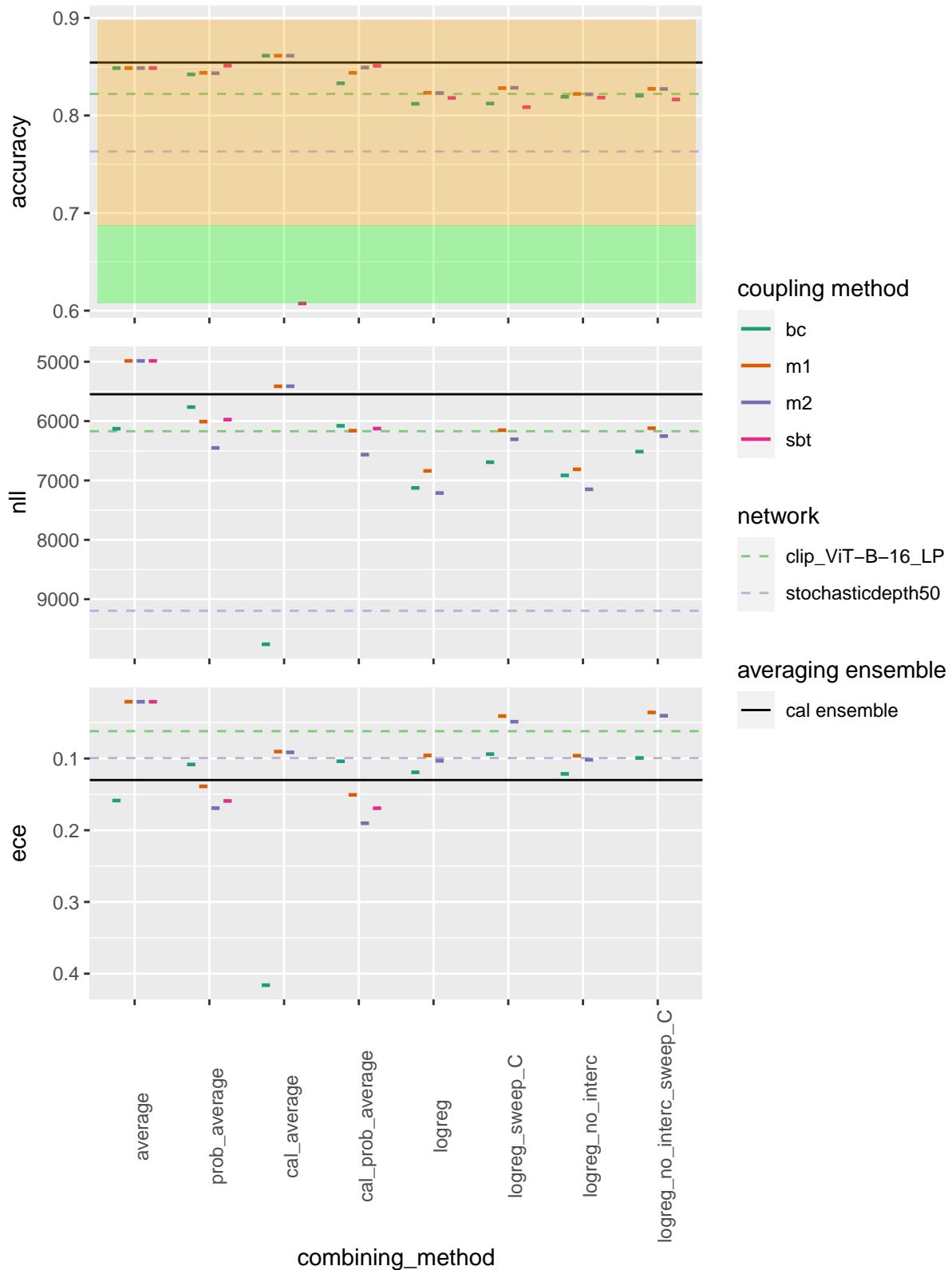
Ensemble metrics
Error inconsistency 0.33390000462532



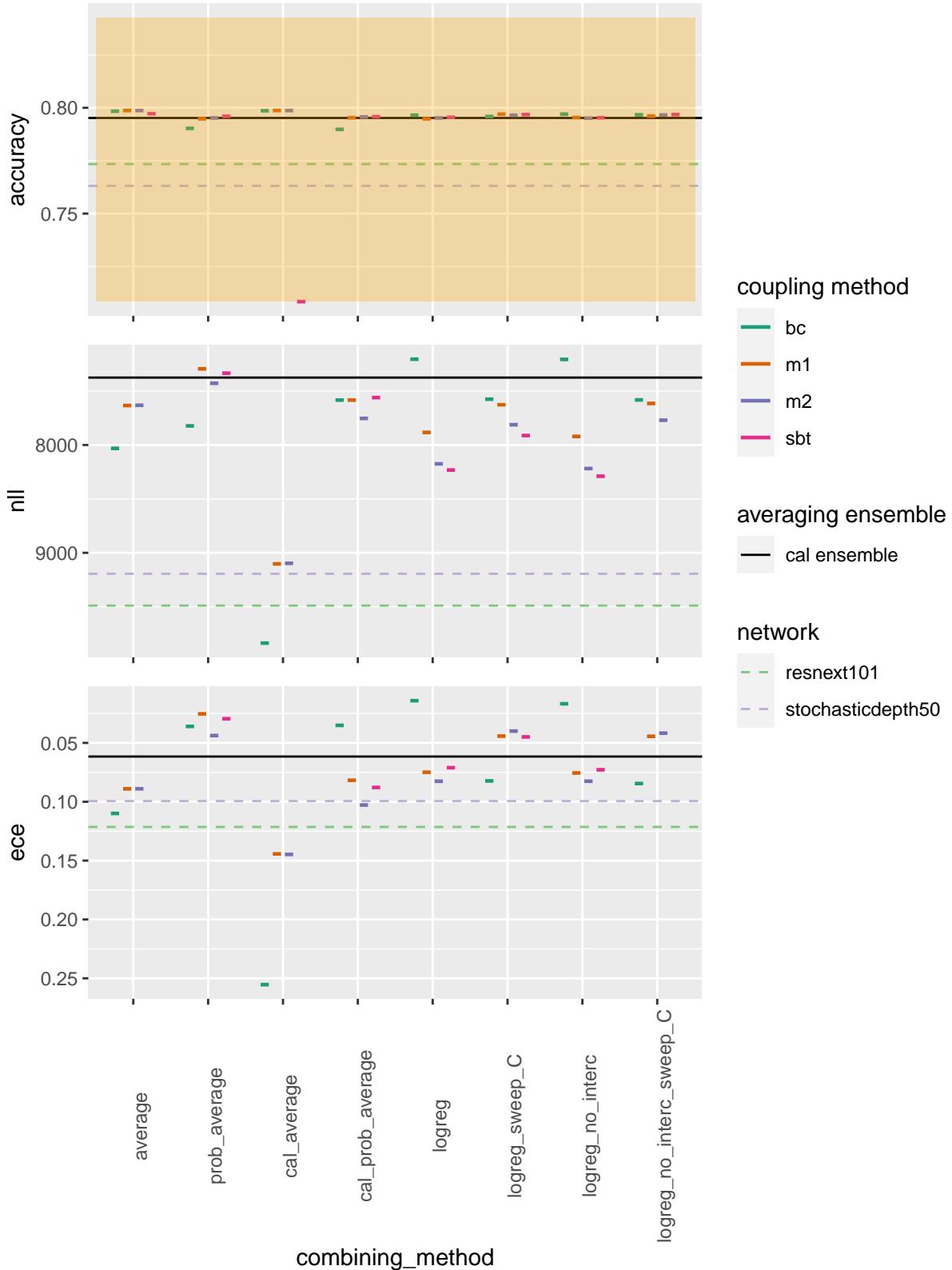
Ensemble metrics
 Error inconsistency 0.252099990844727



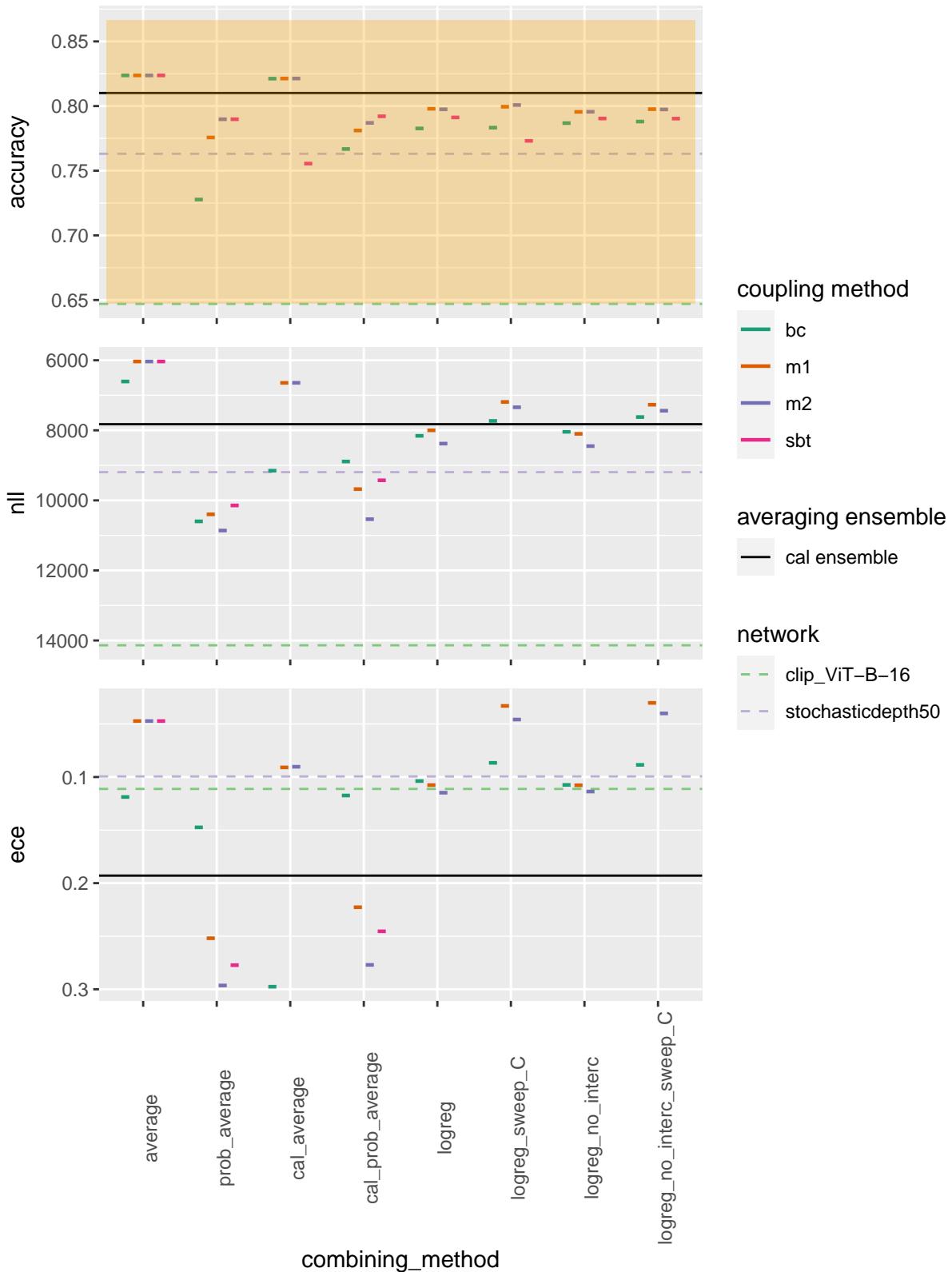
Ensemble metrics
Error inconsistency 0.210400000214577



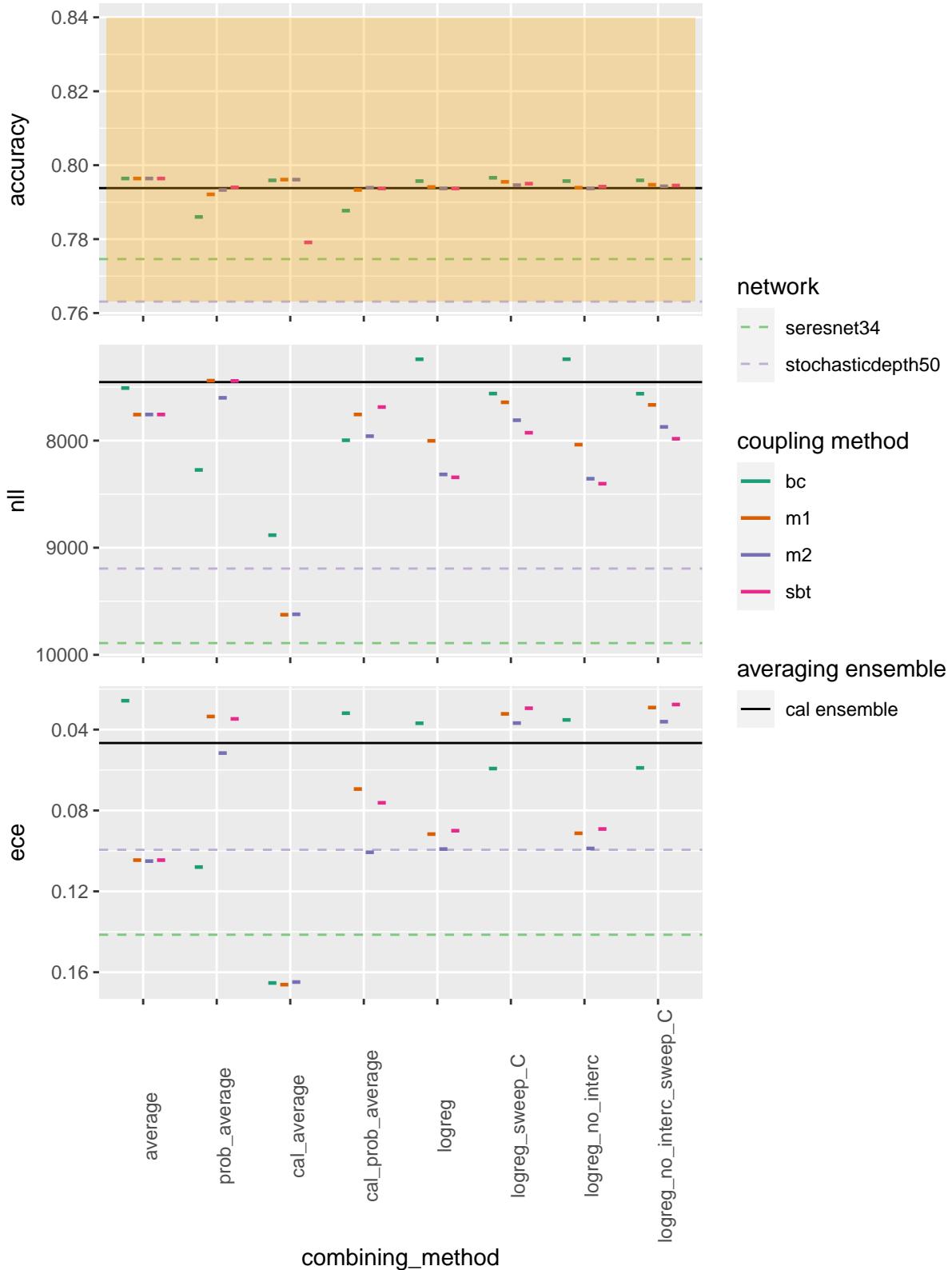
Ensemble metrics
Error inconsistency 0.148699998855591



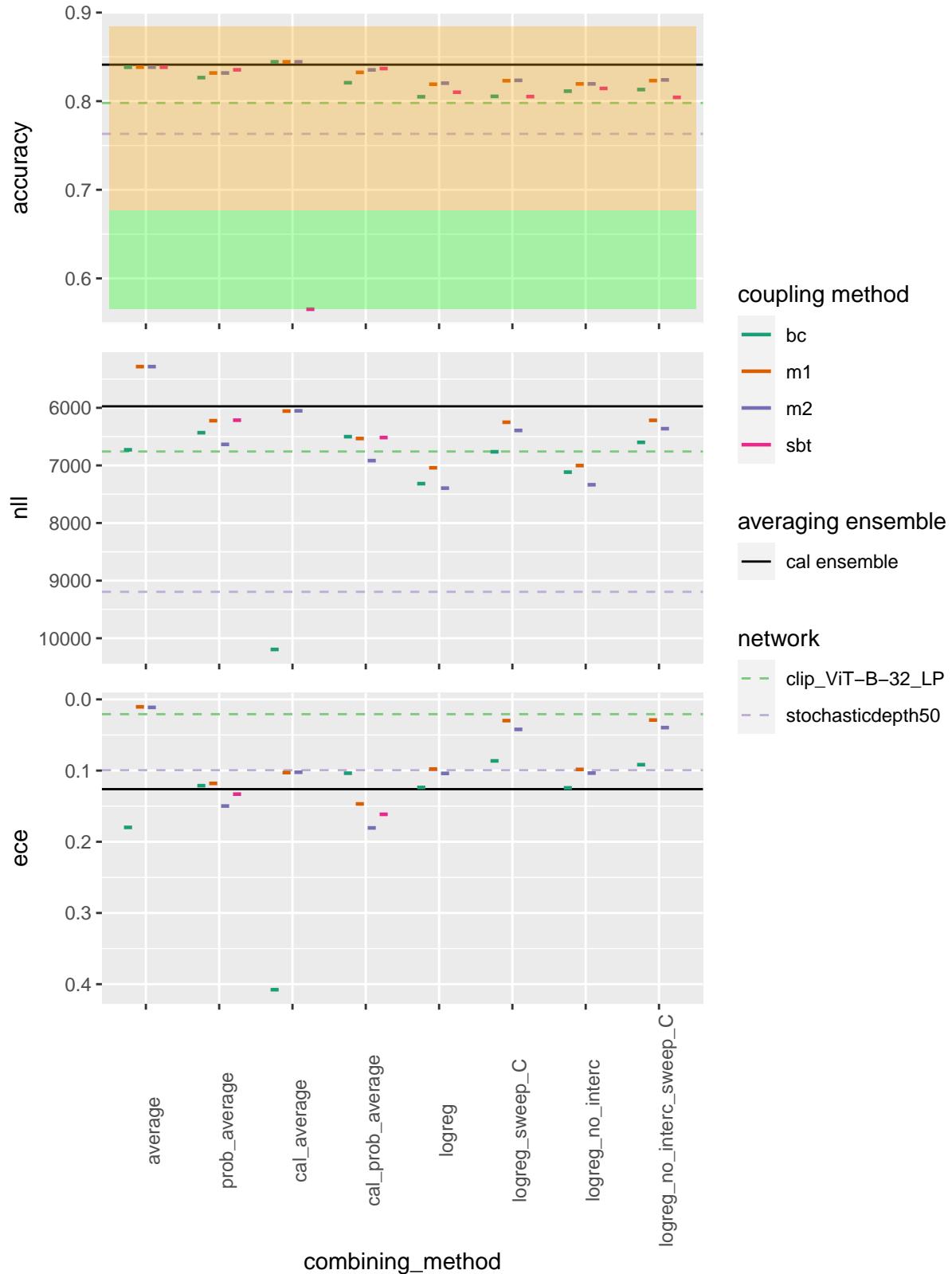
Ensemble metrics
Error inconsistency 0.322899997234344



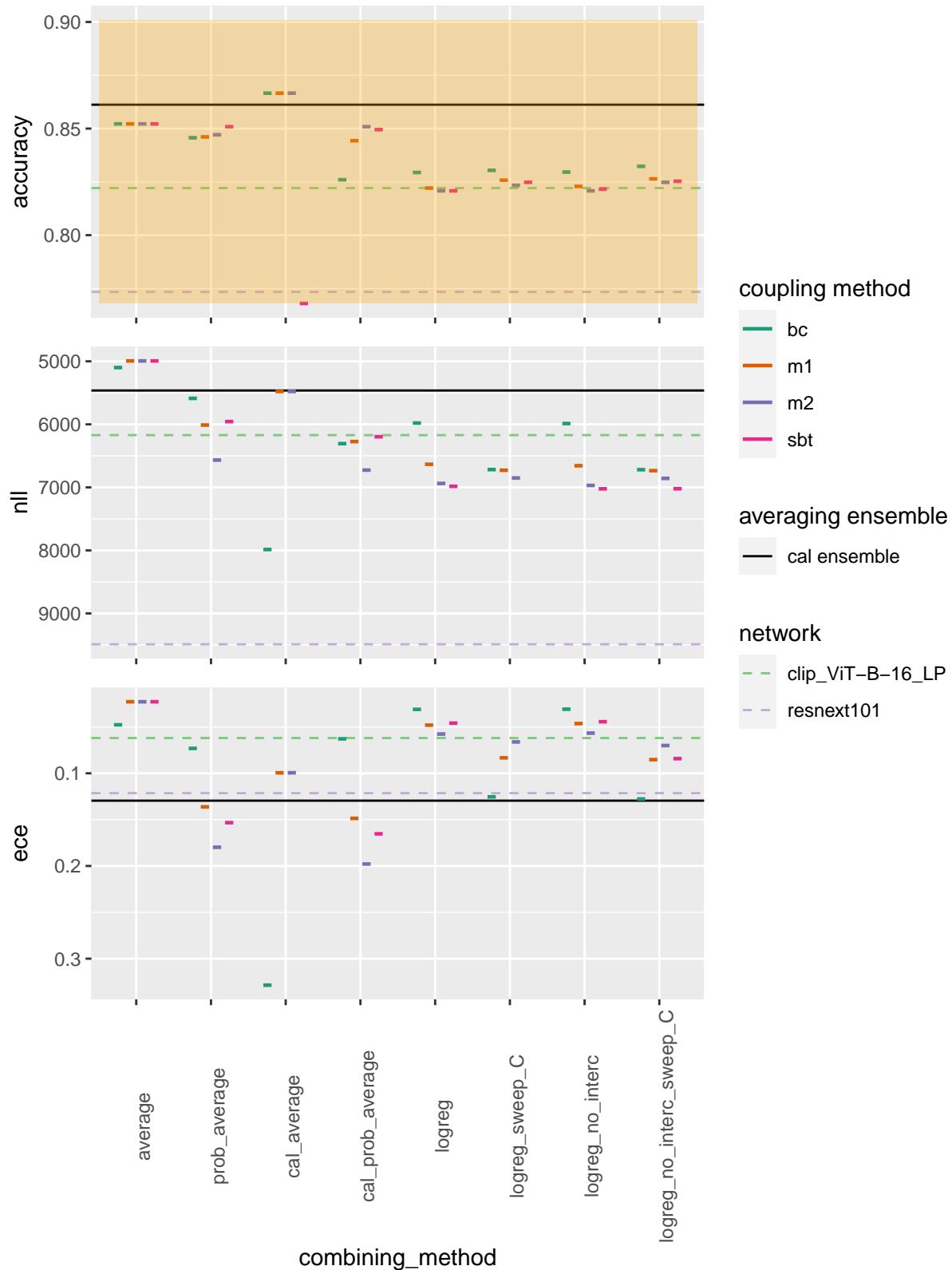
Ensemble metrics
Error inconsistency 0.142099991440773



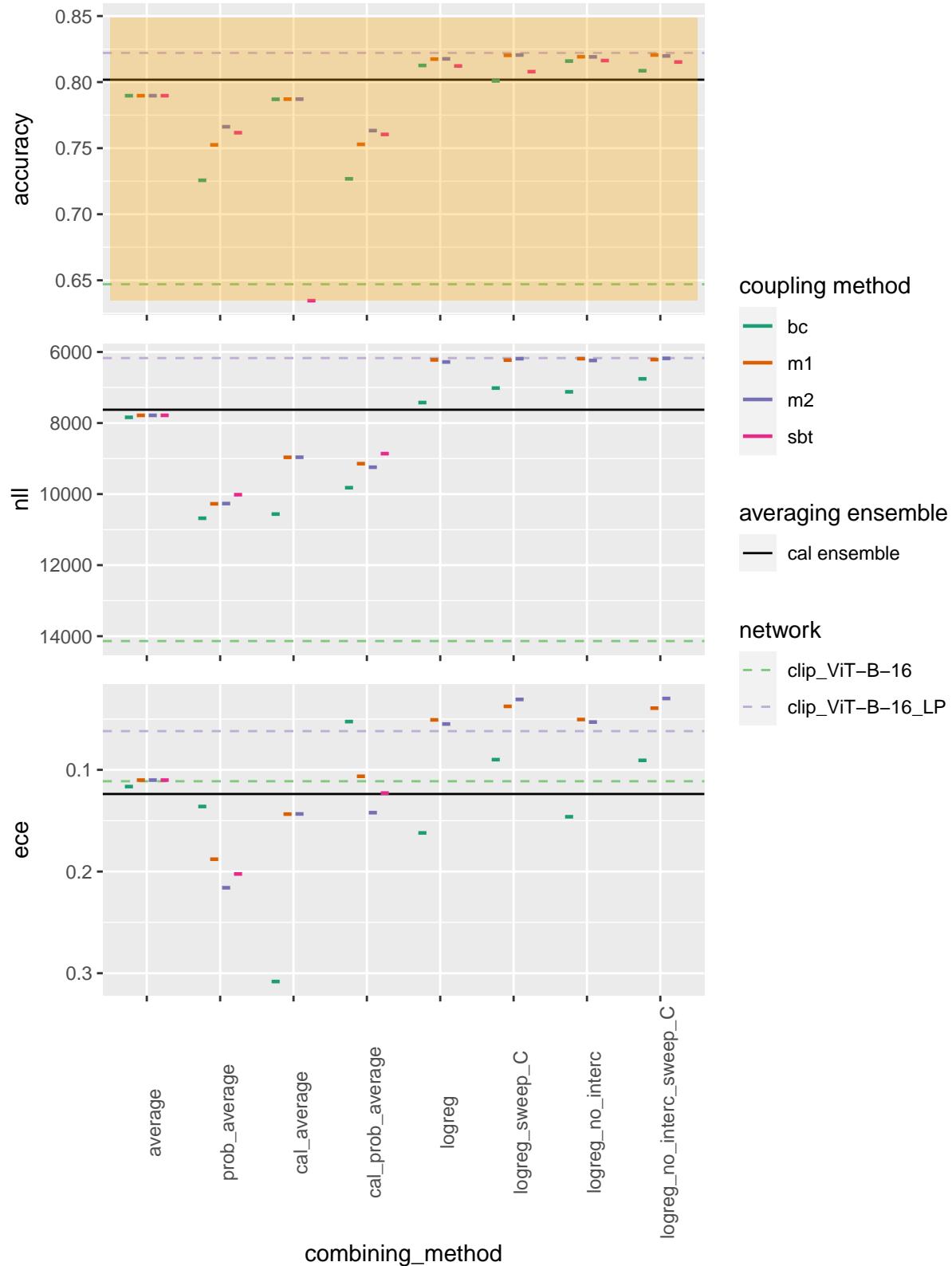
Ensemble metrics
Error inconsistency 0.207699999213219



Ensemble metrics
Error inconsistency 0.206299990415573

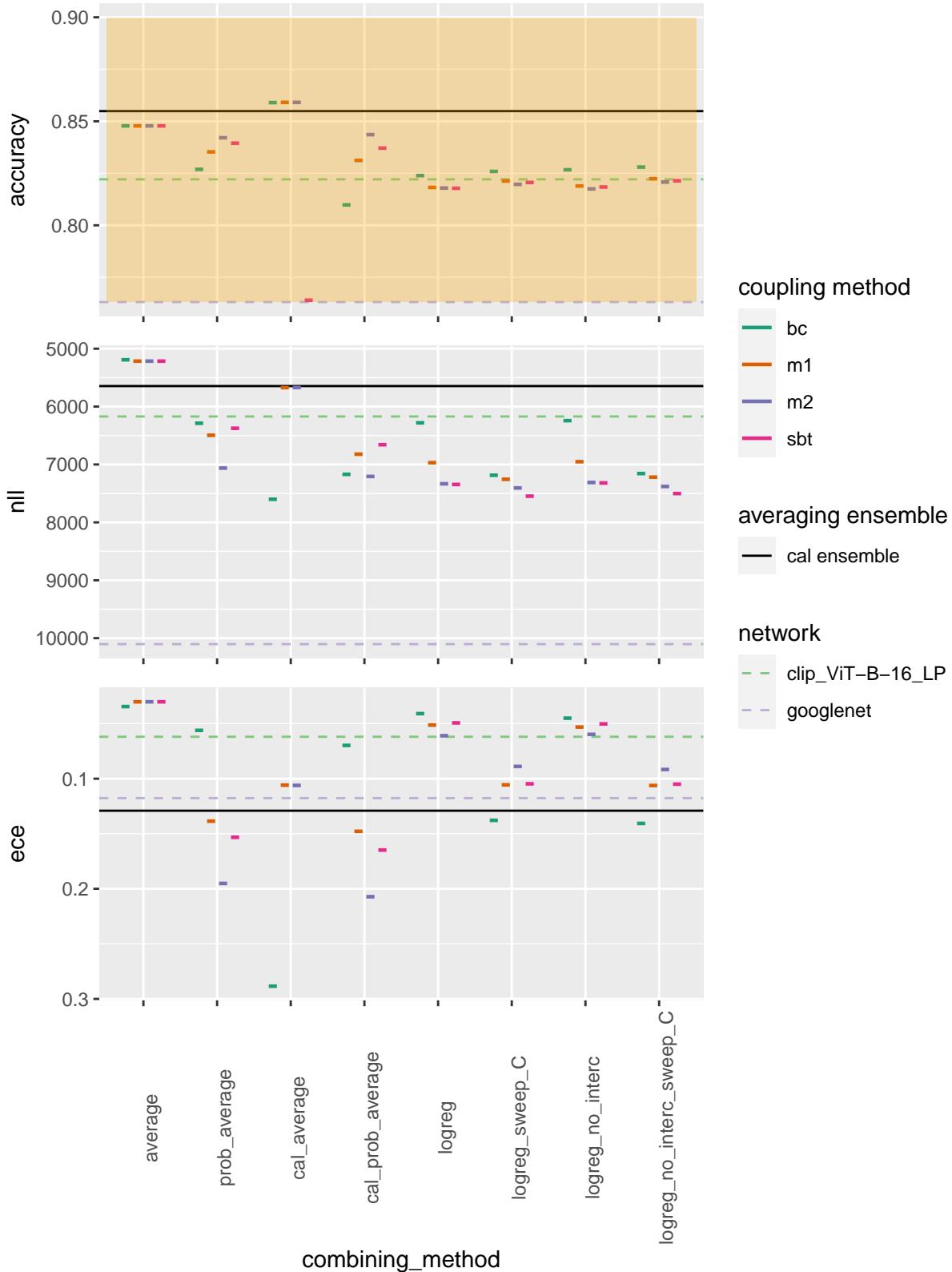


Ensemble metrics
Error inconsistency 0.228499993681908

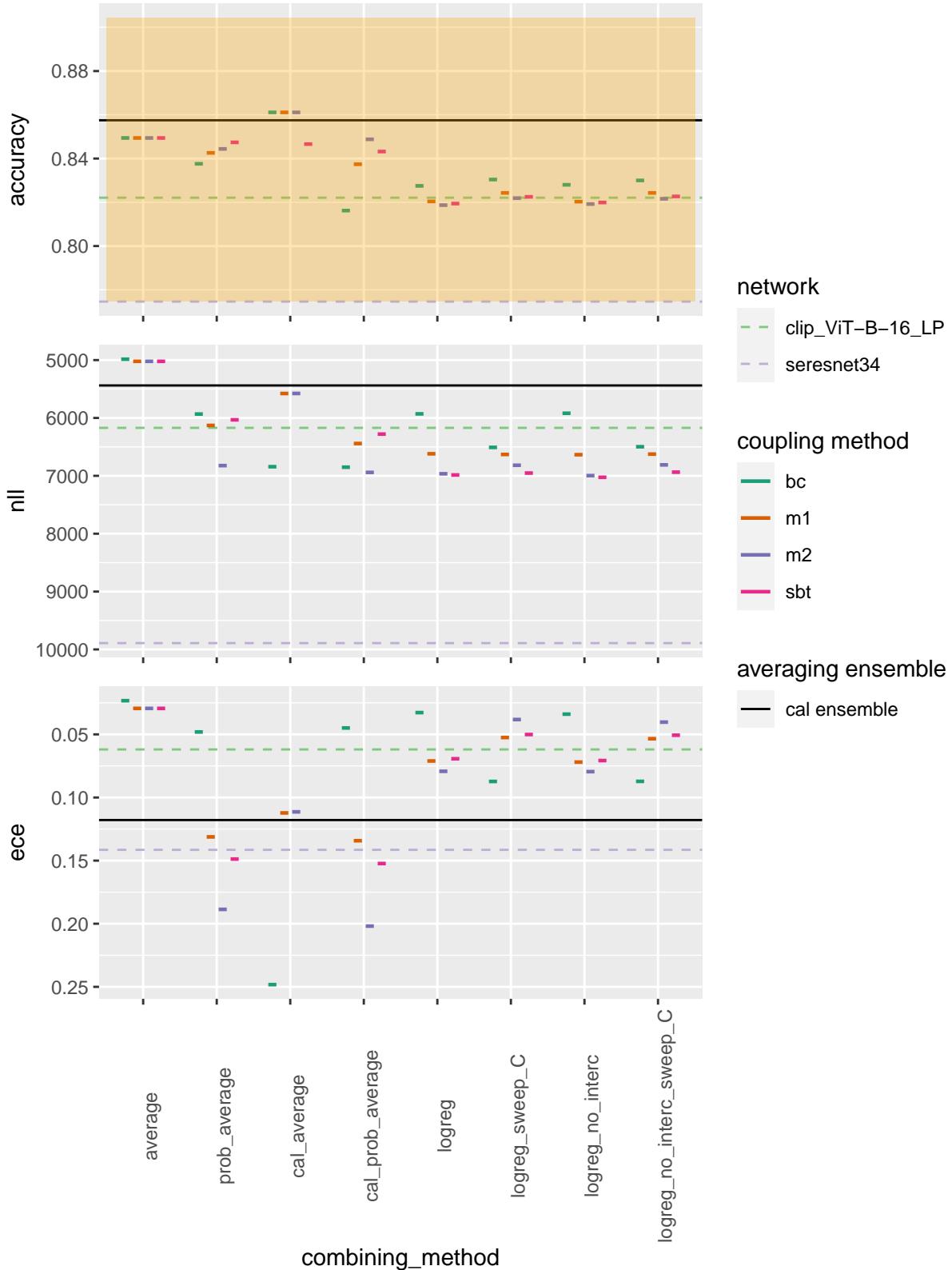


Ensemble metrics

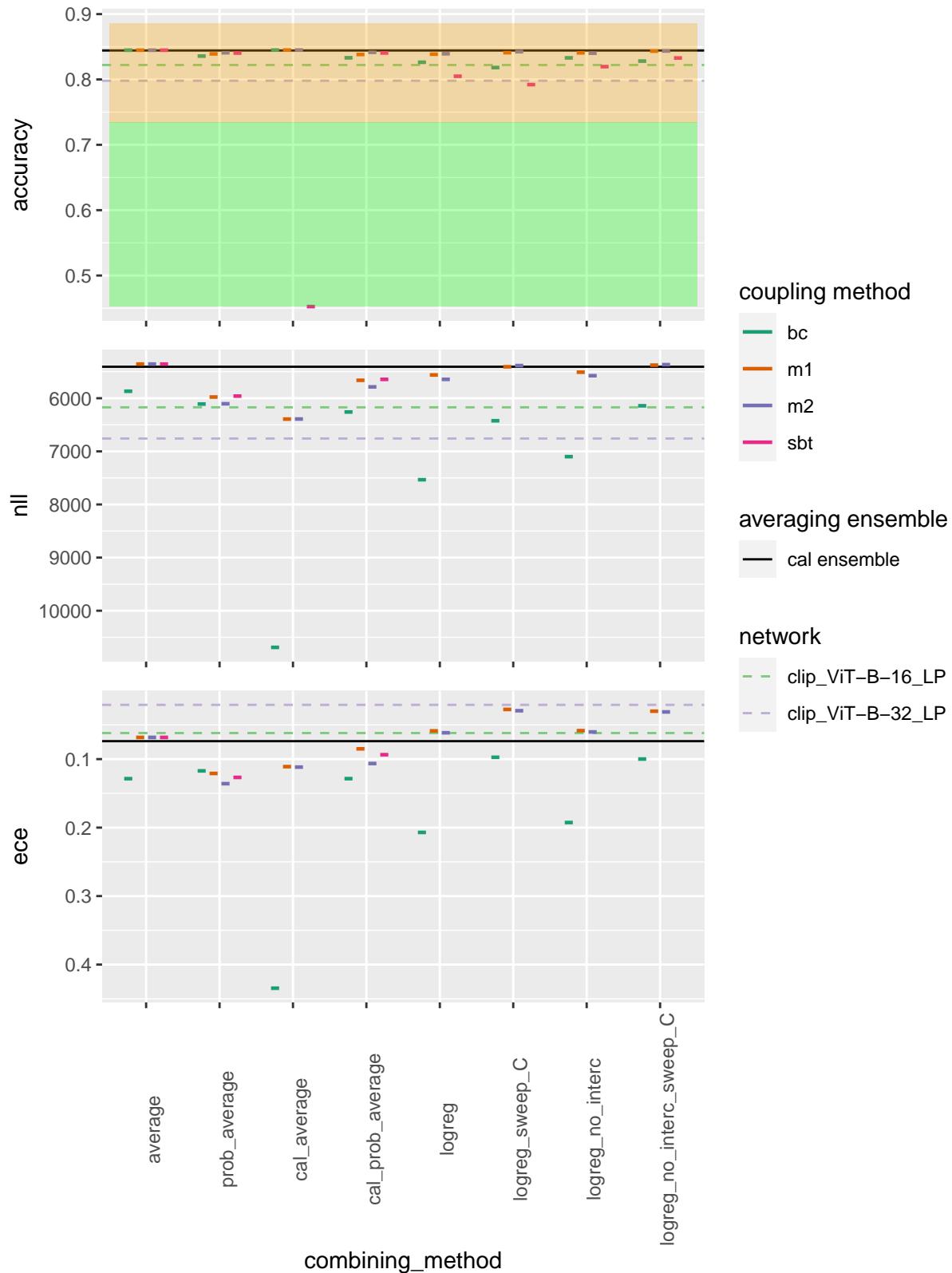
Error inconsistency 0.214399993419647



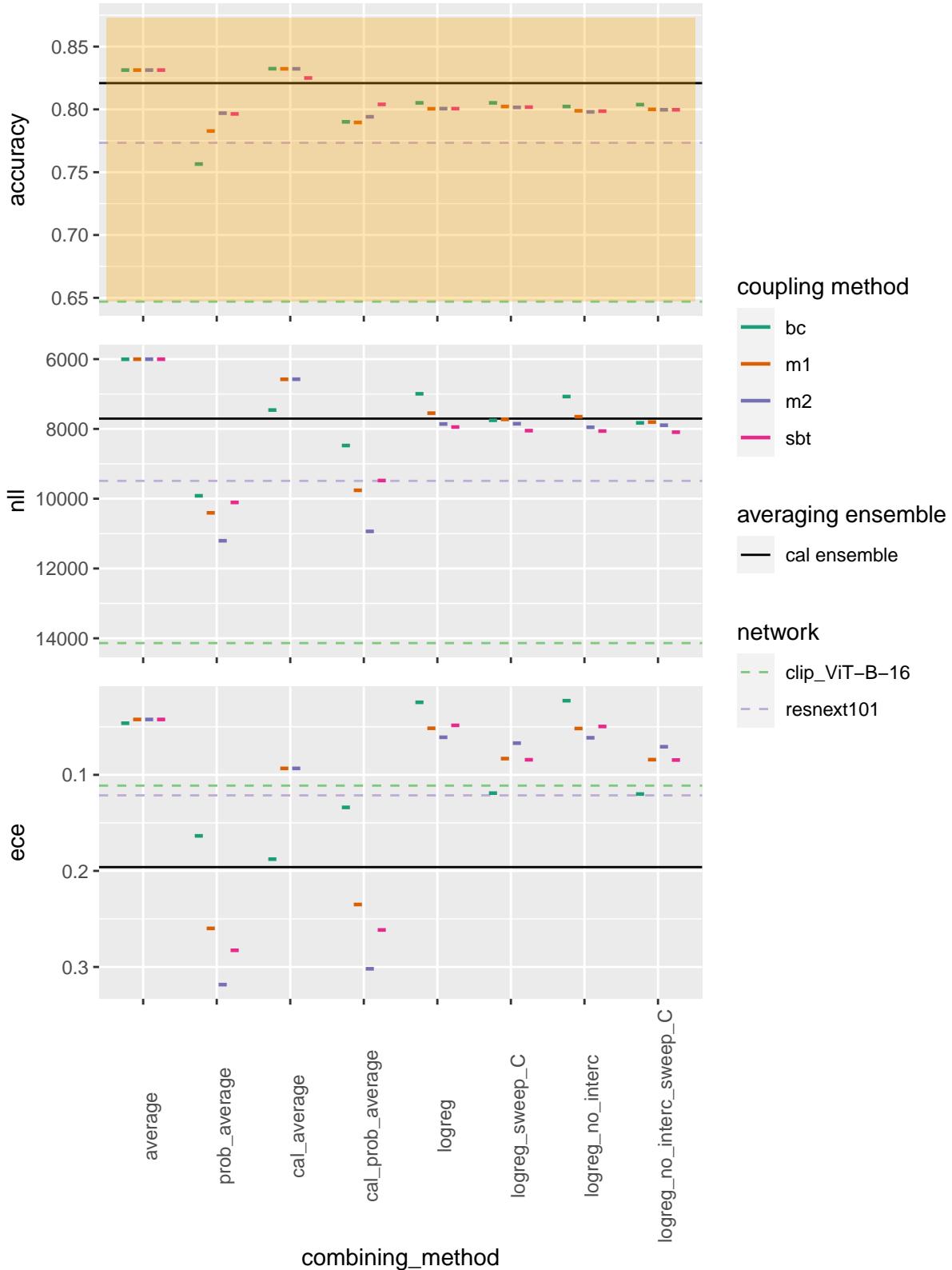
Ensemble metrics
Error inconsistency 0.212099999189377



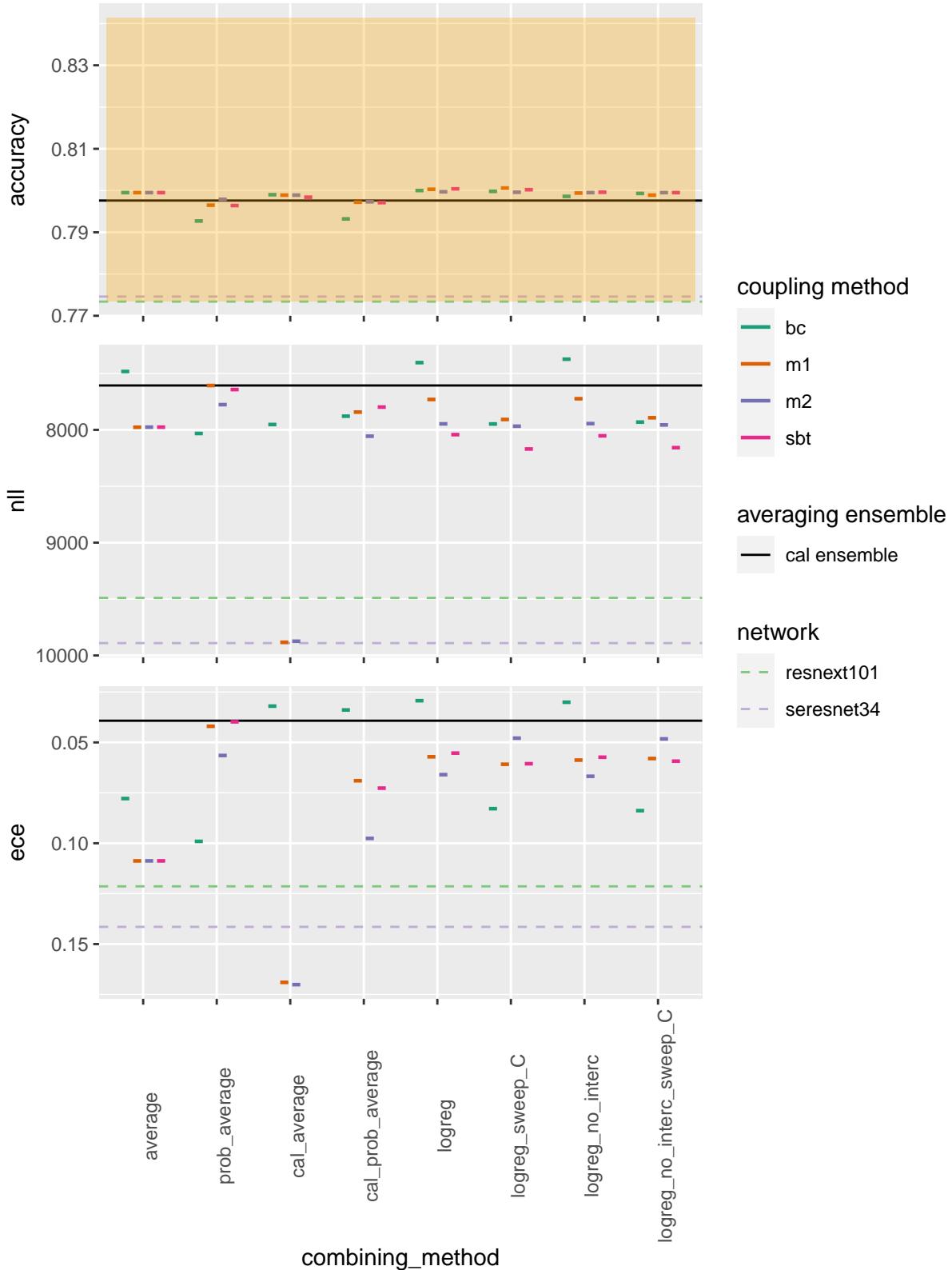
Ensemble metrics
Error inconsistency 0.151899993419647



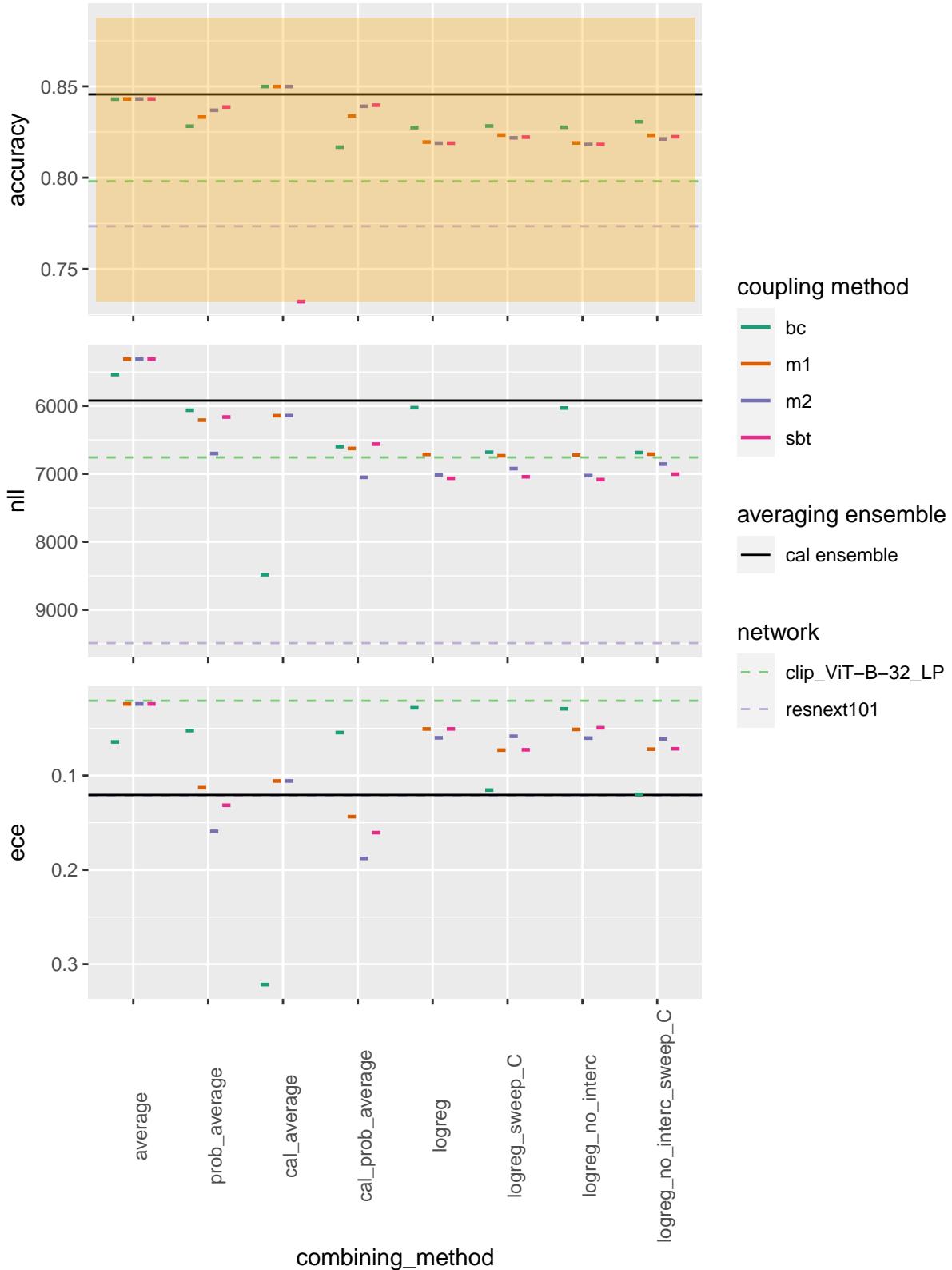
Ensemble metrics
Error inconsistency 0.325599998235703



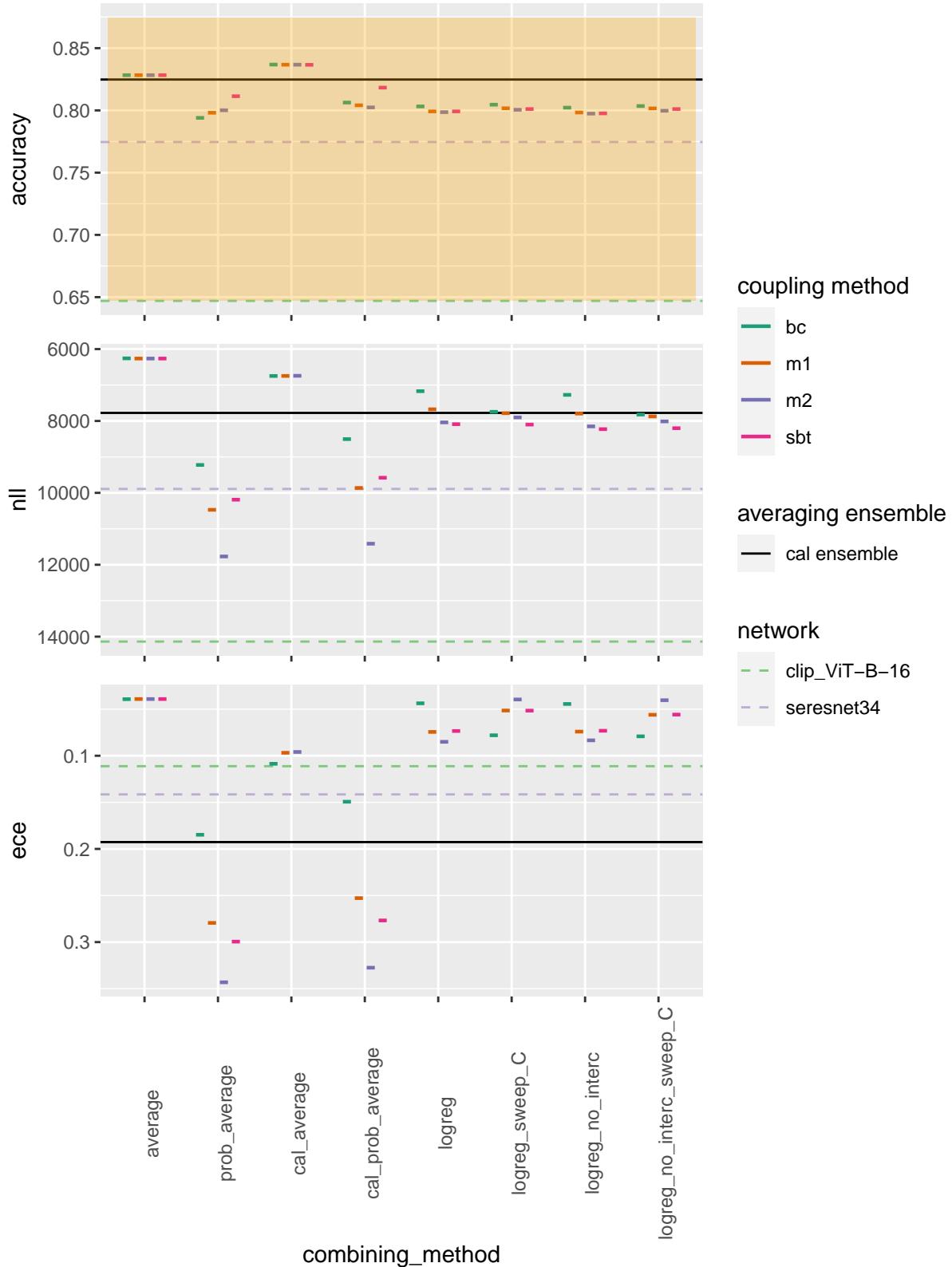
Ensemble metrics
Error inconsistency 0.134800001978874



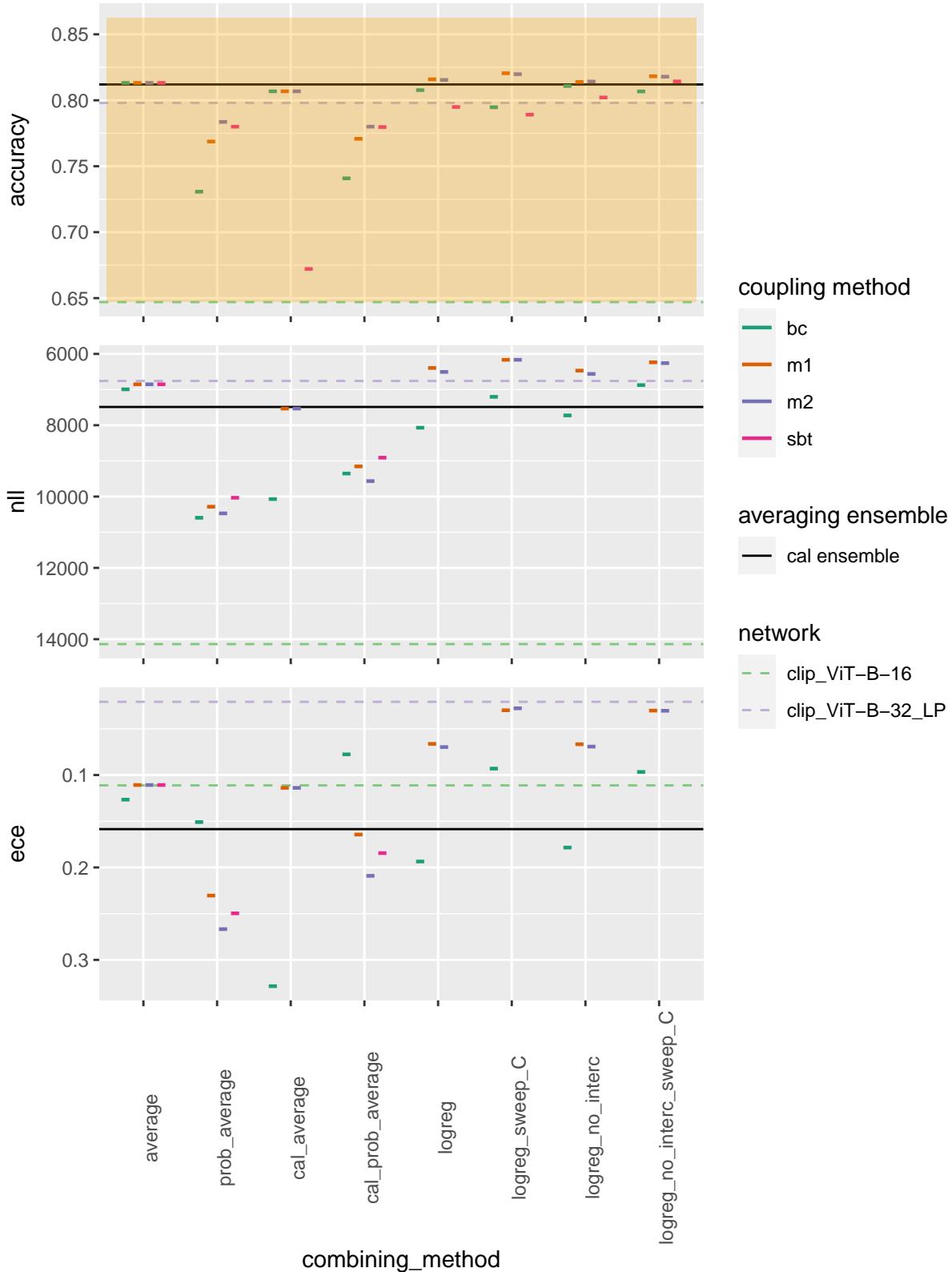
Ensemble metrics
Error inconsistency 0.203799992799759



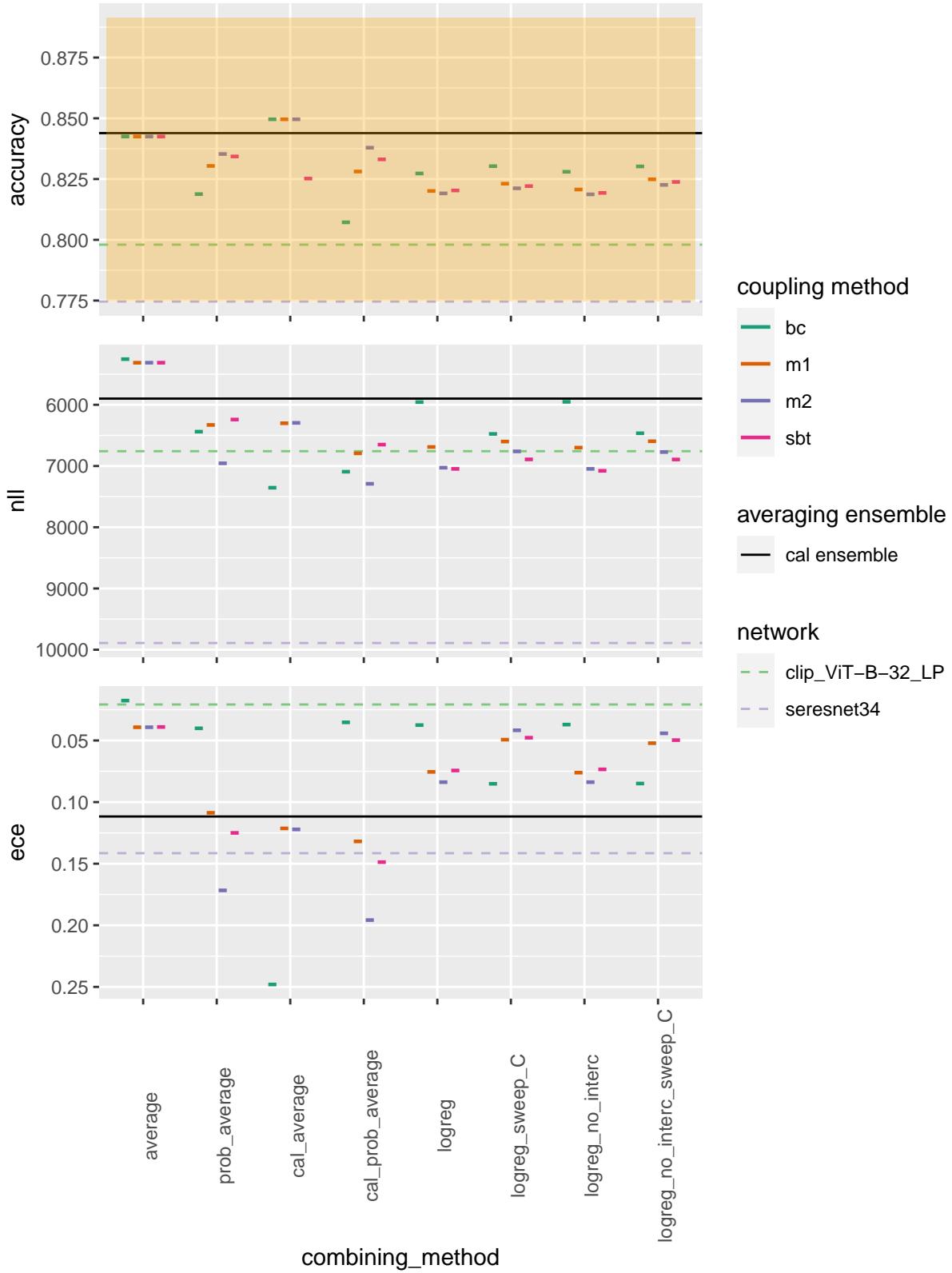
Ensemble metrics
Error inconsistency 0.327399998903274



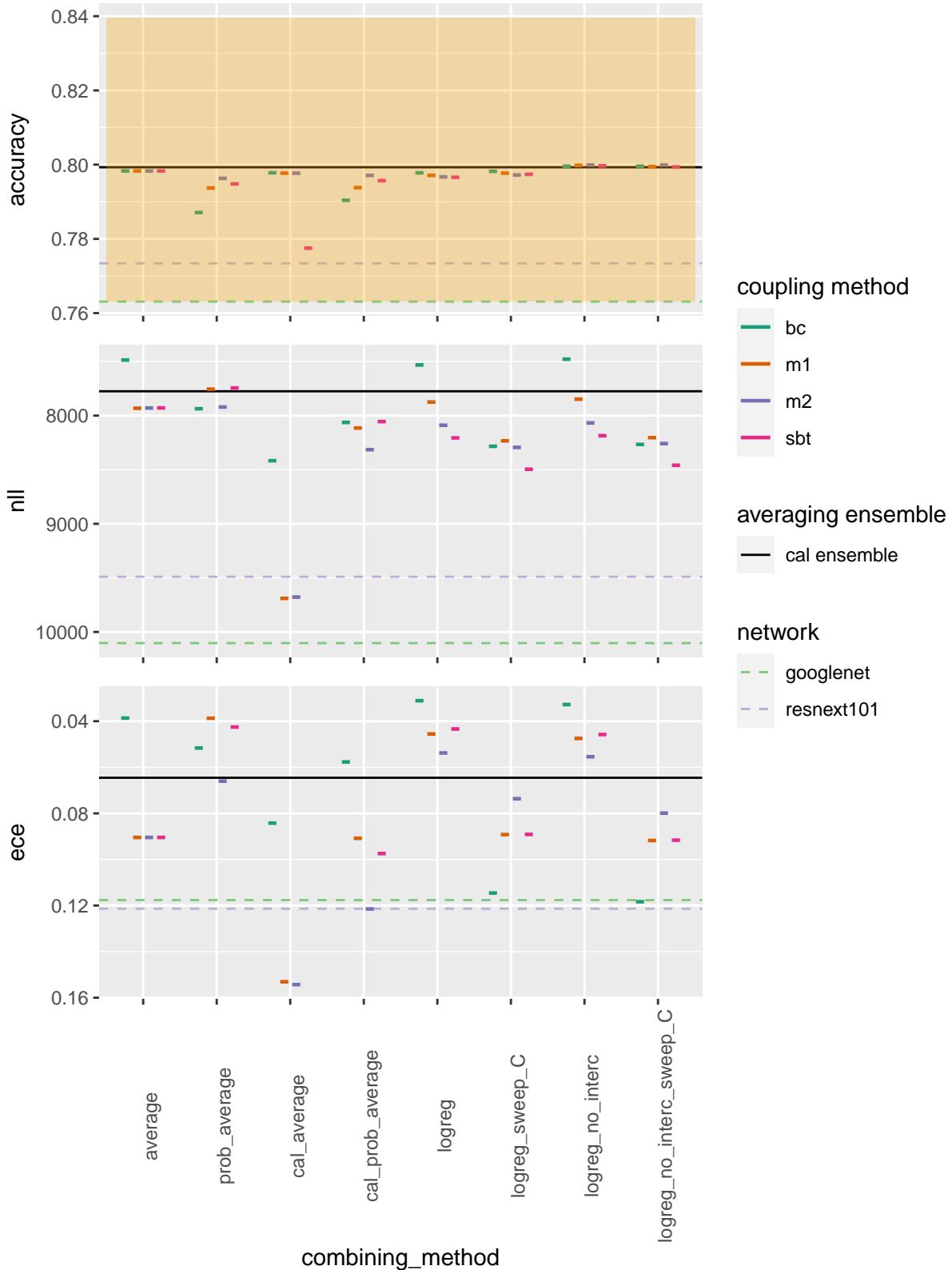
Ensemble metrics
Error inconsistency 0.280200004577637



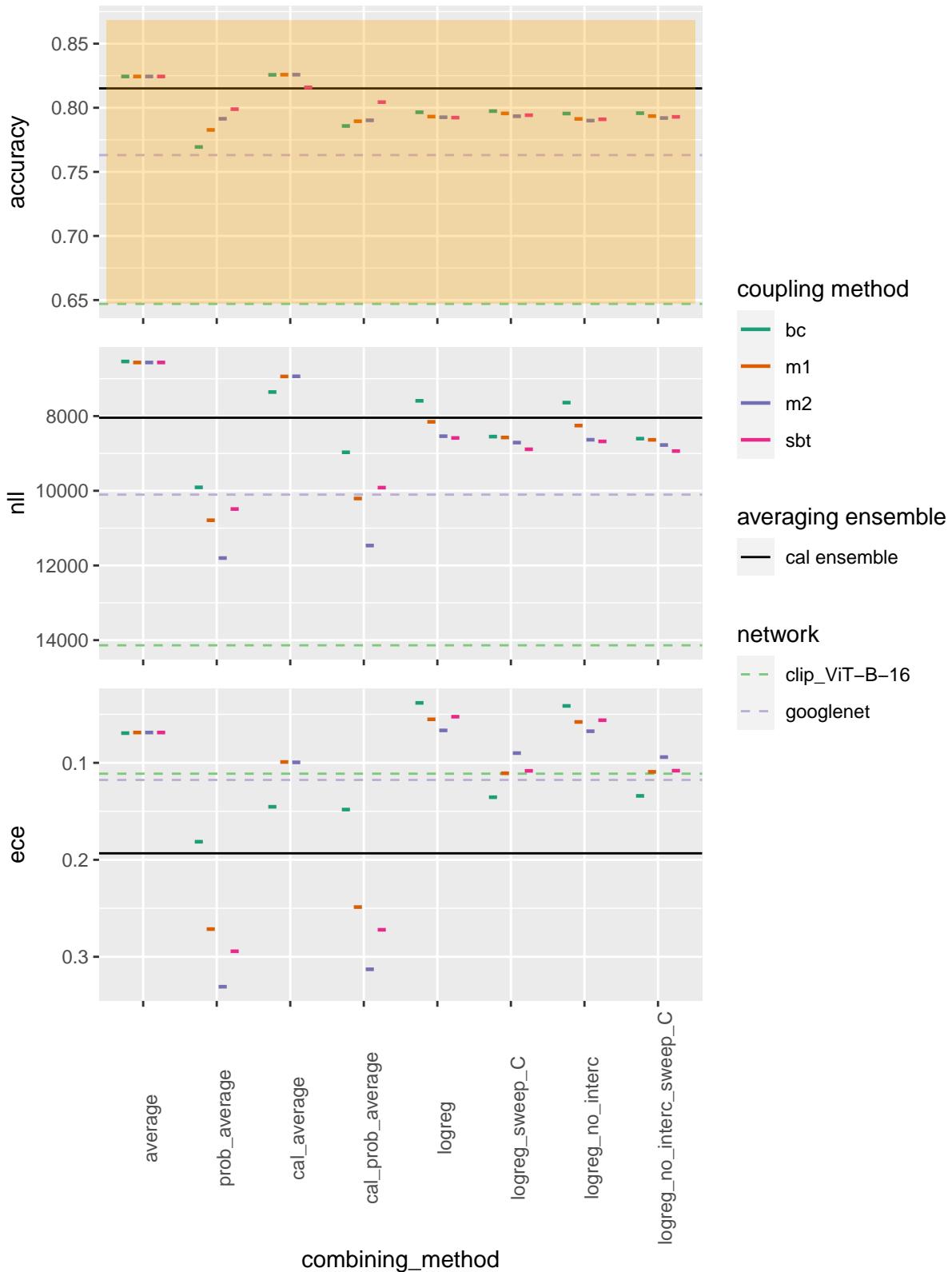
Ensemble metrics
Error inconsistency 0.210199996829033



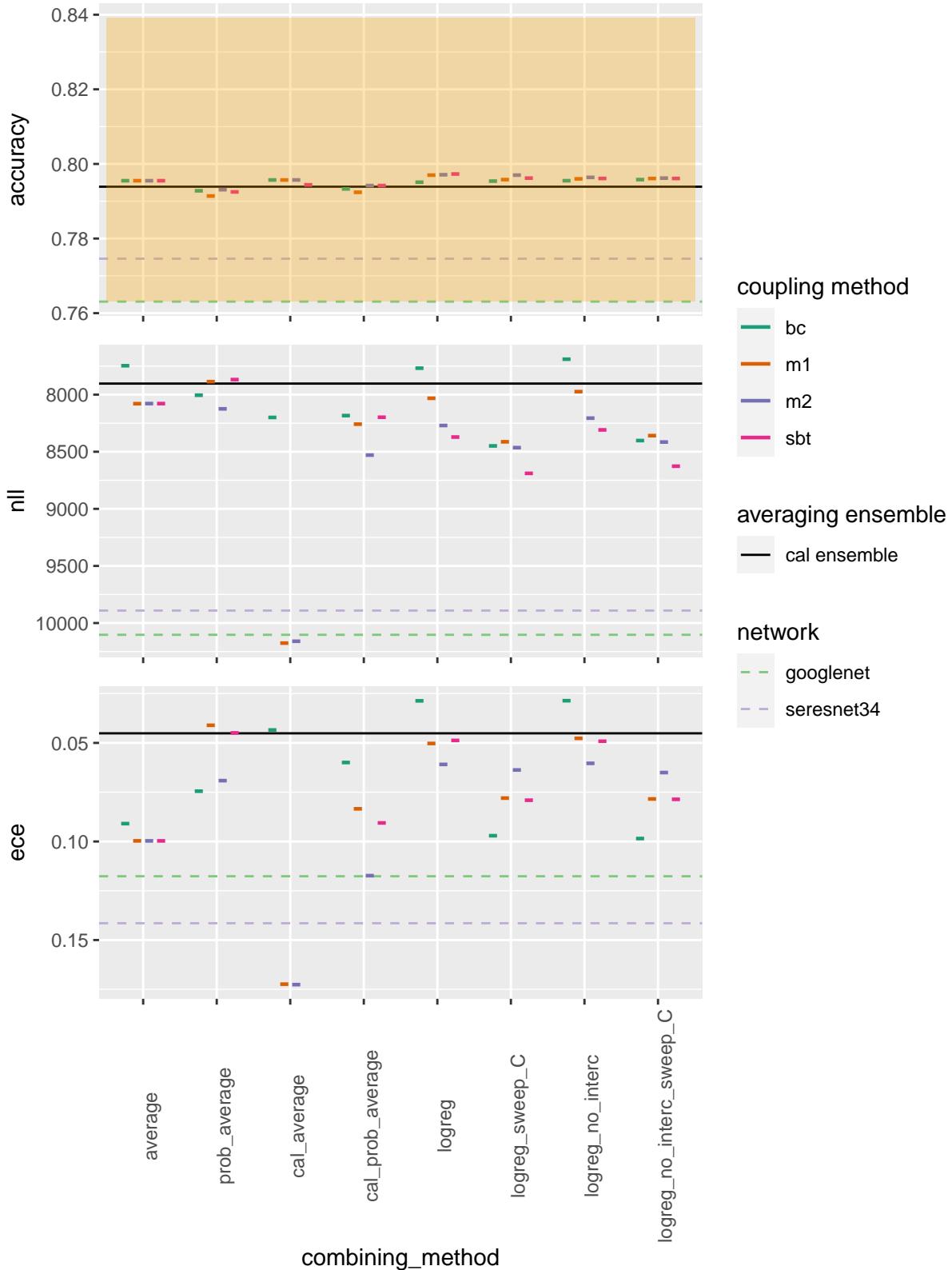
Ensemble metrics
Error inconsistency 0.142700001597404



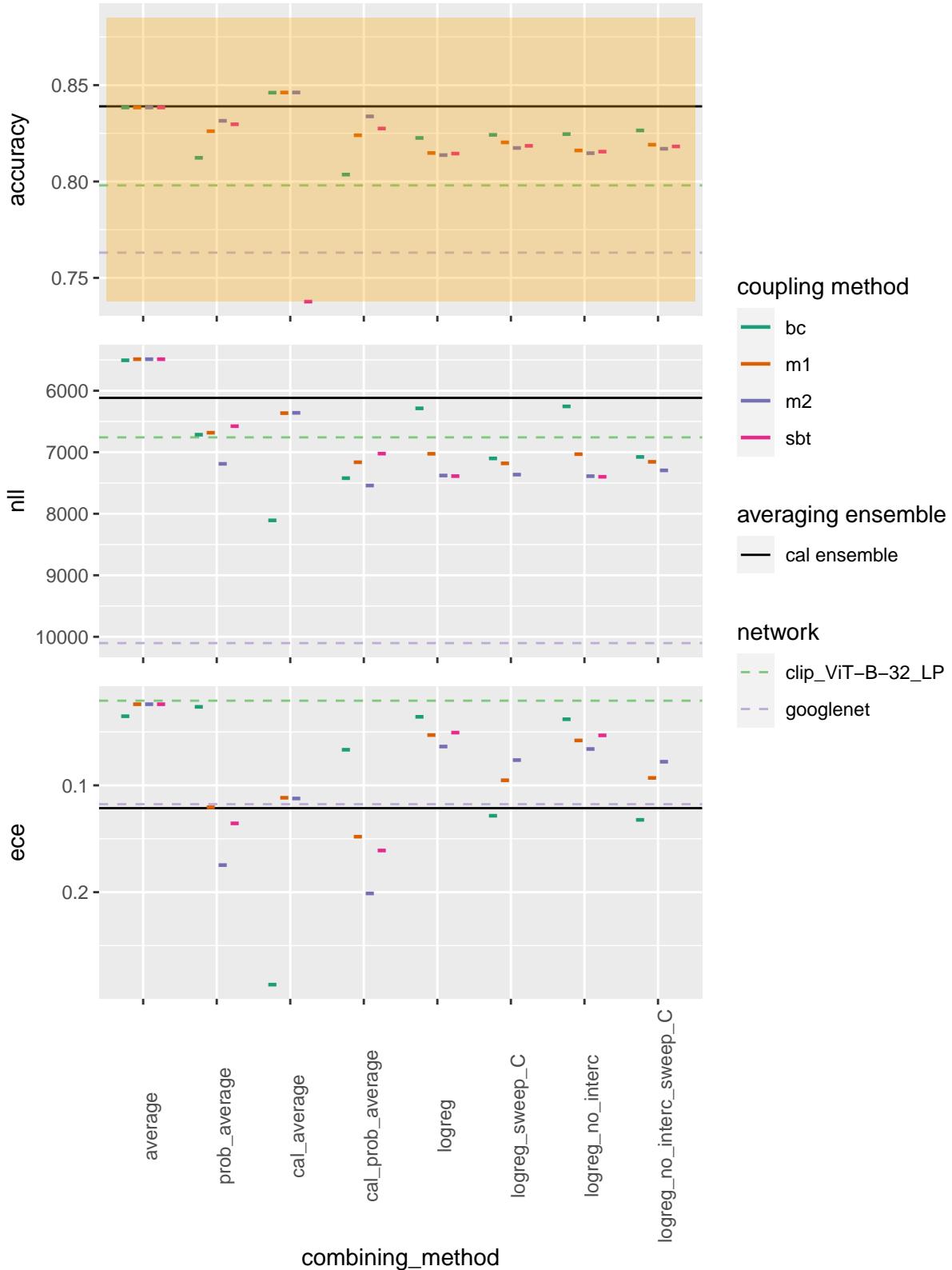
Ensemble metrics
Error inconsistency 0.326700001955032



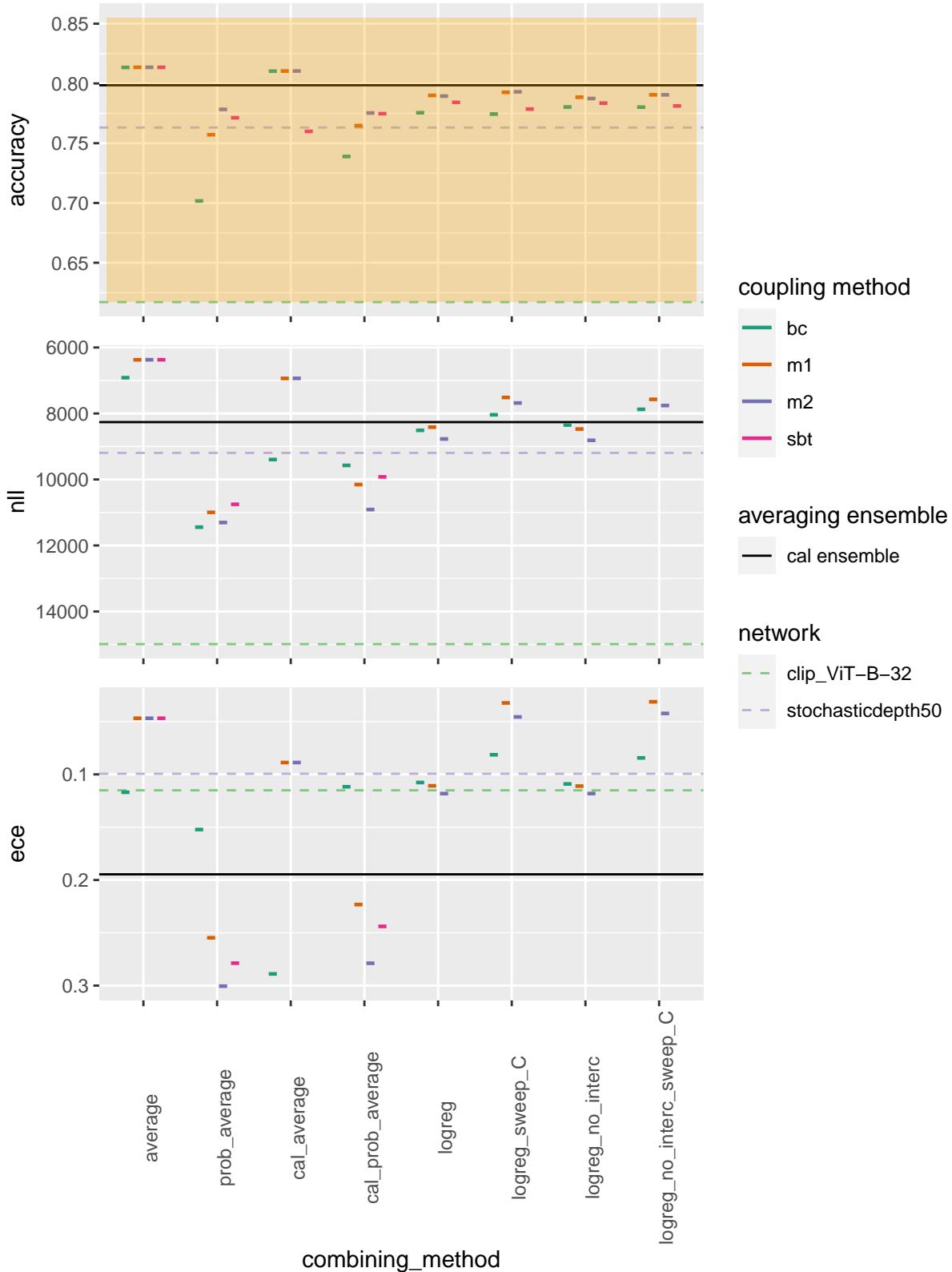
Ensemble metrics
Error inconsistency 0.140699997544289



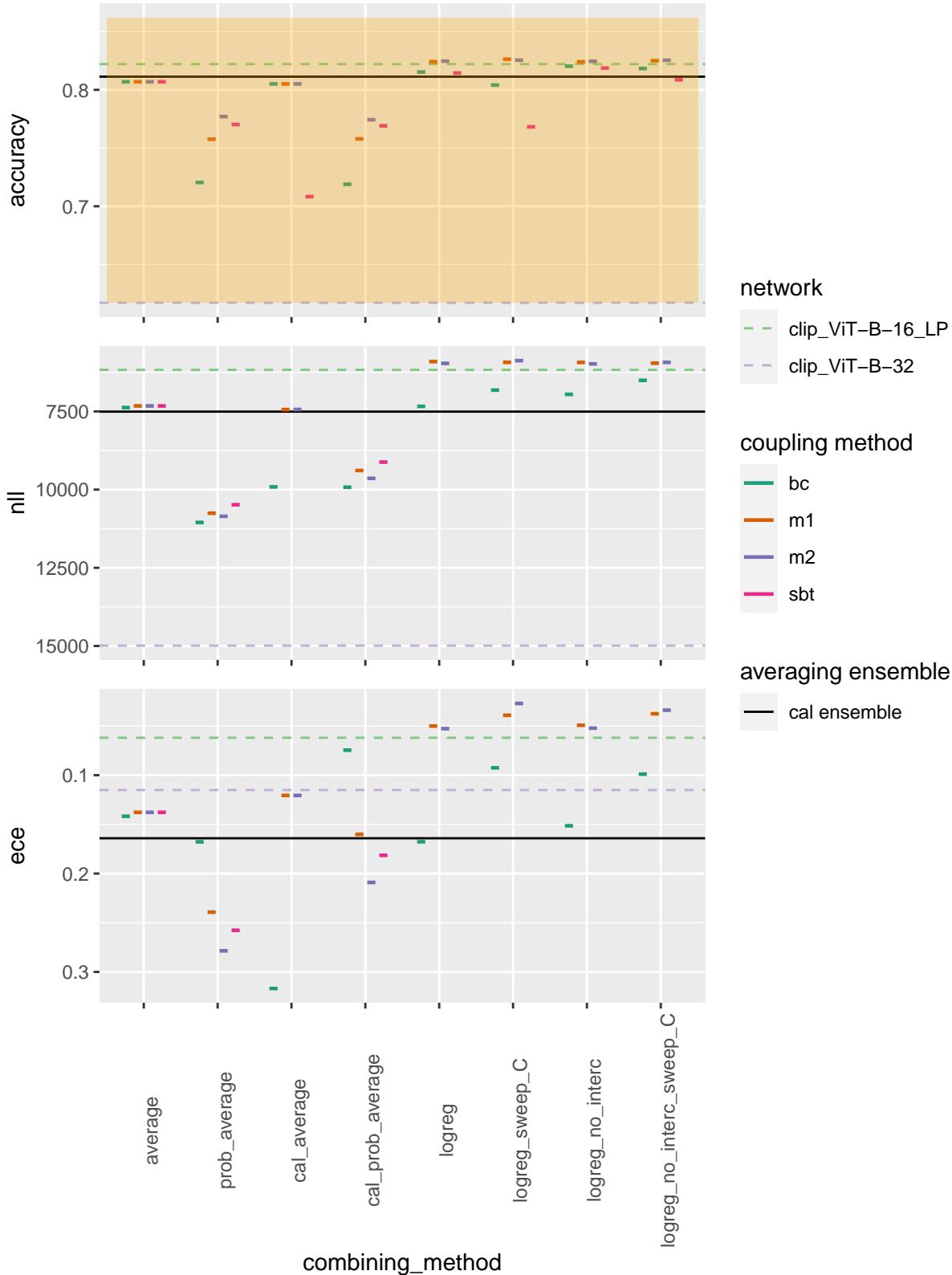
Ensemble metrics
Error inconsistency 0.208899989724159



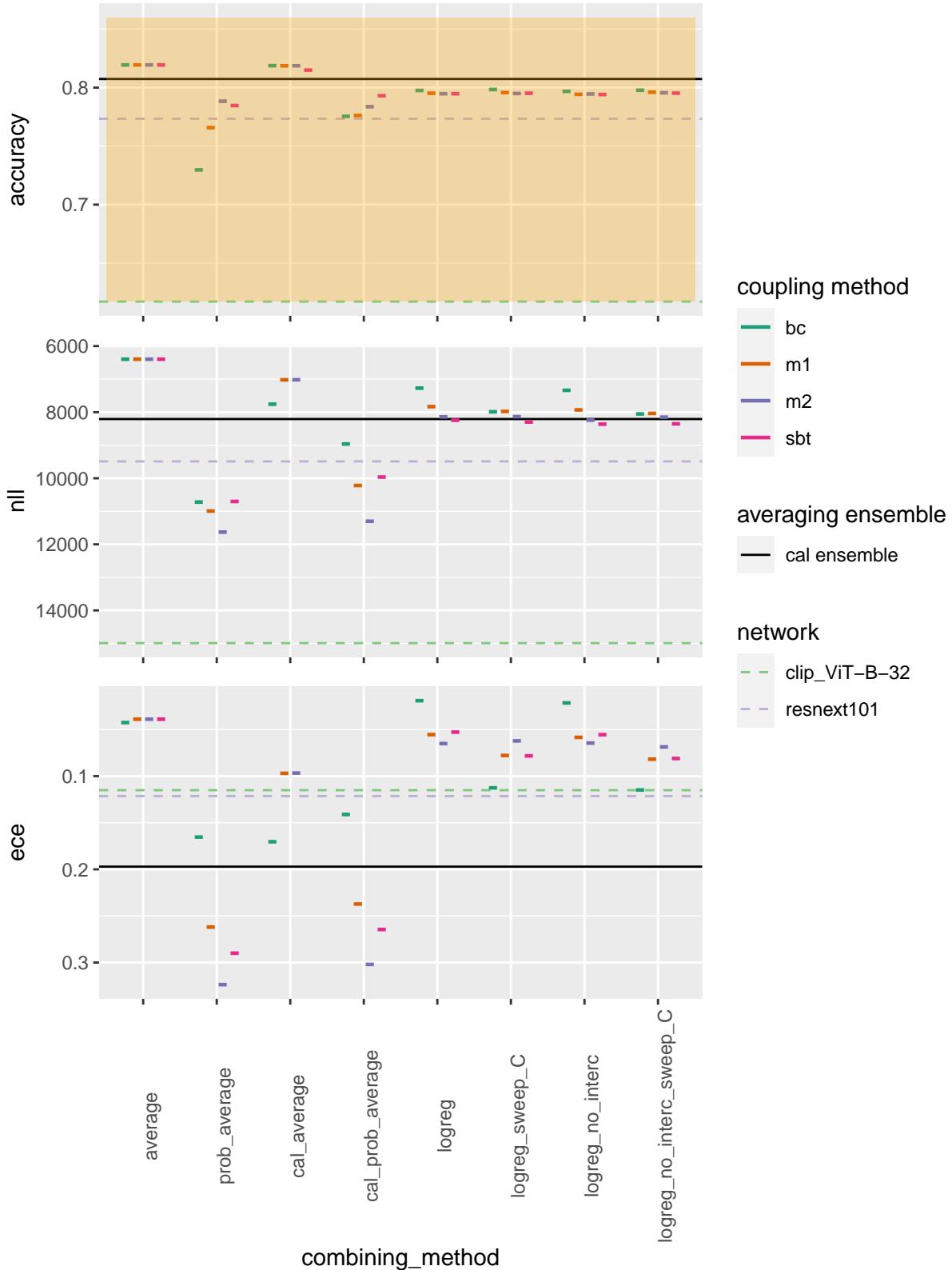
Ensemble metrics
Error inconsistency 0.329799979925156



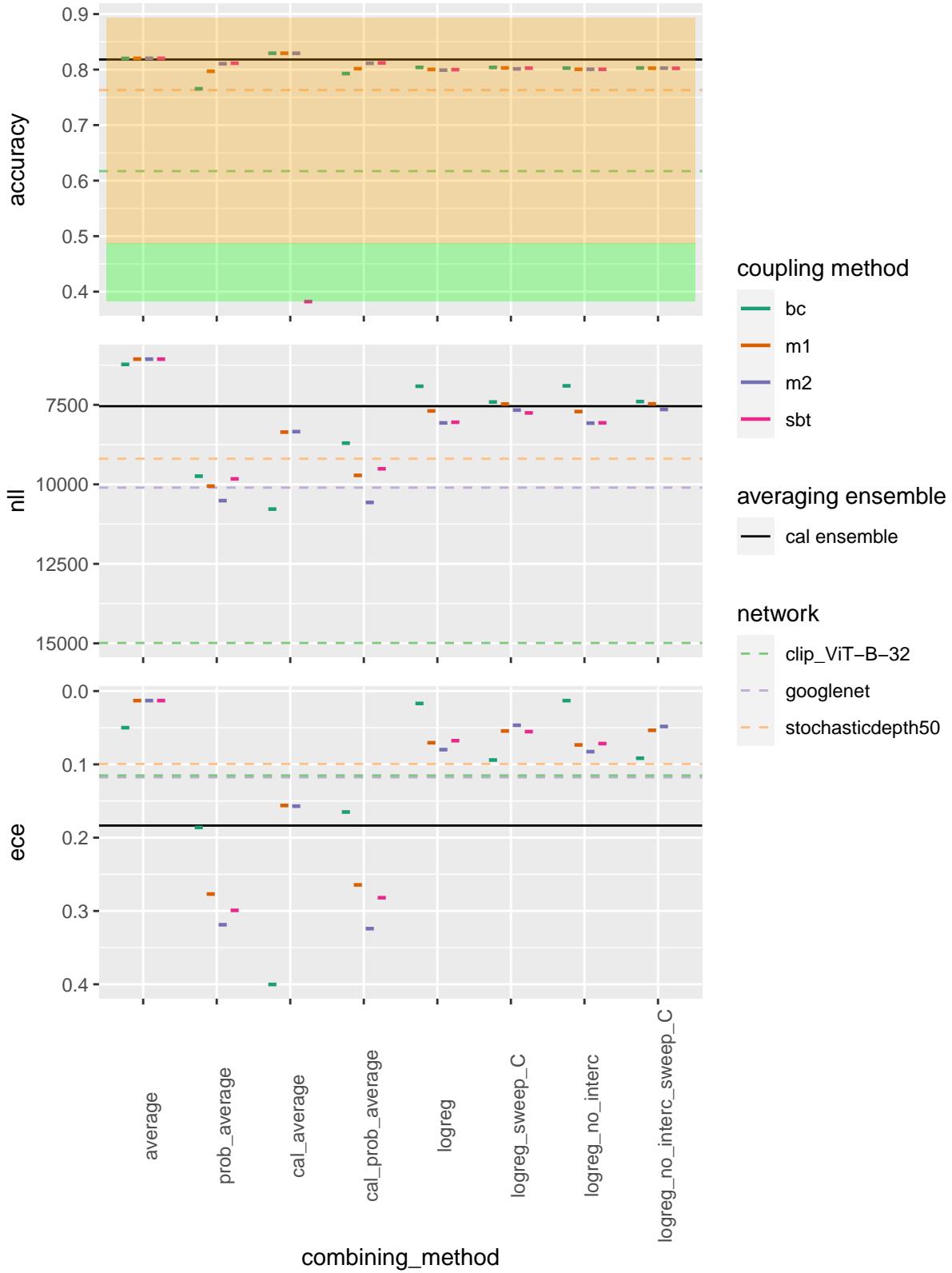
Ensemble metrics
Error inconsistency 0.284599989652634



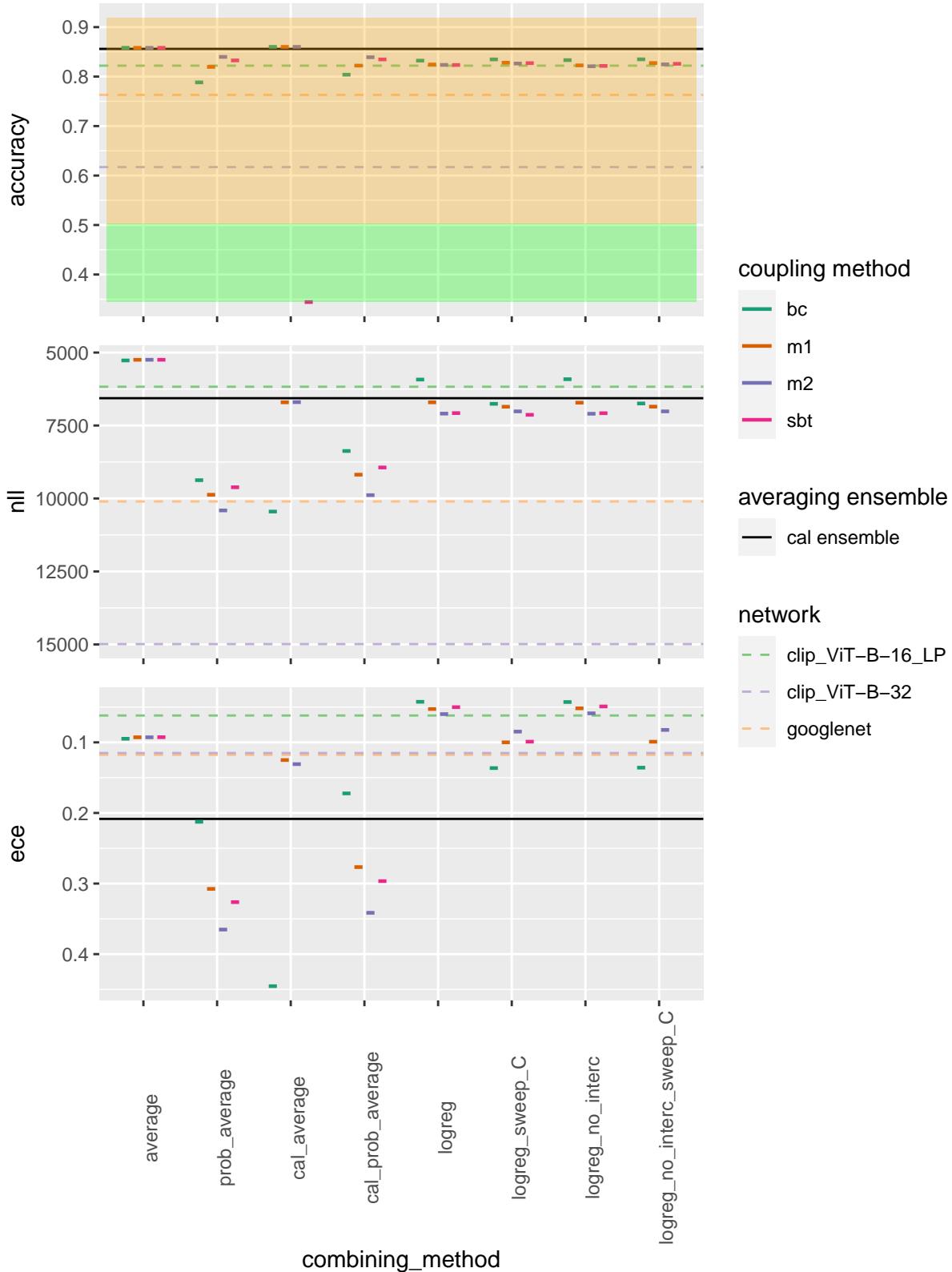
Ensemble metrics
Error inconsistency 0.329099982976913



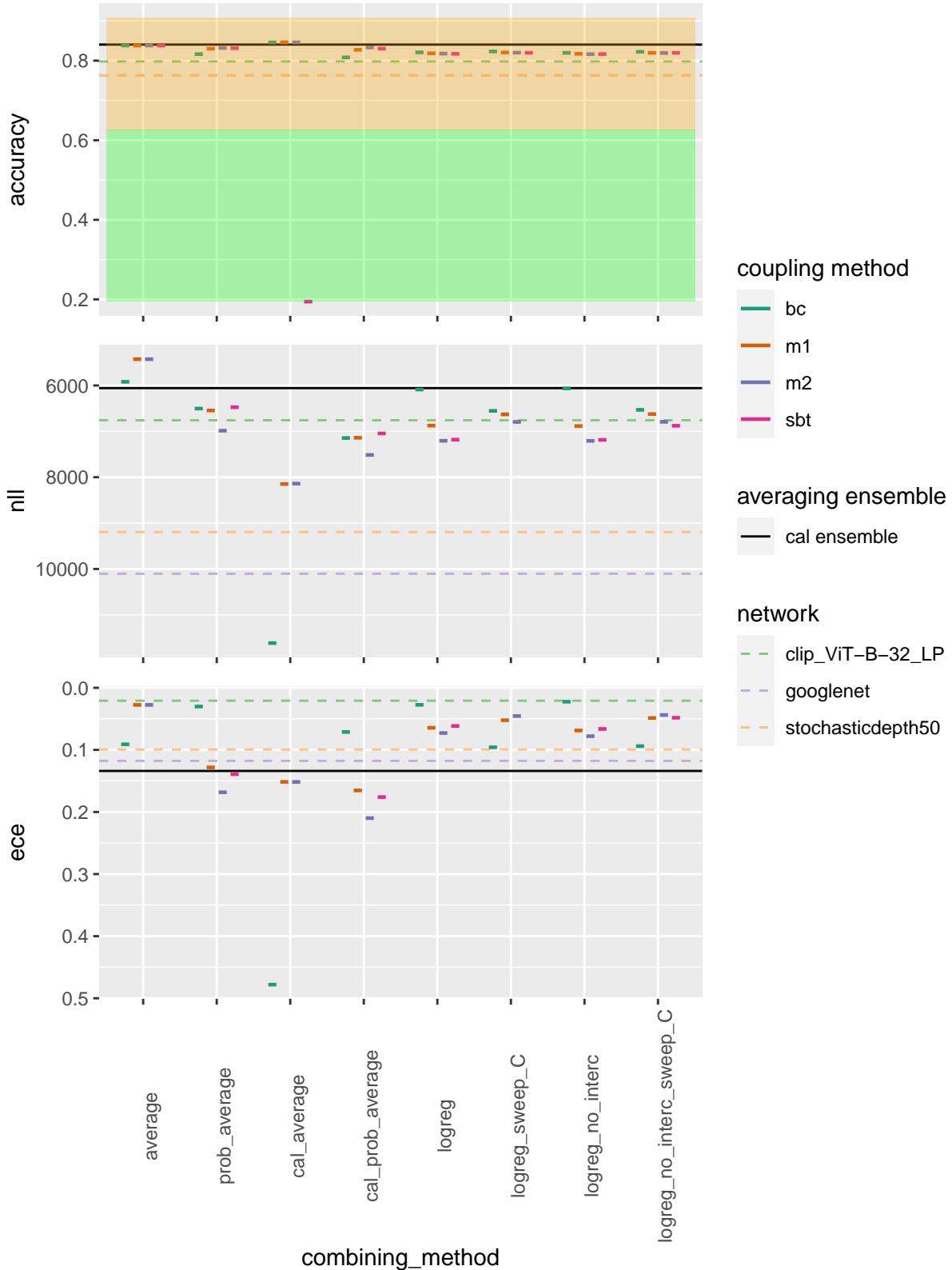
Ensemble metrics
Error inconsistency 0.406499981880188



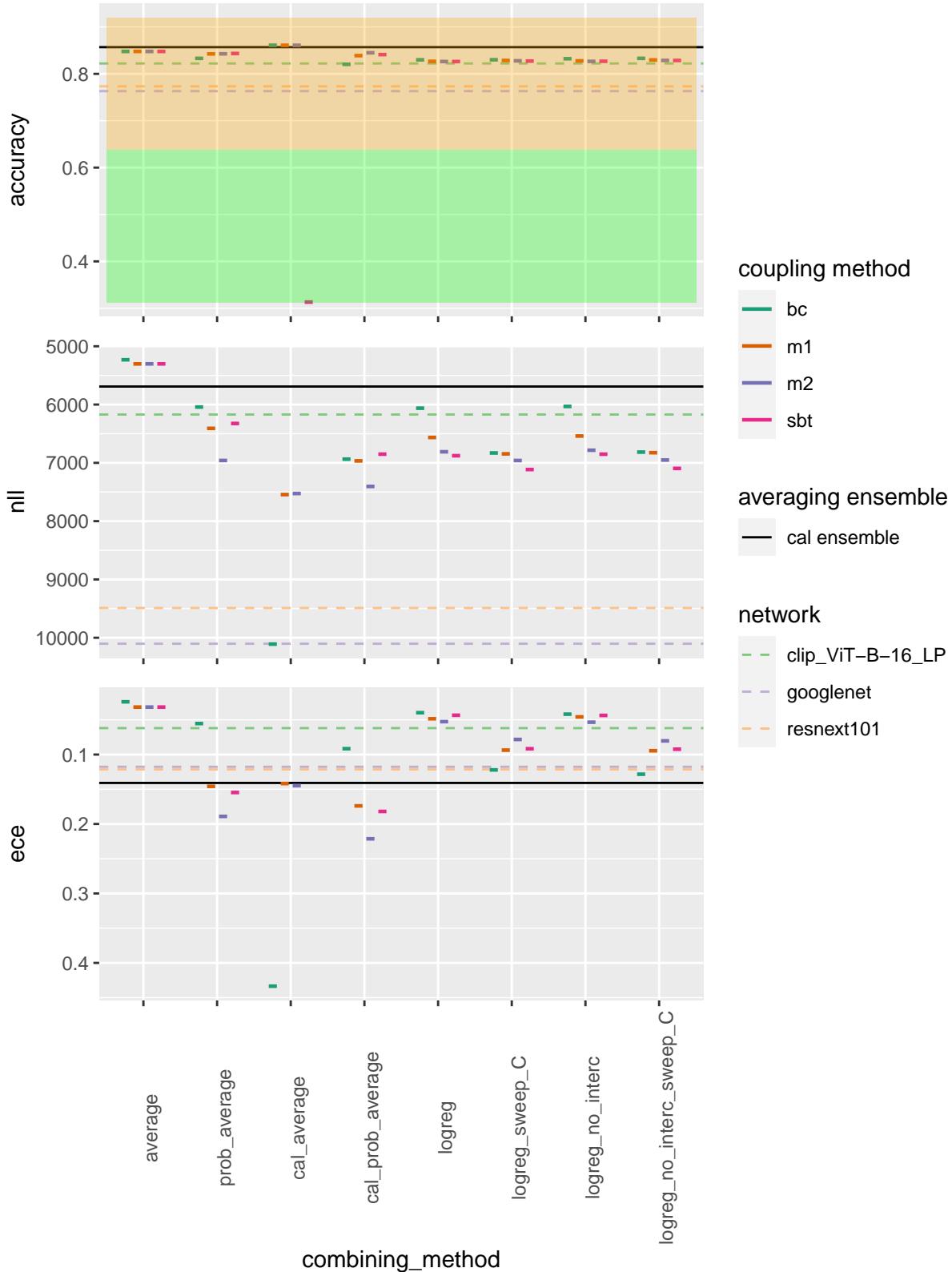
Ensemble metrics
Error inconsistency 0.416699975728989



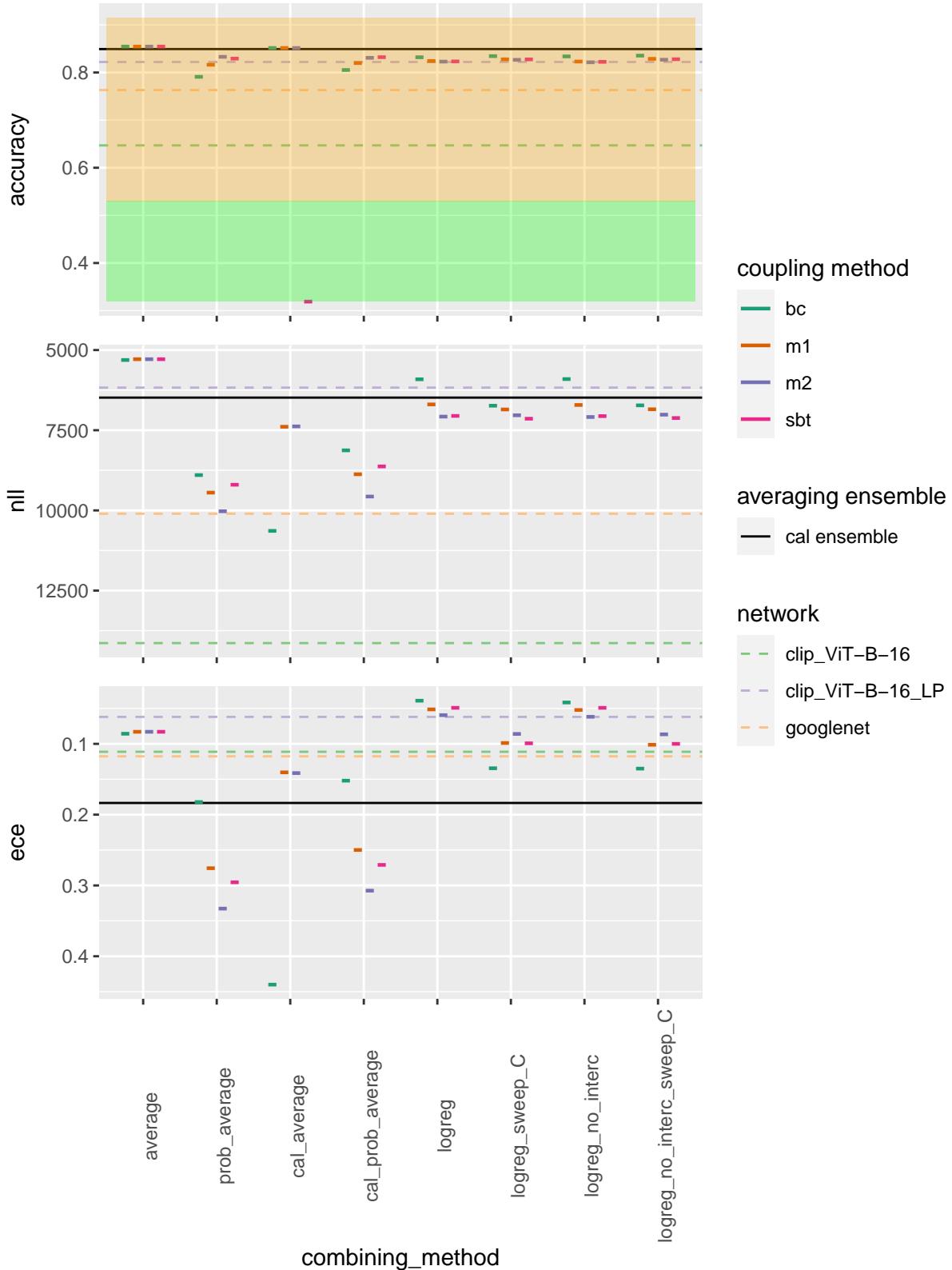
Ensemble metrics
Error inconsistency 0.282700002193451



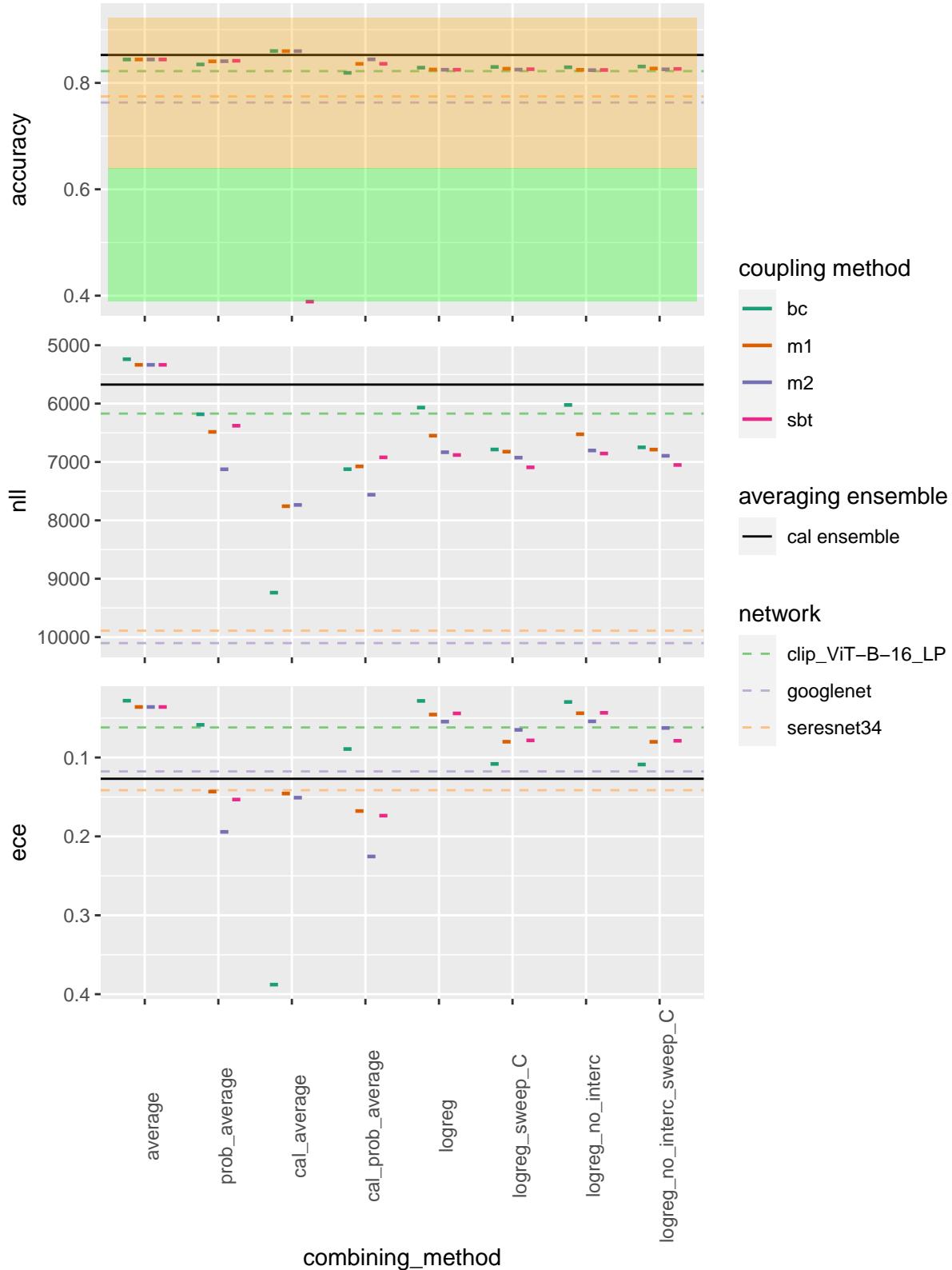
Ensemble metrics
Error inconsistency 0.281699985265732



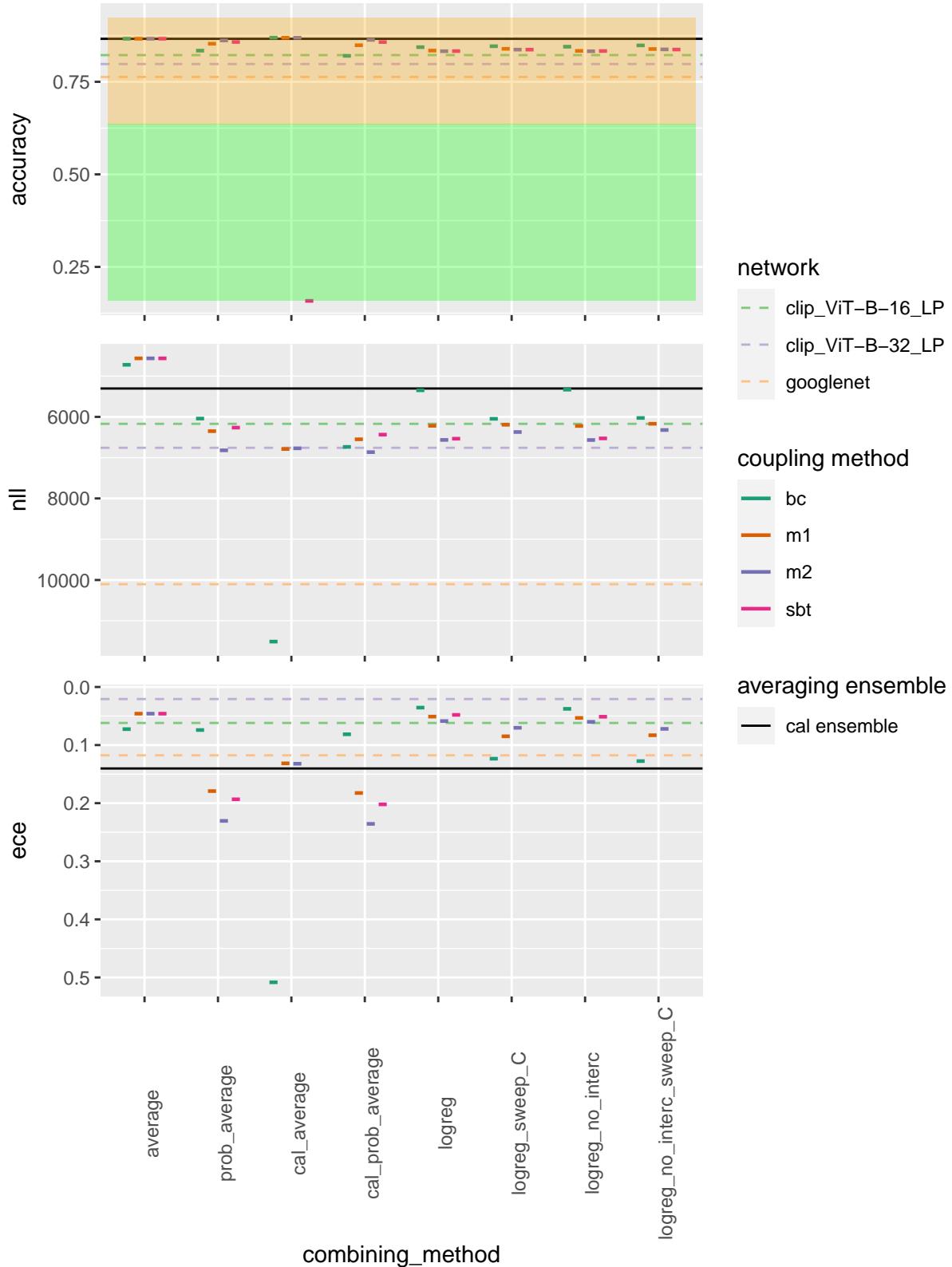
Ensemble metrics
Error inconsistency 0.384799987077713



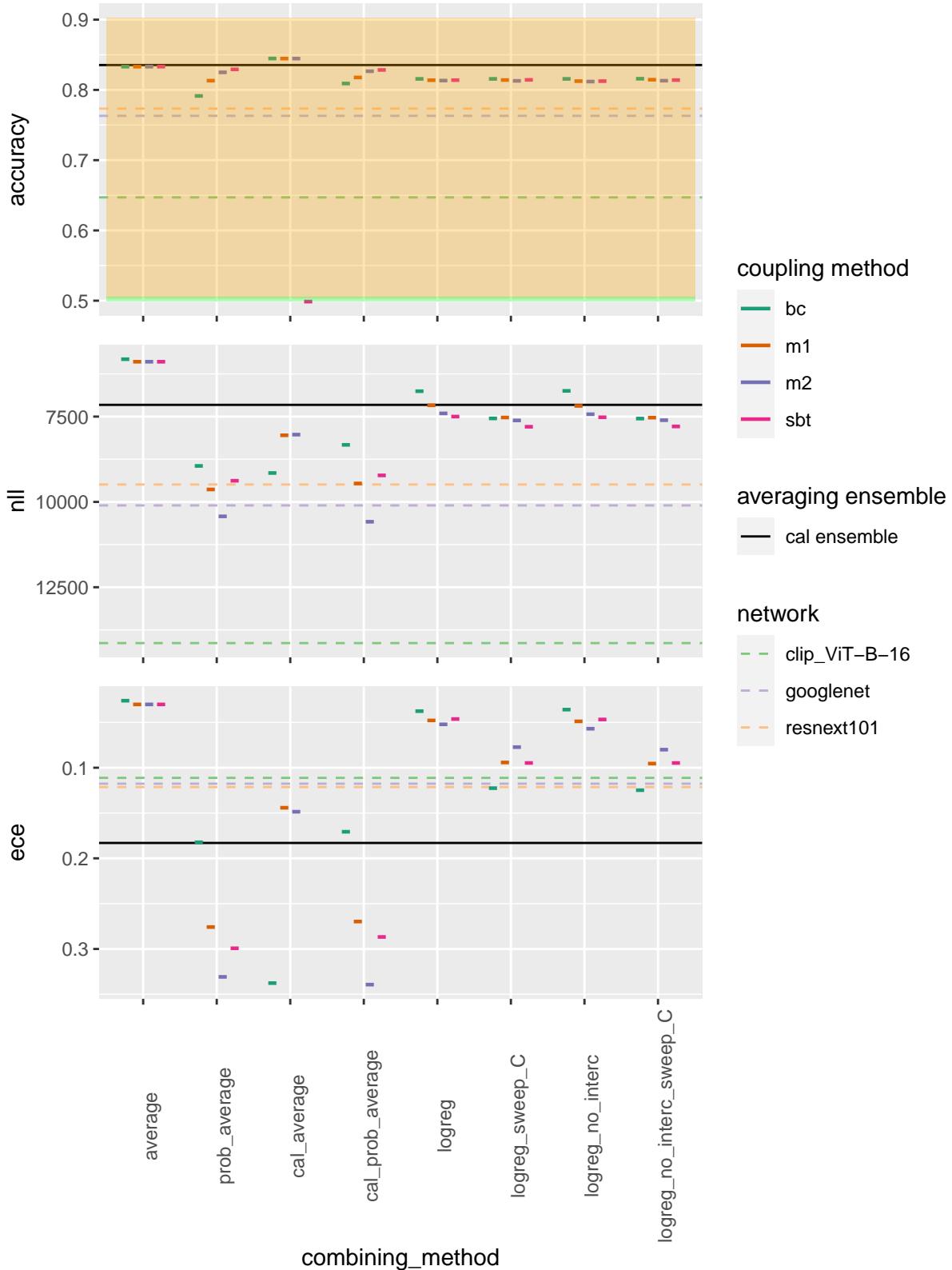
Ensemble metrics
Error inconsistency 0.283600002527237



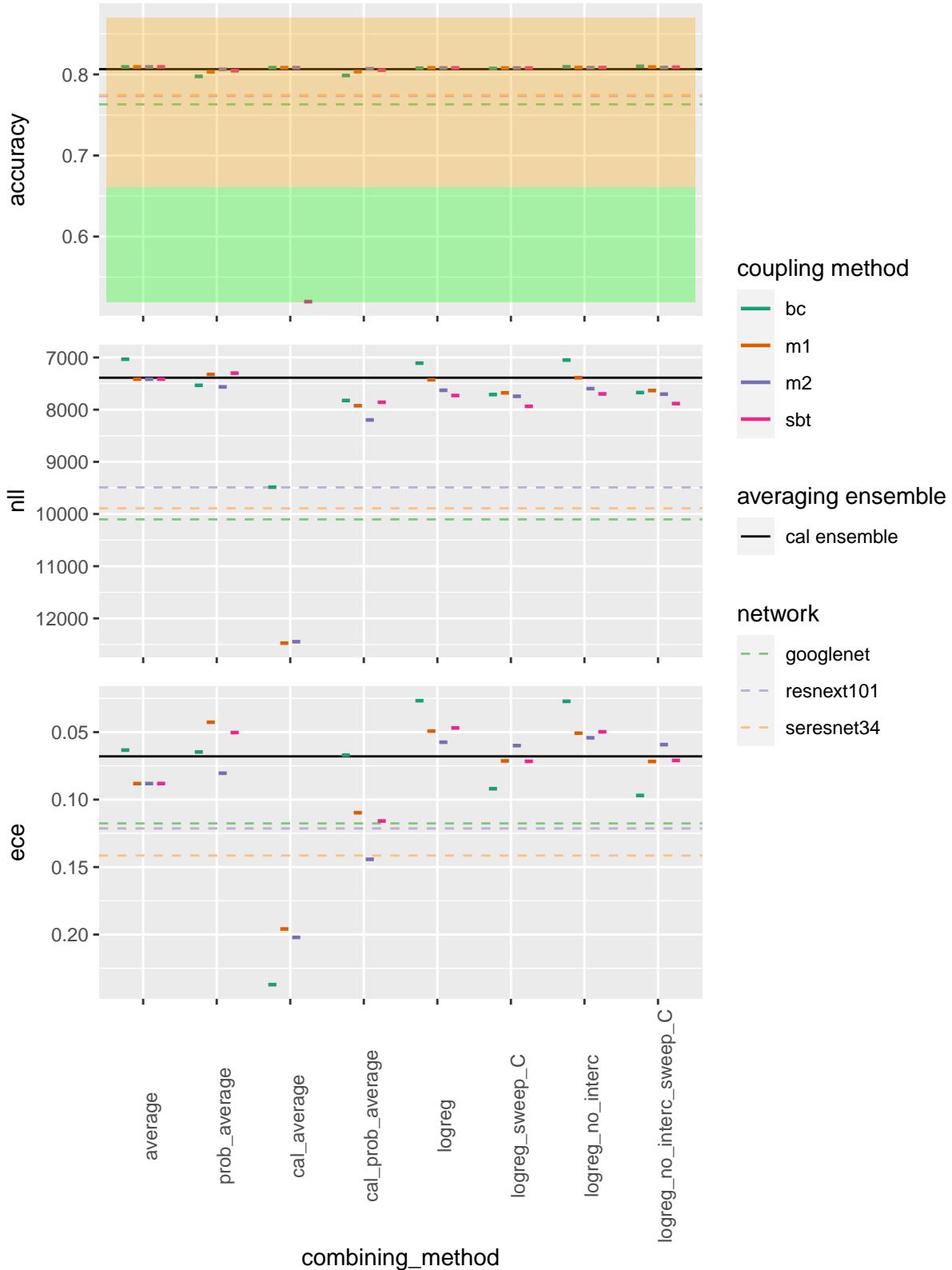
Ensemble metrics
Error inconsistency 0.287599980831146



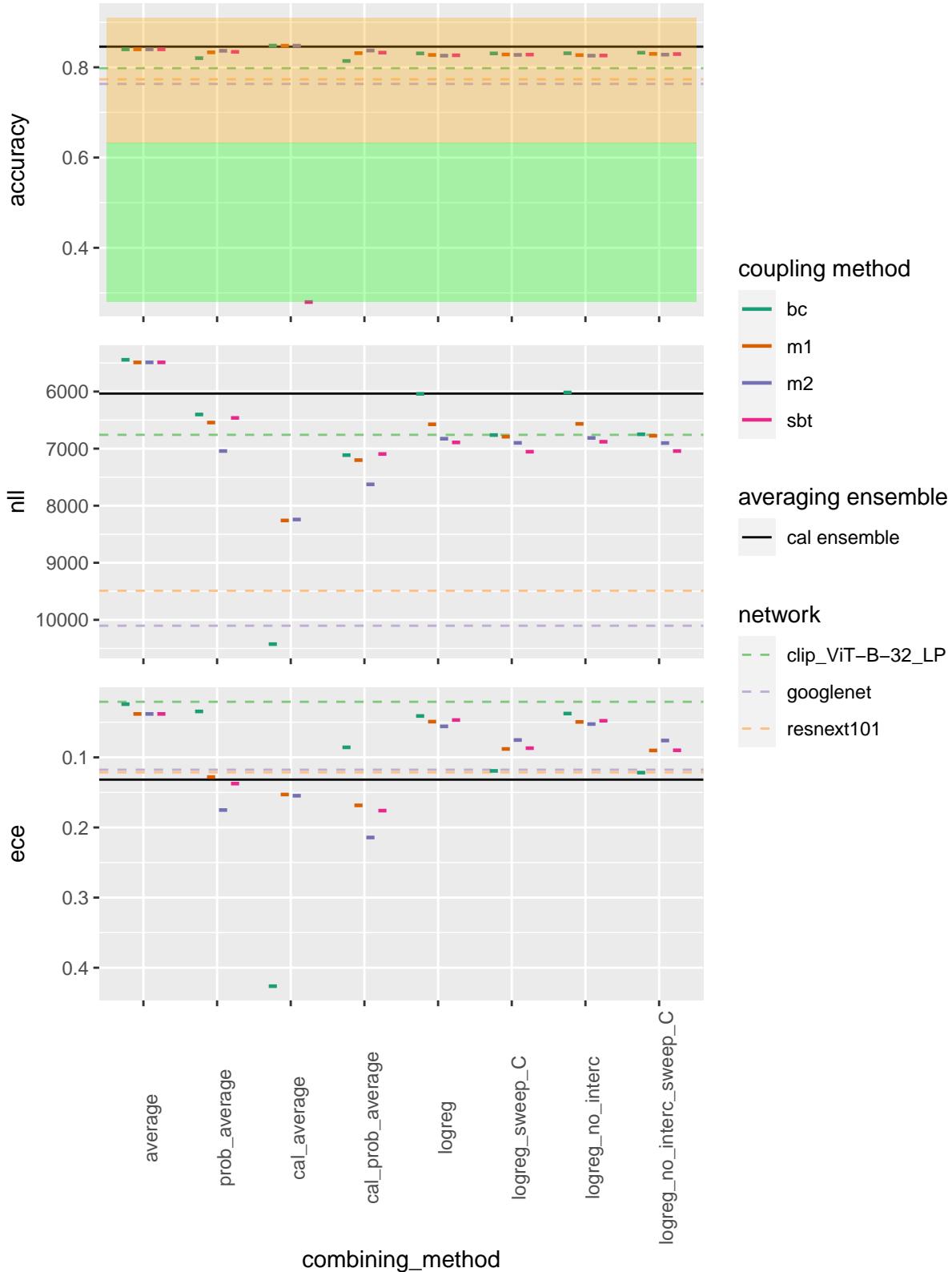
Ensemble metrics
Error inconsistency 0.397499978542328



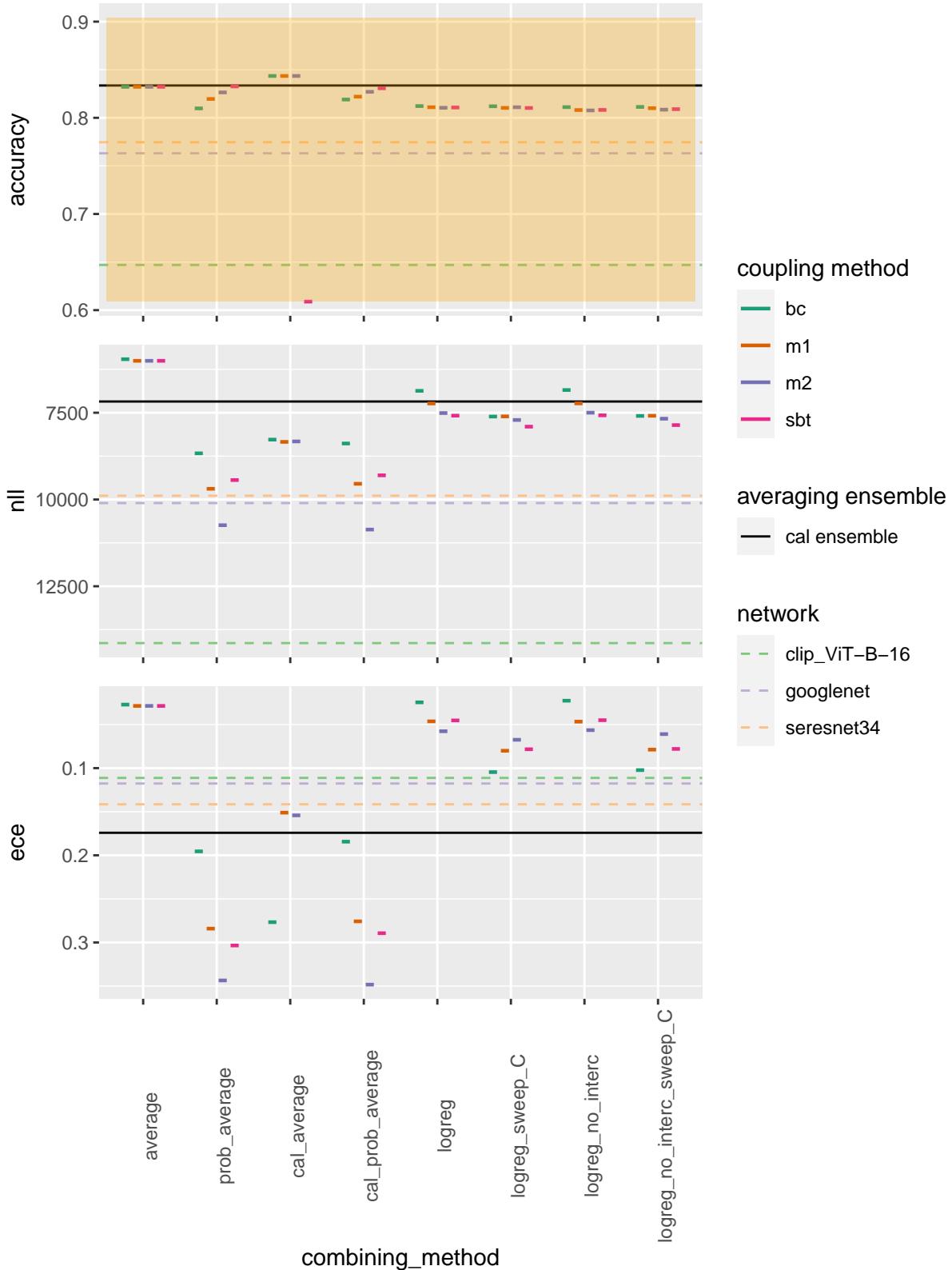
Ensemble metrics
Error inconsistency 0.209099993109703



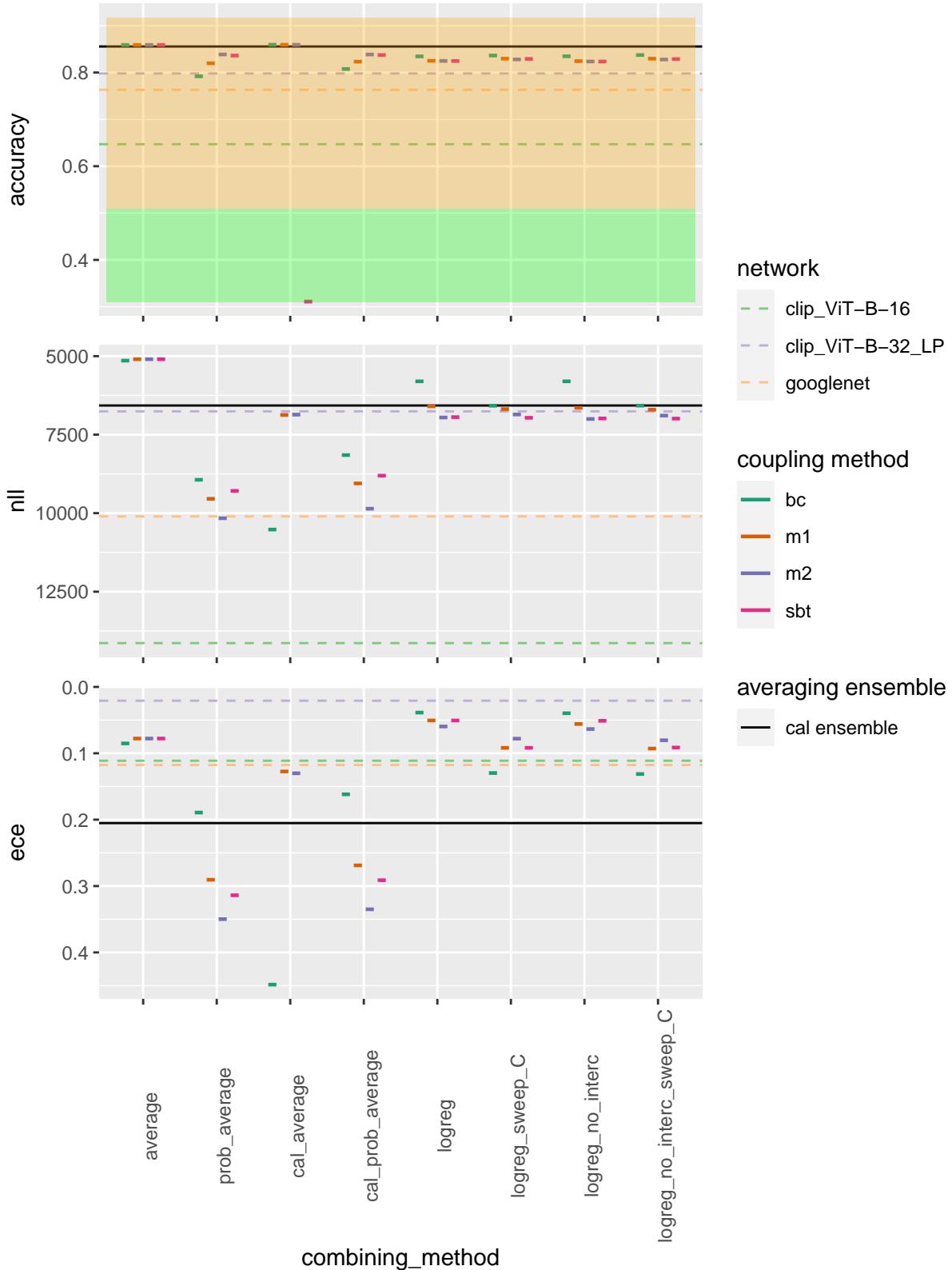
Ensemble metrics
Error inconsistency 0.277700006961823



Ensemble metrics
Error inconsistency 0.397399991750717

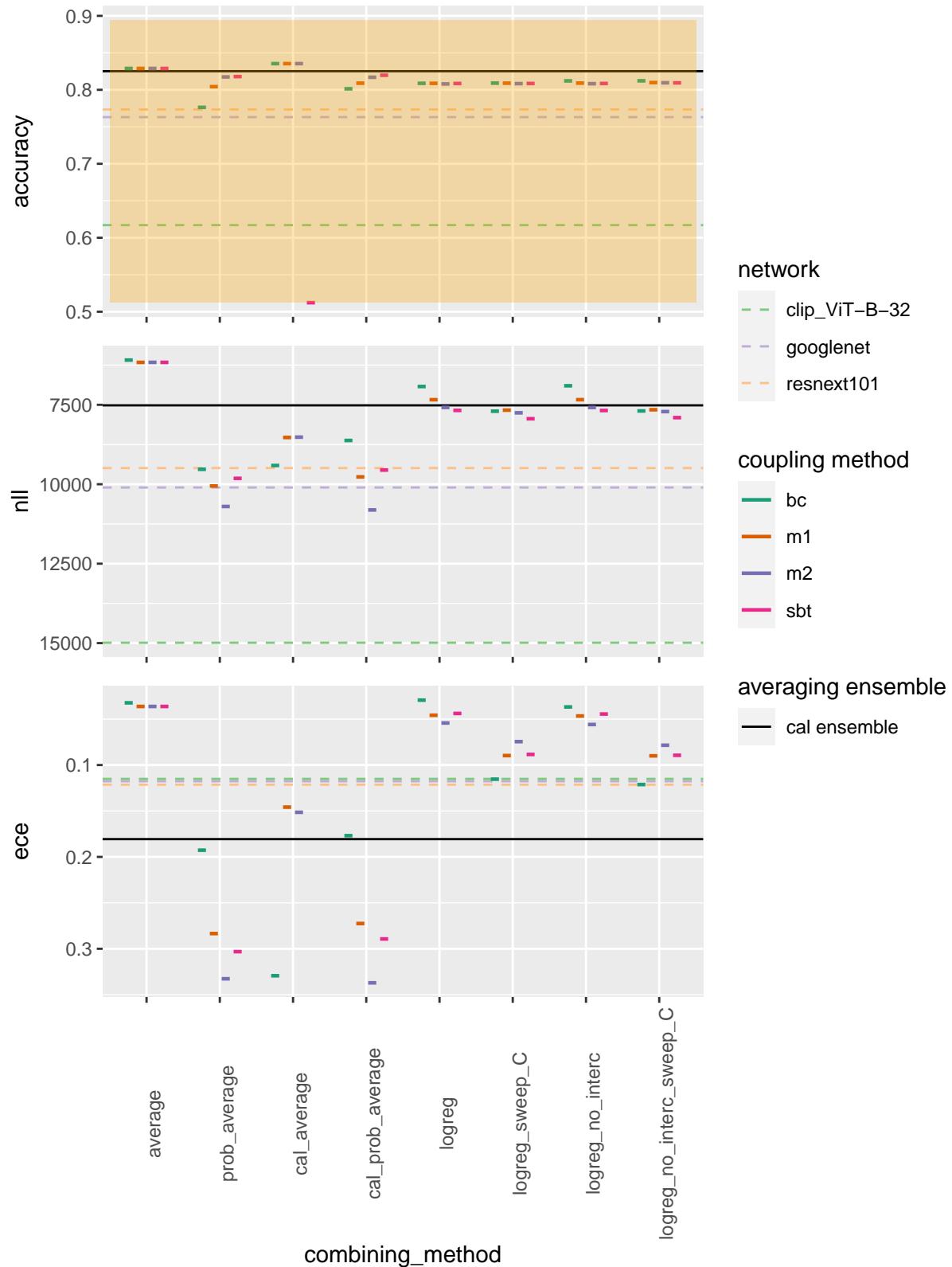


Ensemble metrics
Error inconsistency 0.407899975776672

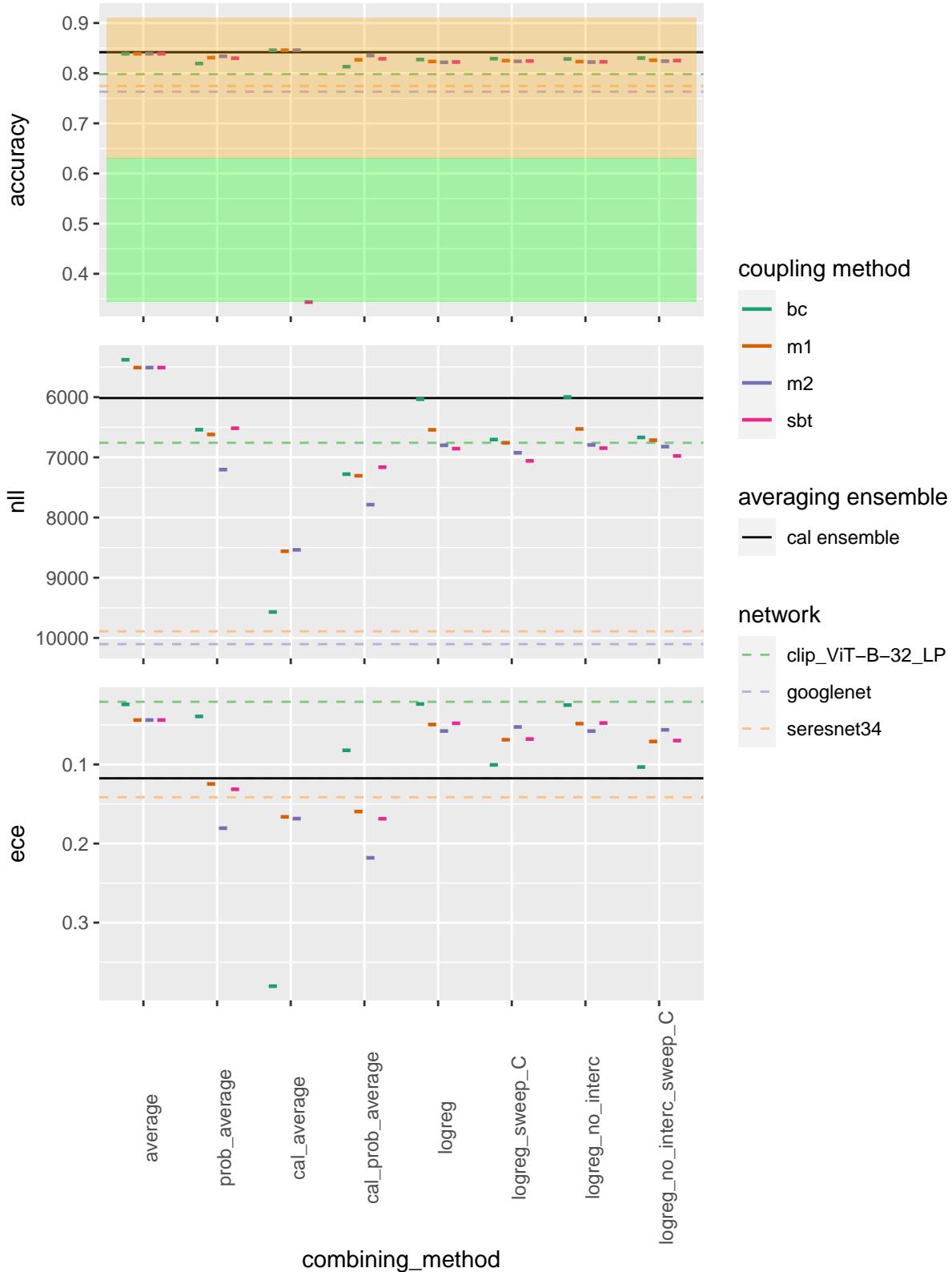


Ensemble metrics

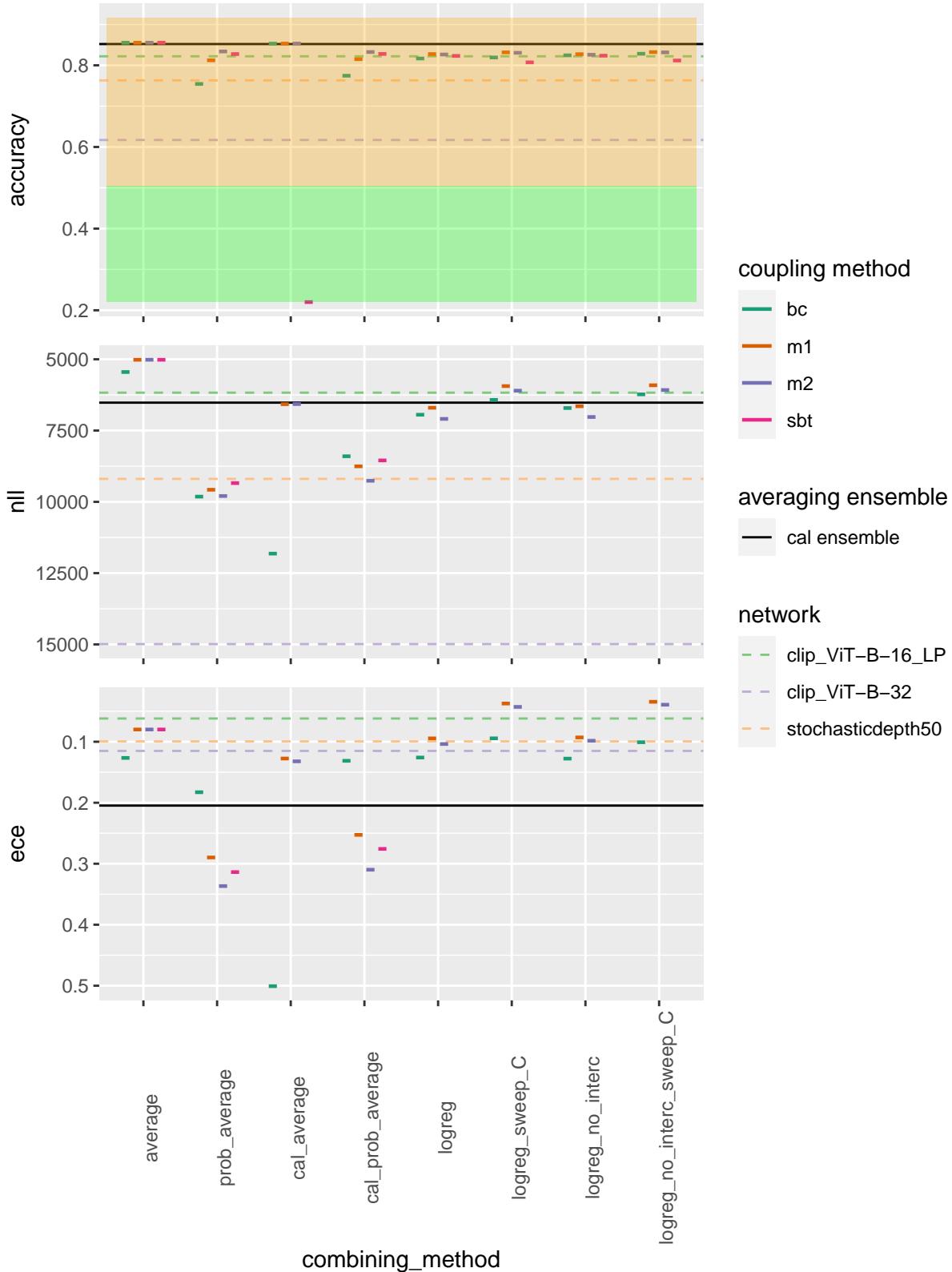
Error inconsistency 0.403099983930588



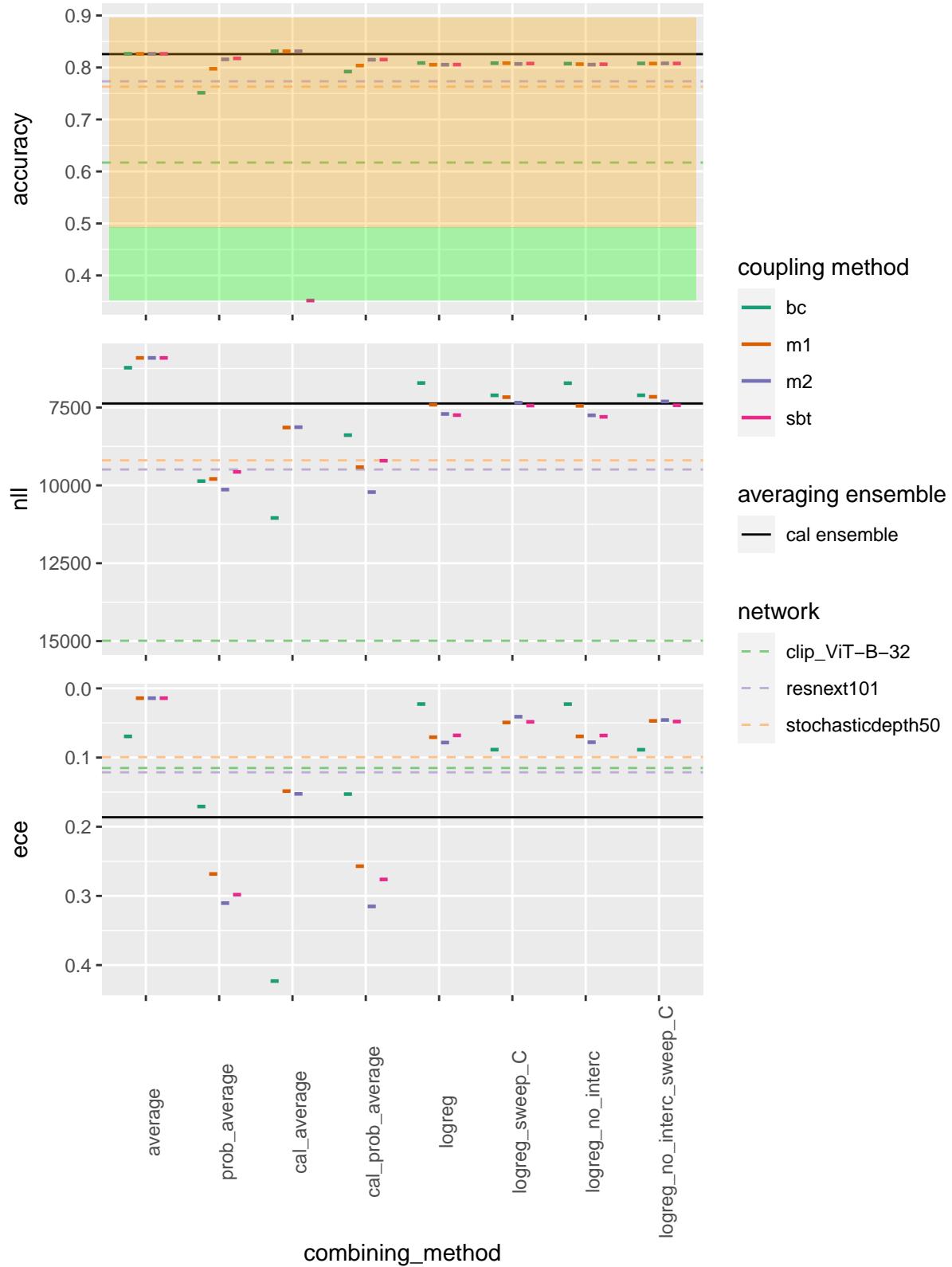
Ensemble metrics
Error inconsistency 0.27989998459816



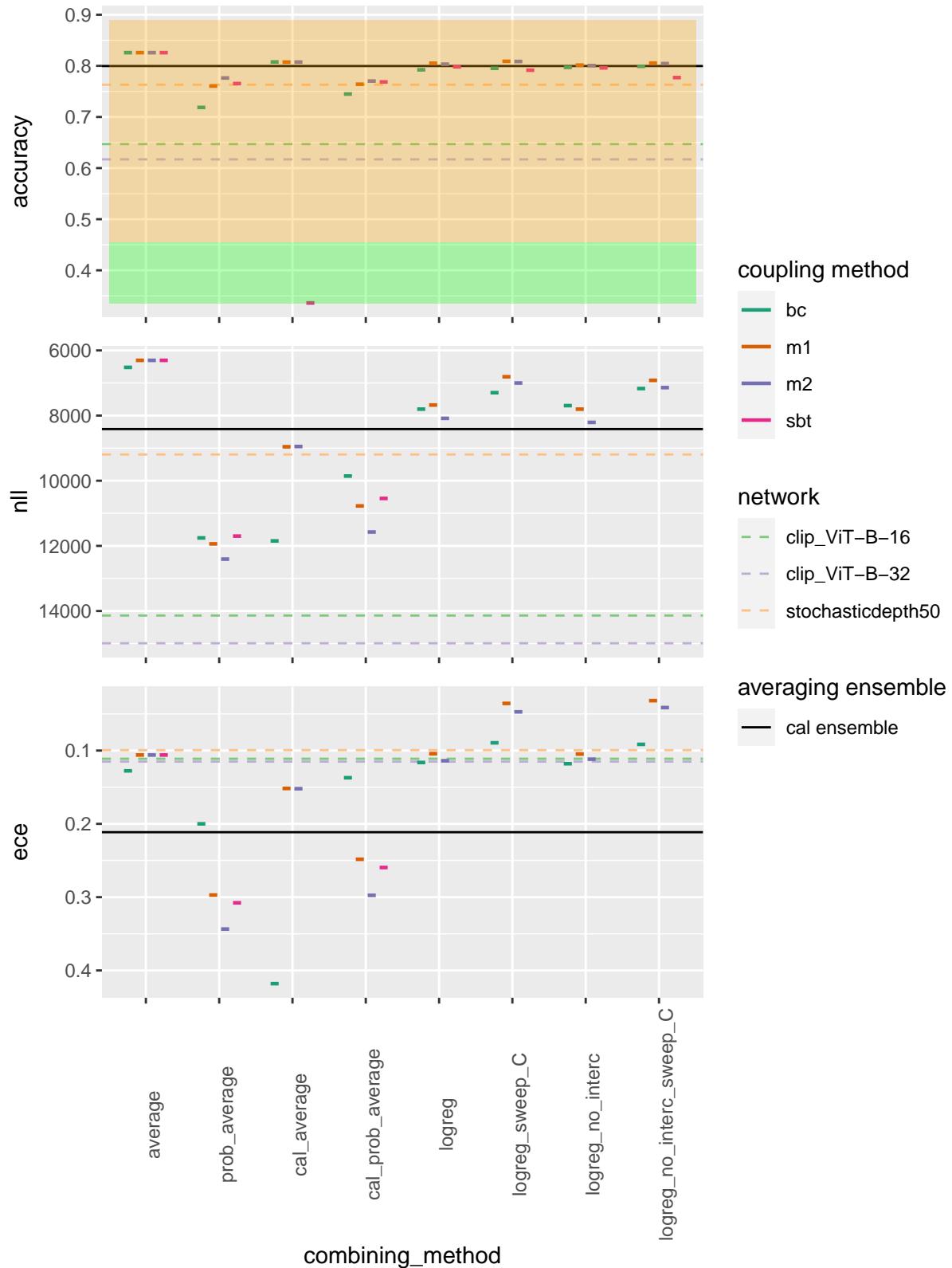
Ensemble metrics
Error inconsistency 0.412399977445602



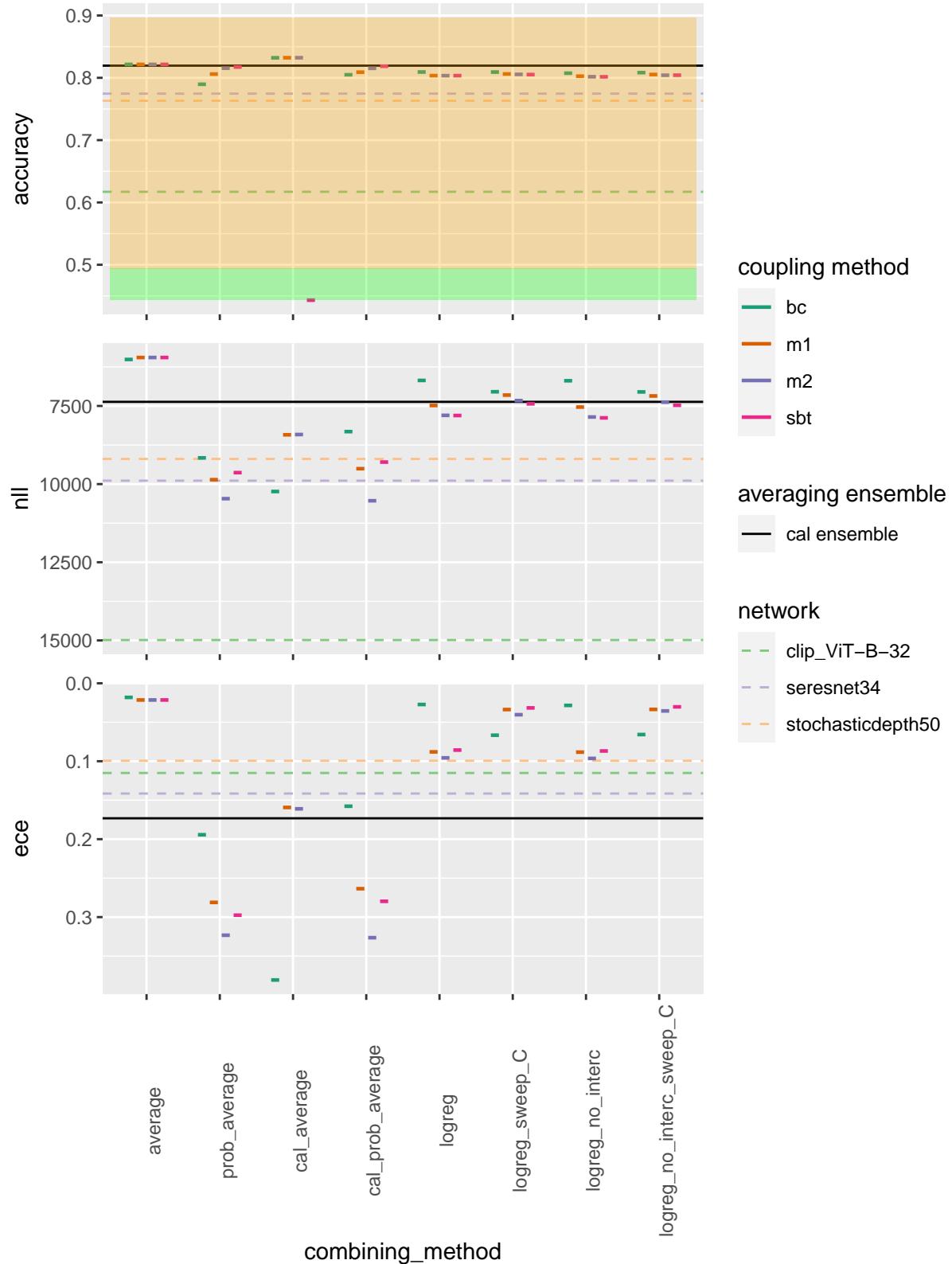
Ensemble metrics
Error inconsistency 0.40379998087883



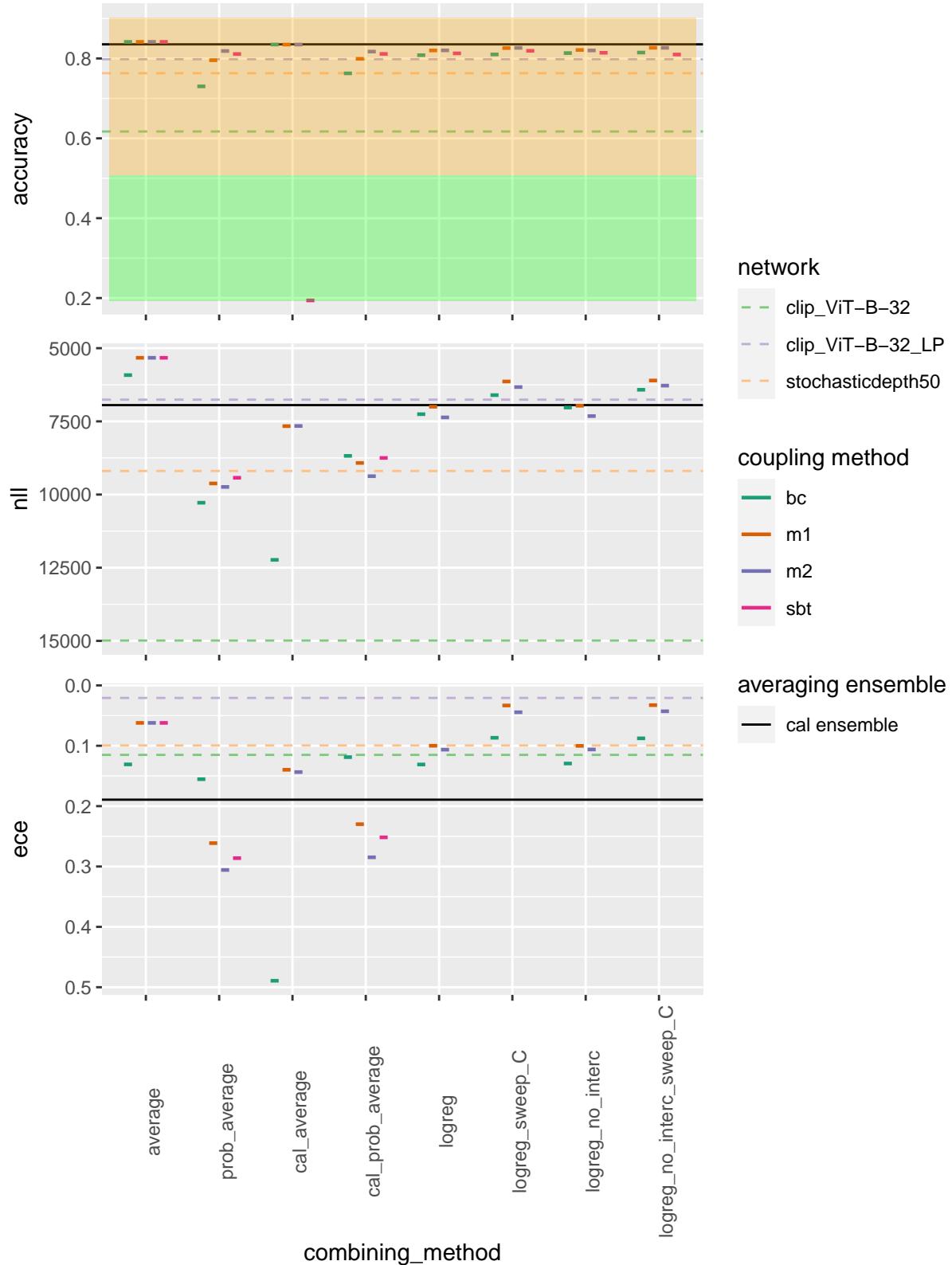
Ensemble metrics
Error inconsistency 0.434699982404709



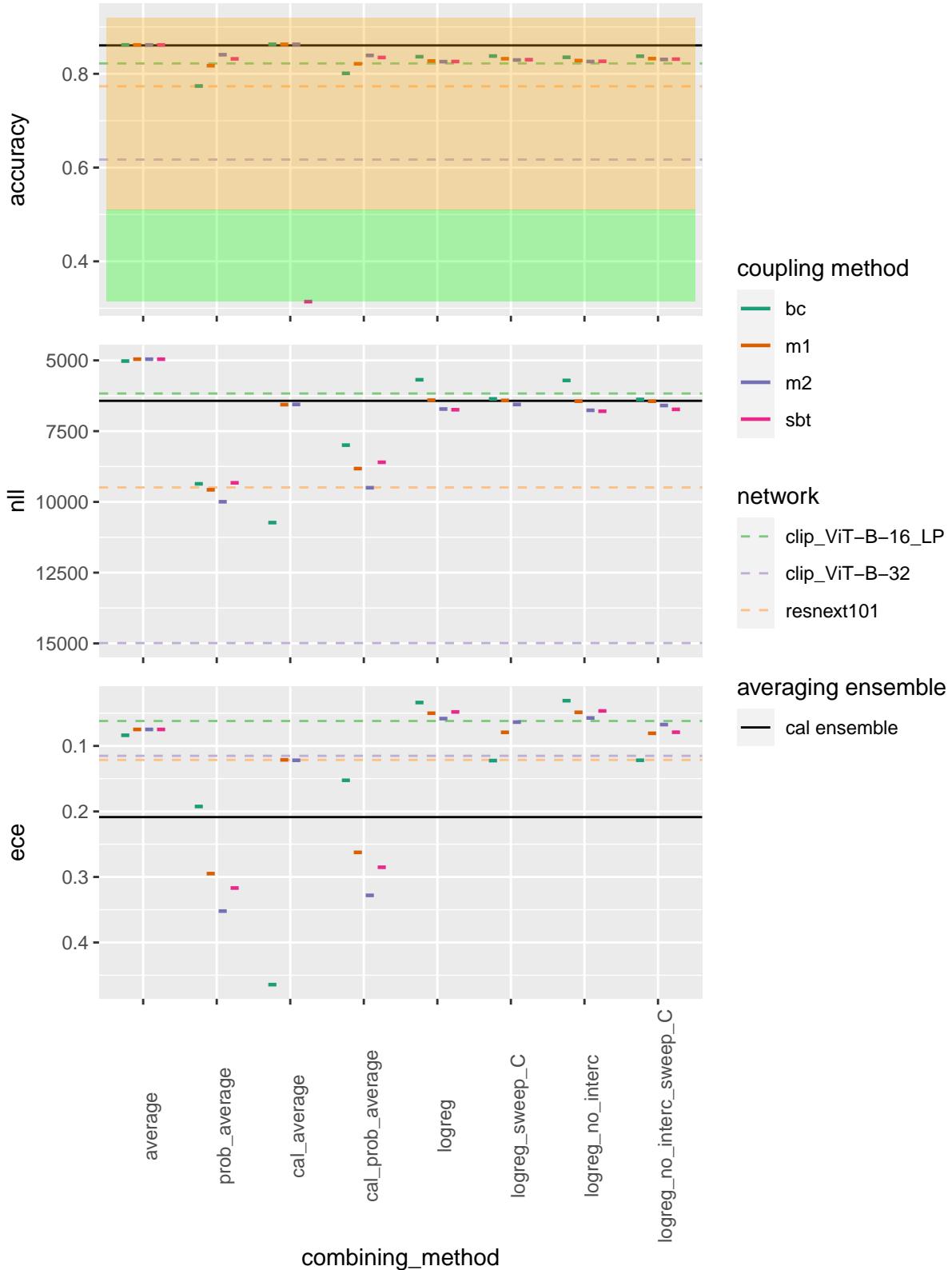
Ensemble metrics
Error inconsistency 0.402899980545044



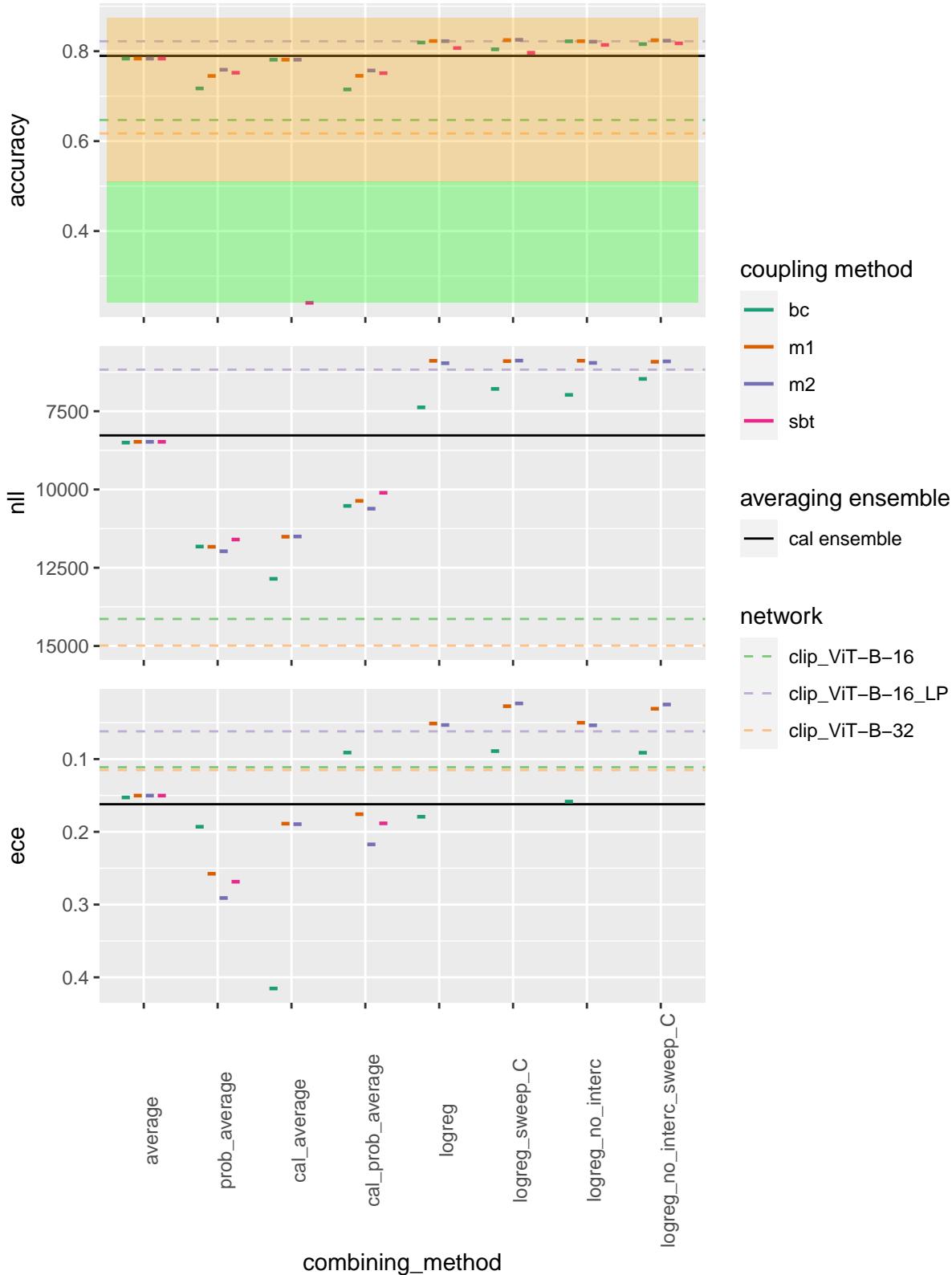
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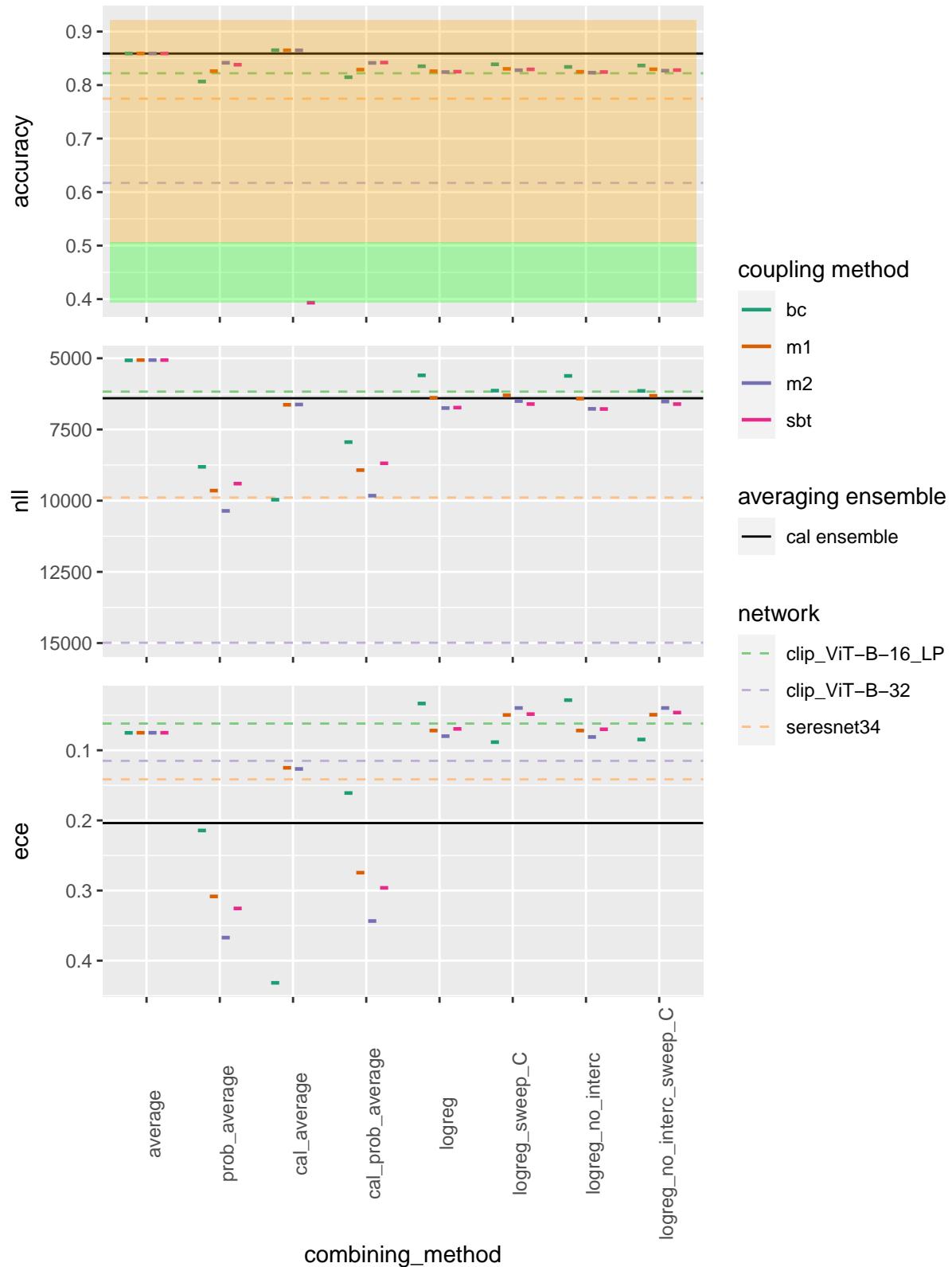
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Error inconsistency 0.409999996423721



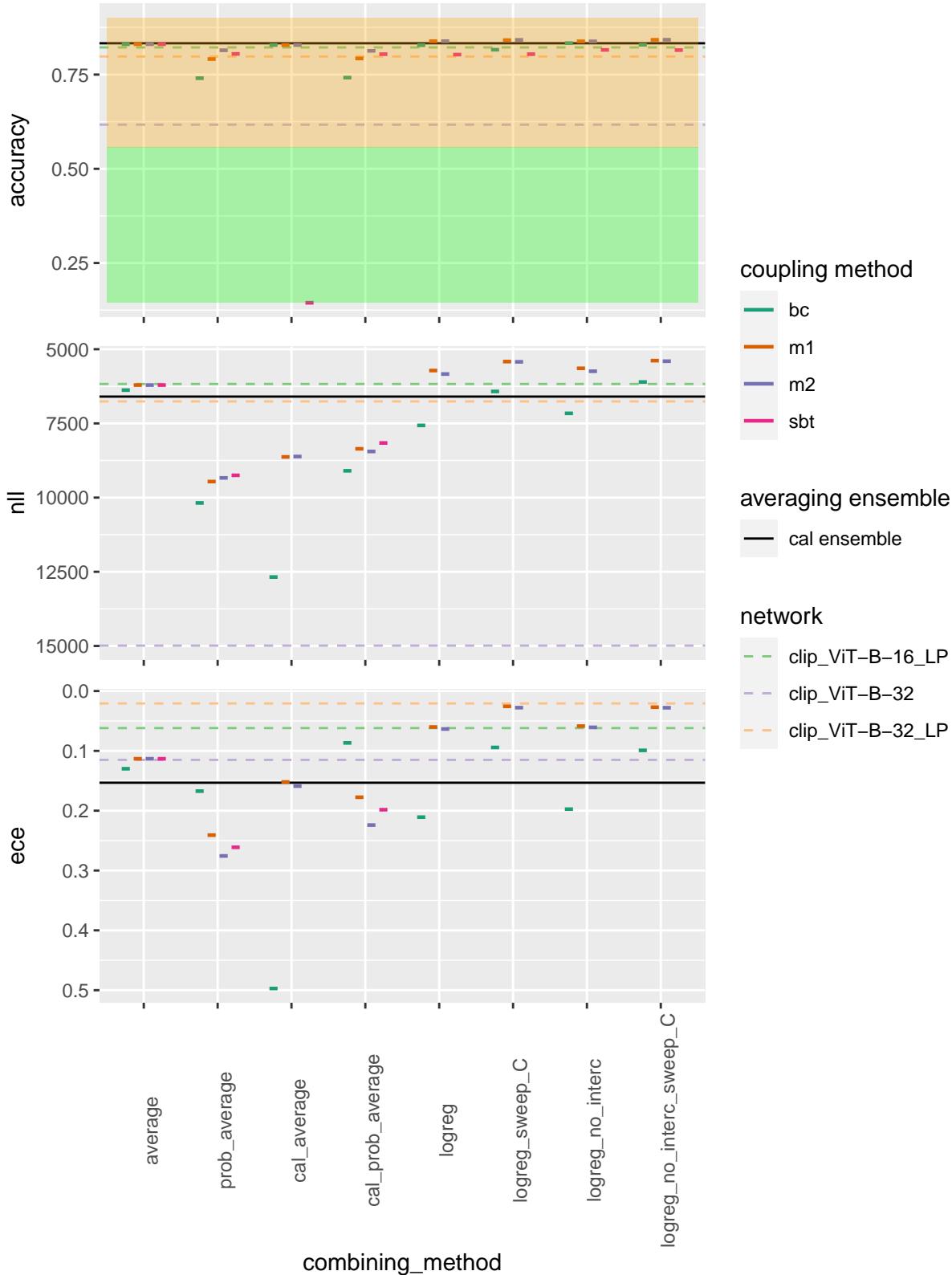
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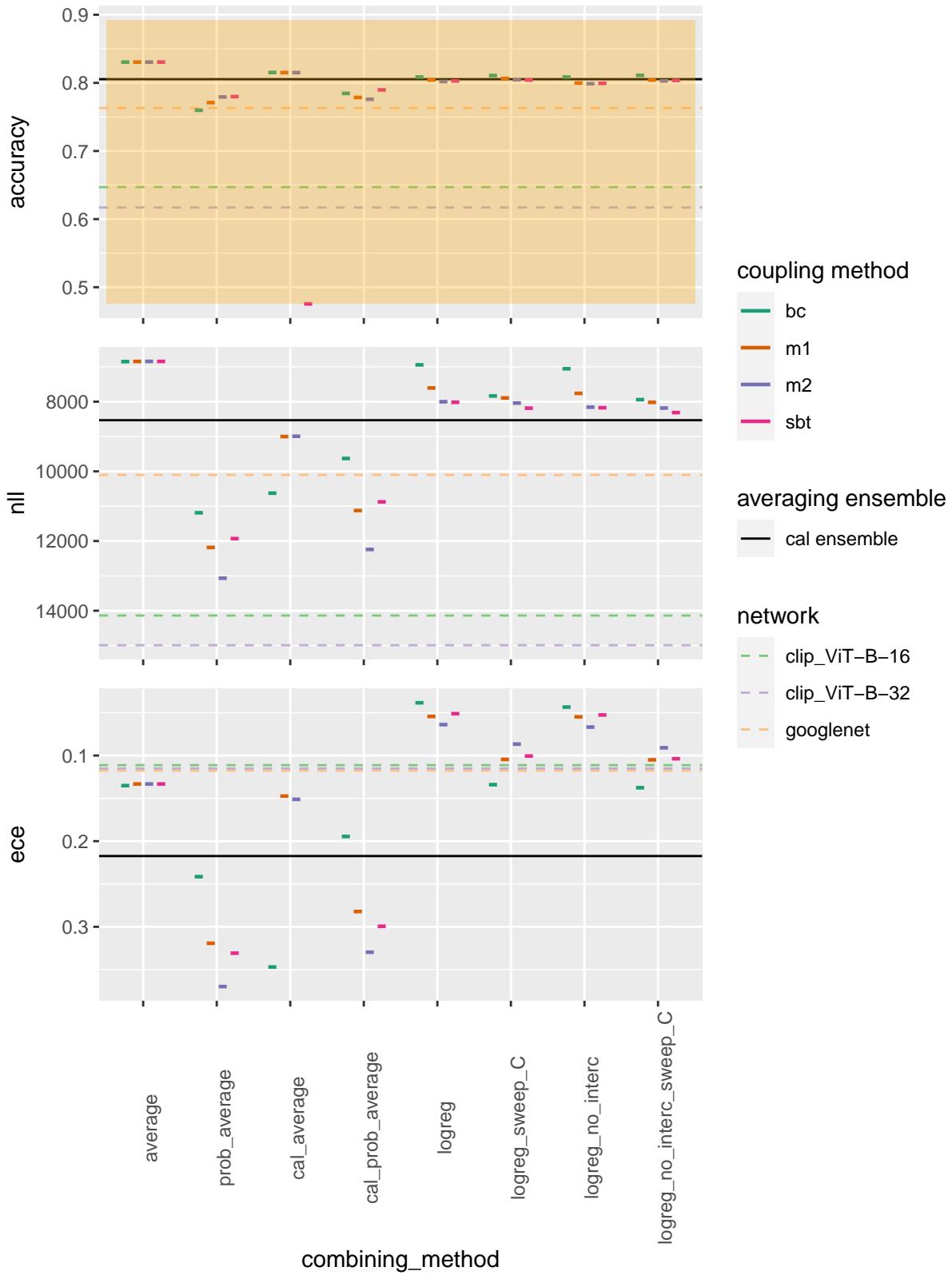
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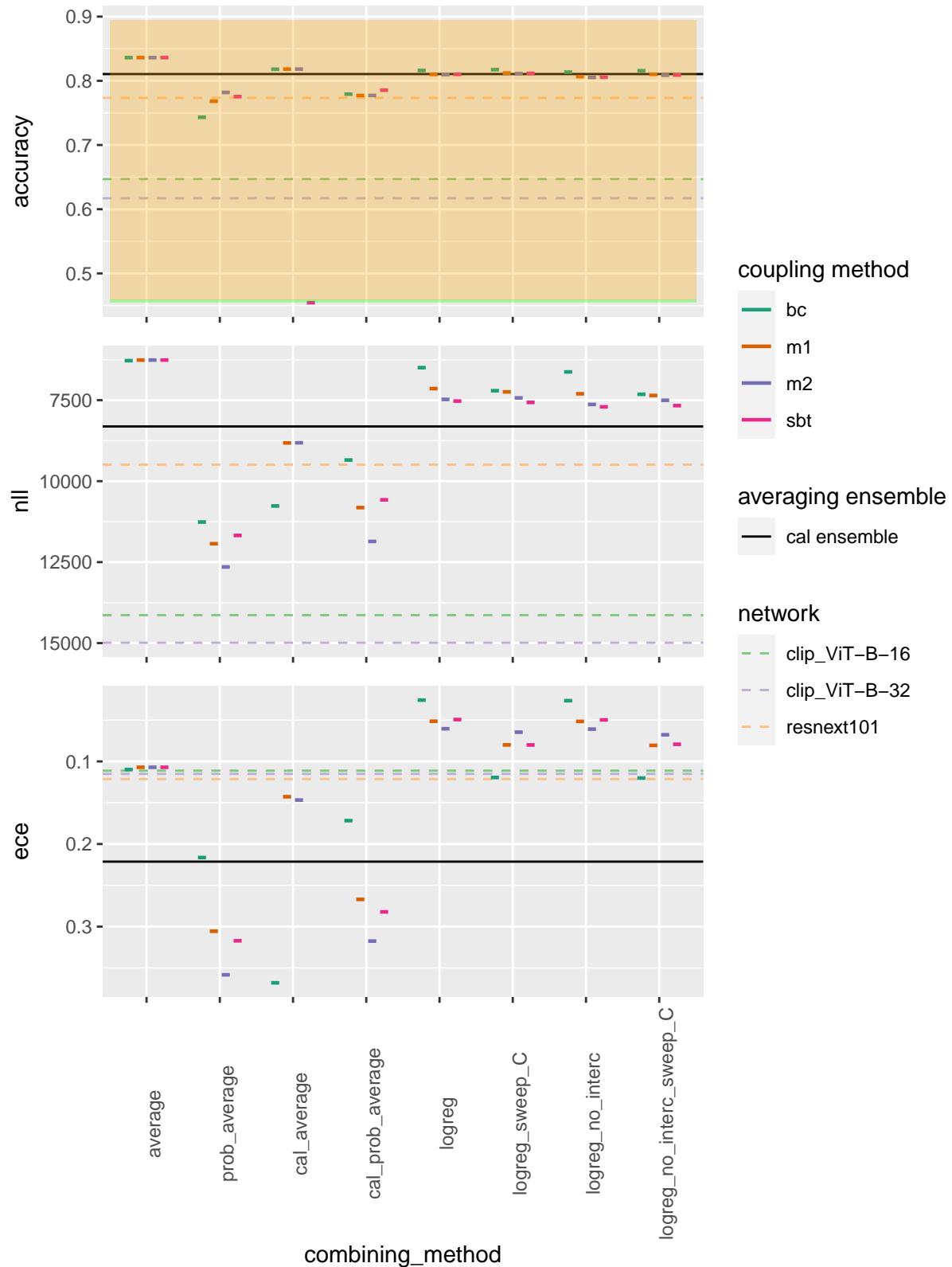
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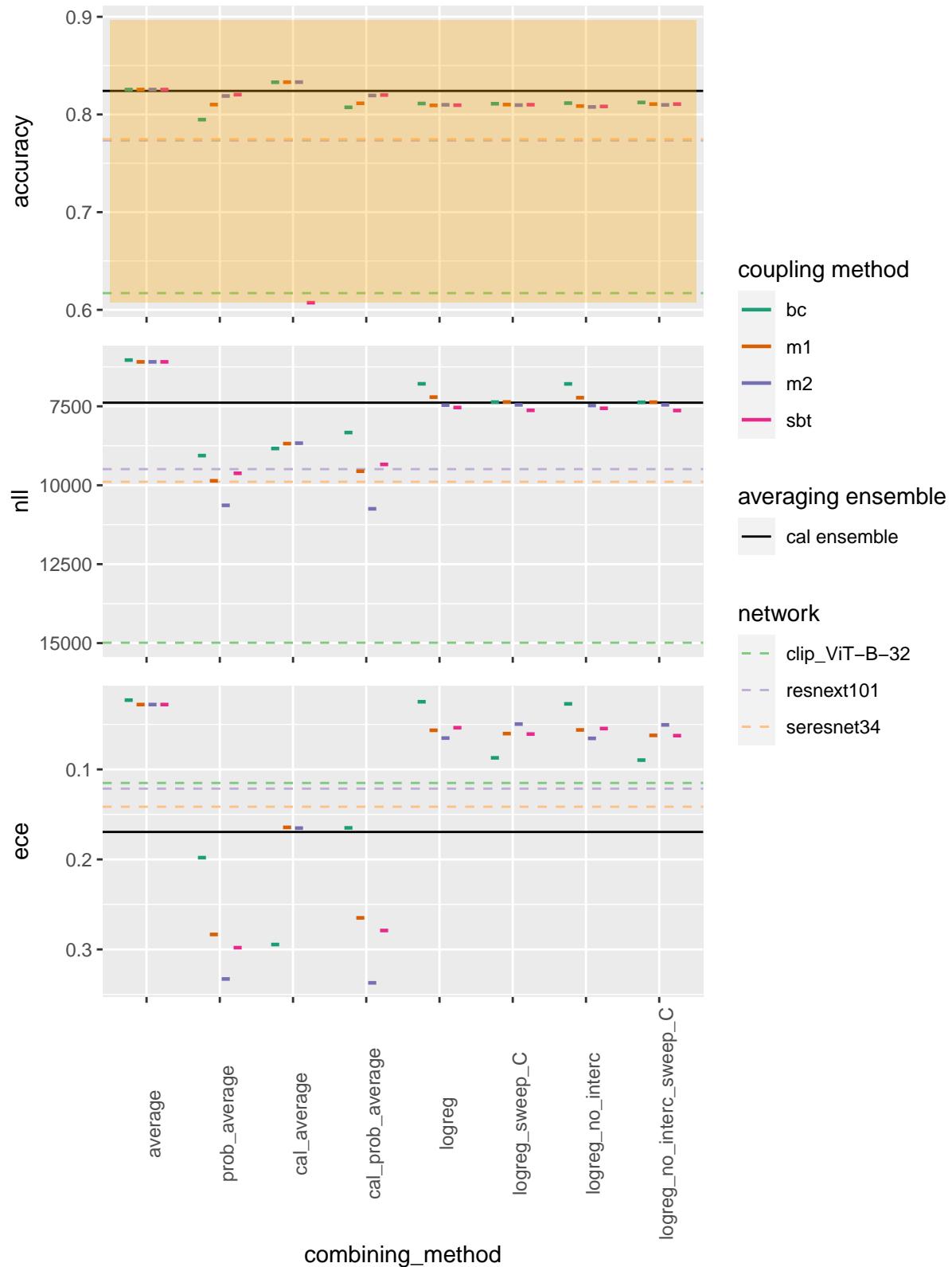
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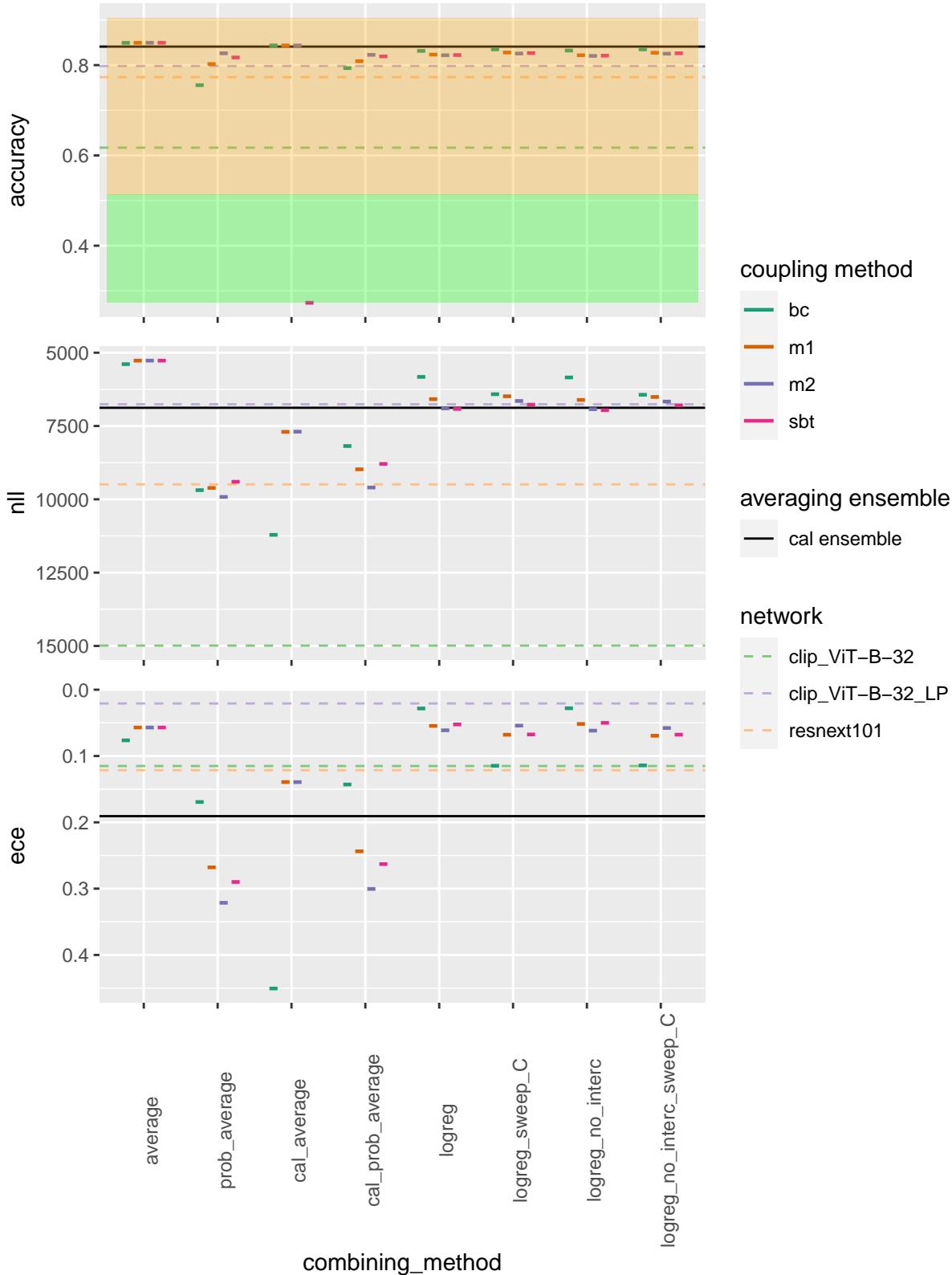
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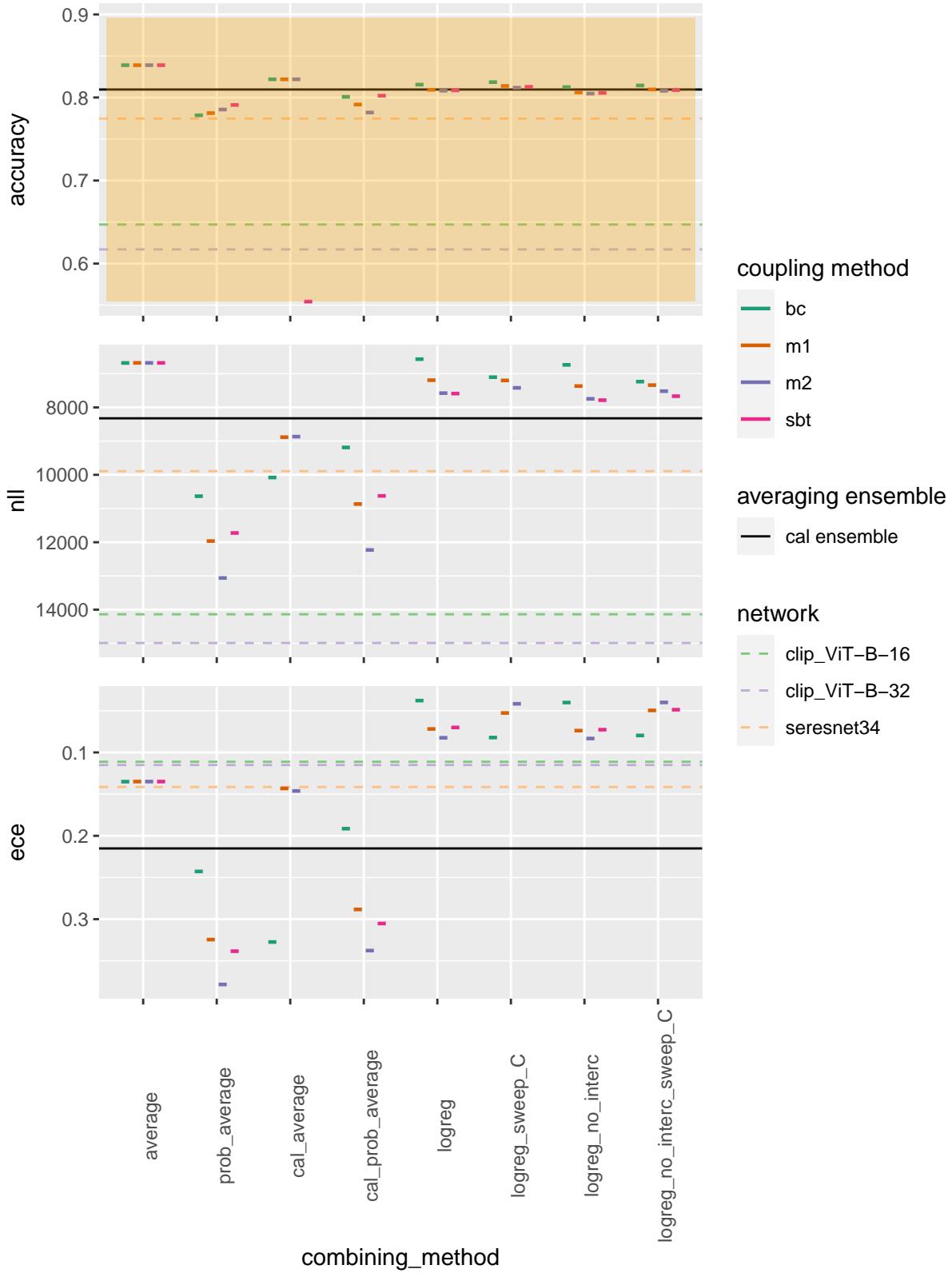
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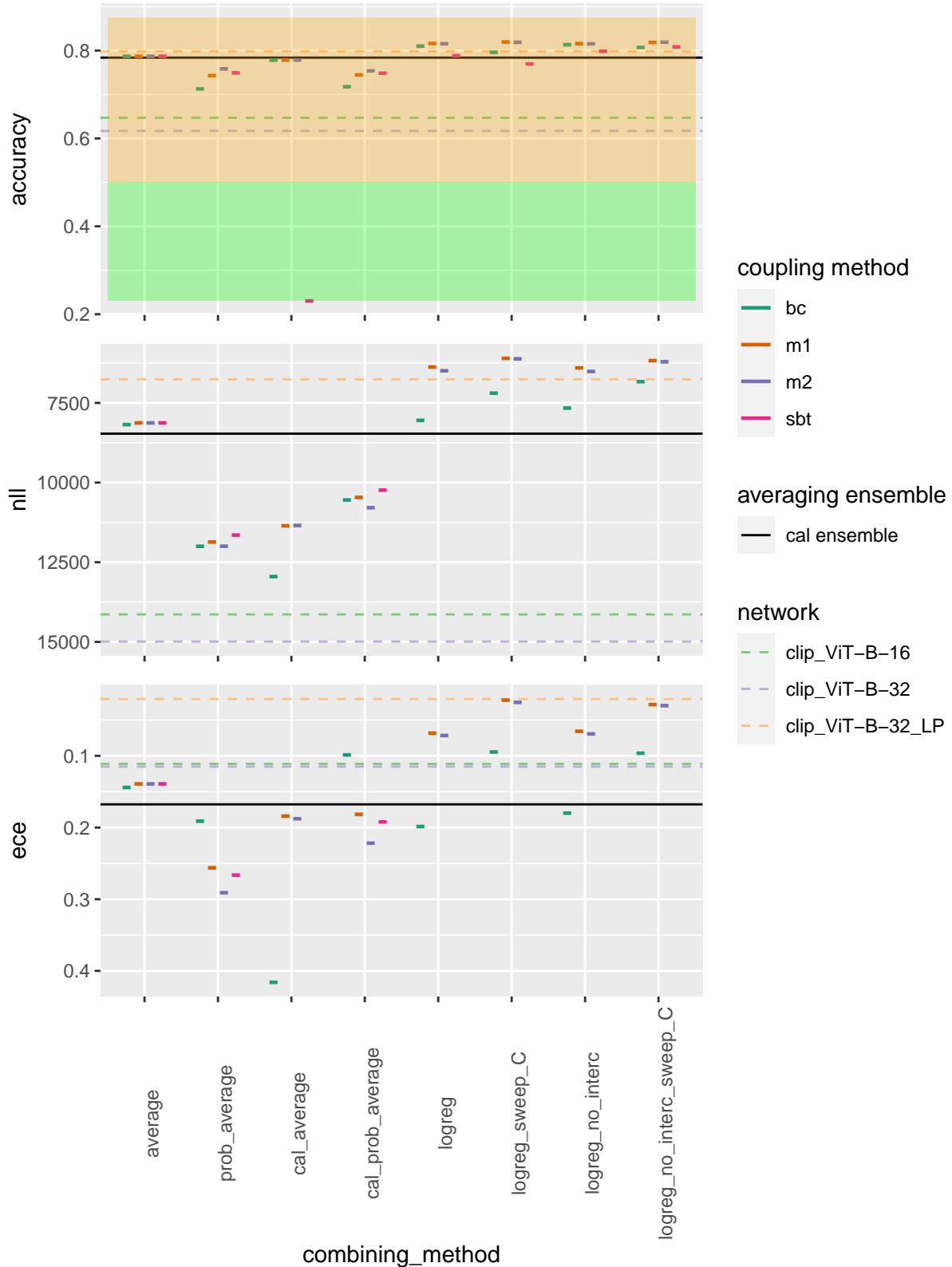
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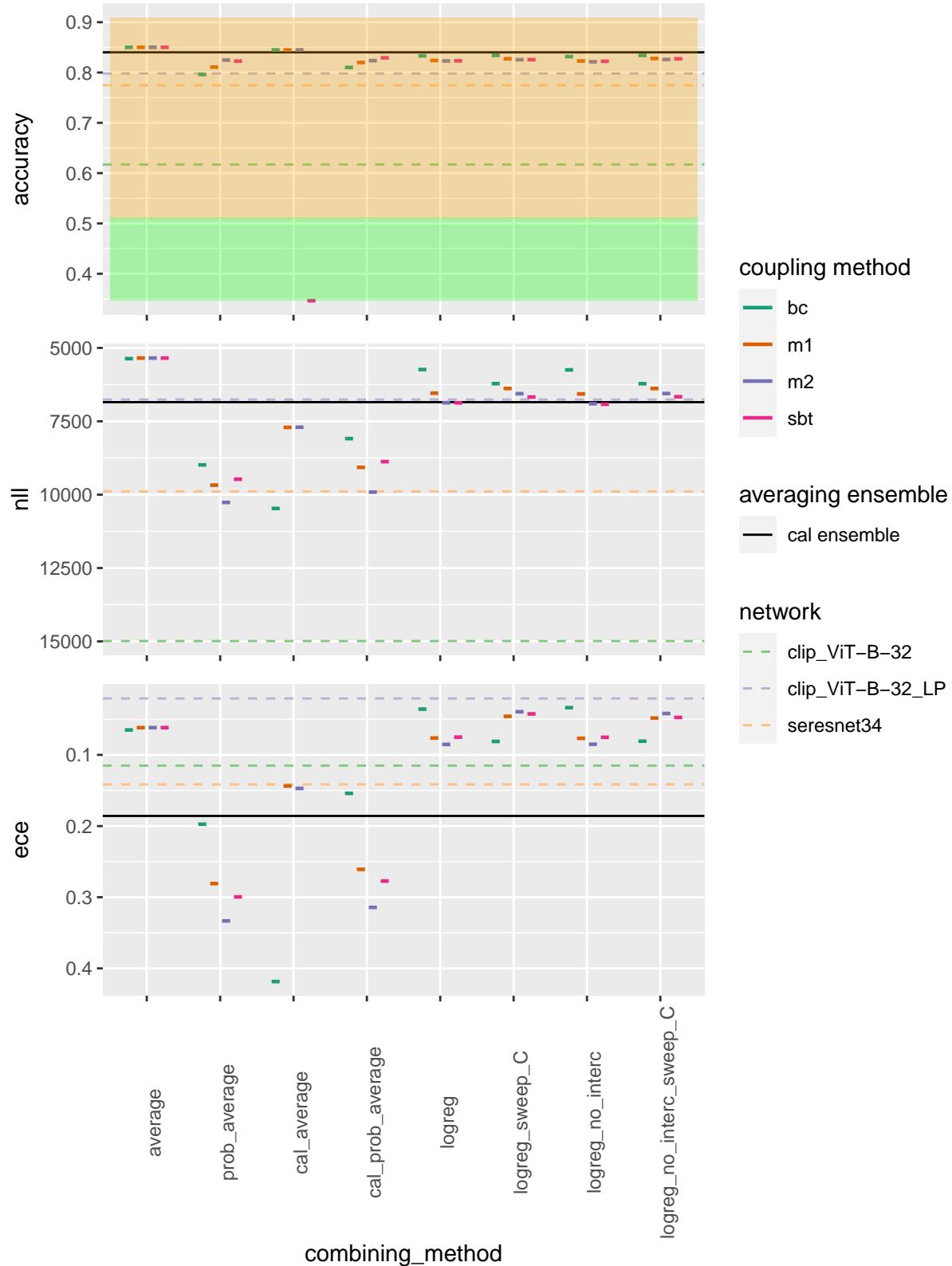
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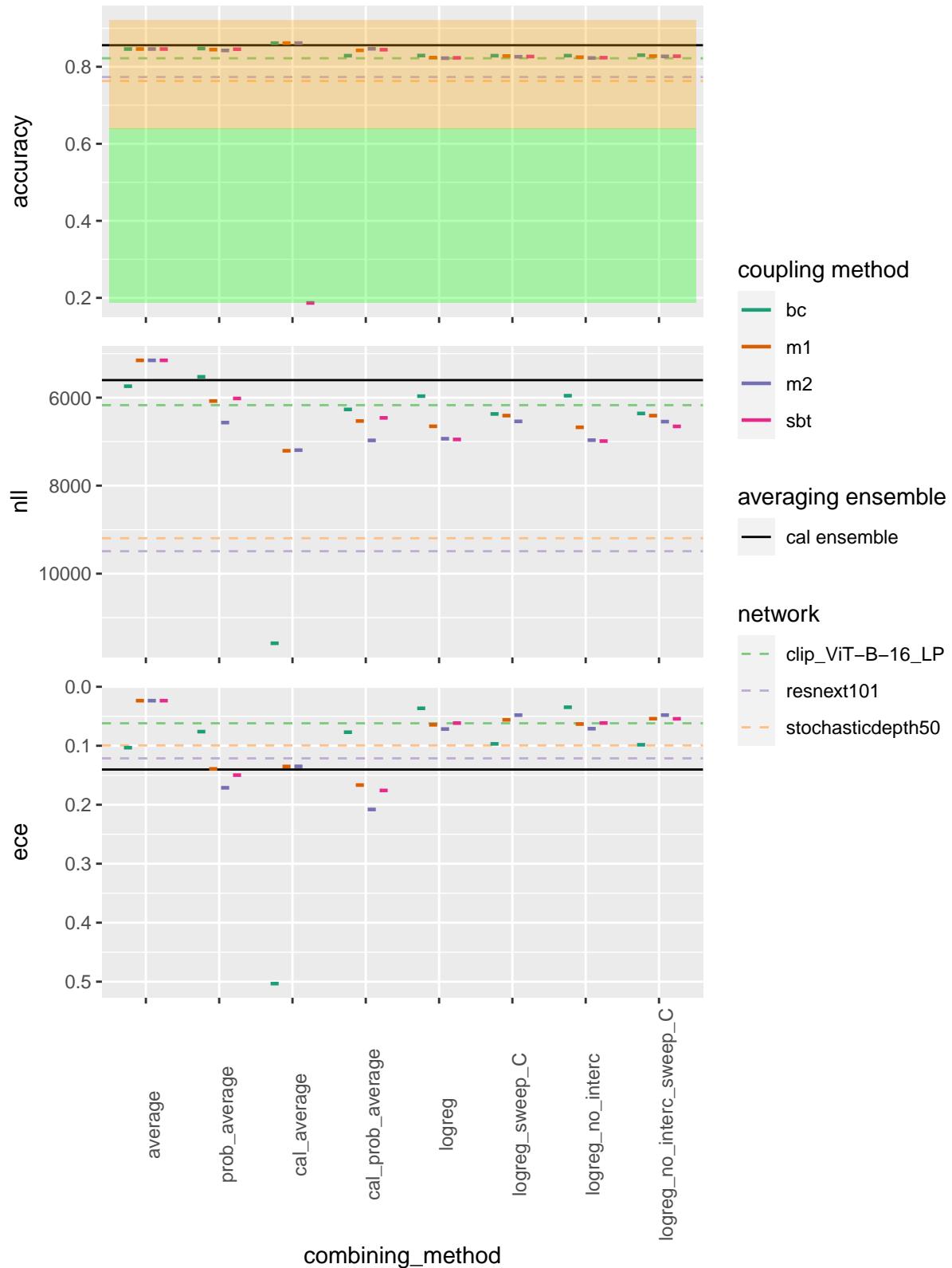
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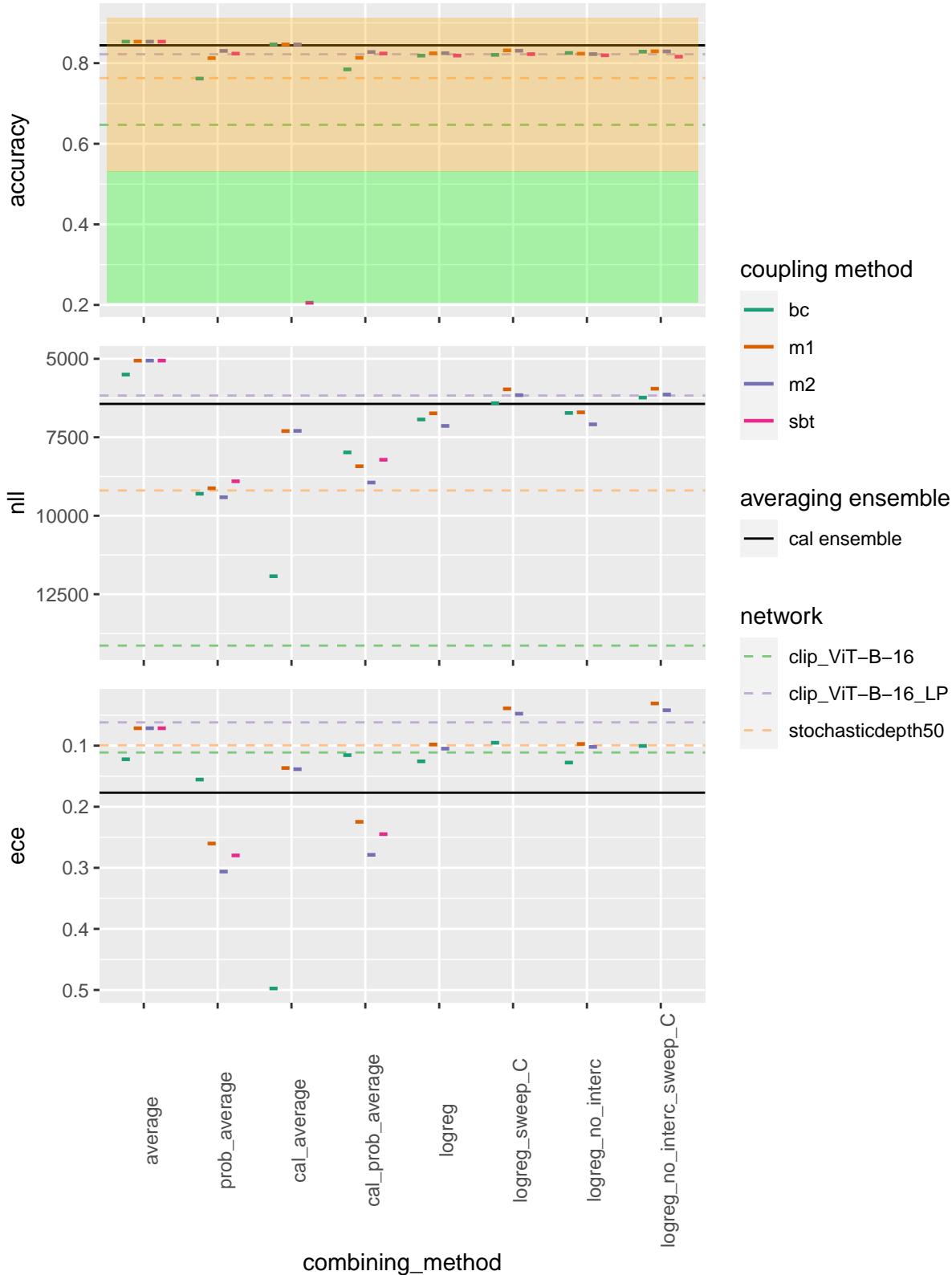
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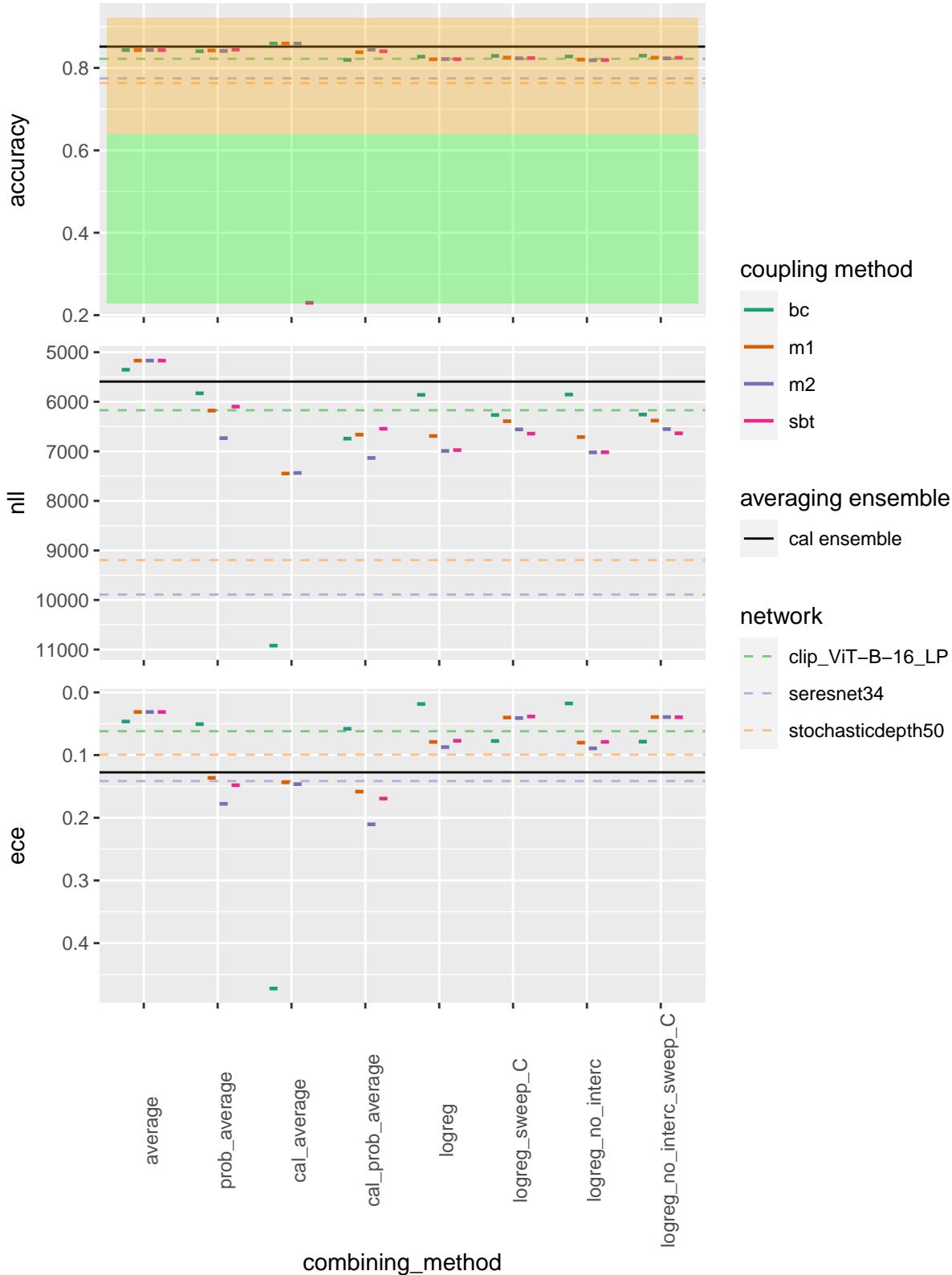
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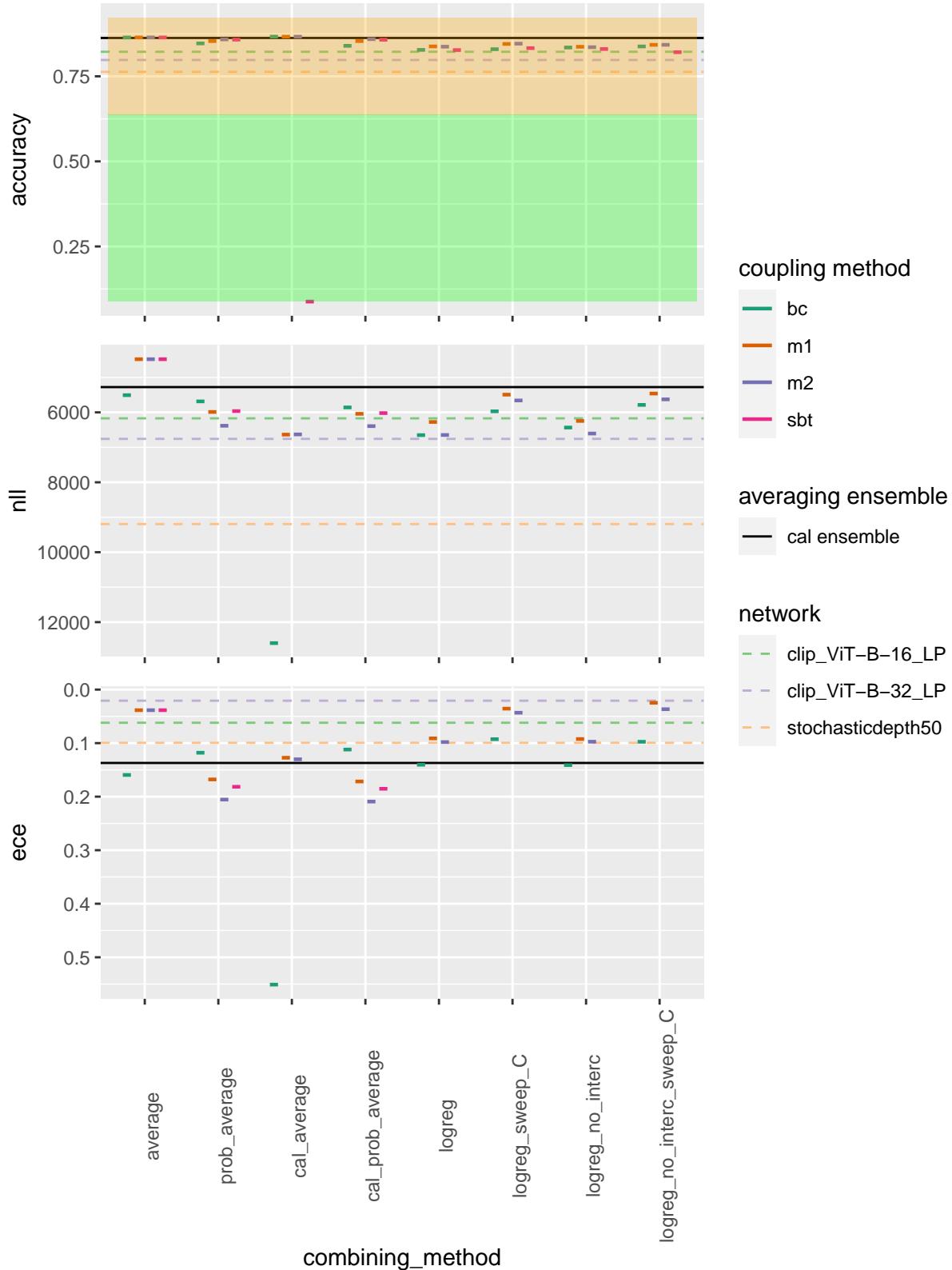
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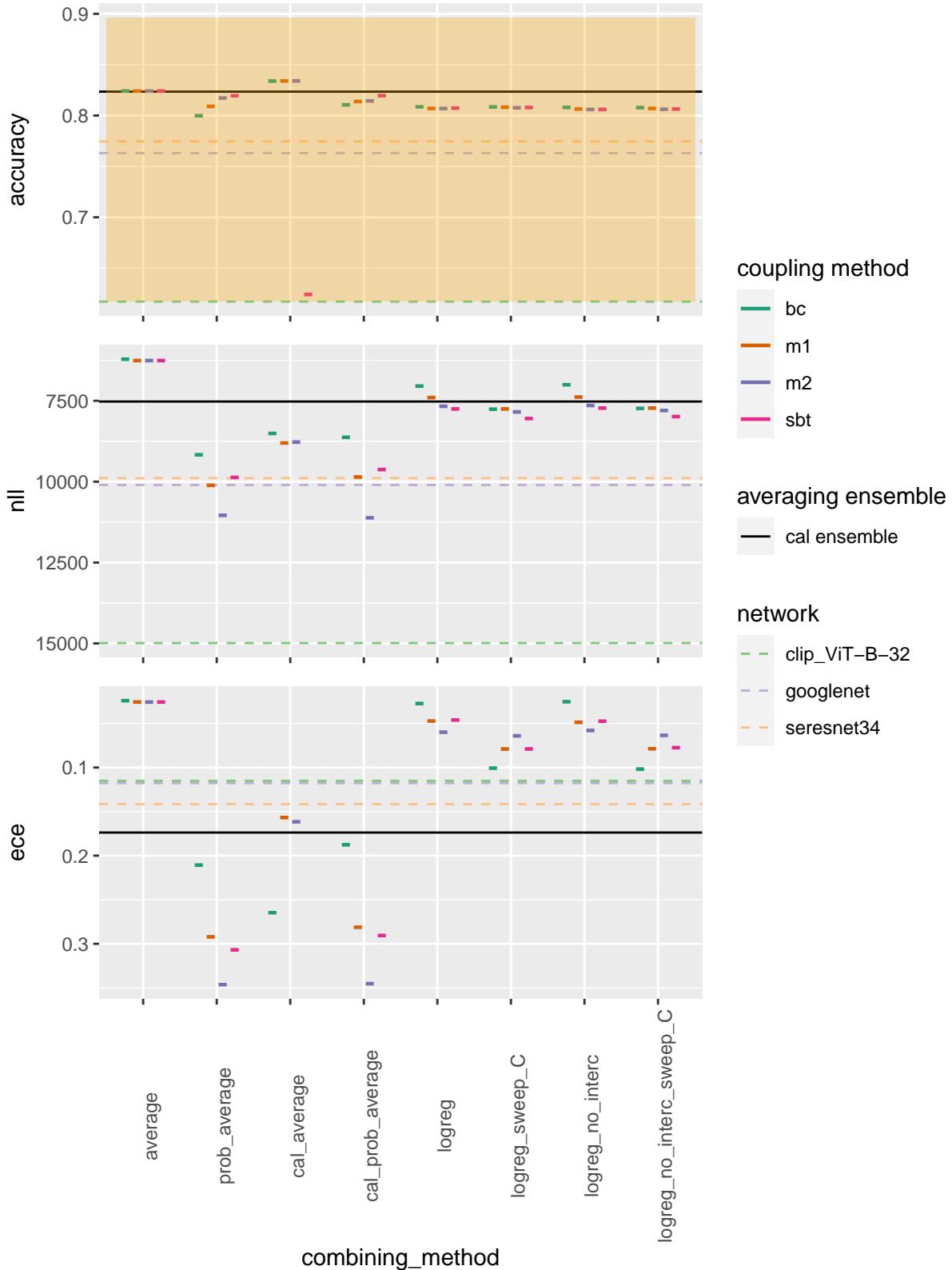
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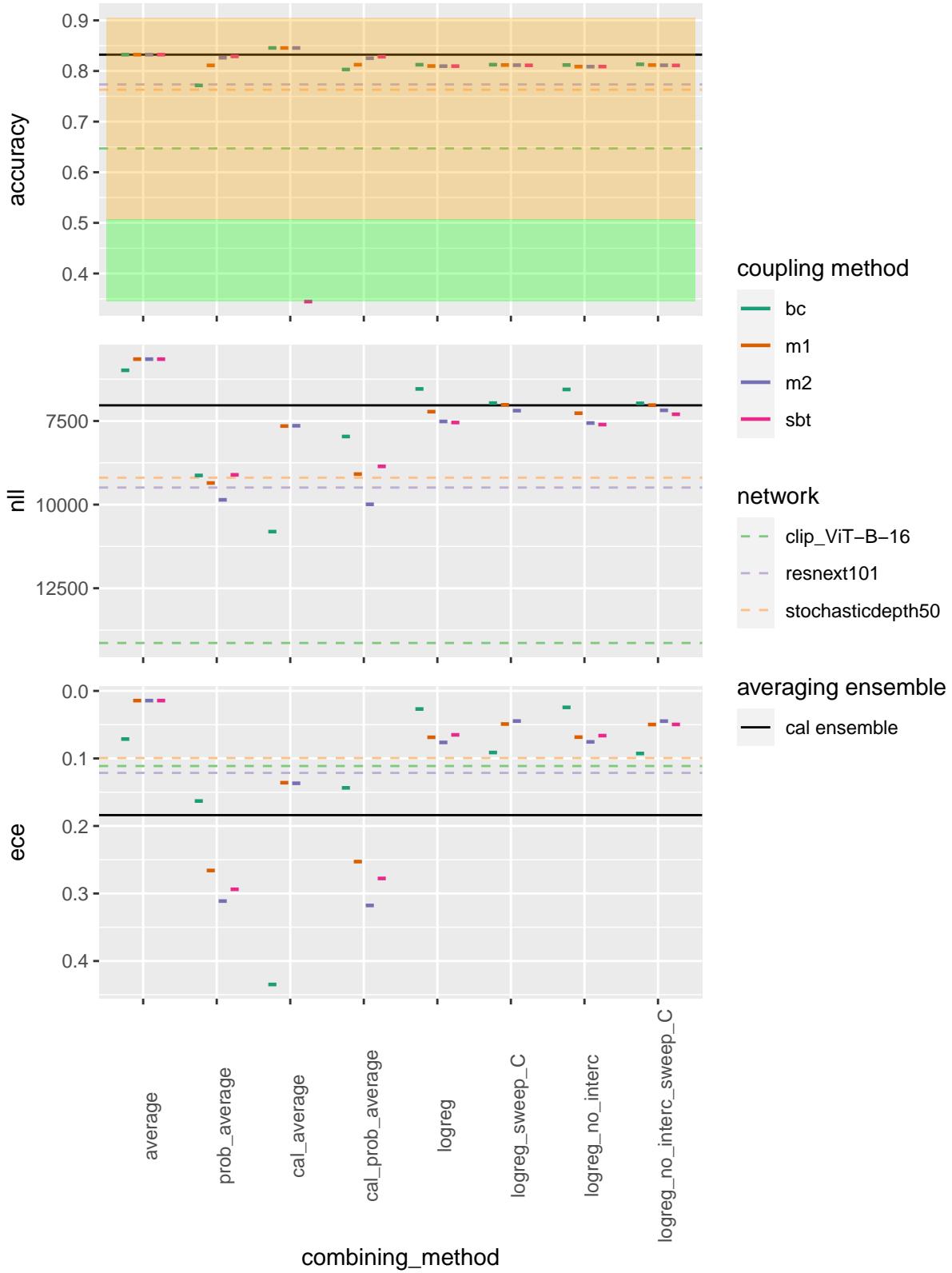
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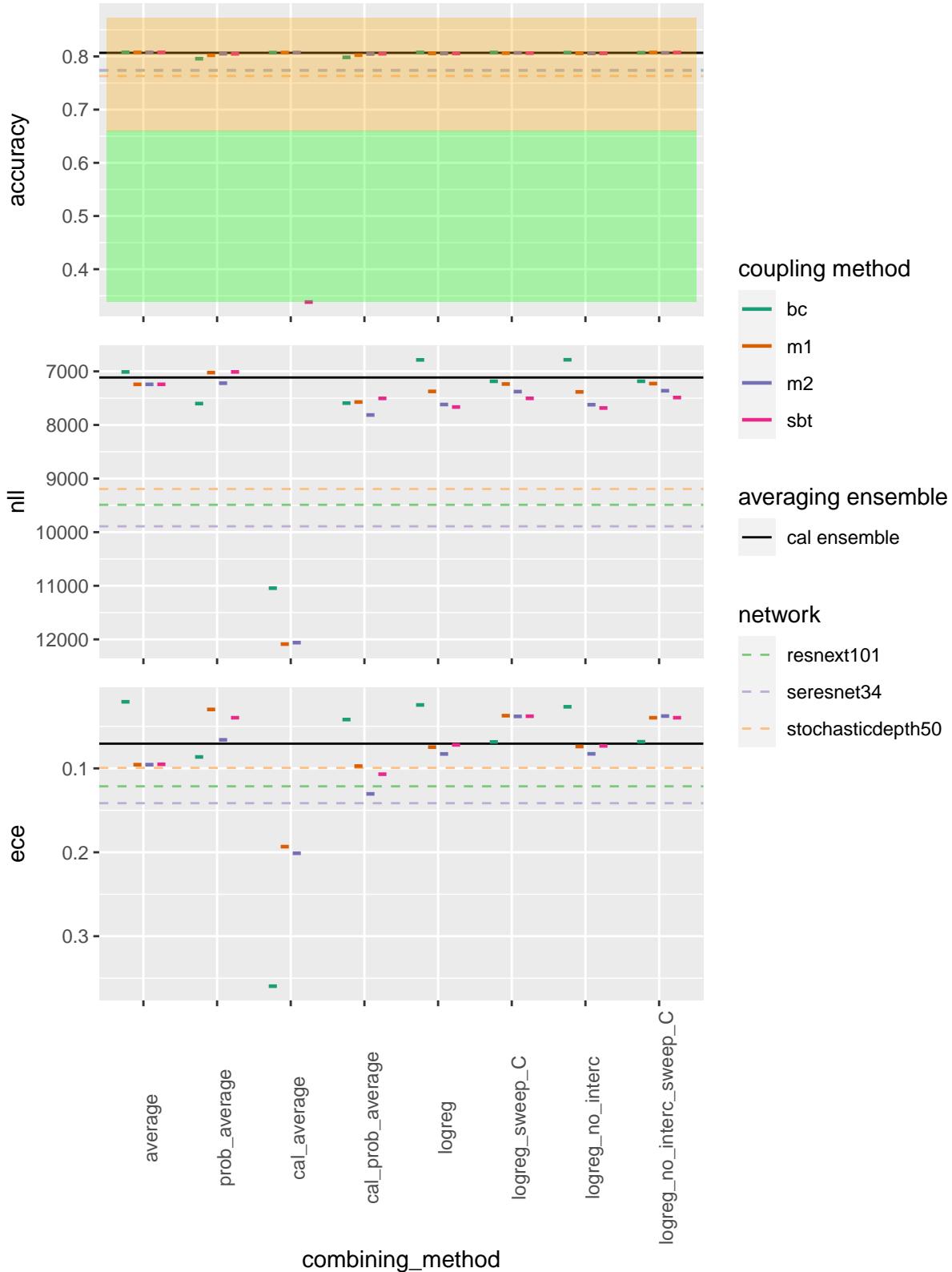
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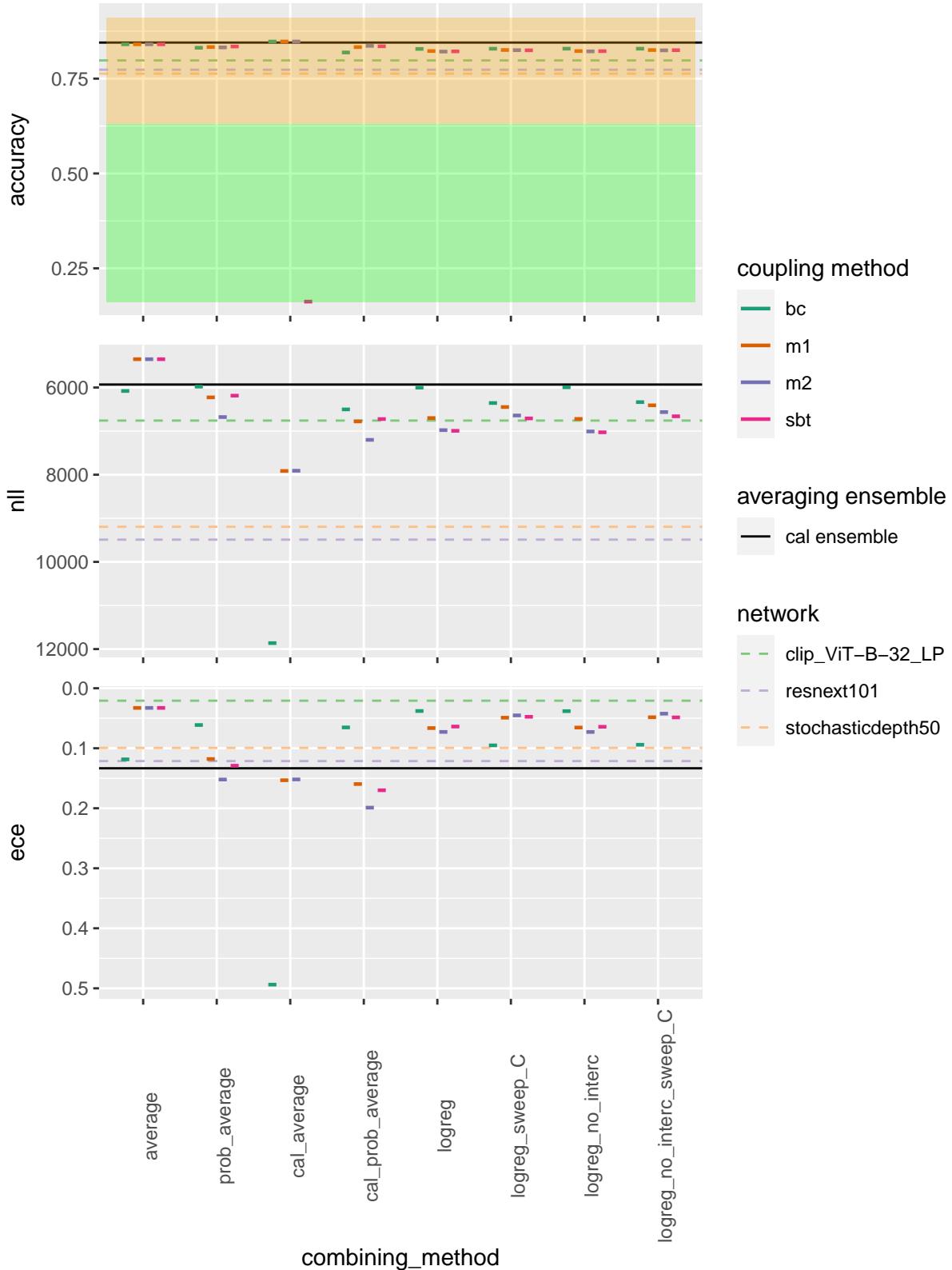
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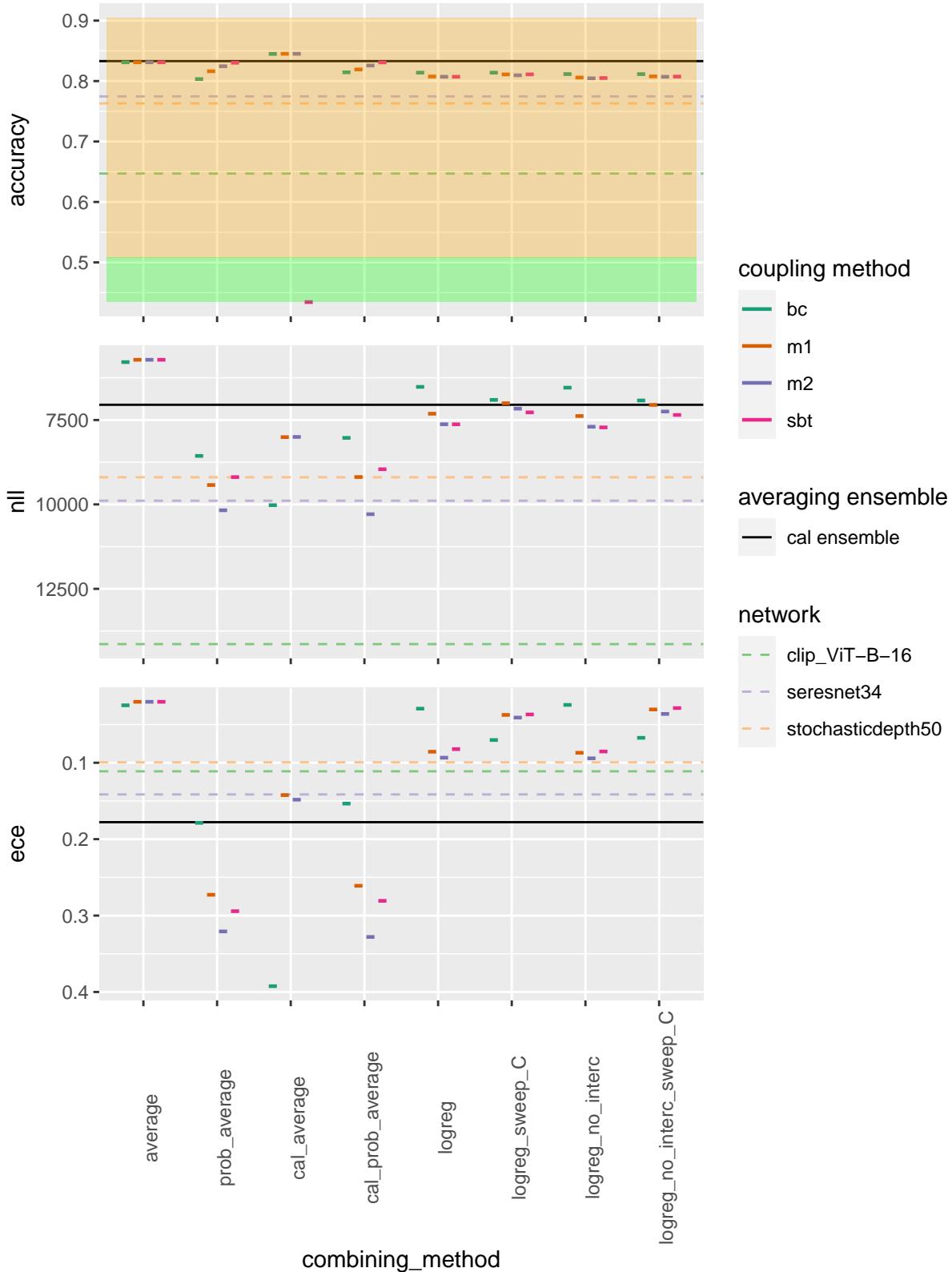
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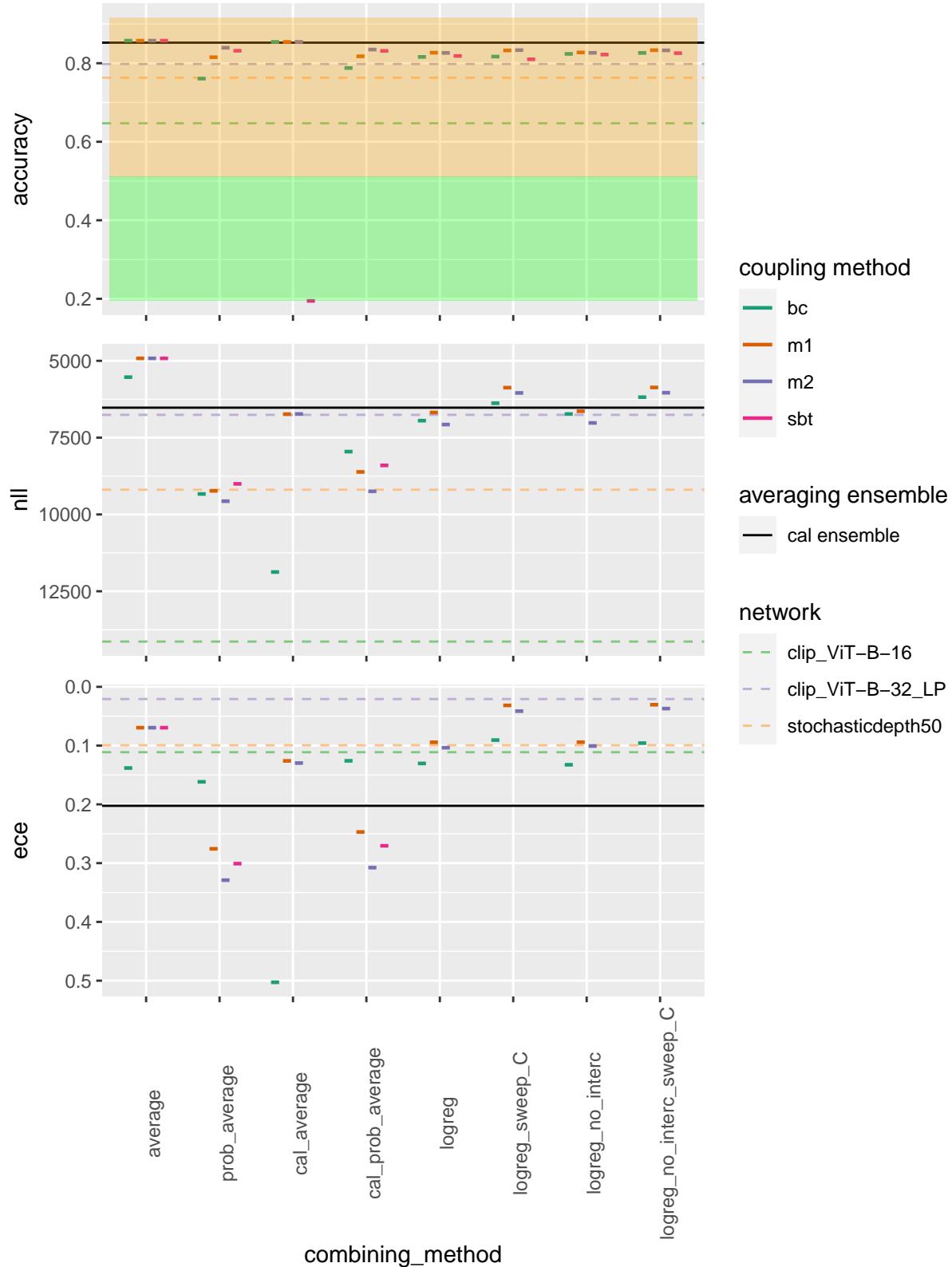
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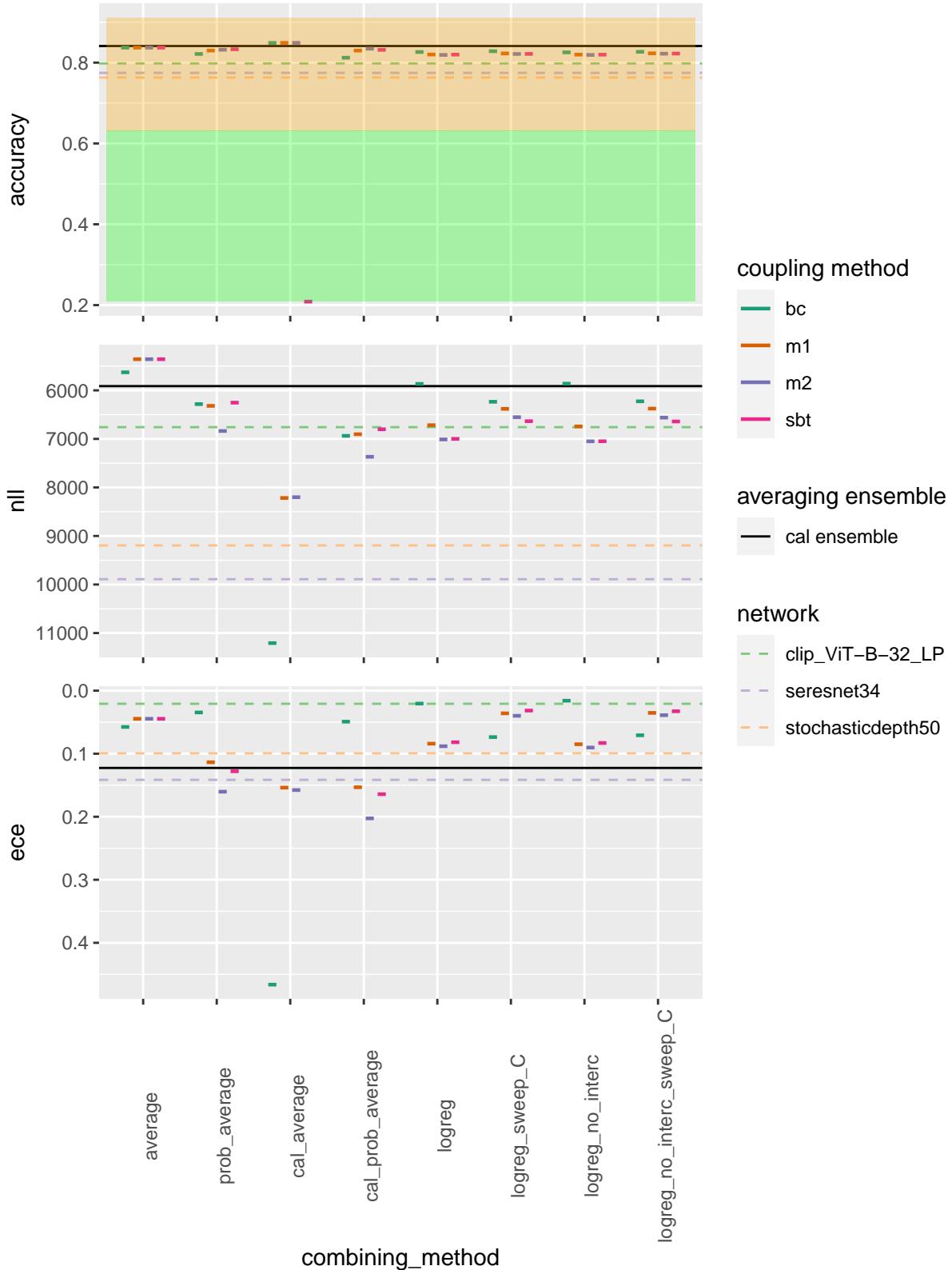
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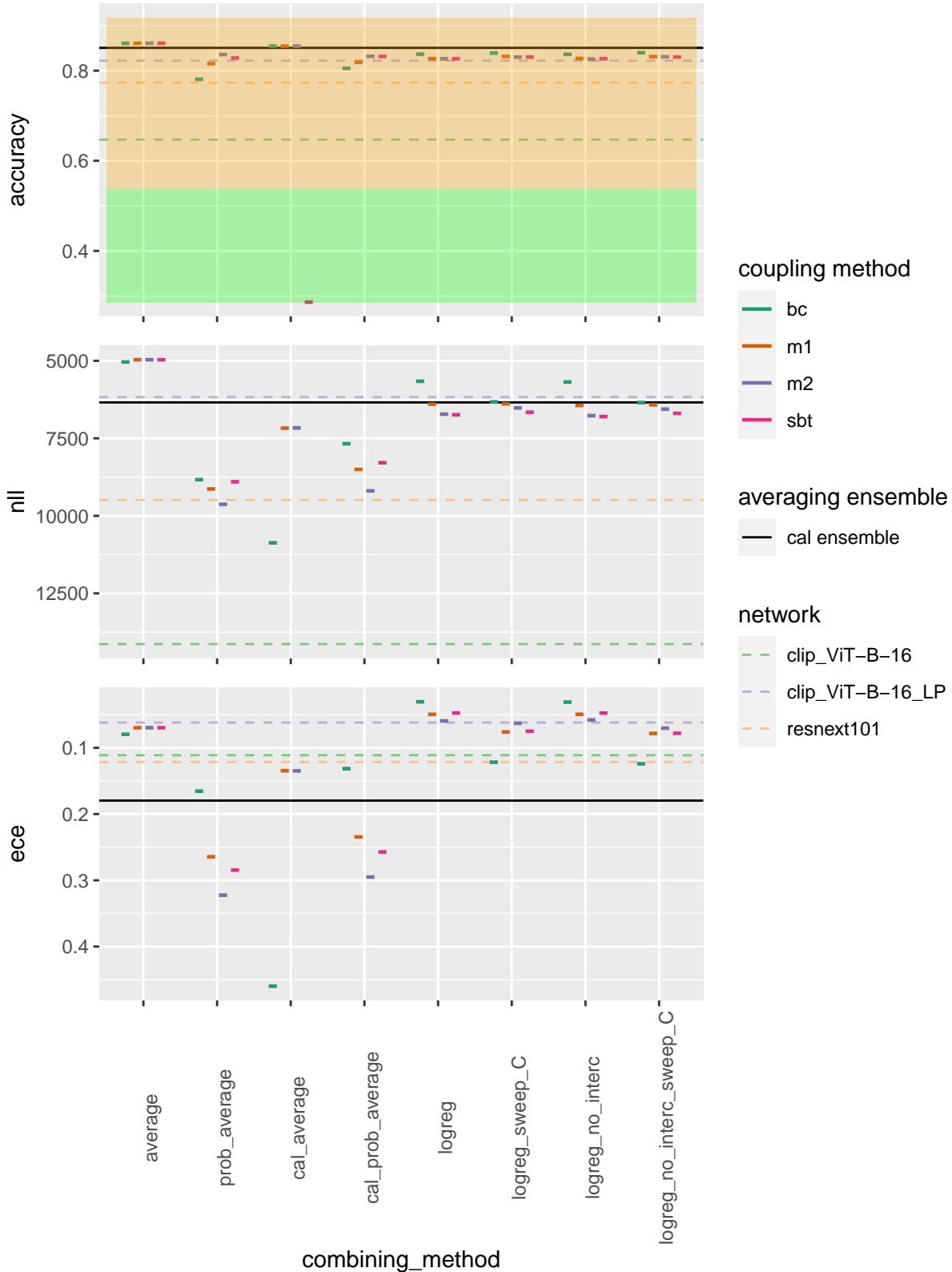
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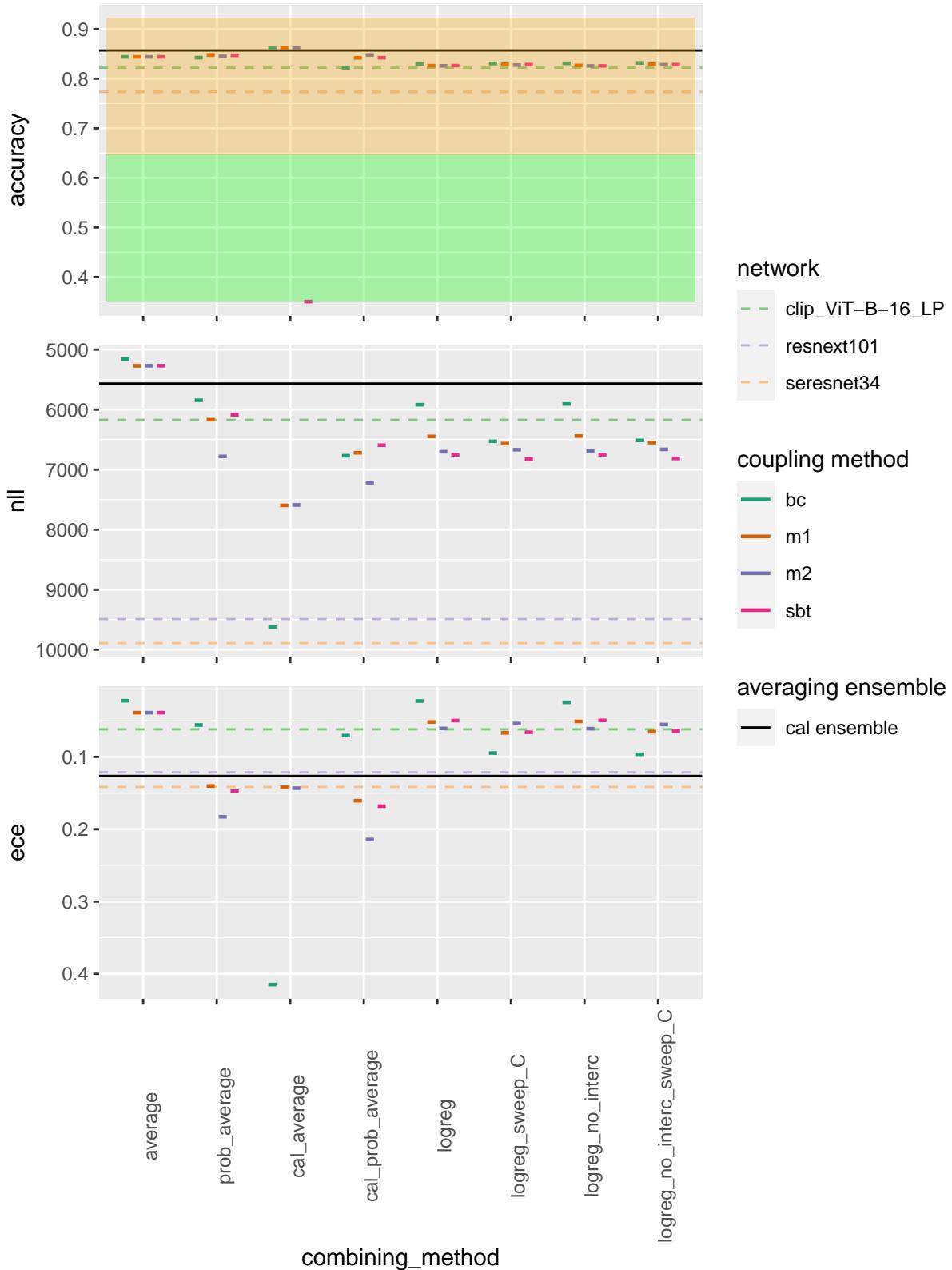
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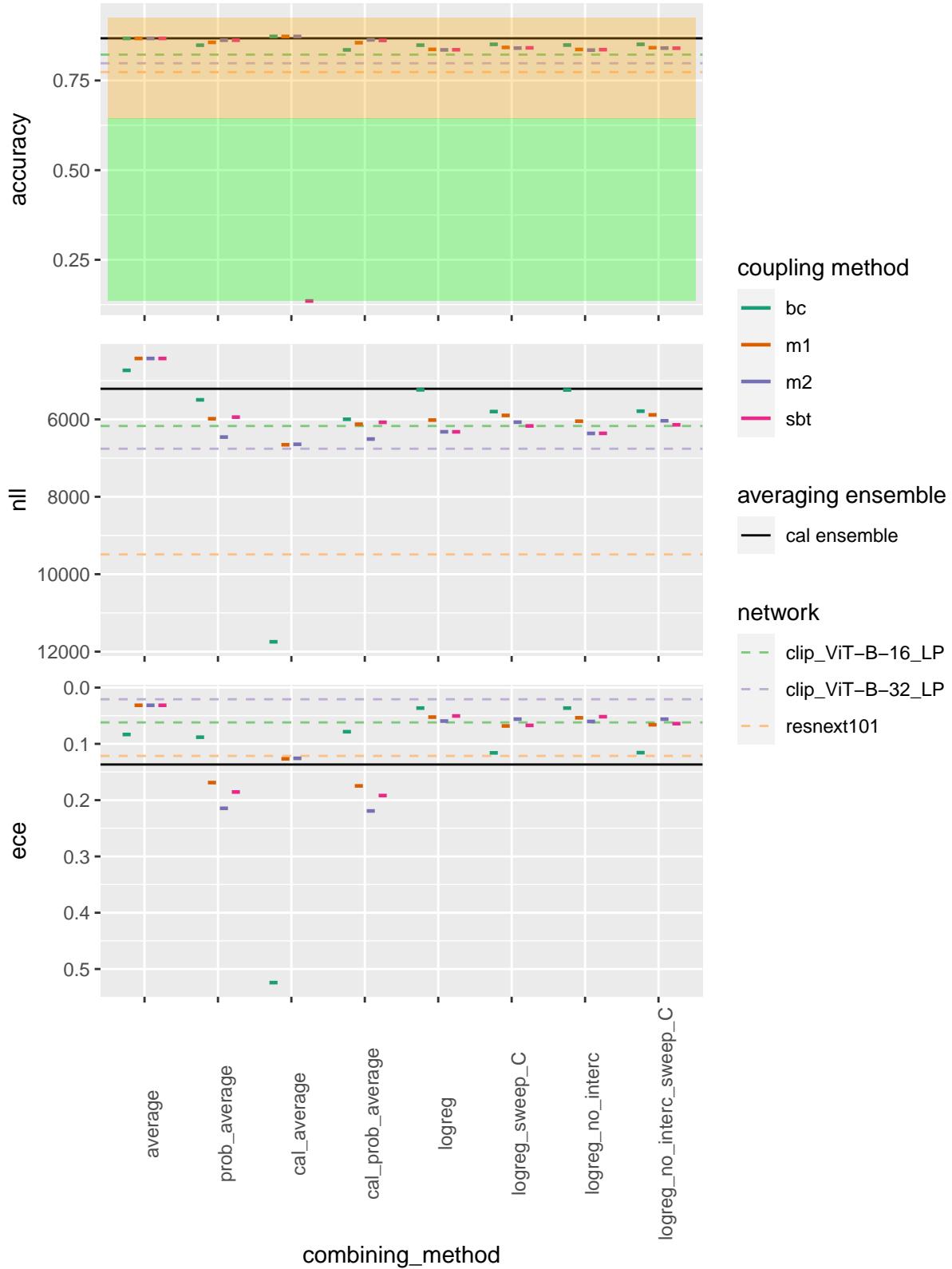
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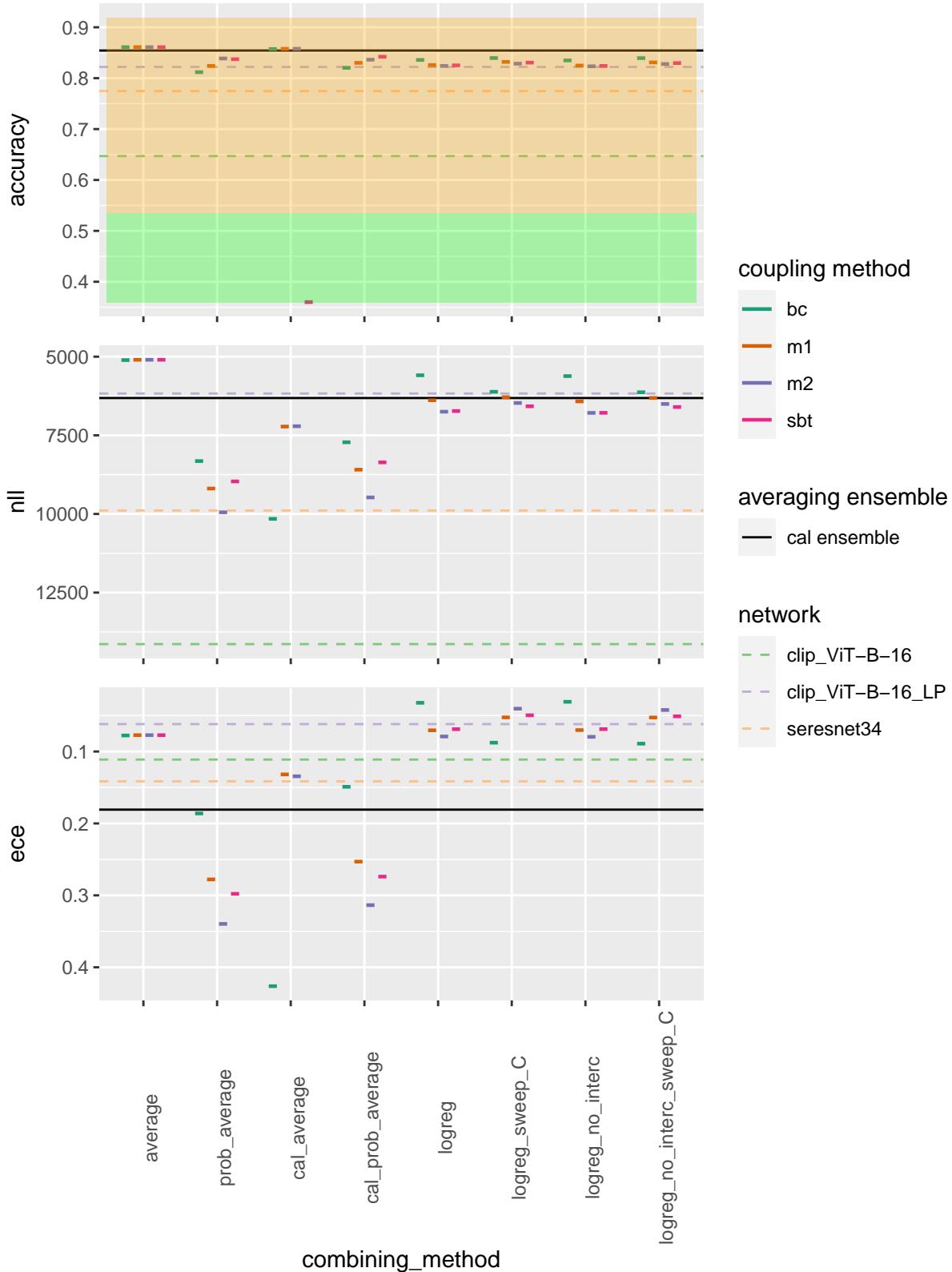
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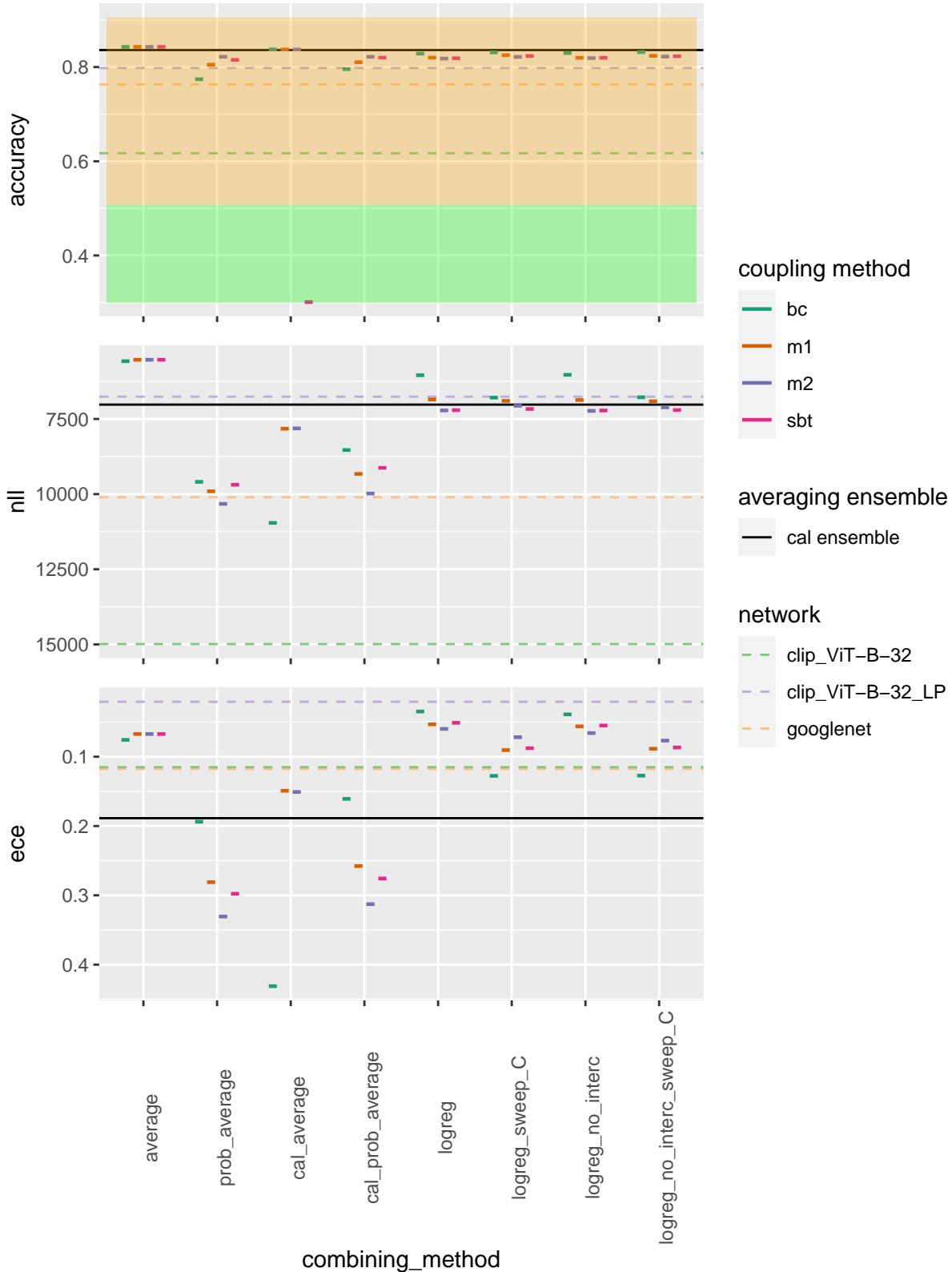
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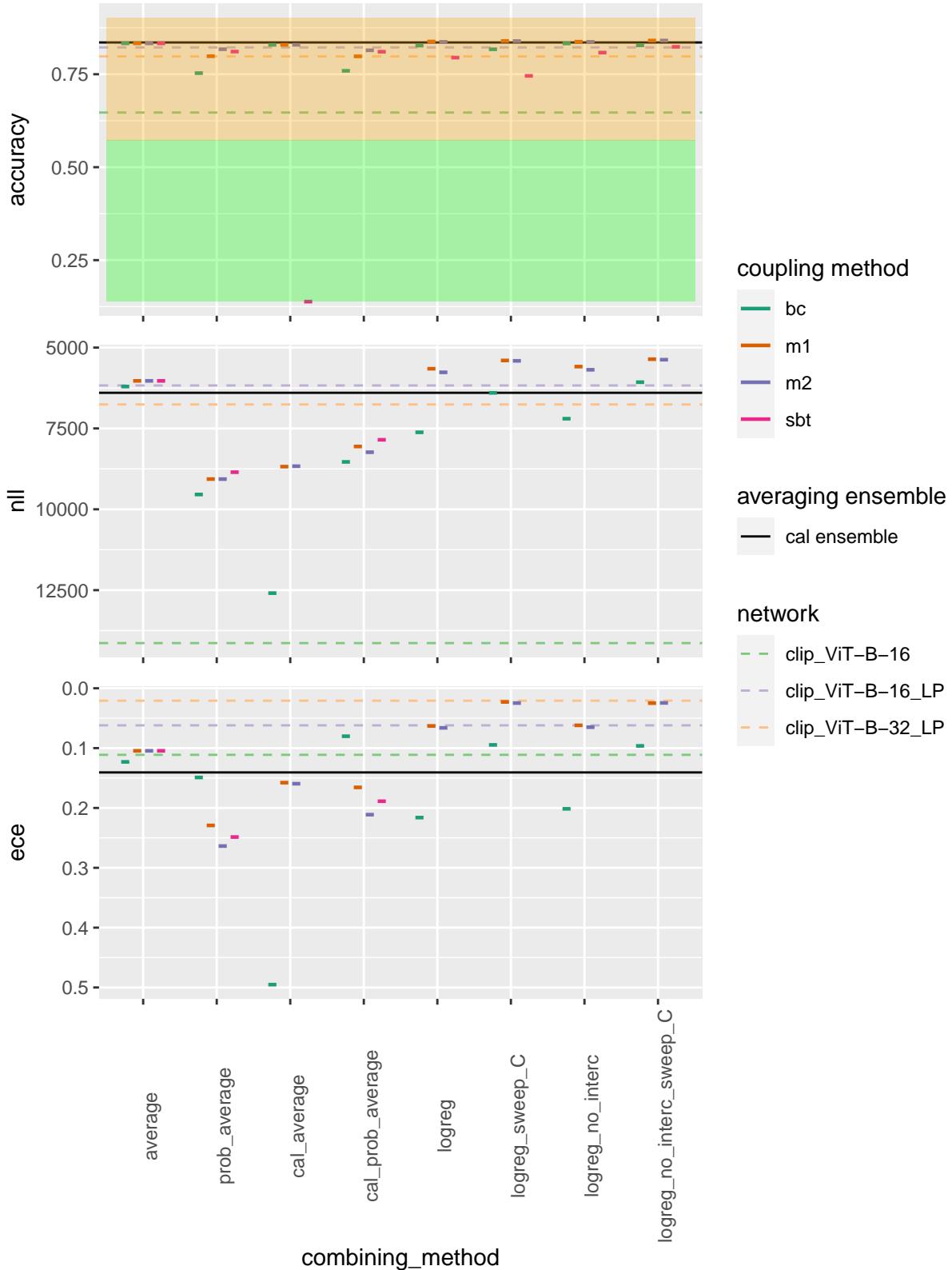
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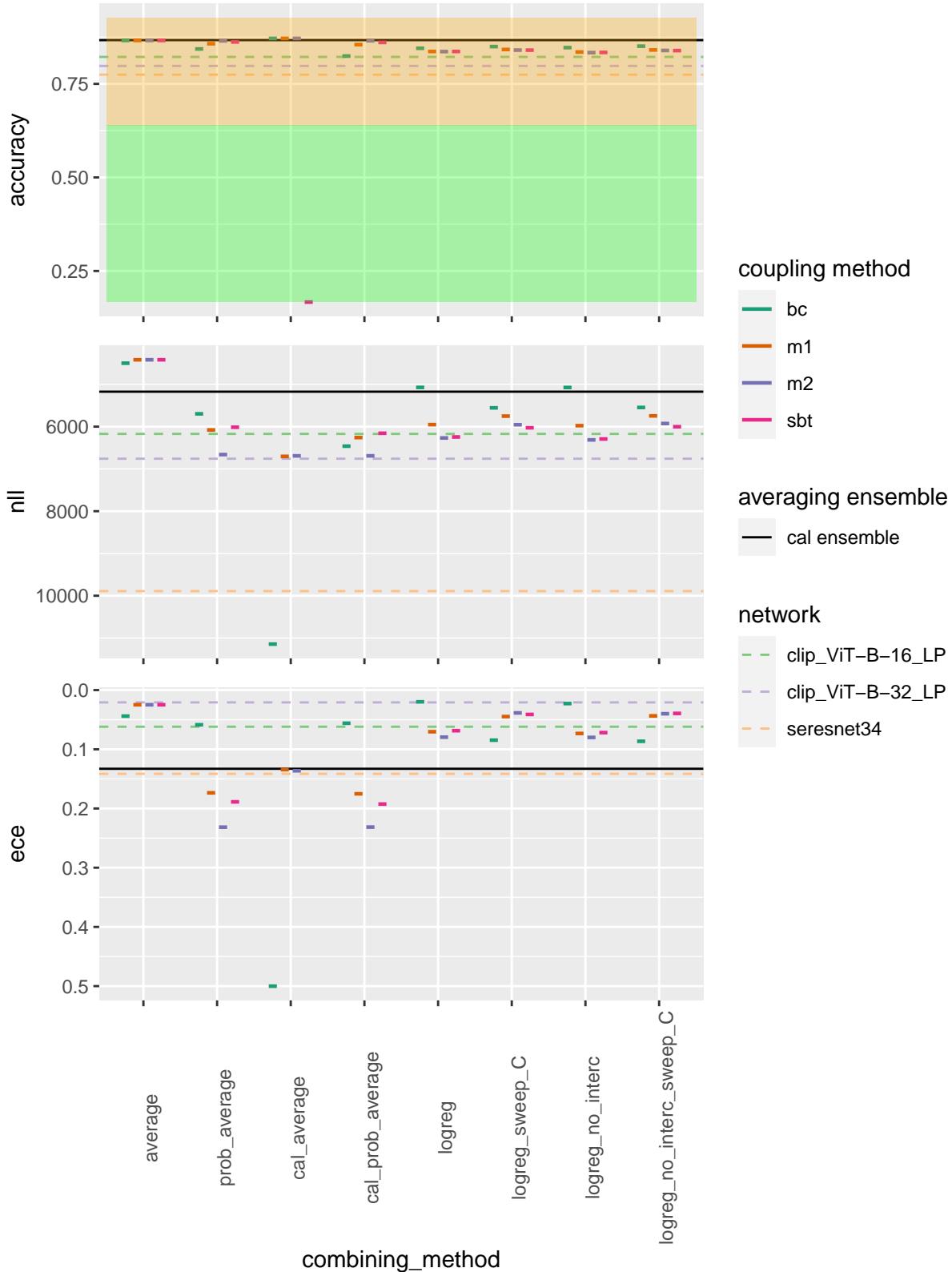
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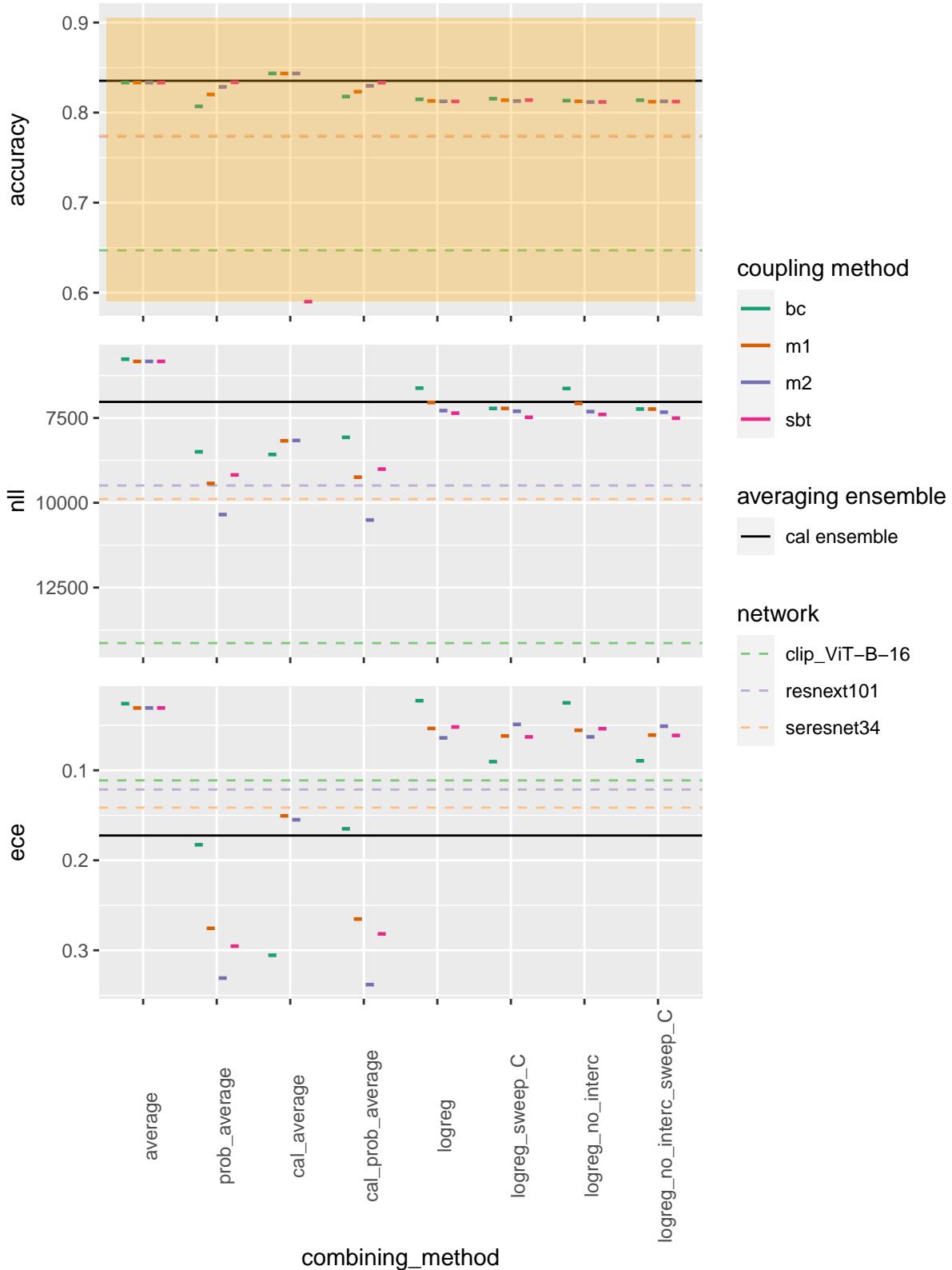
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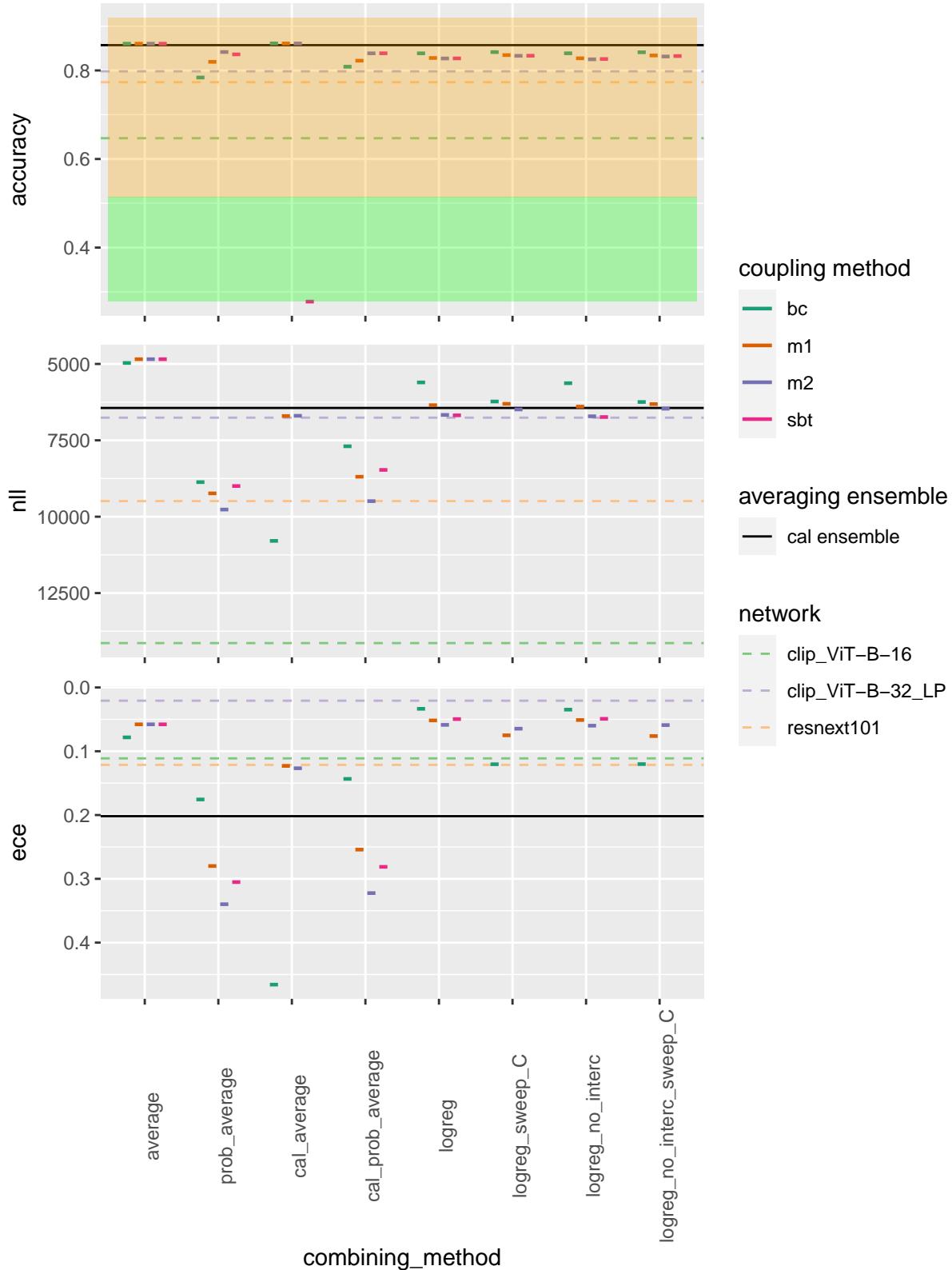
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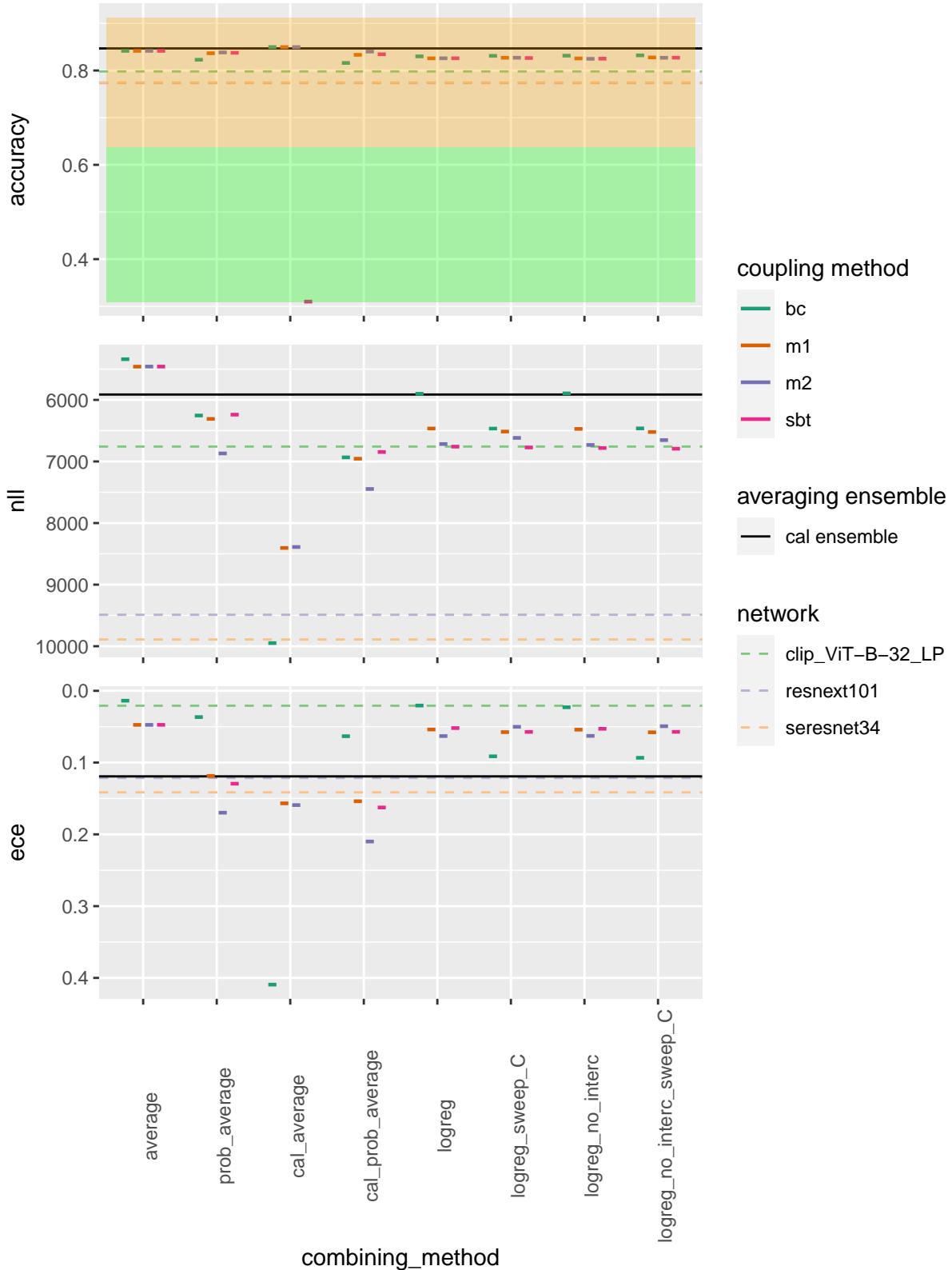
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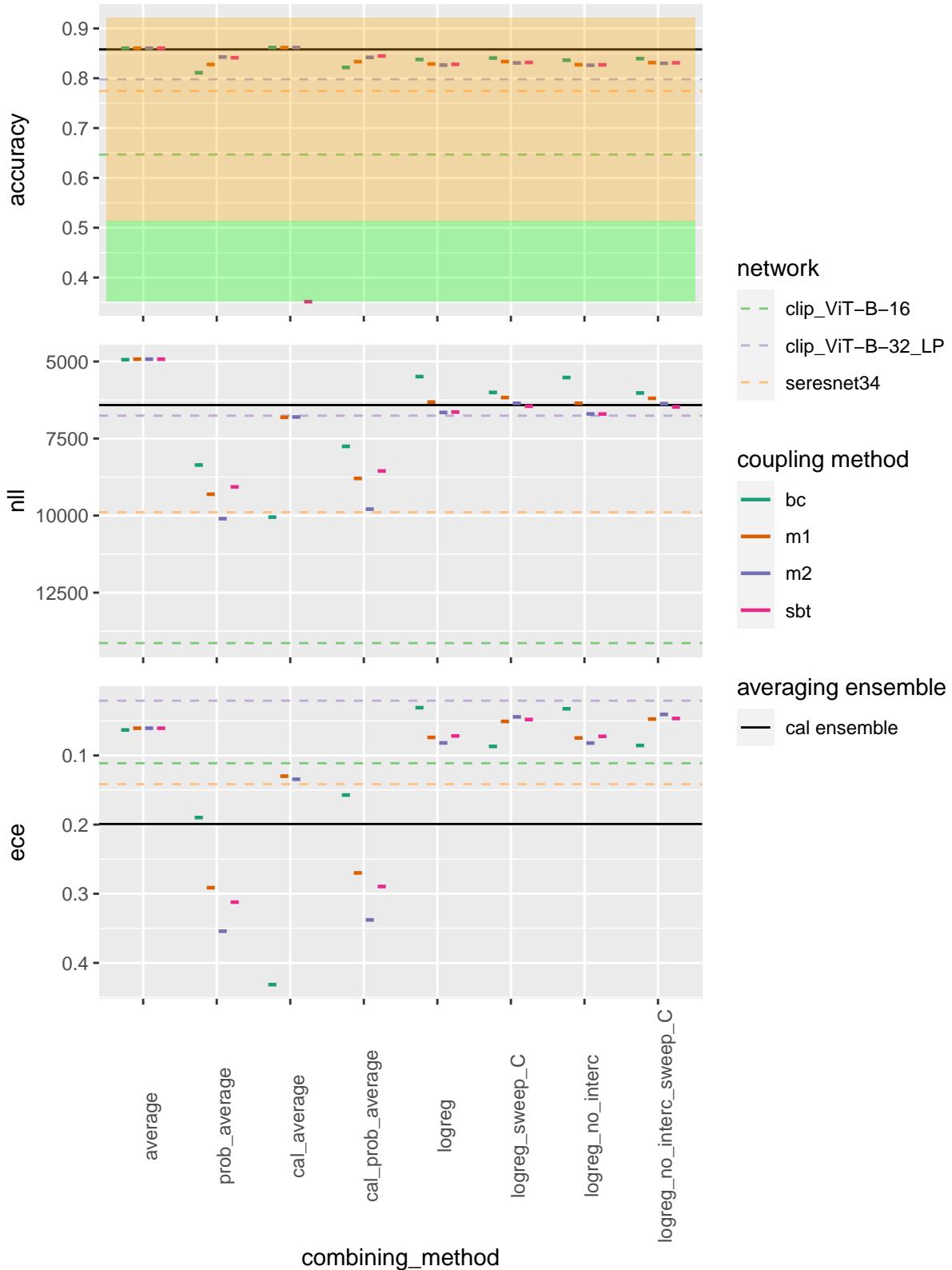
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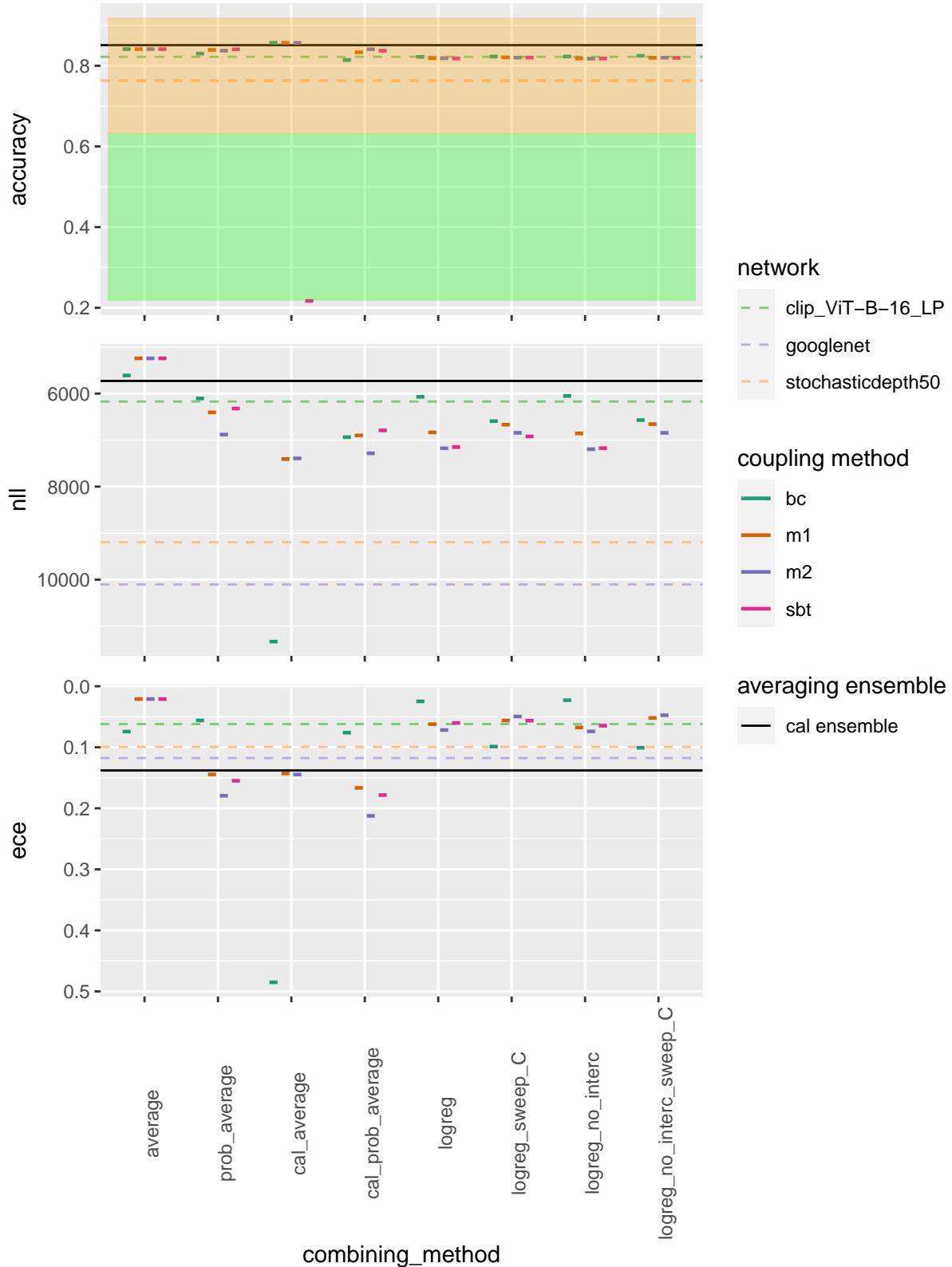
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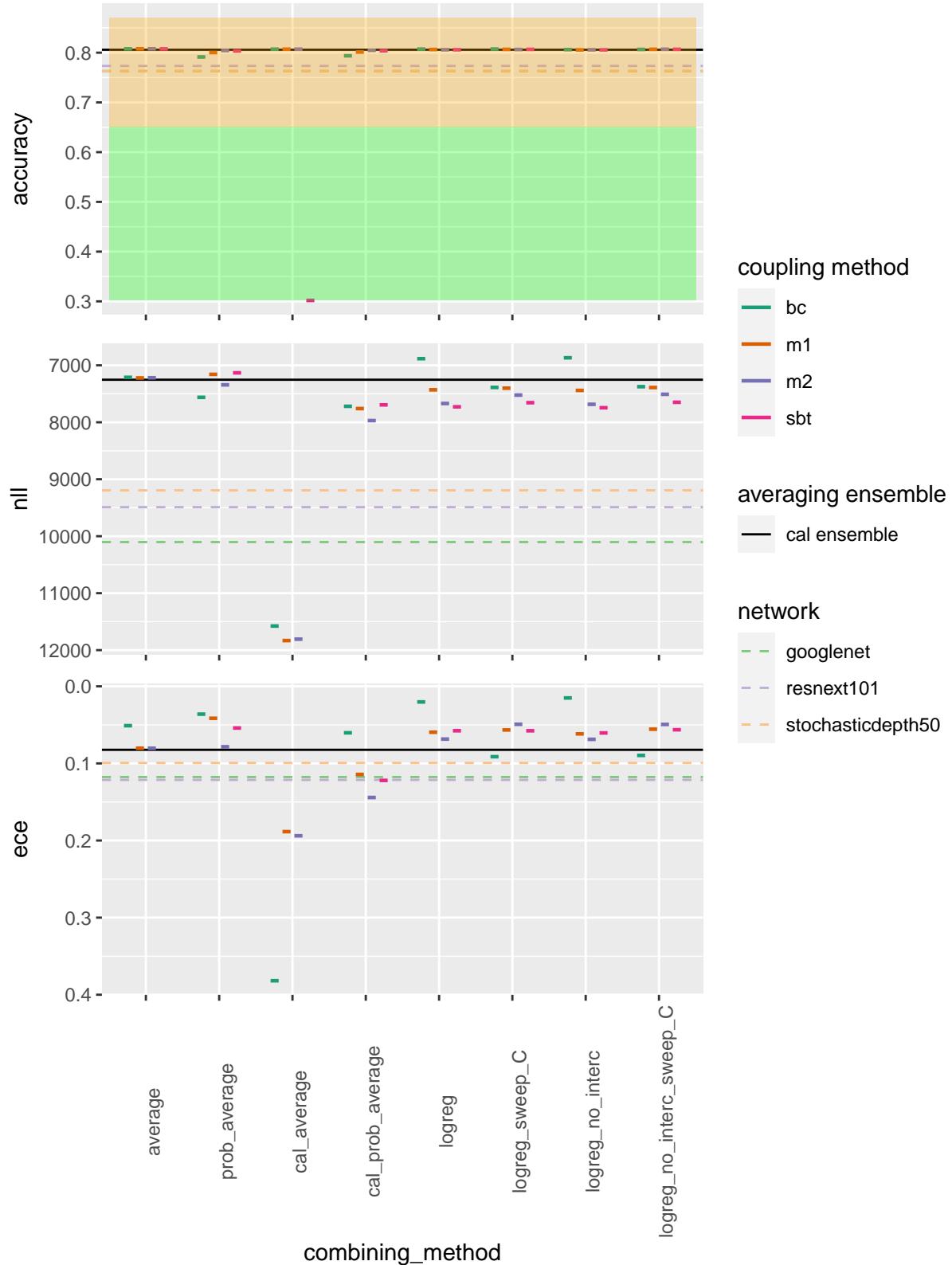
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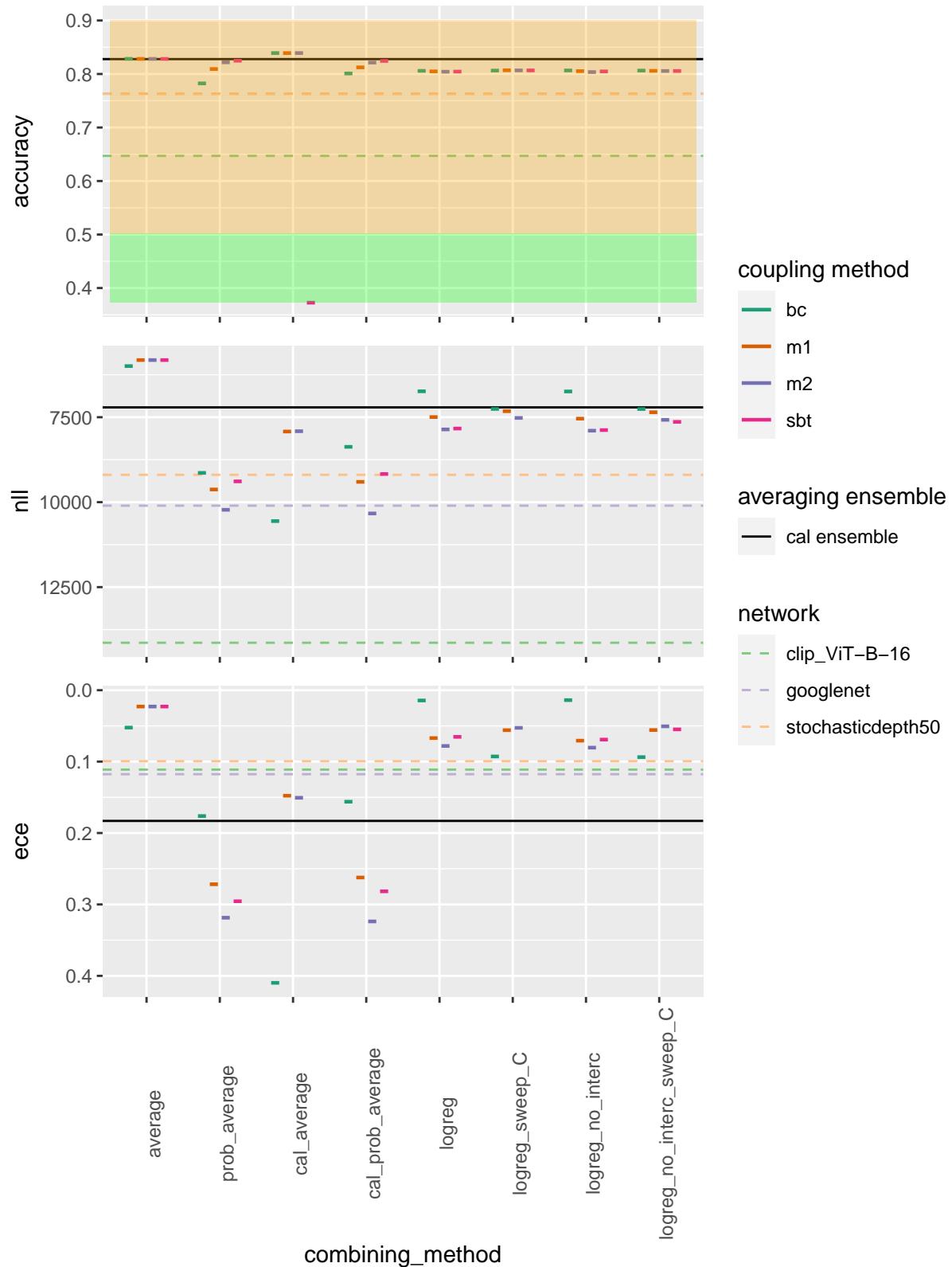
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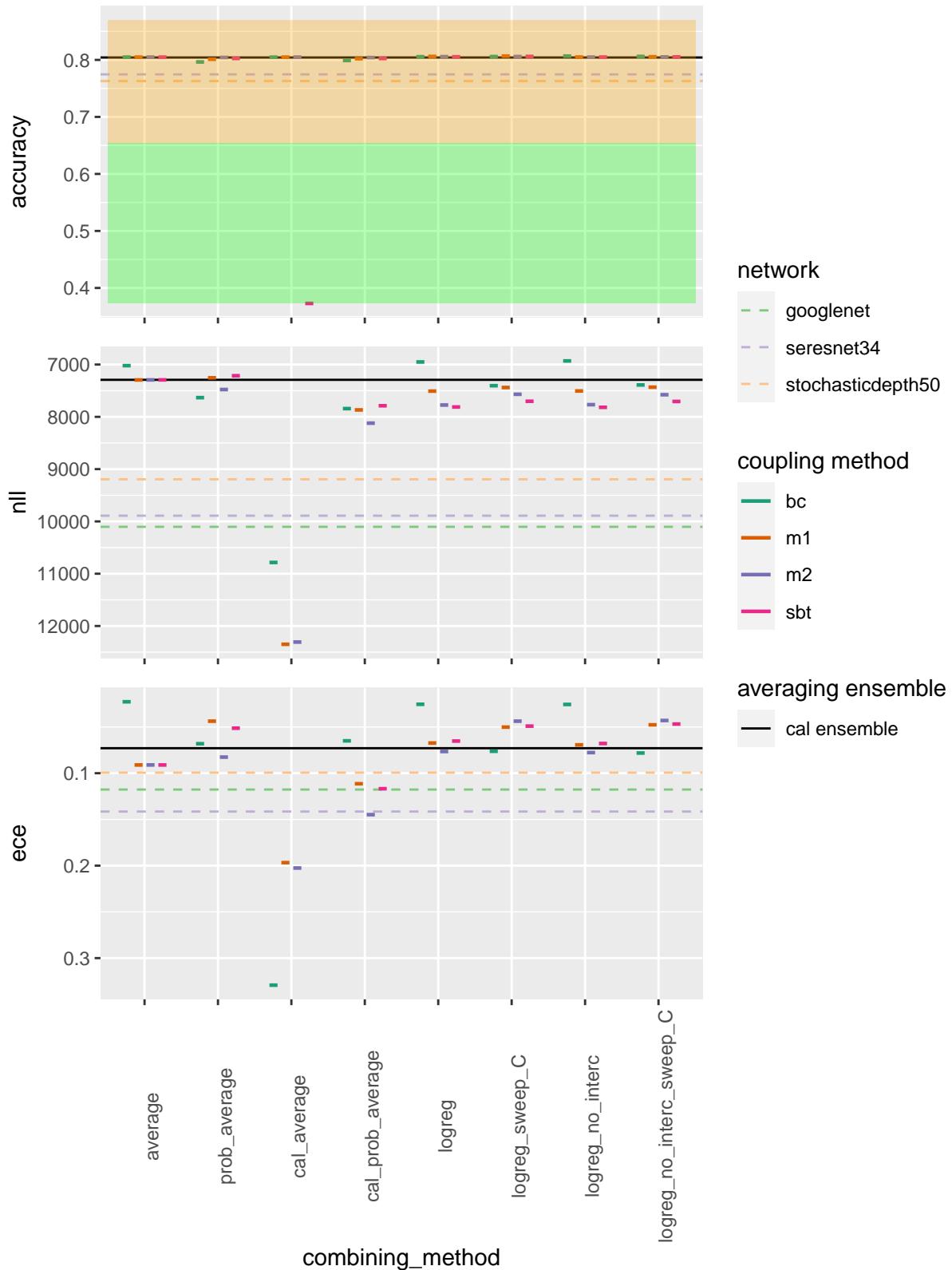
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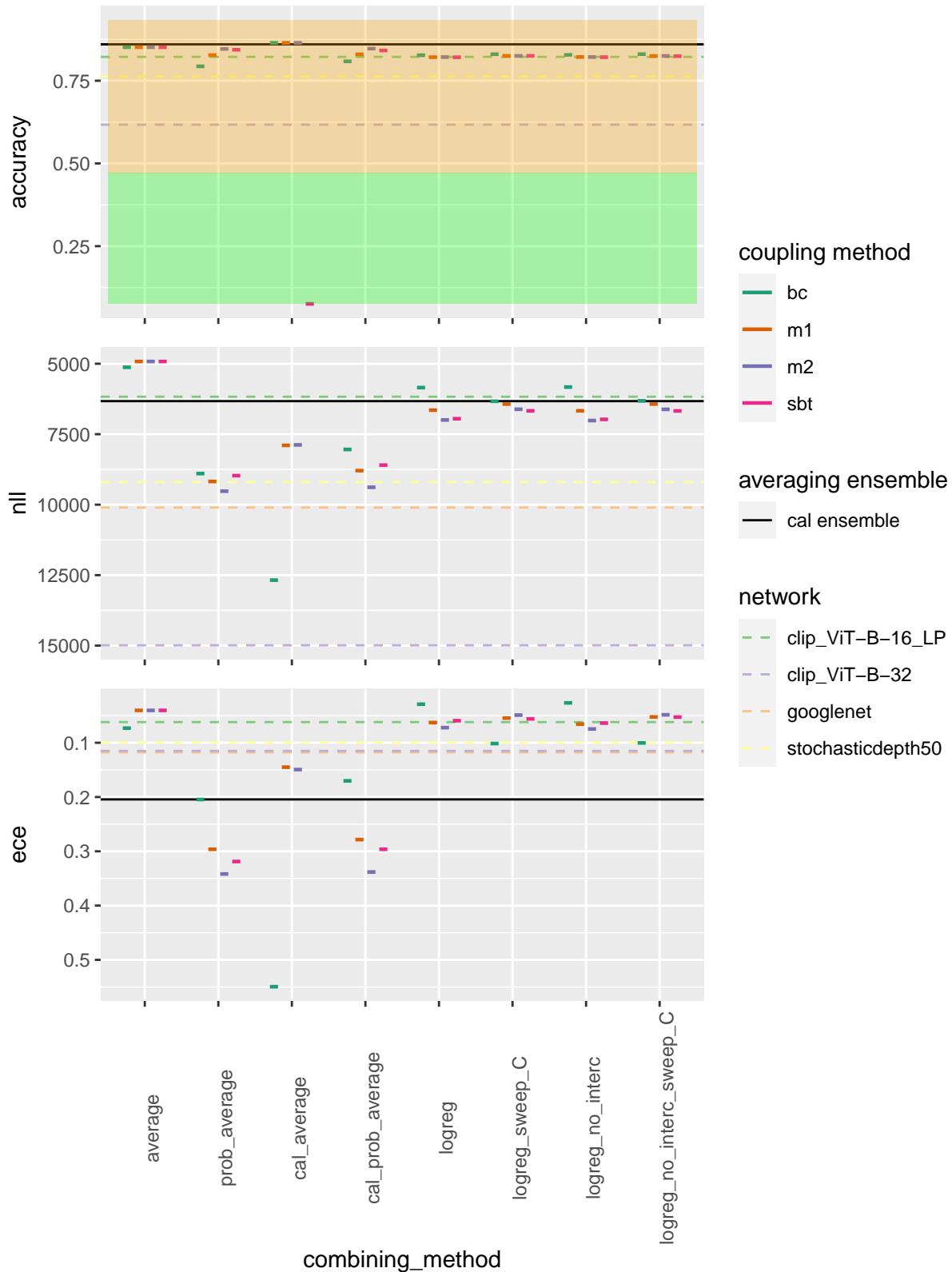
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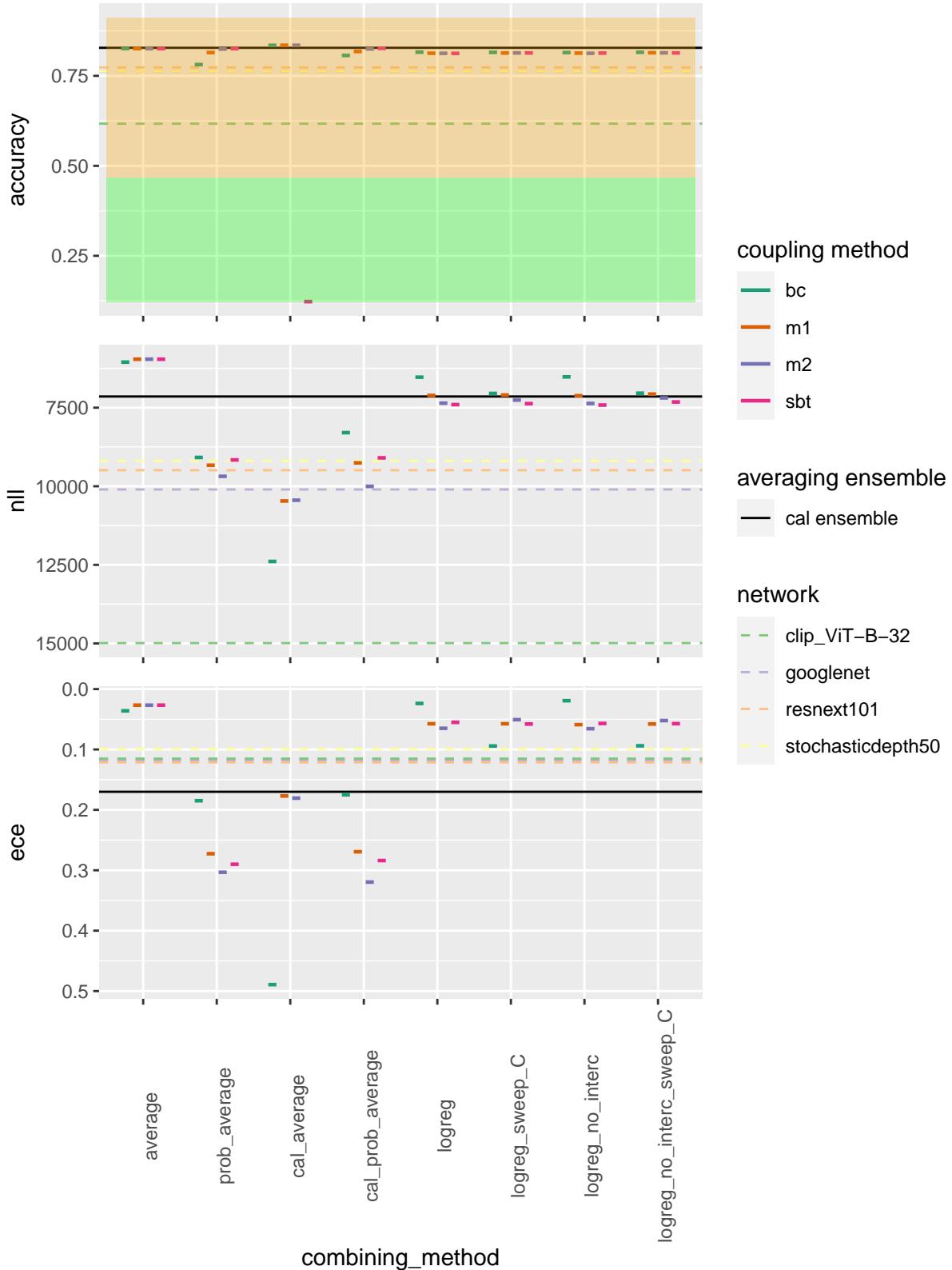
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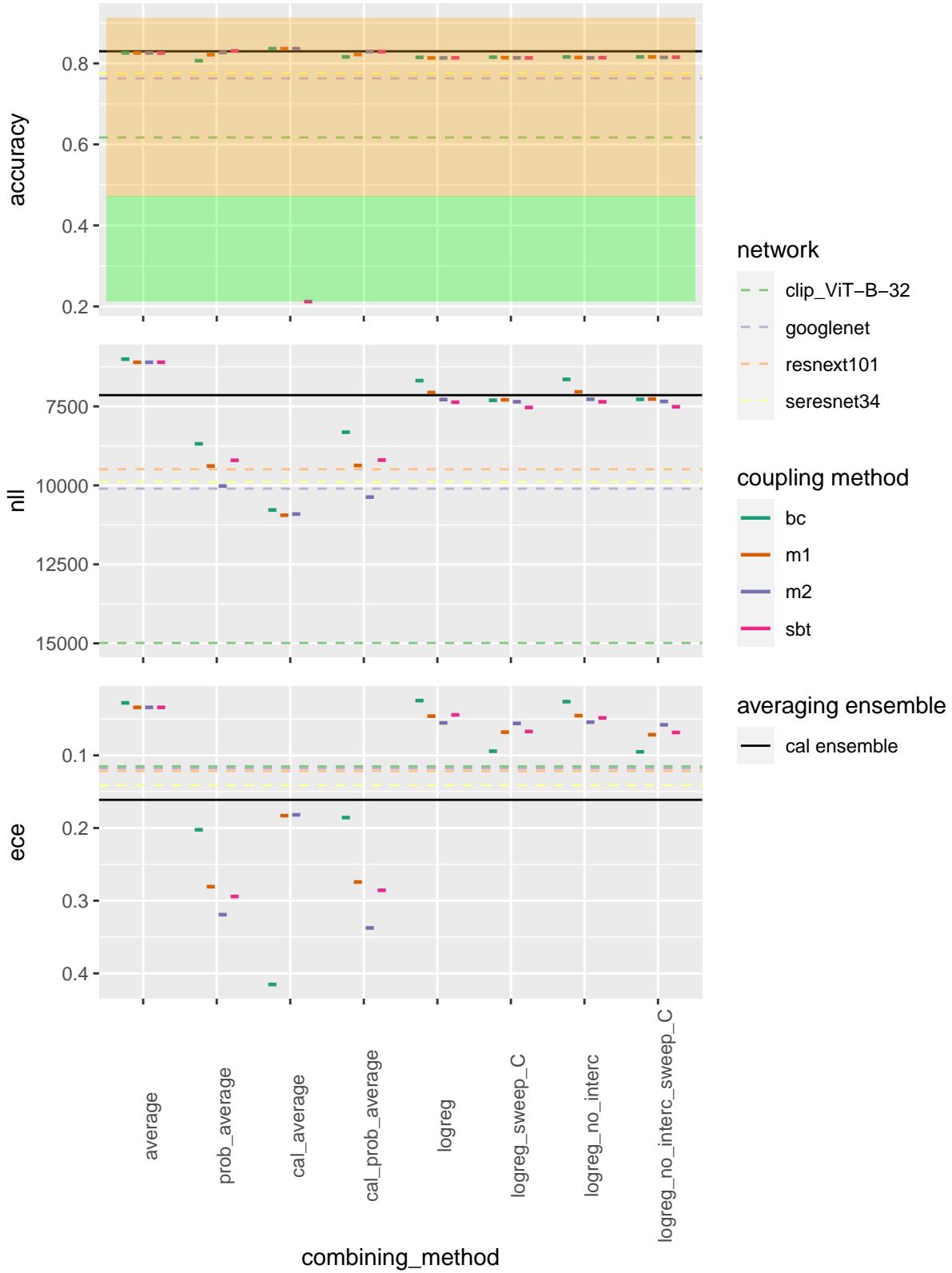
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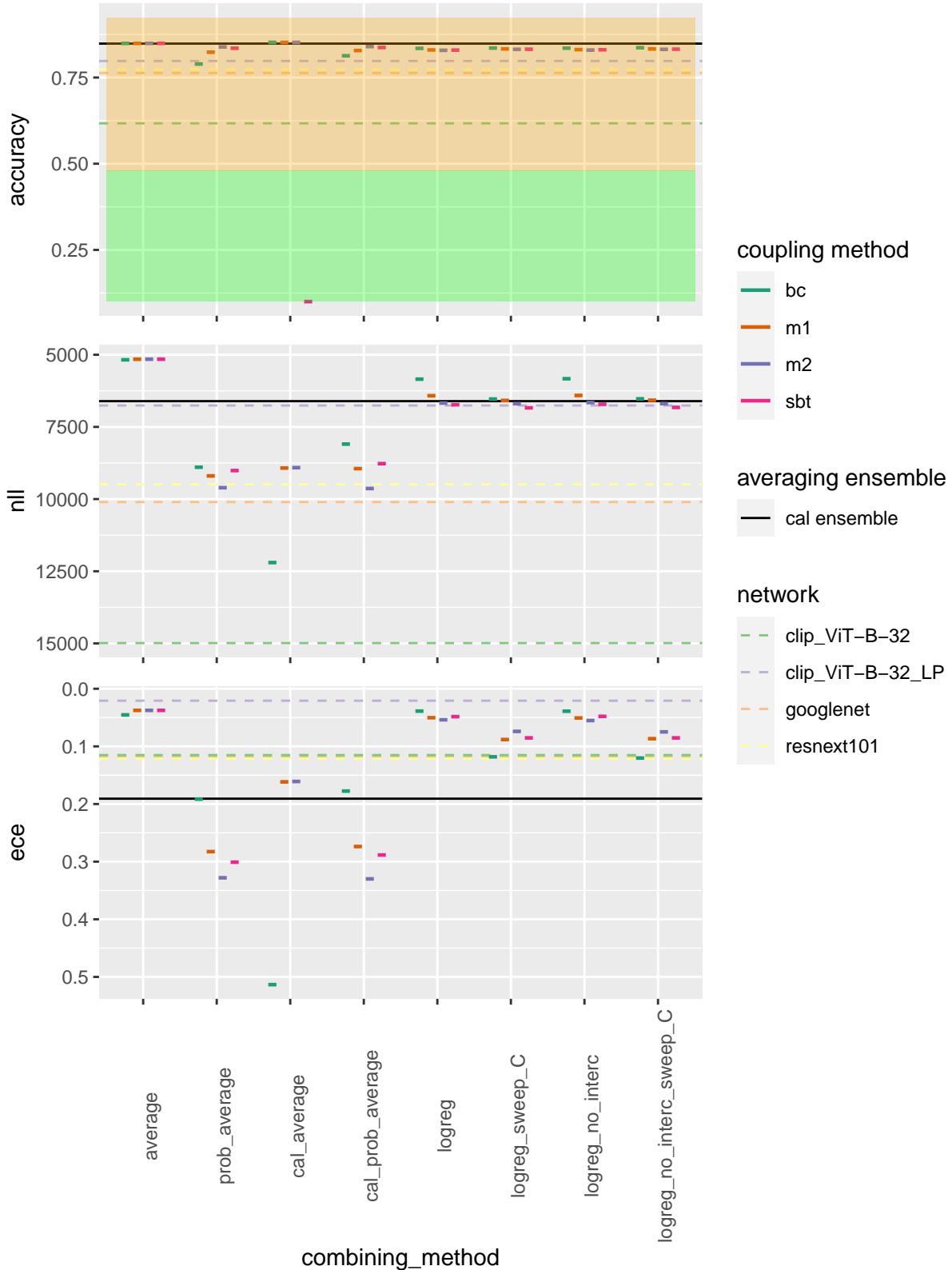
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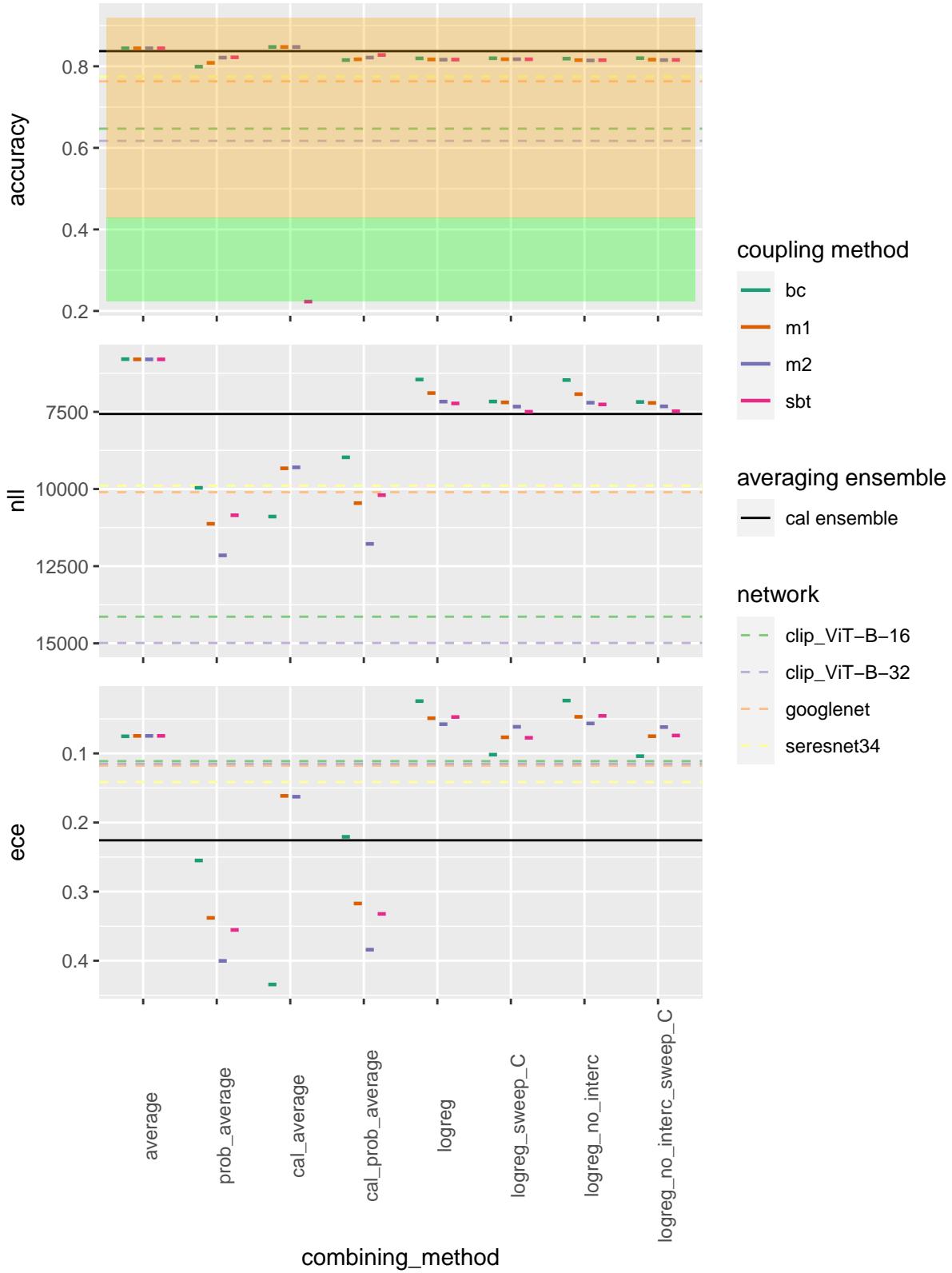
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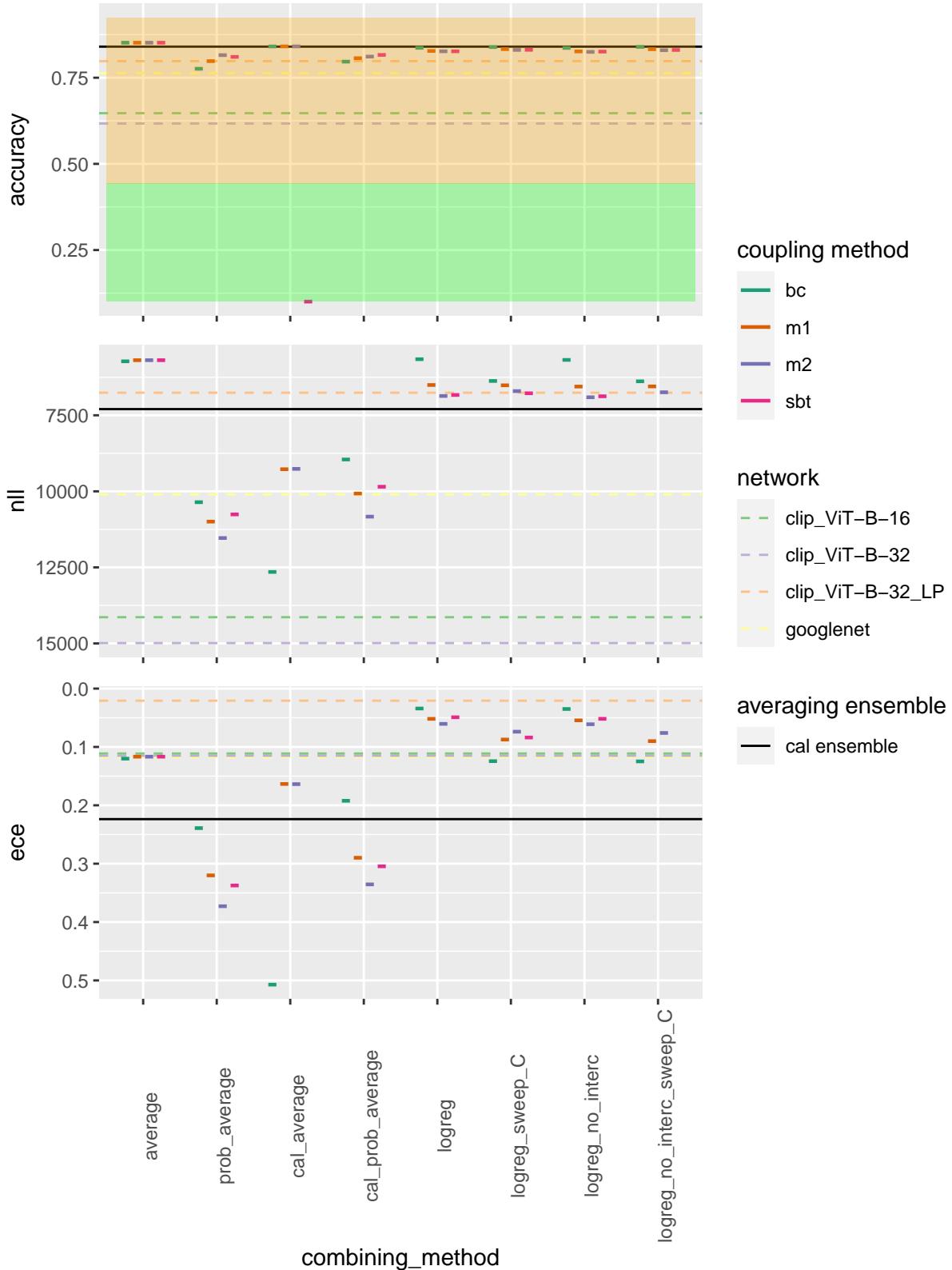
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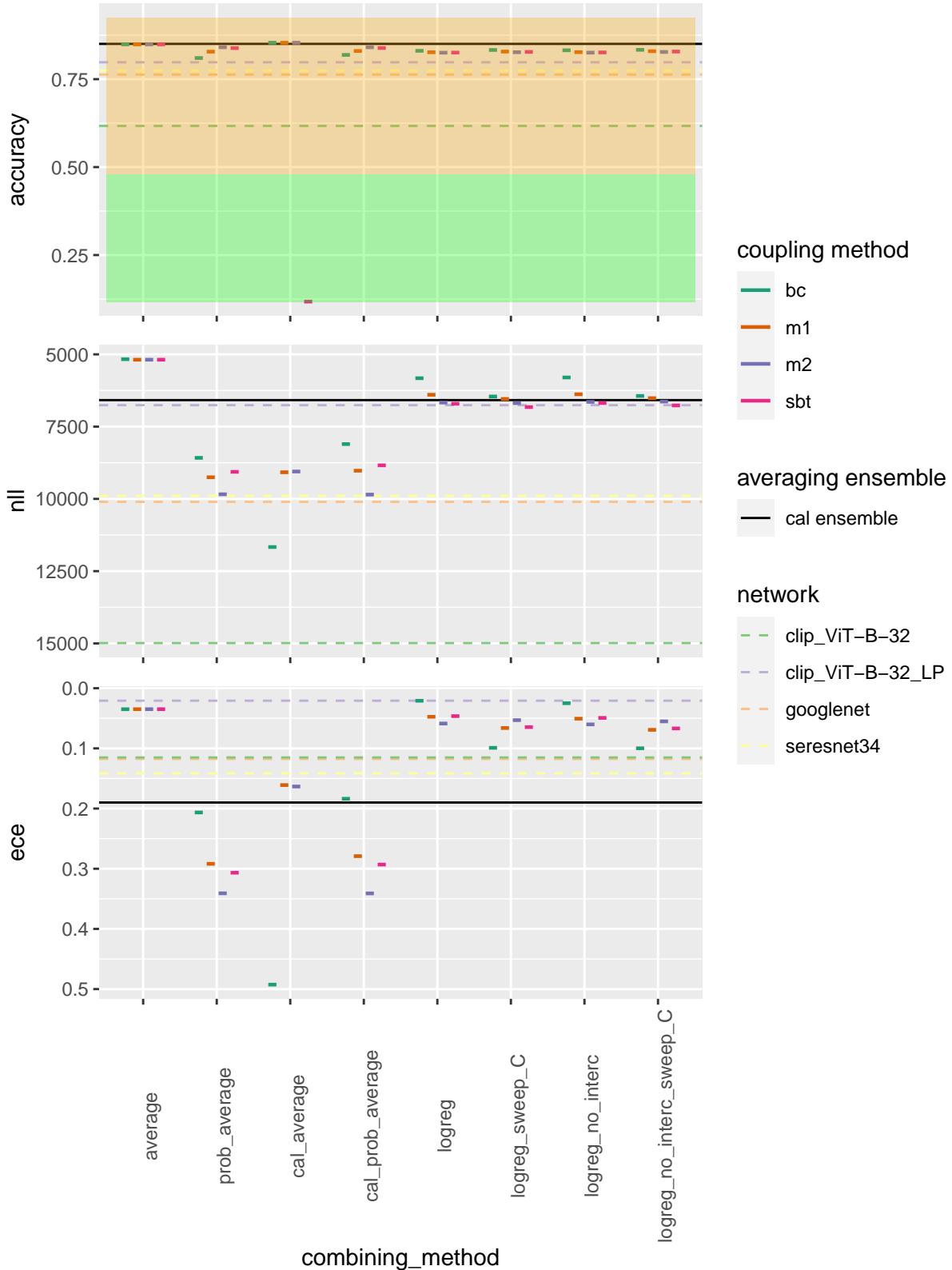
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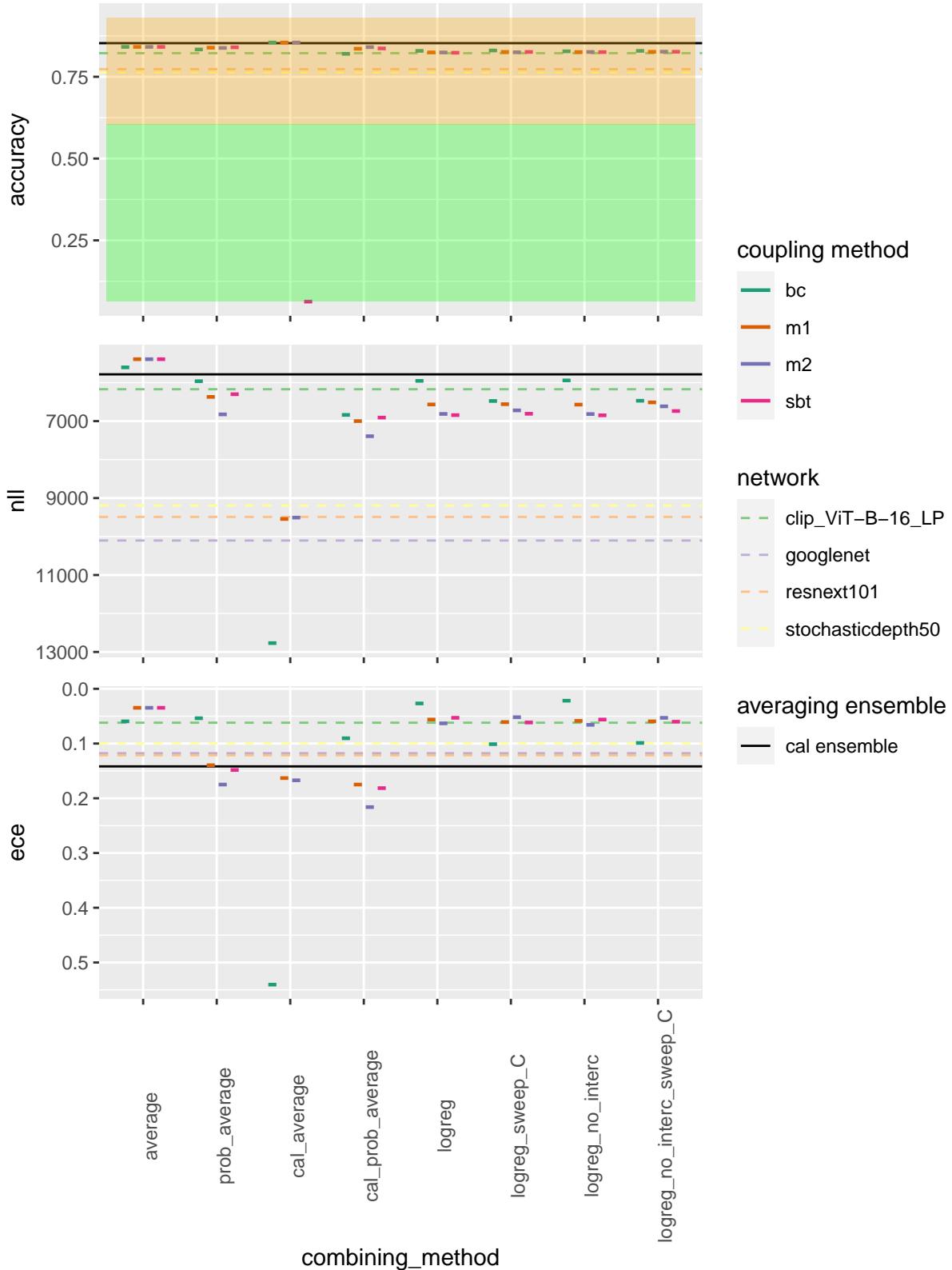
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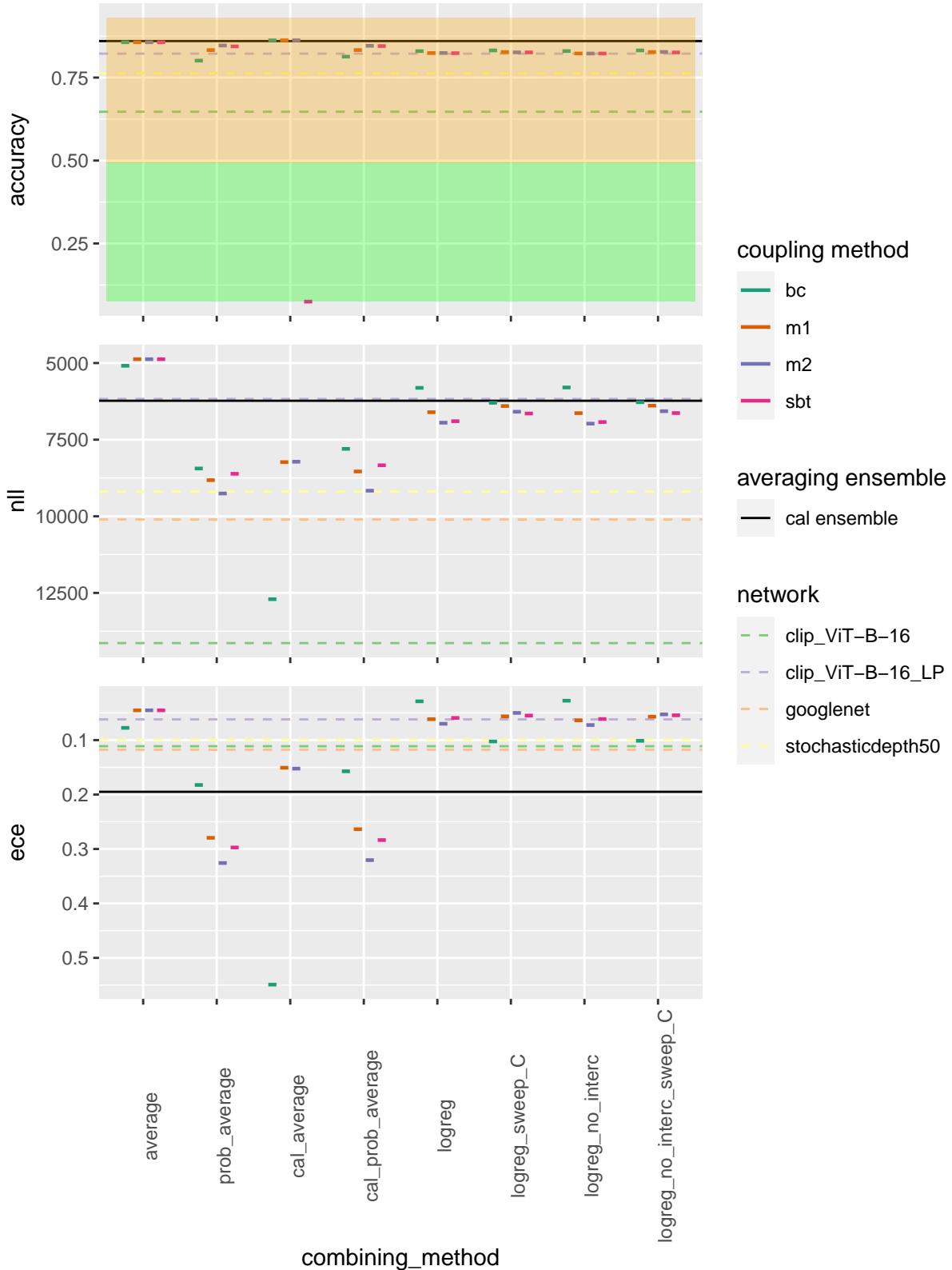
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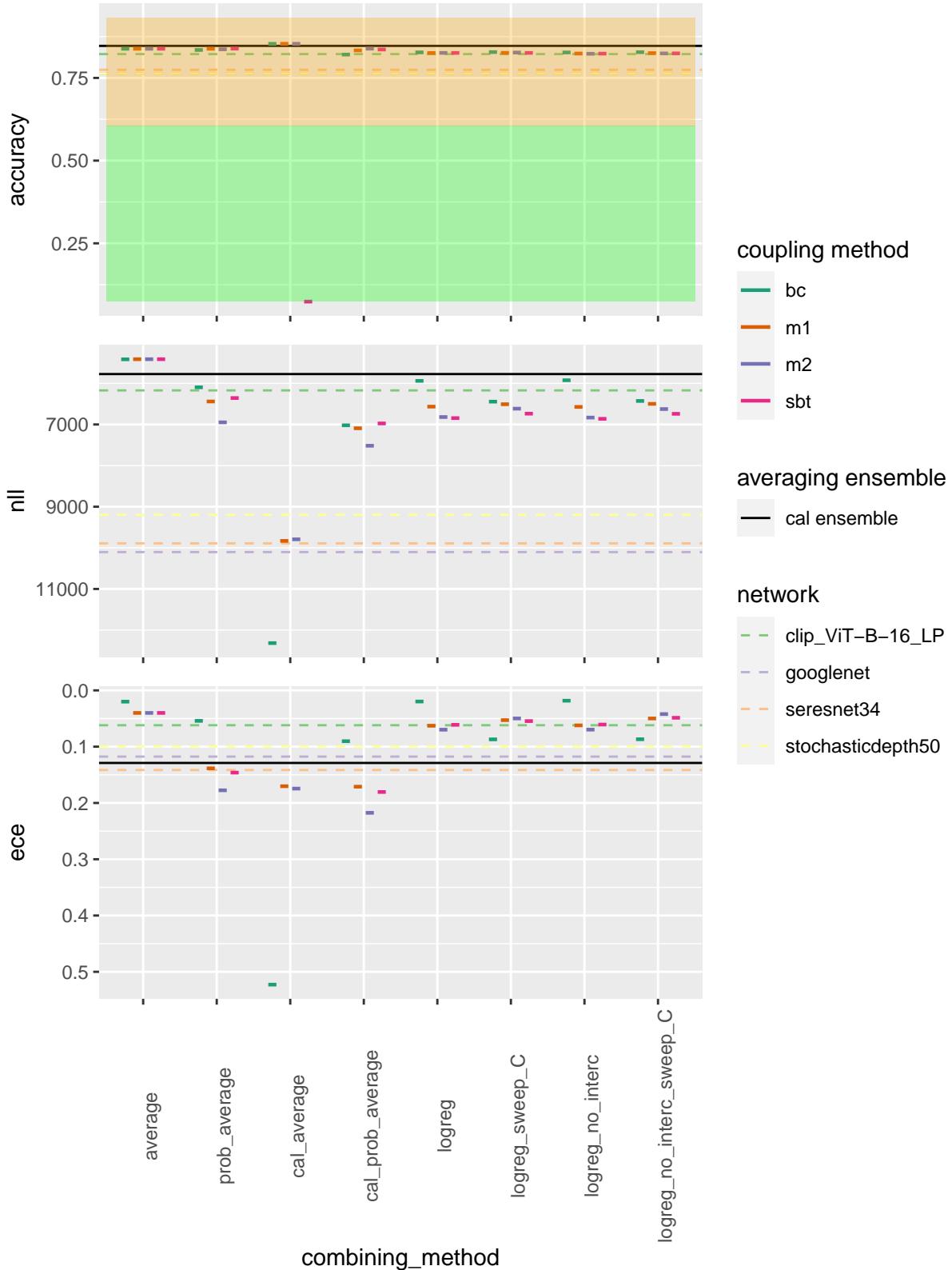
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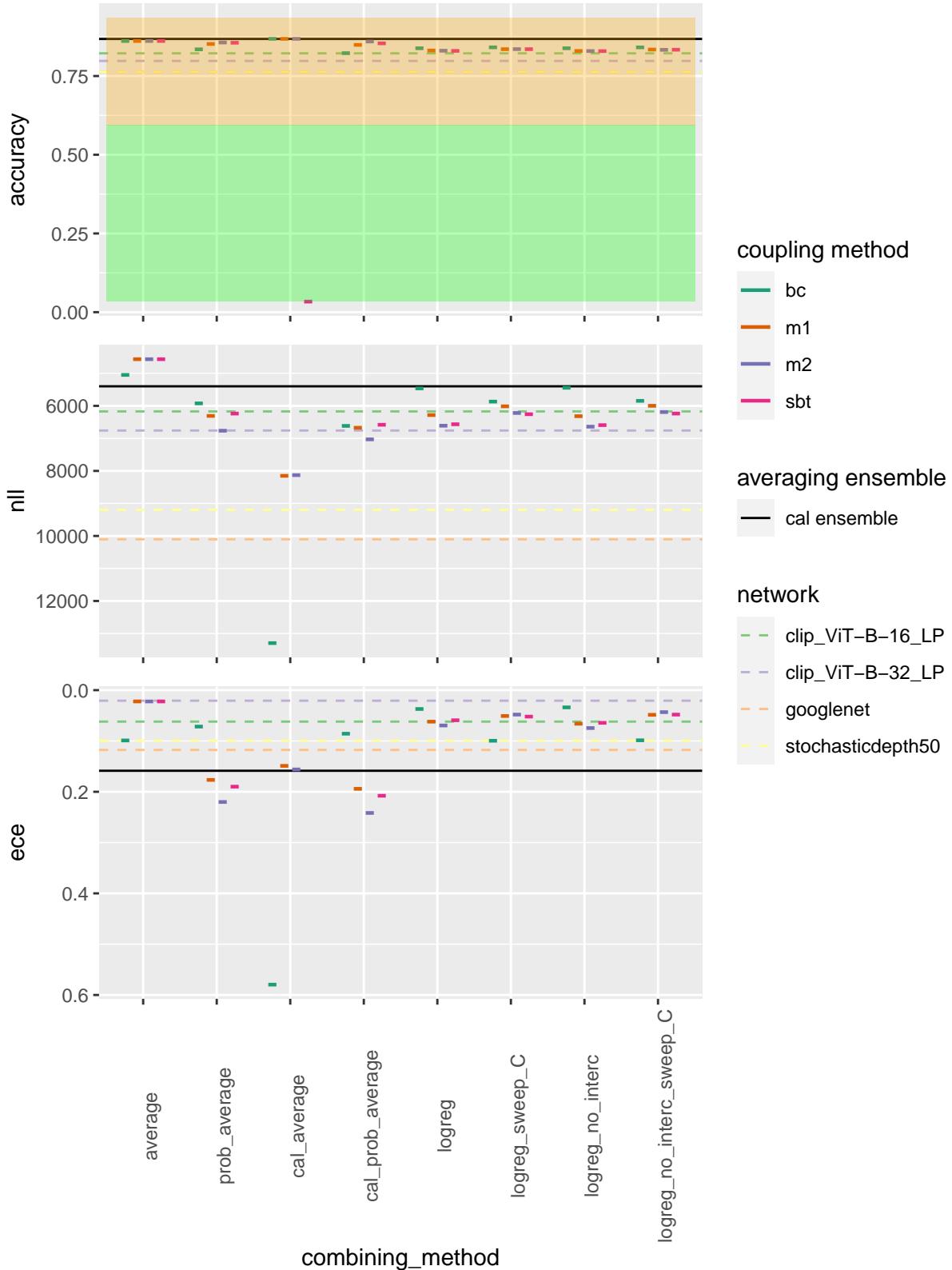
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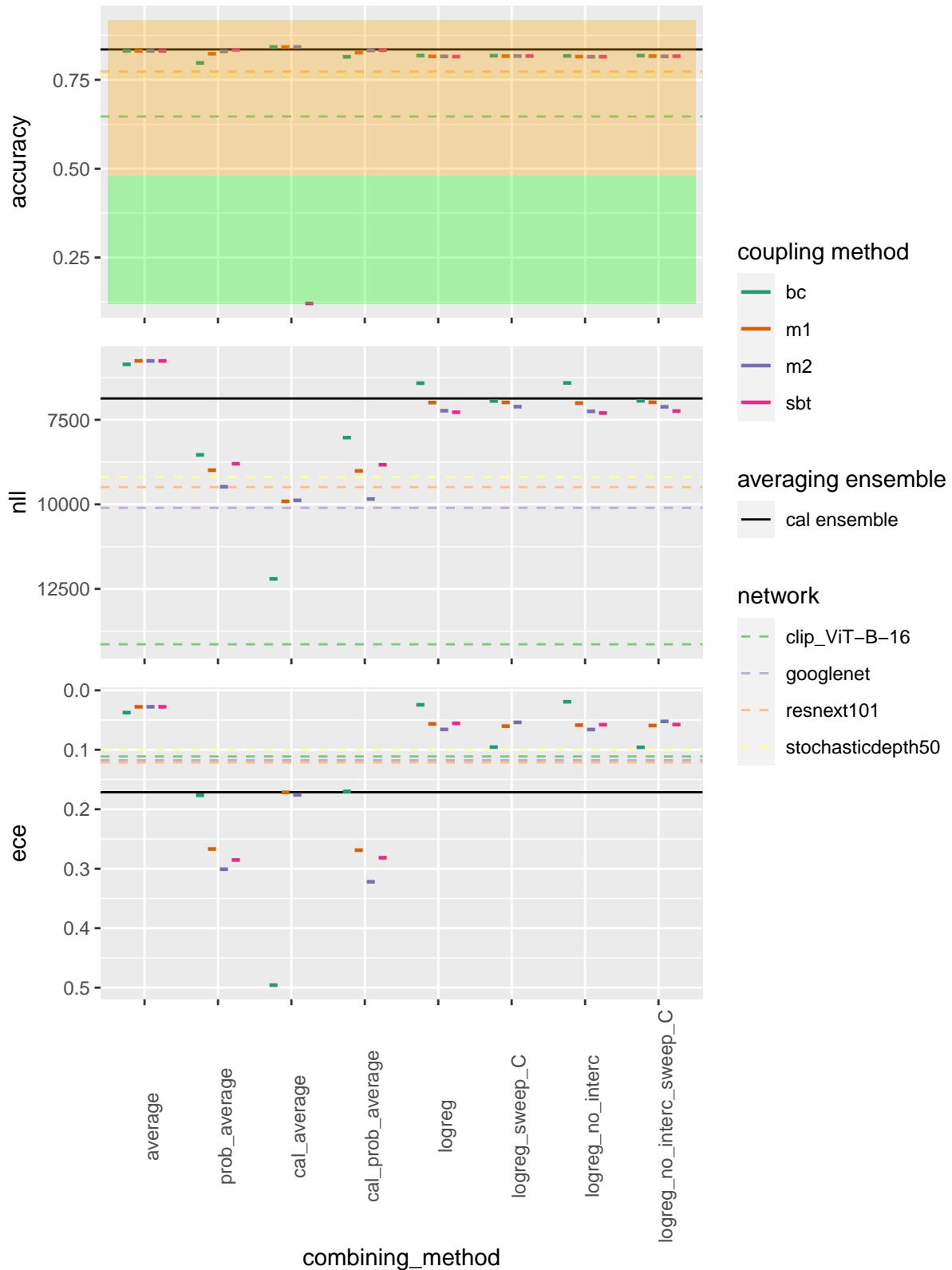
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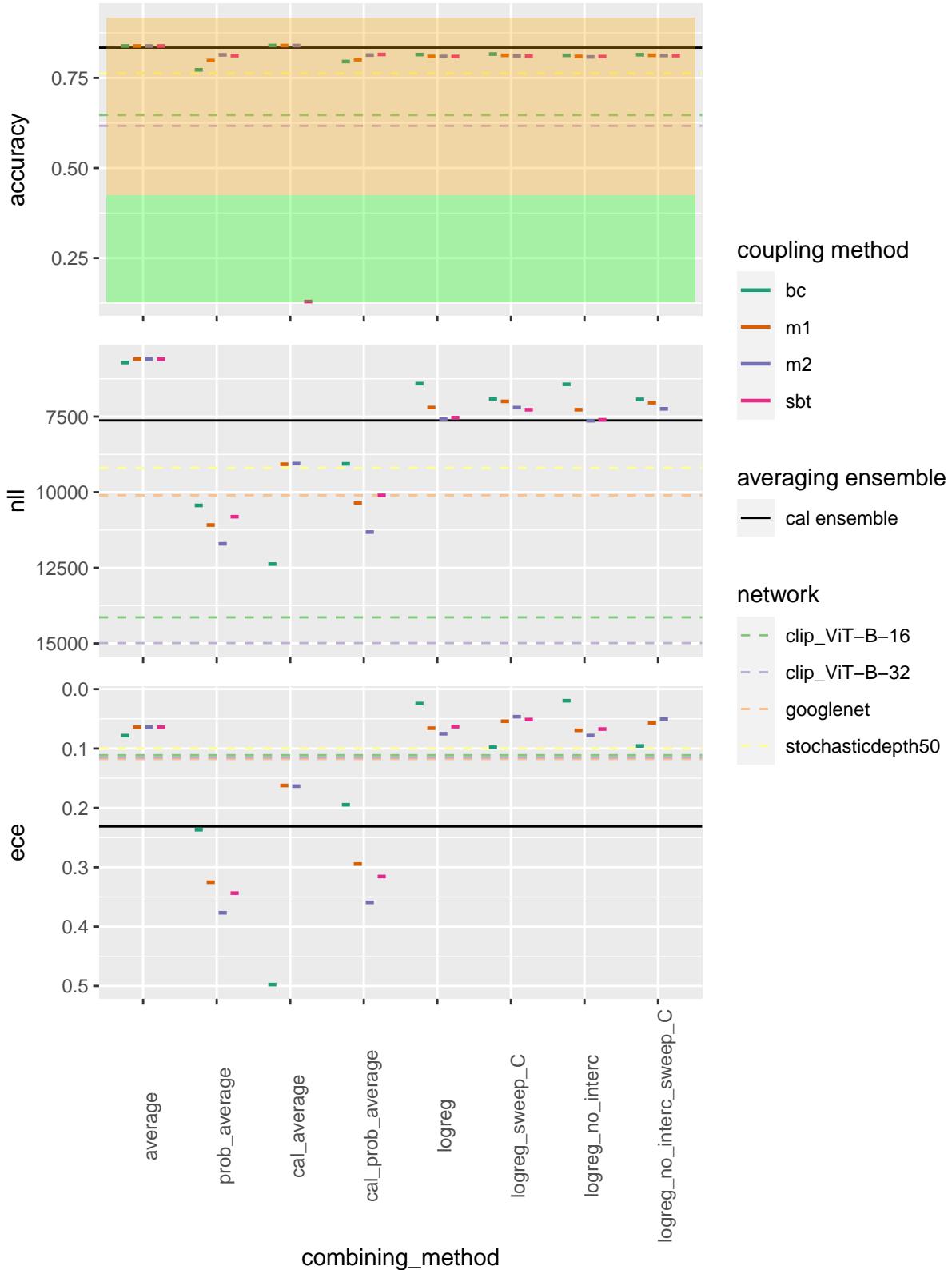
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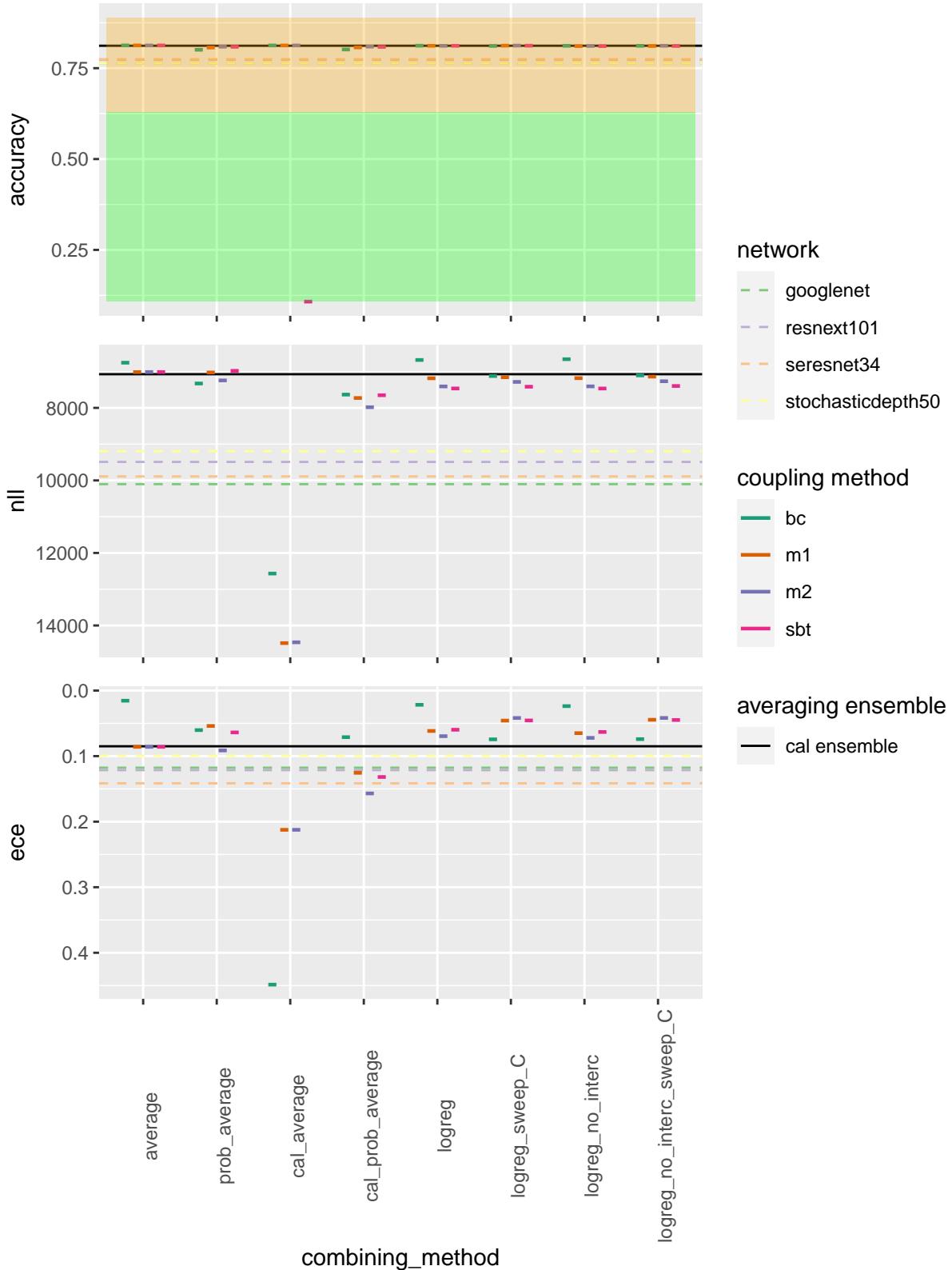
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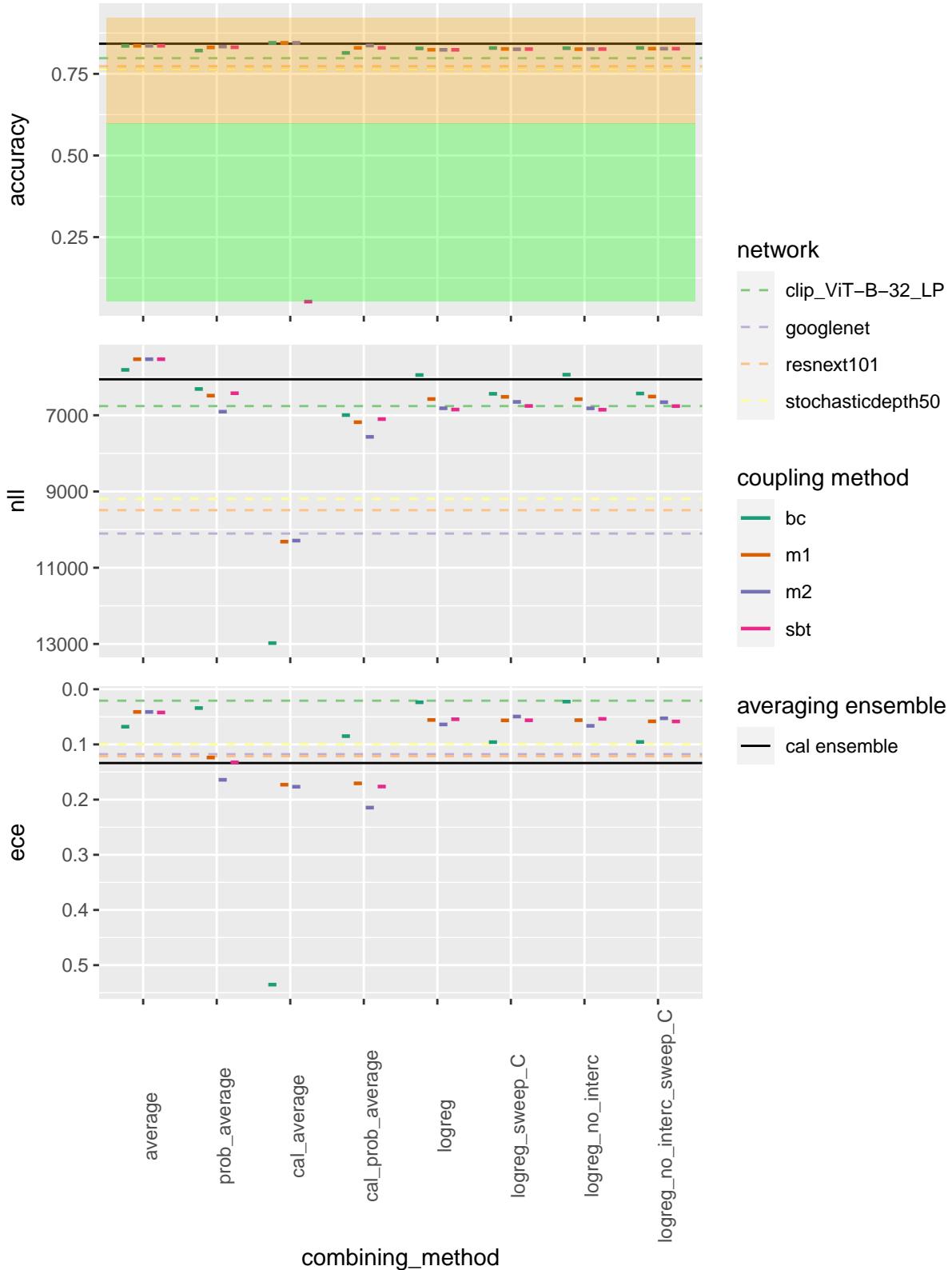
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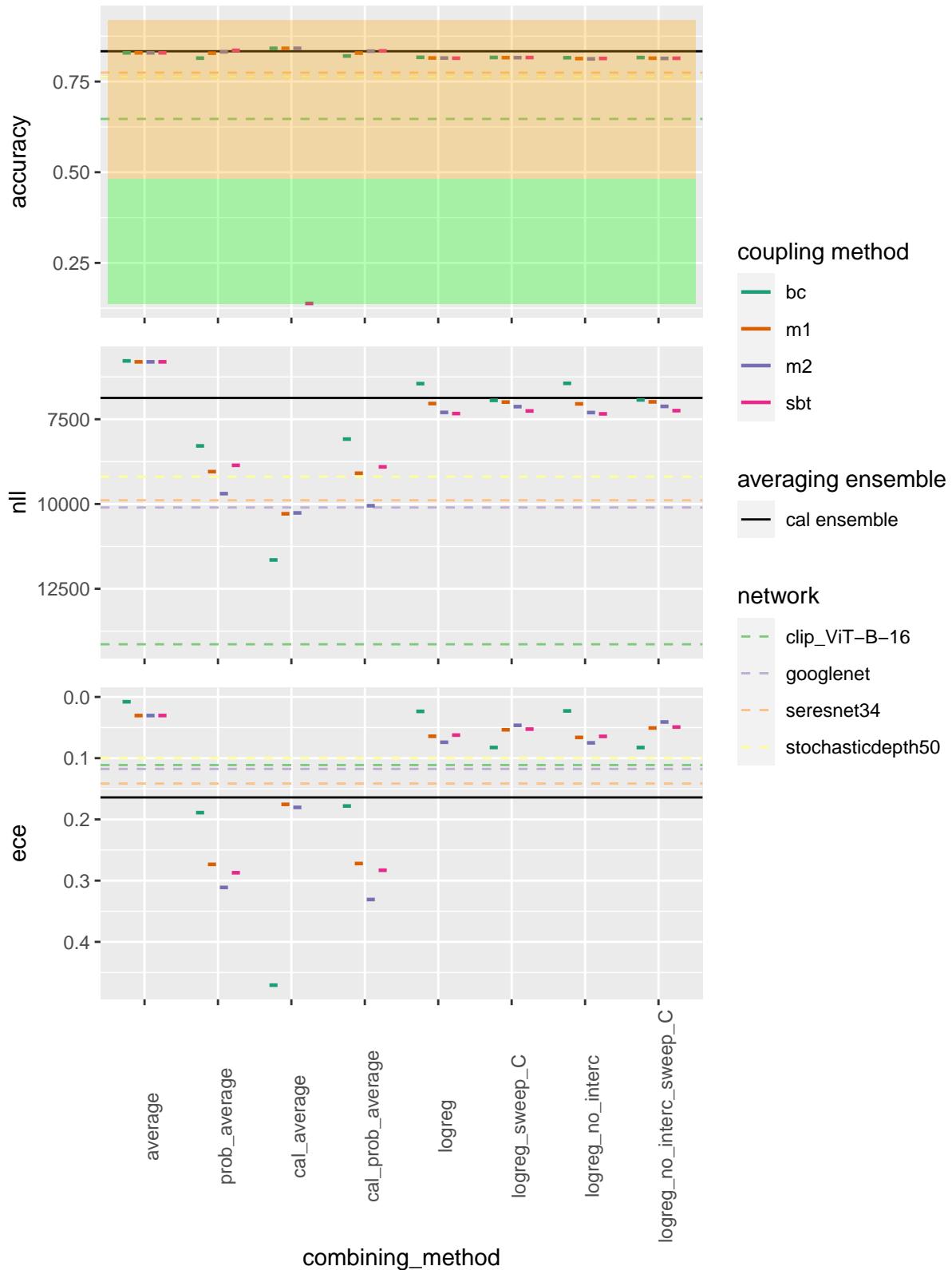
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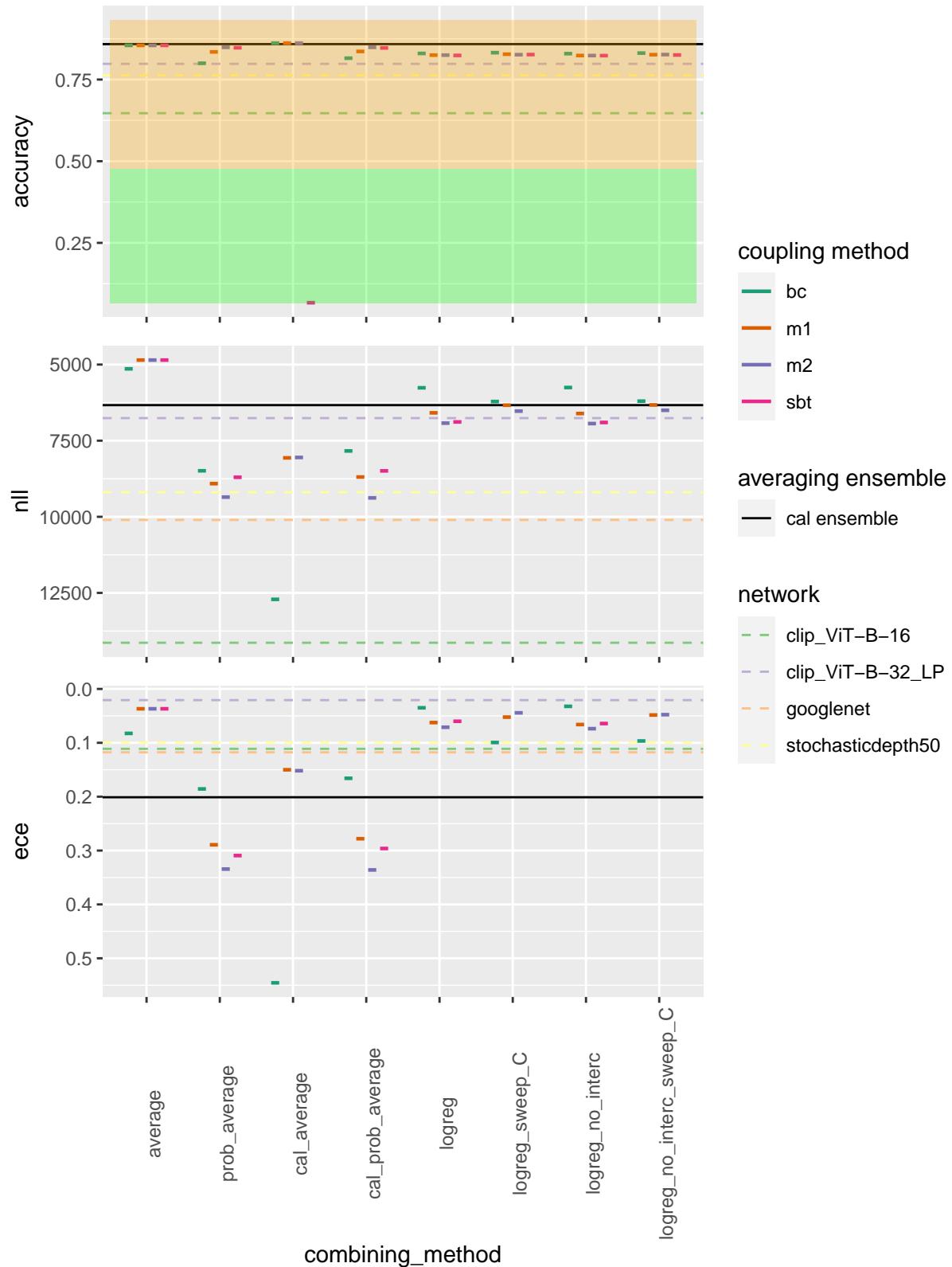
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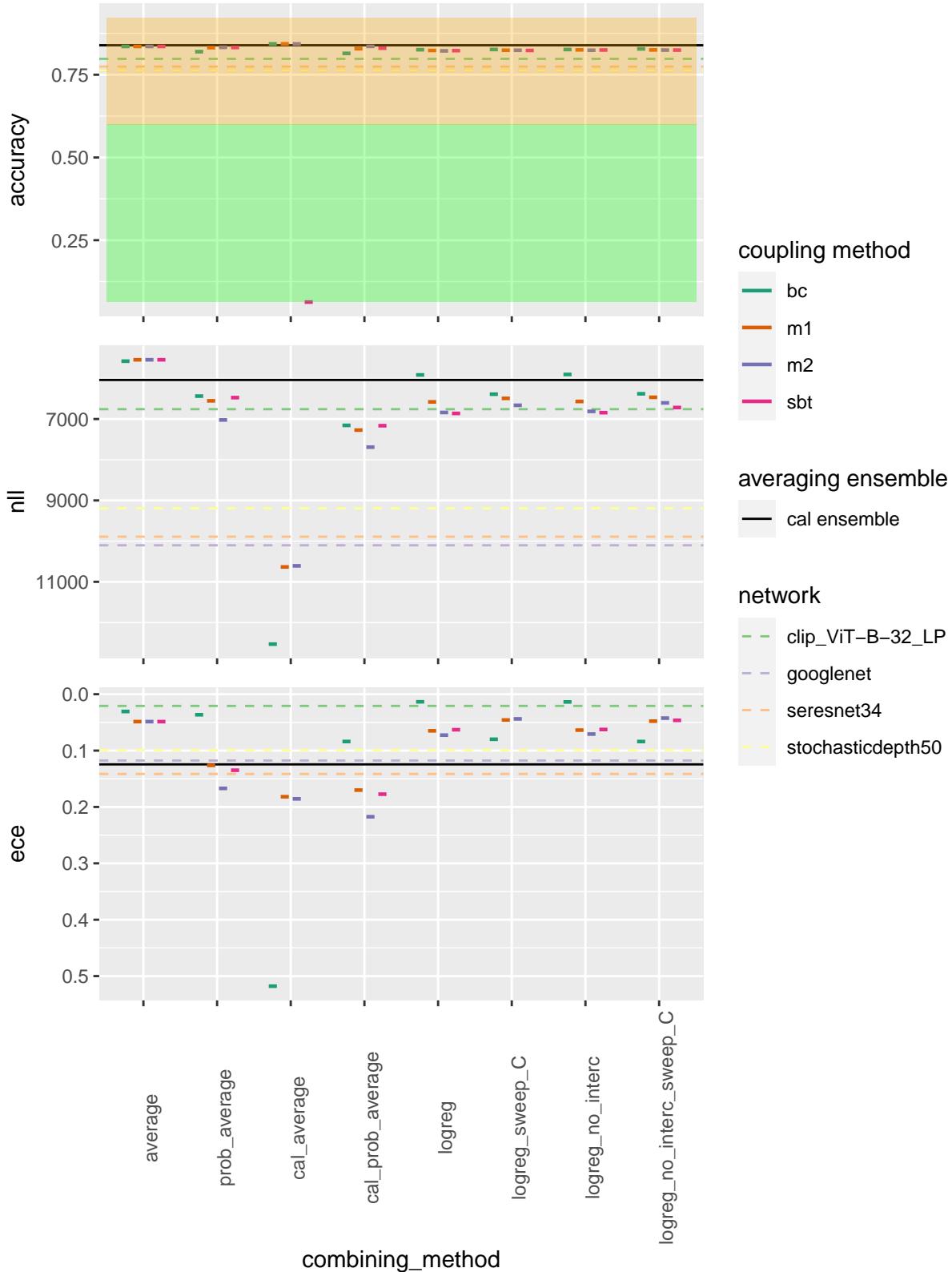
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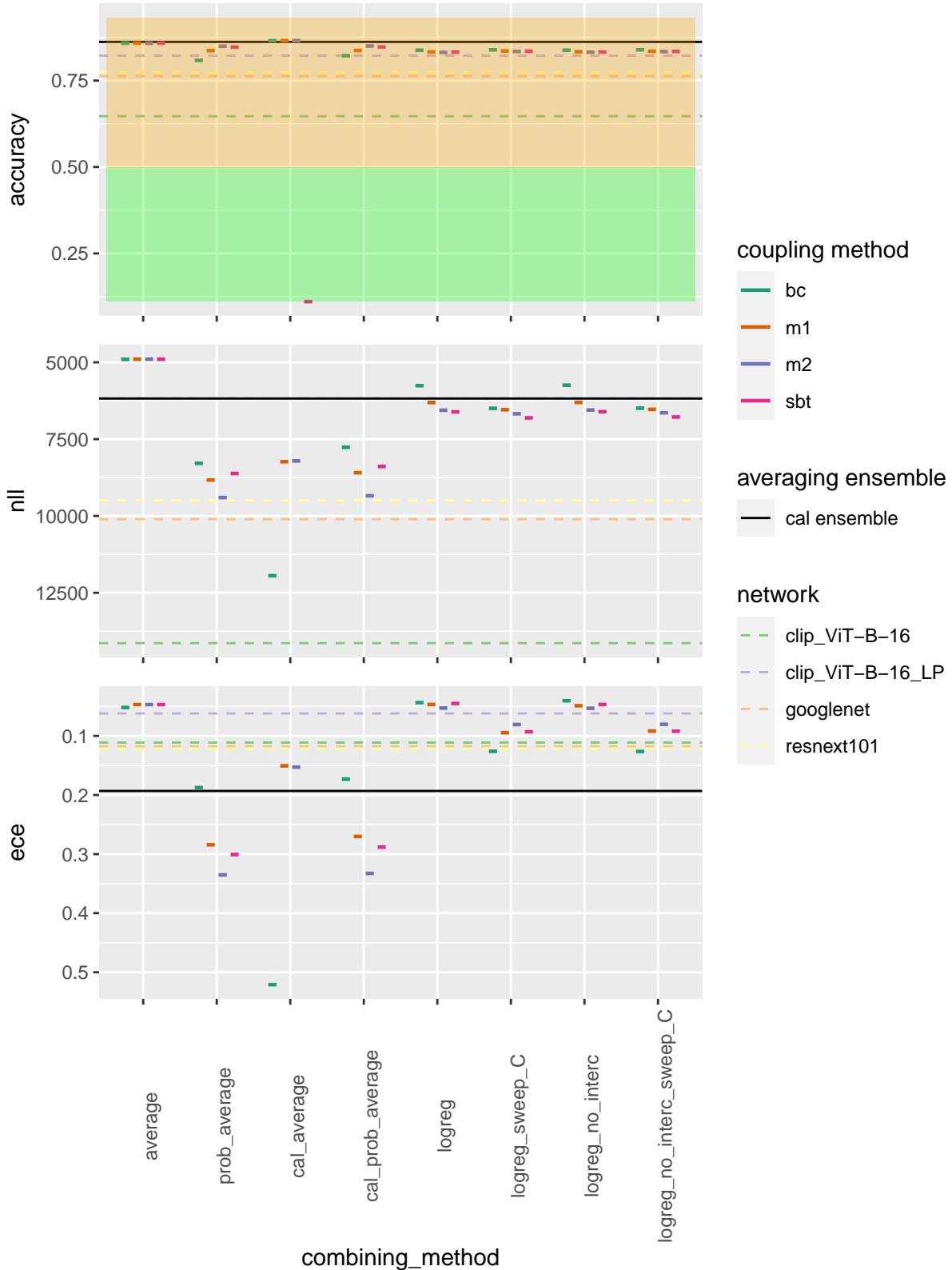
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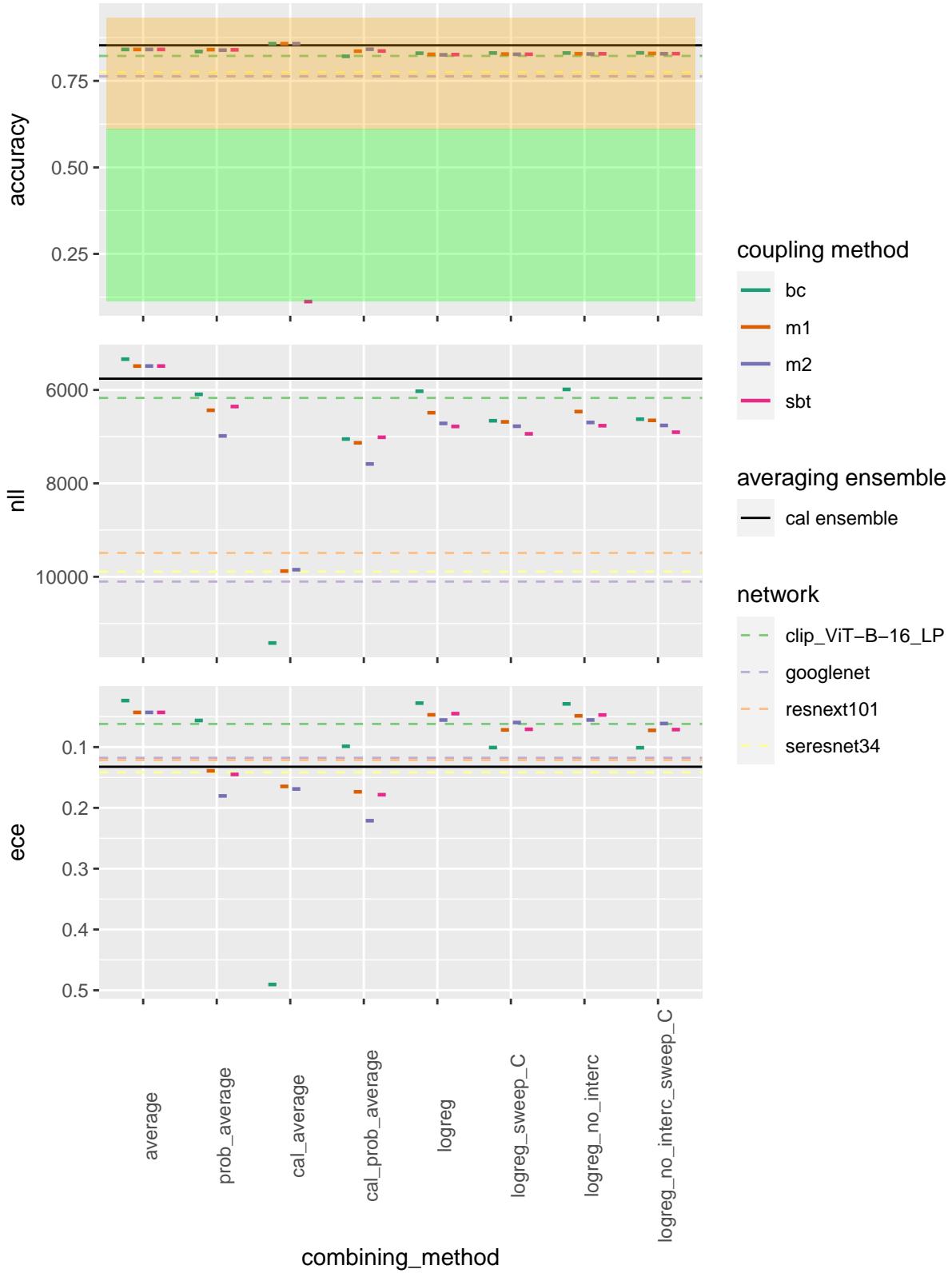
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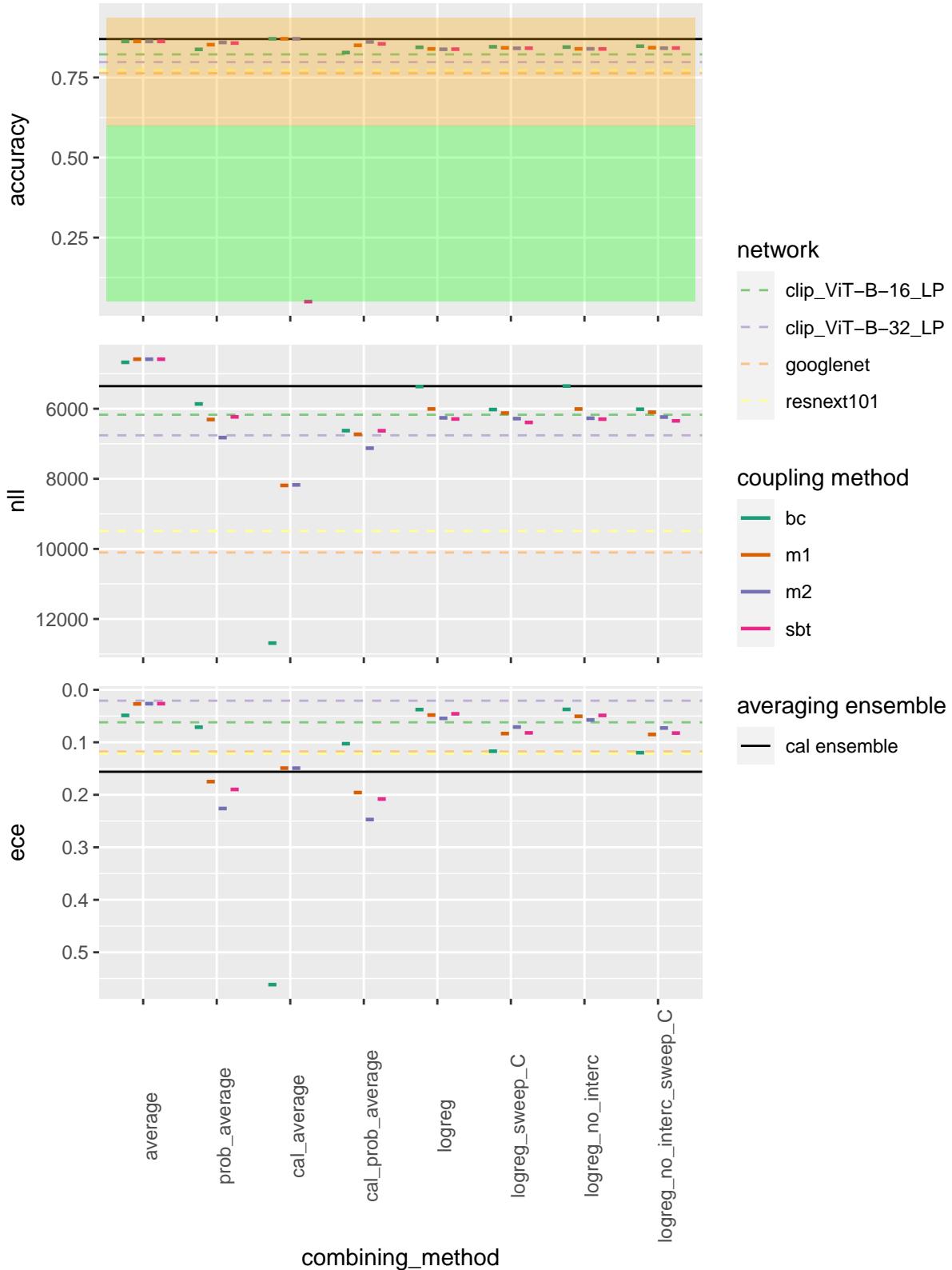
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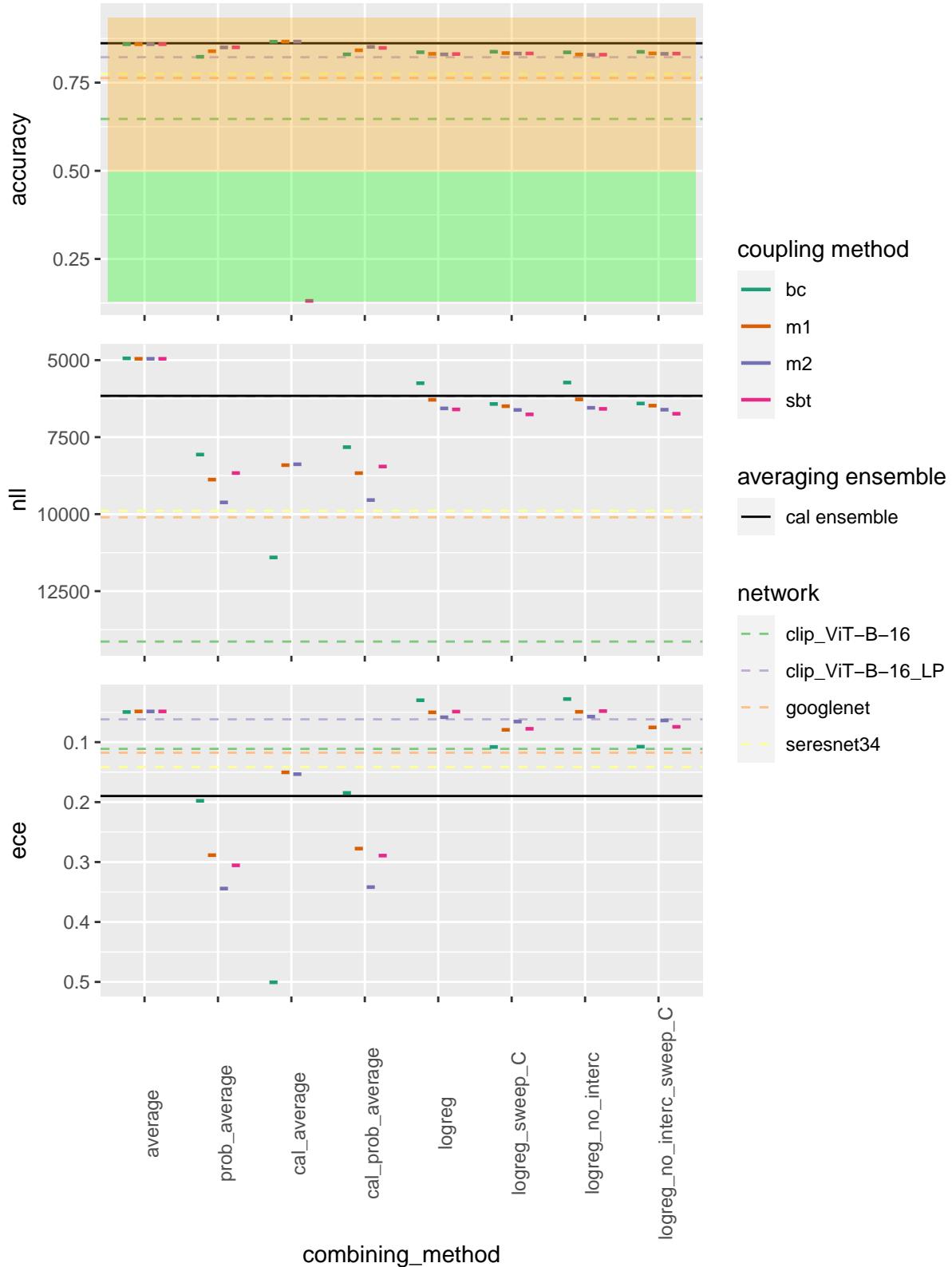
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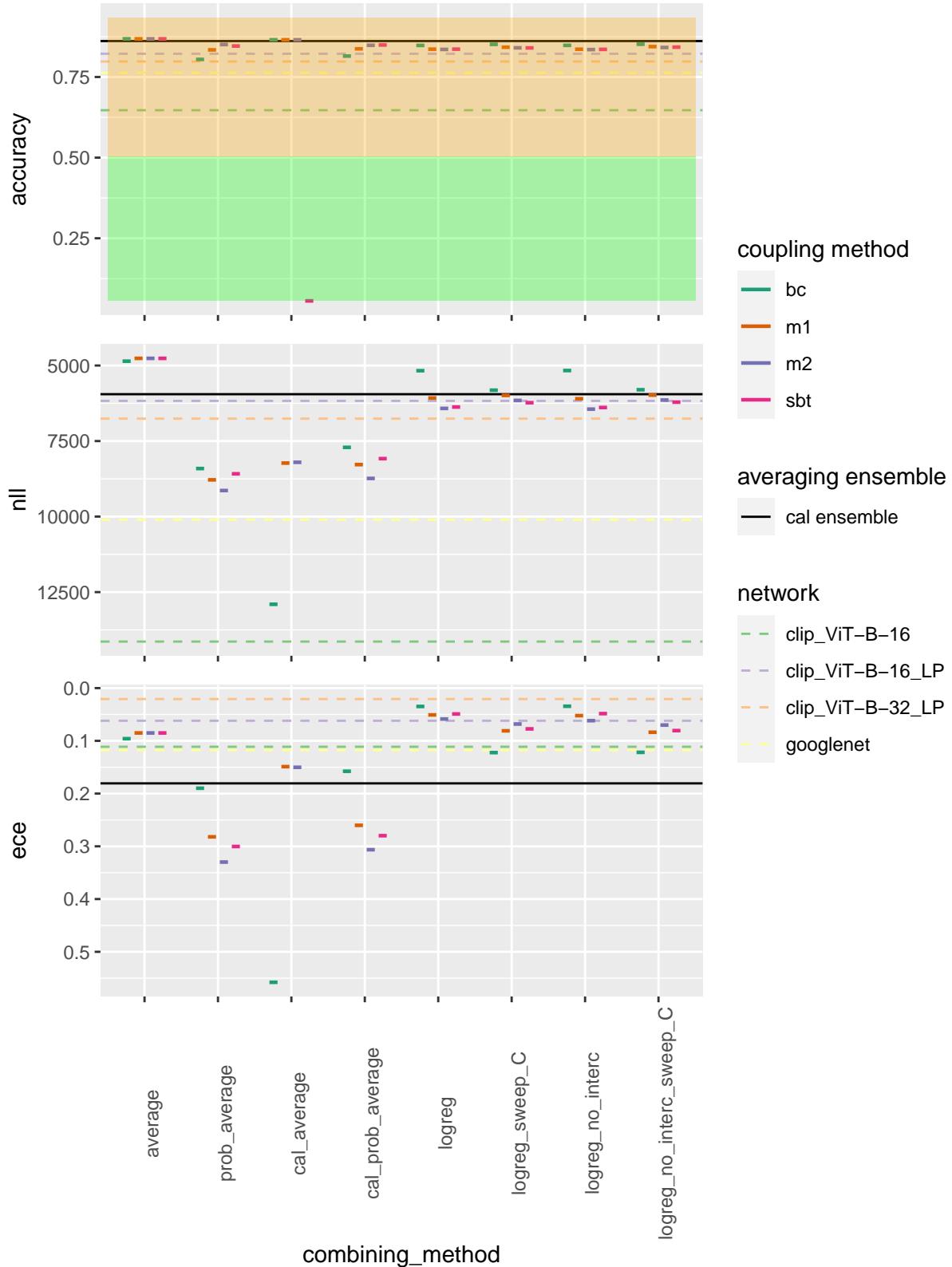
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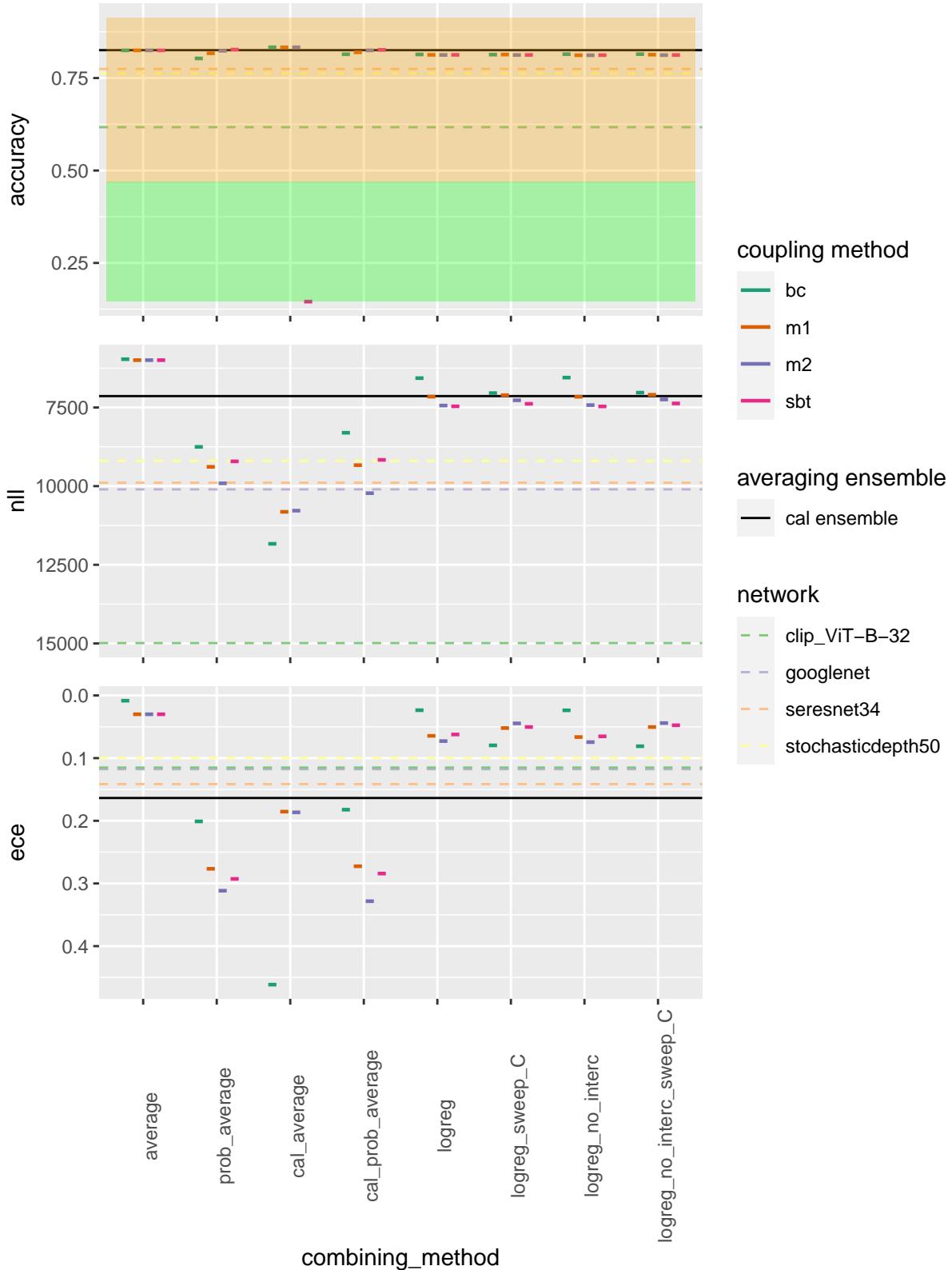
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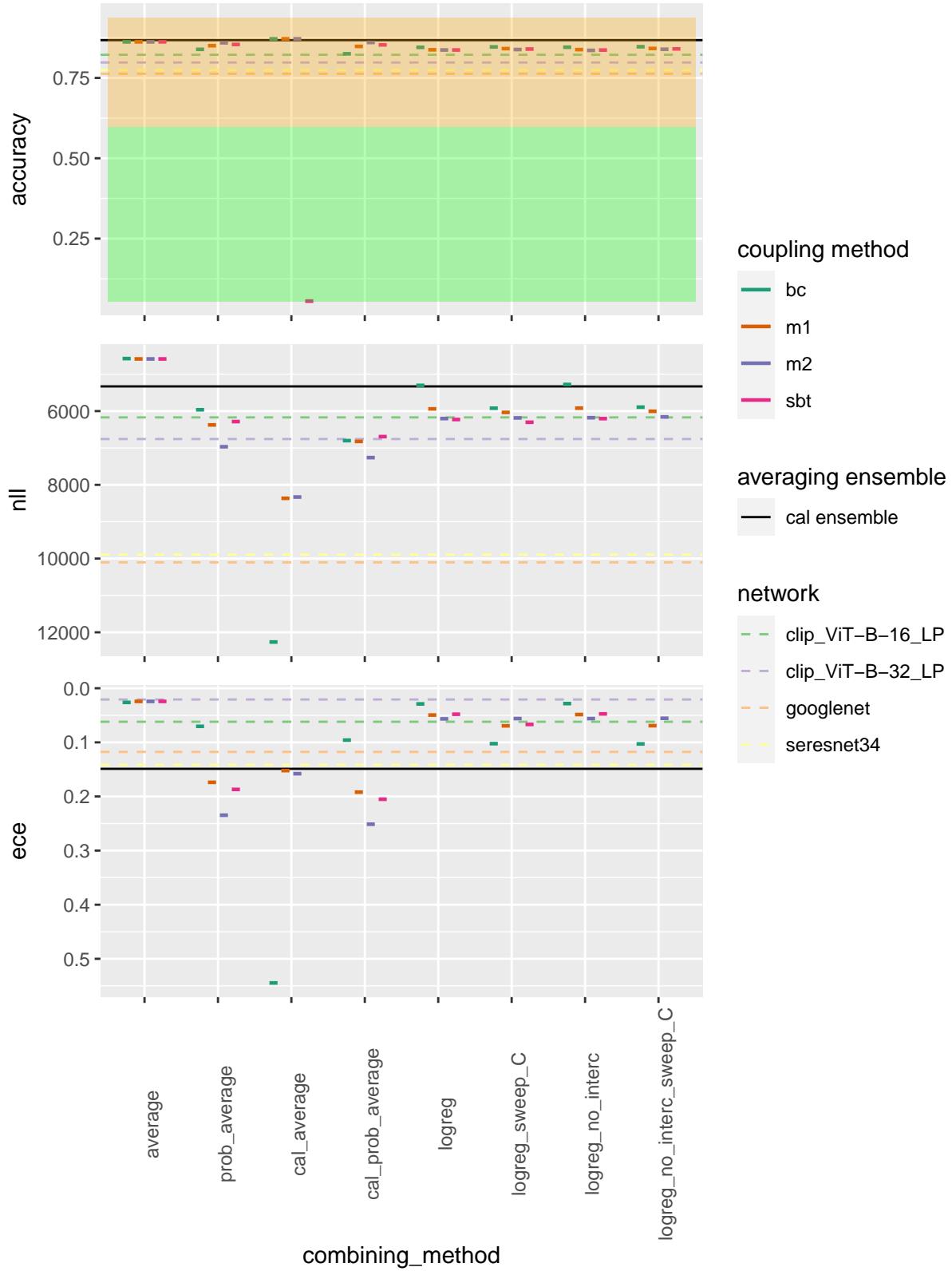
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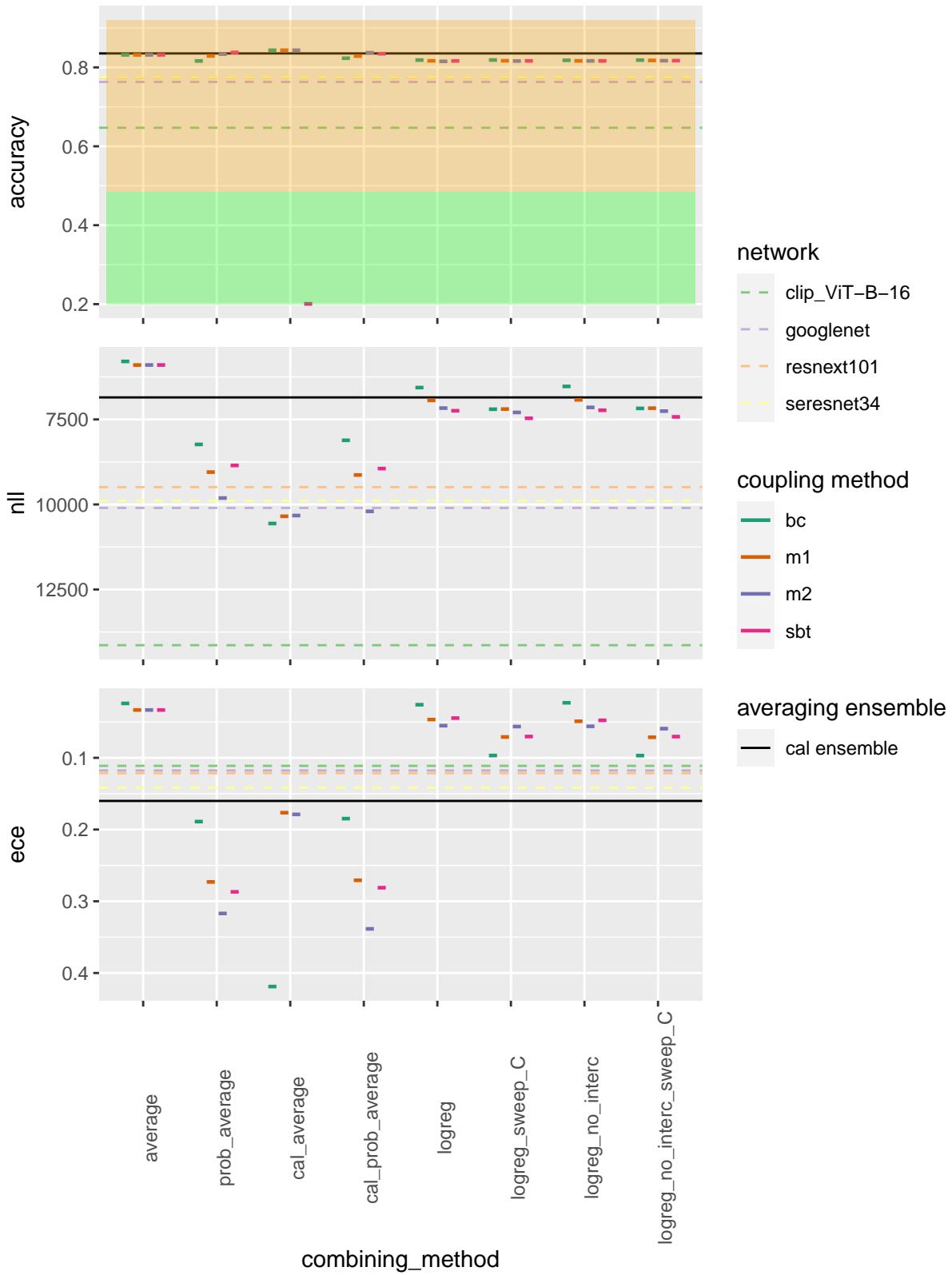
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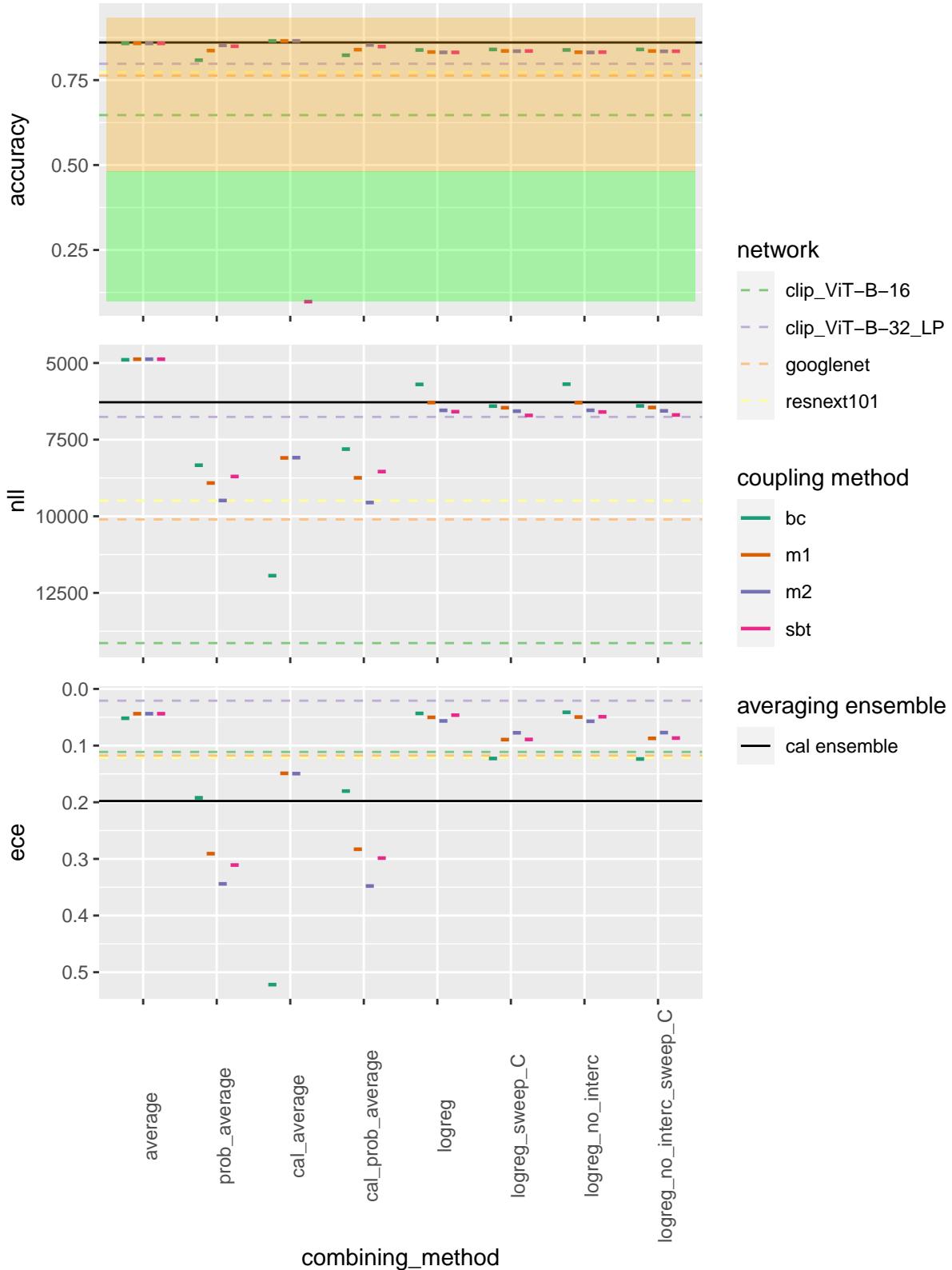
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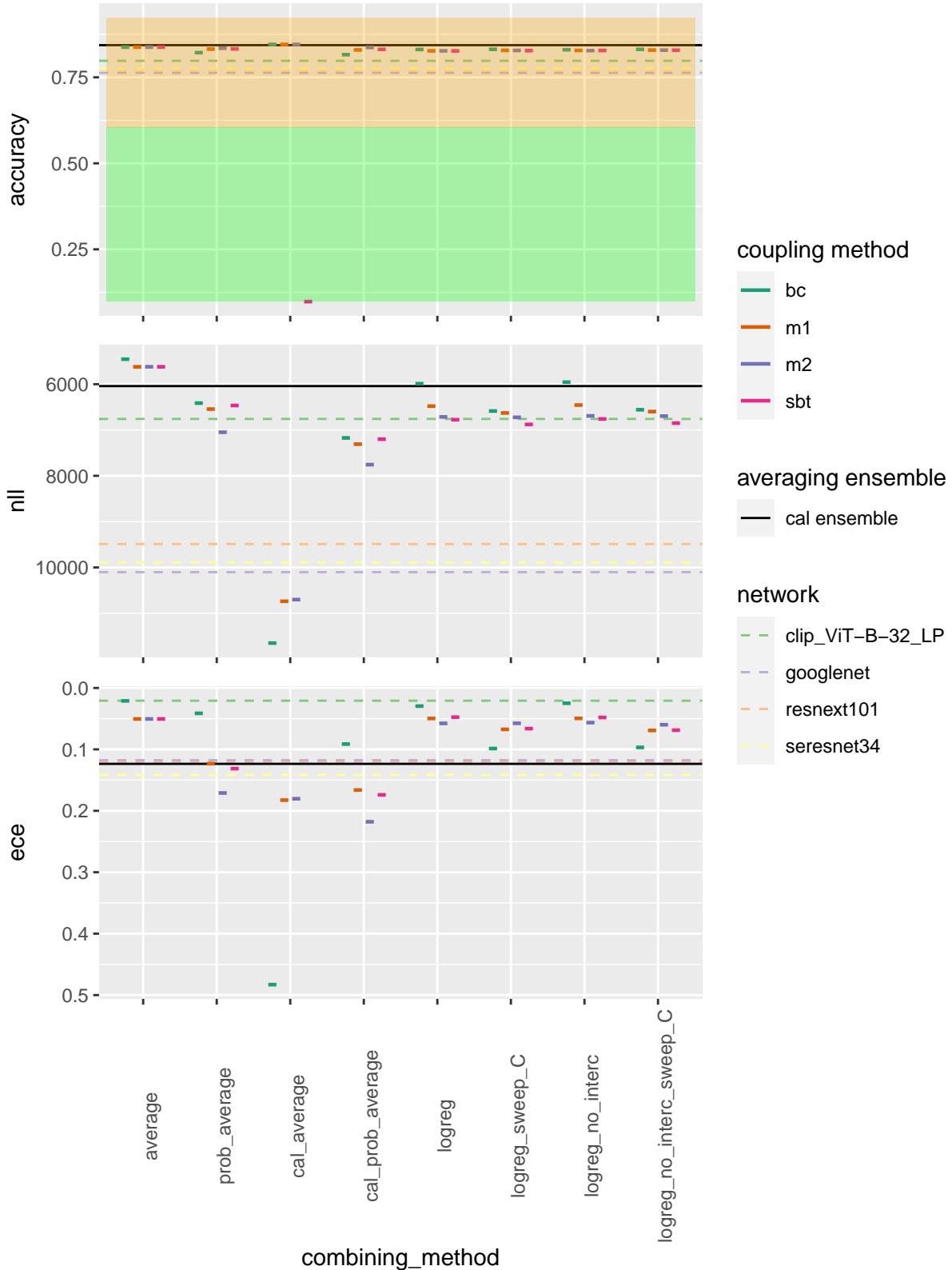
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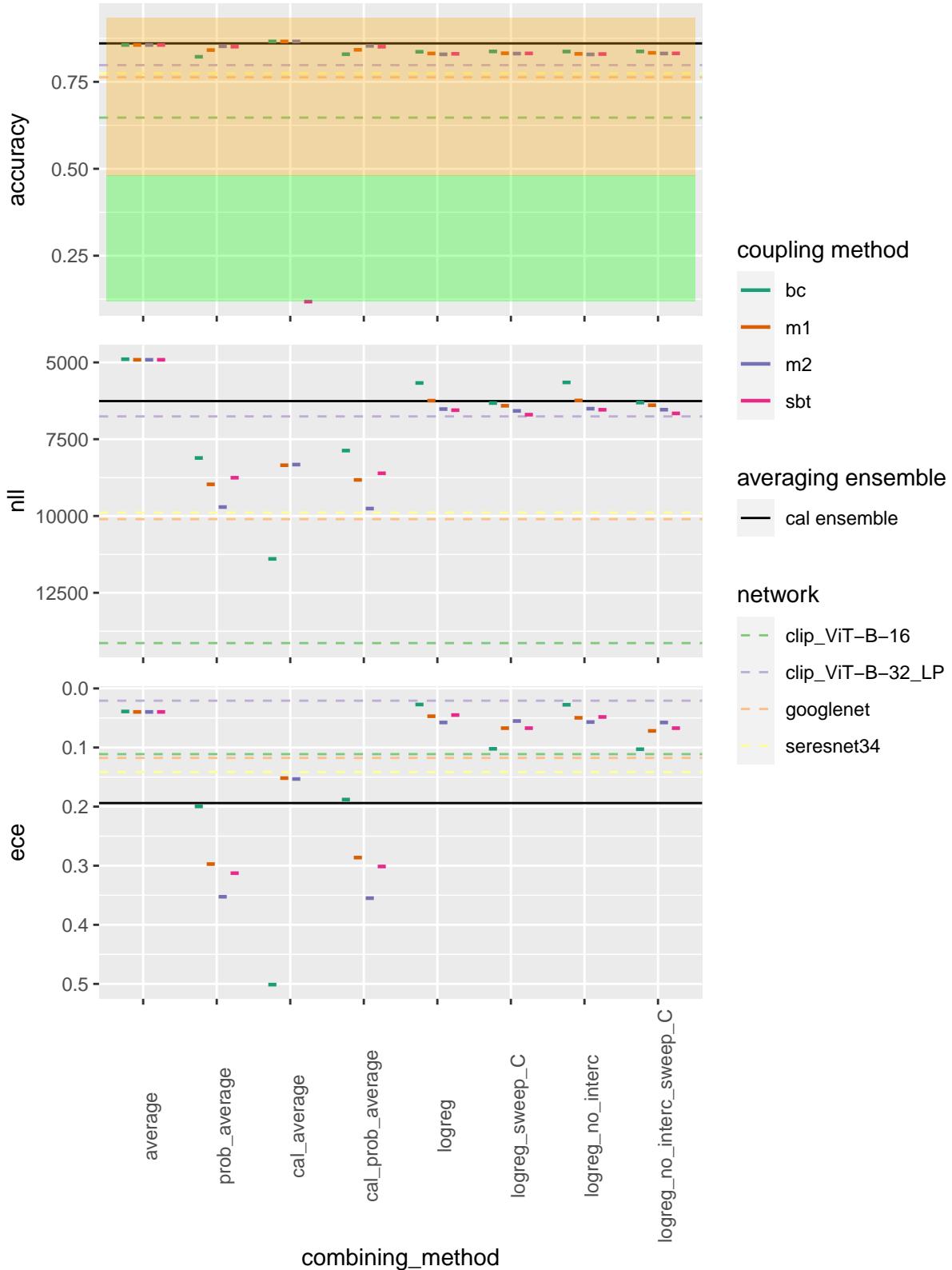
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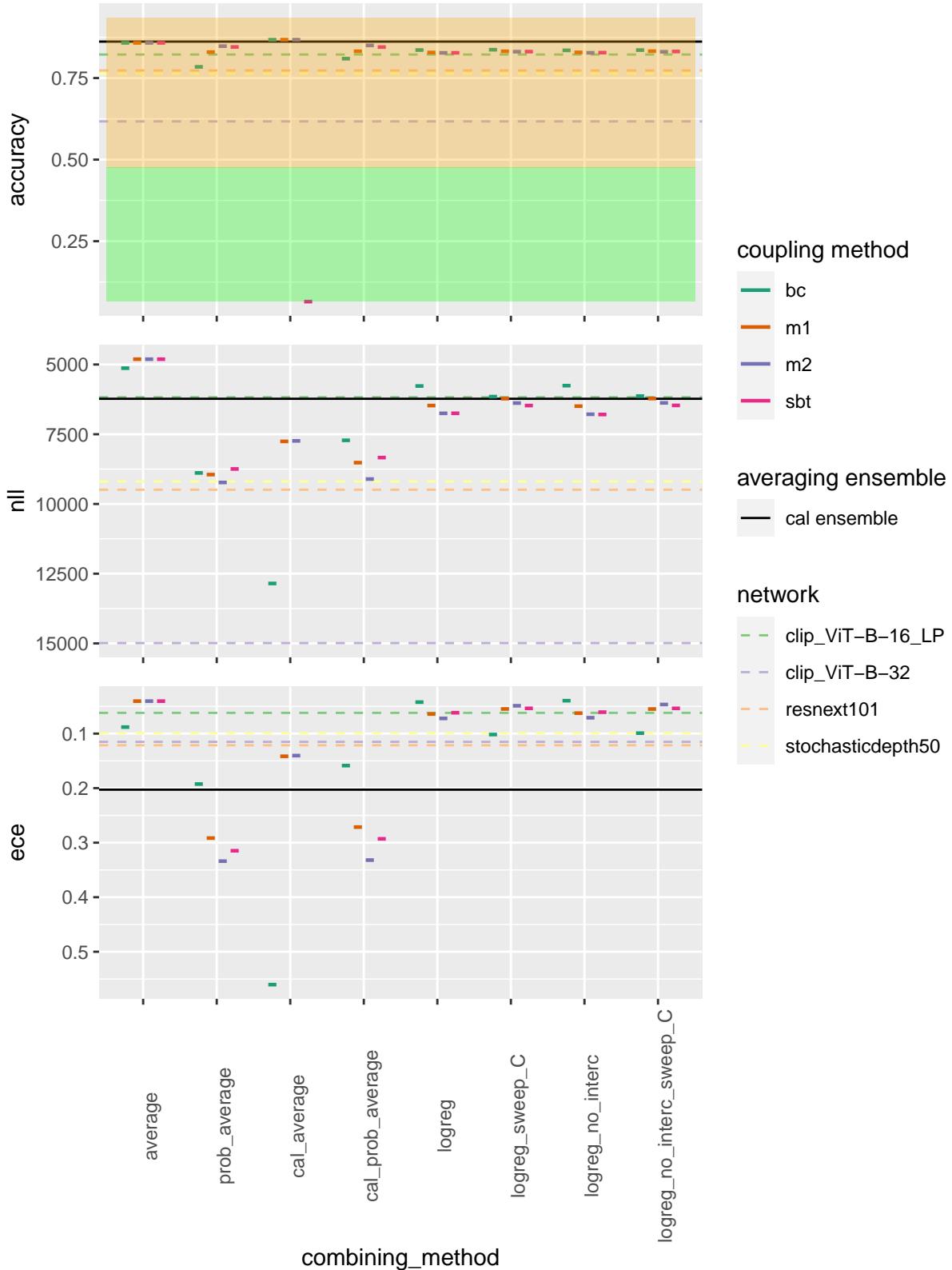
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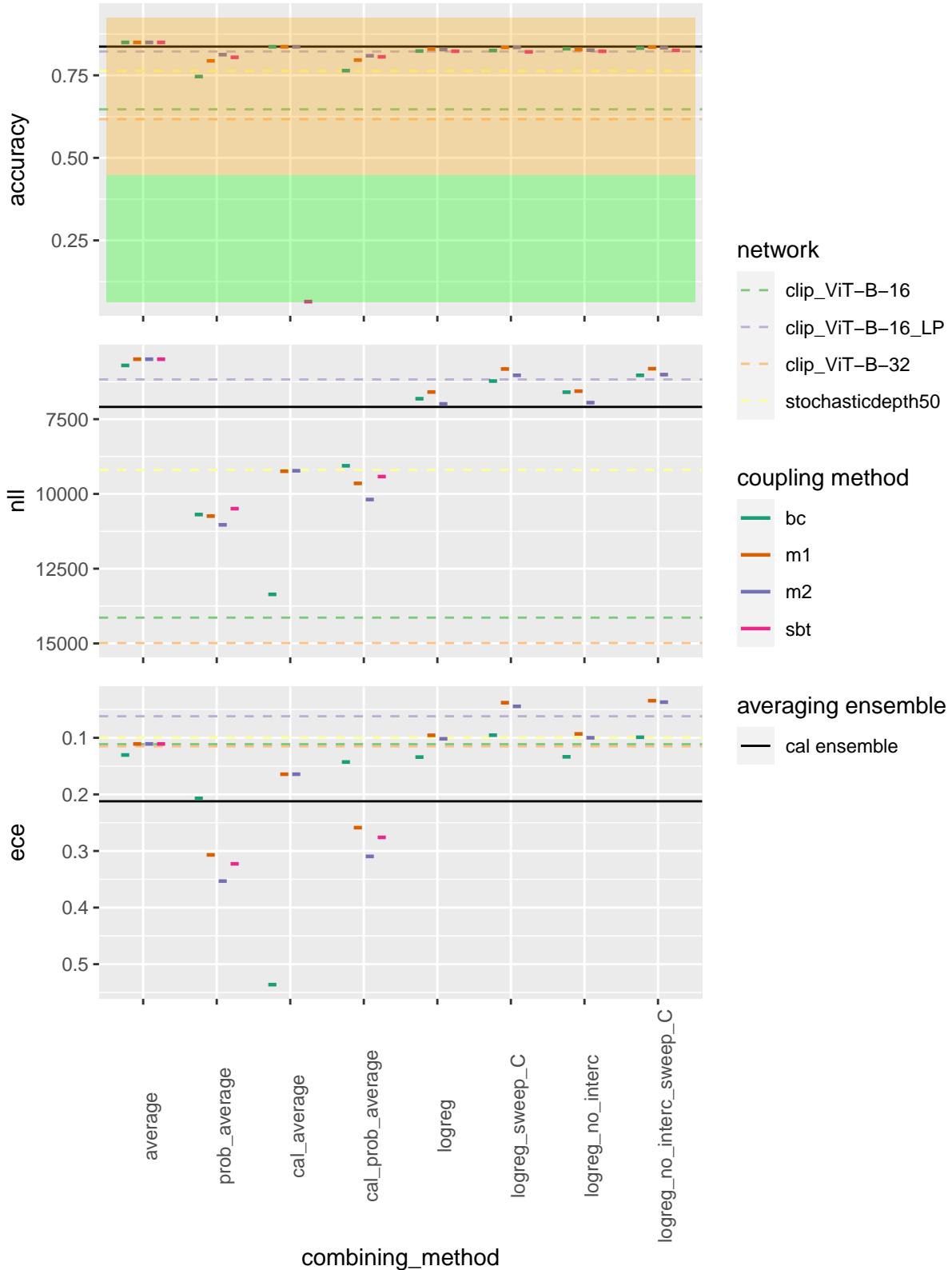
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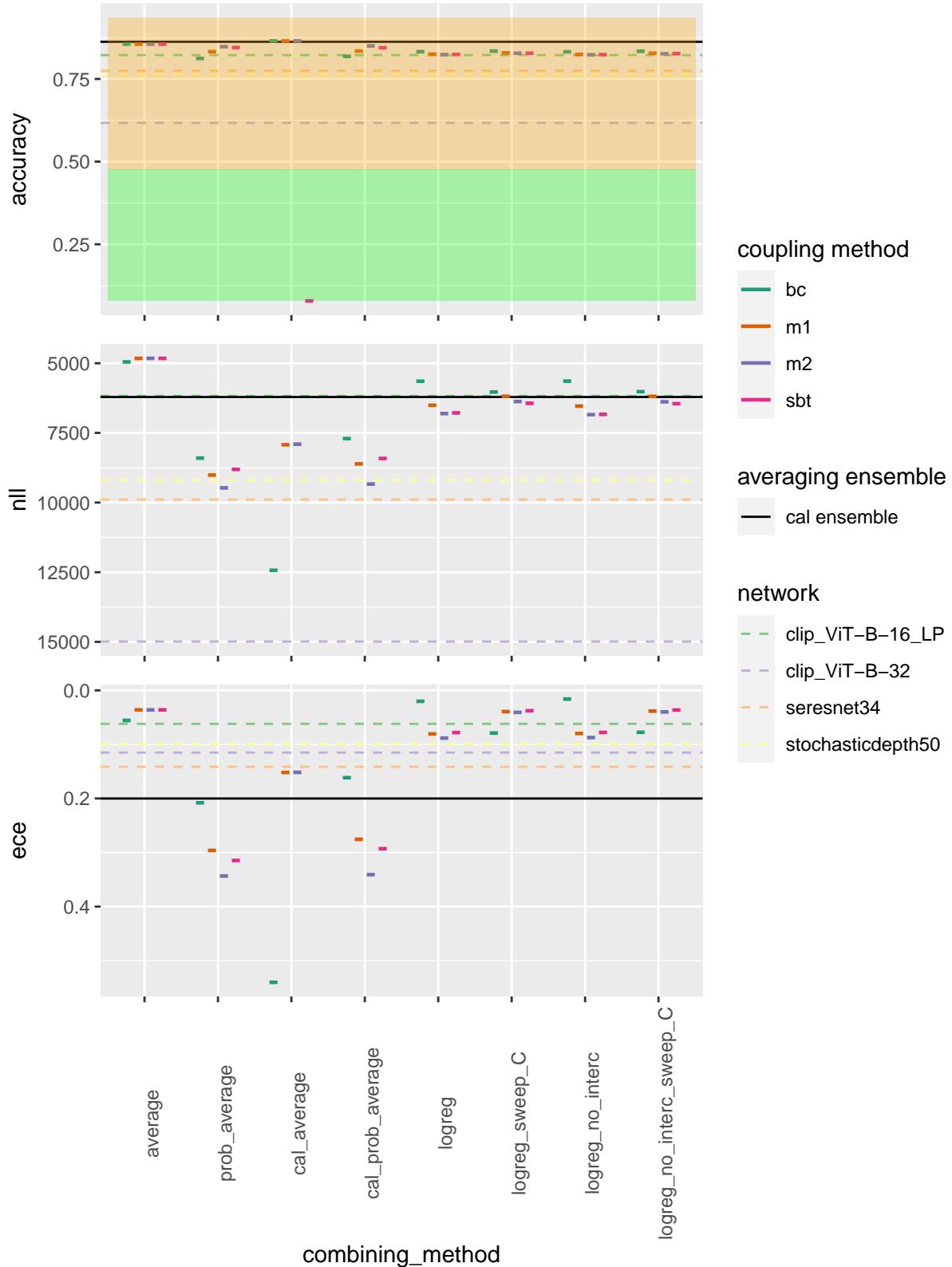
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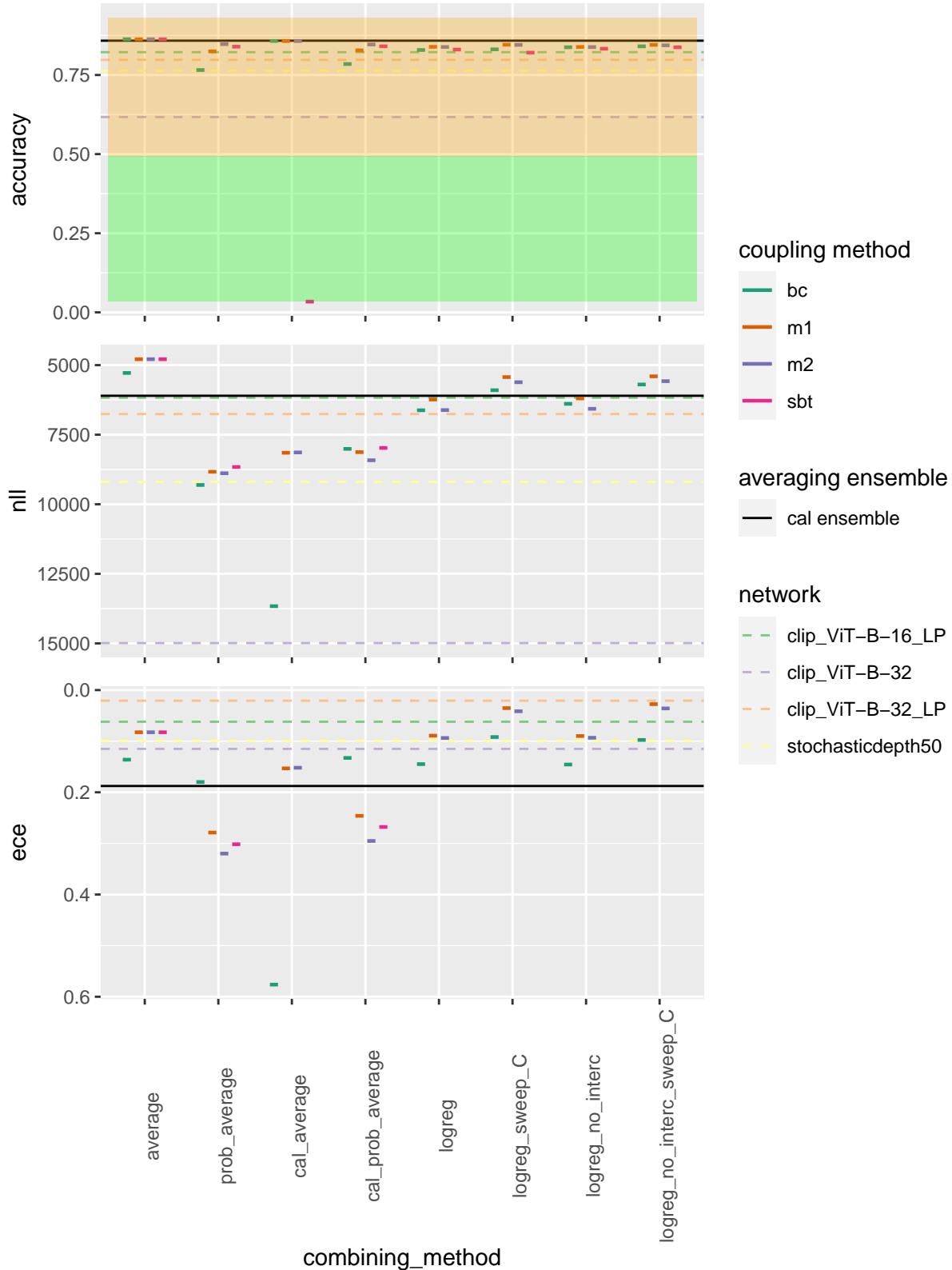
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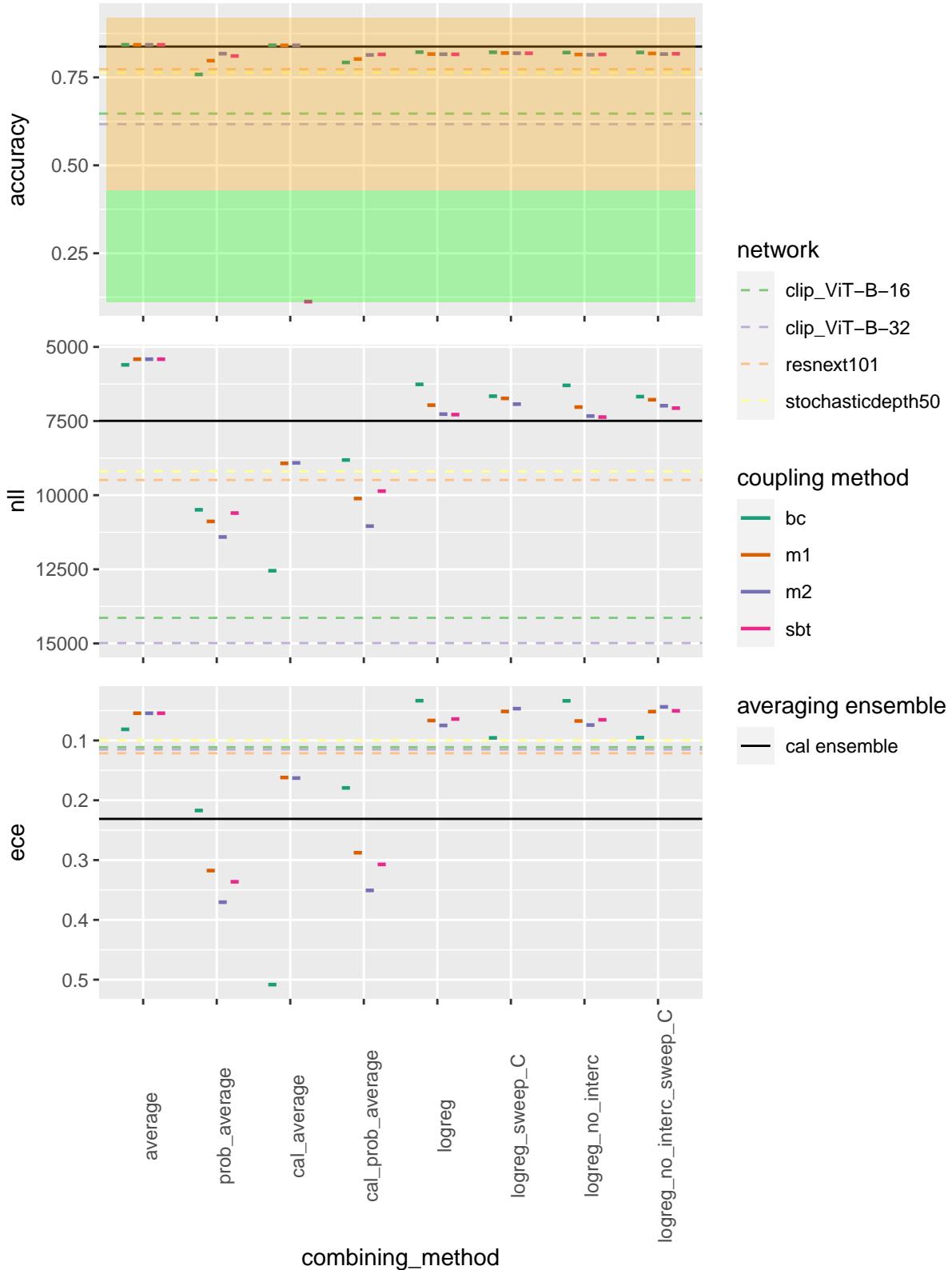
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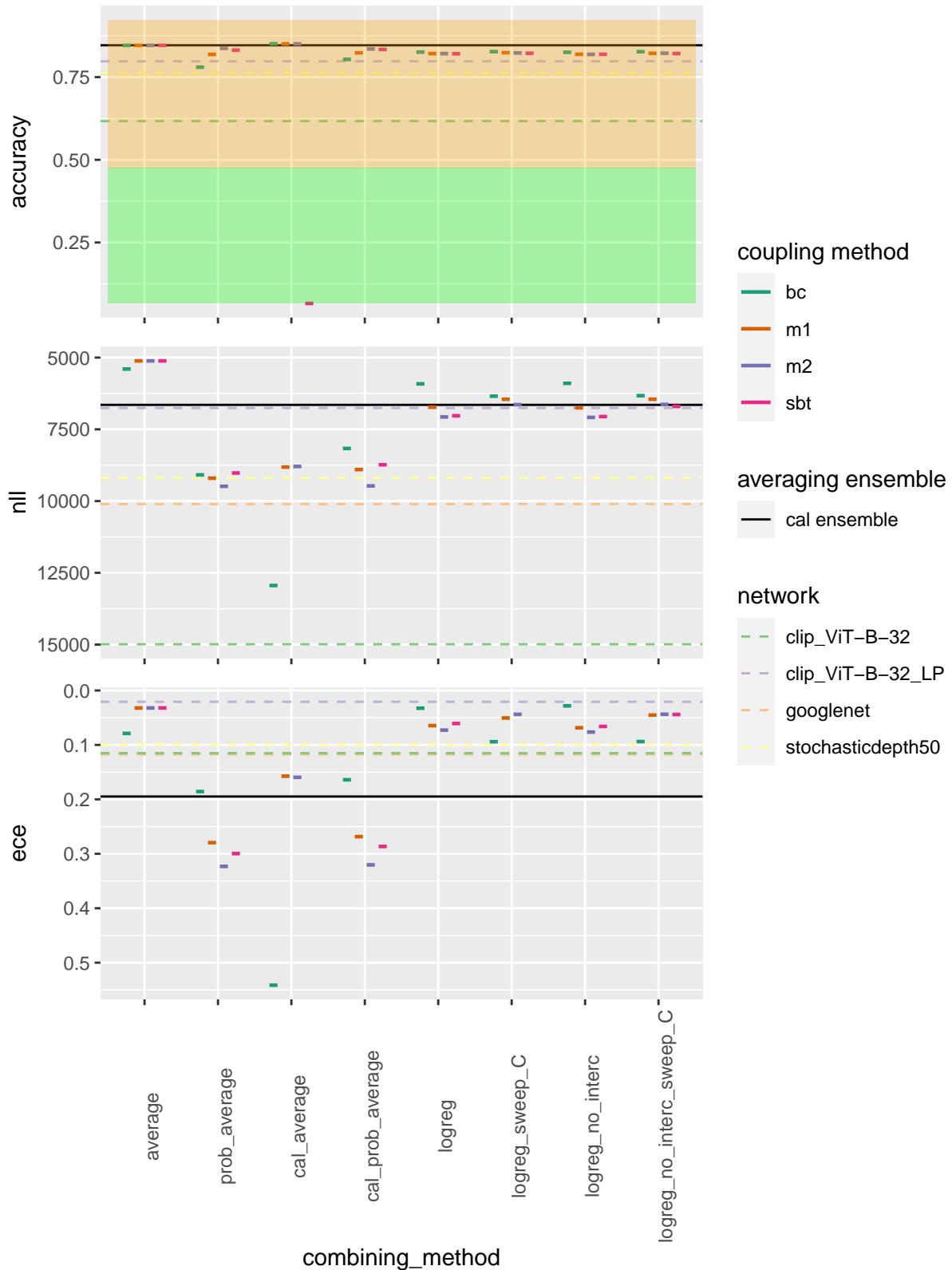
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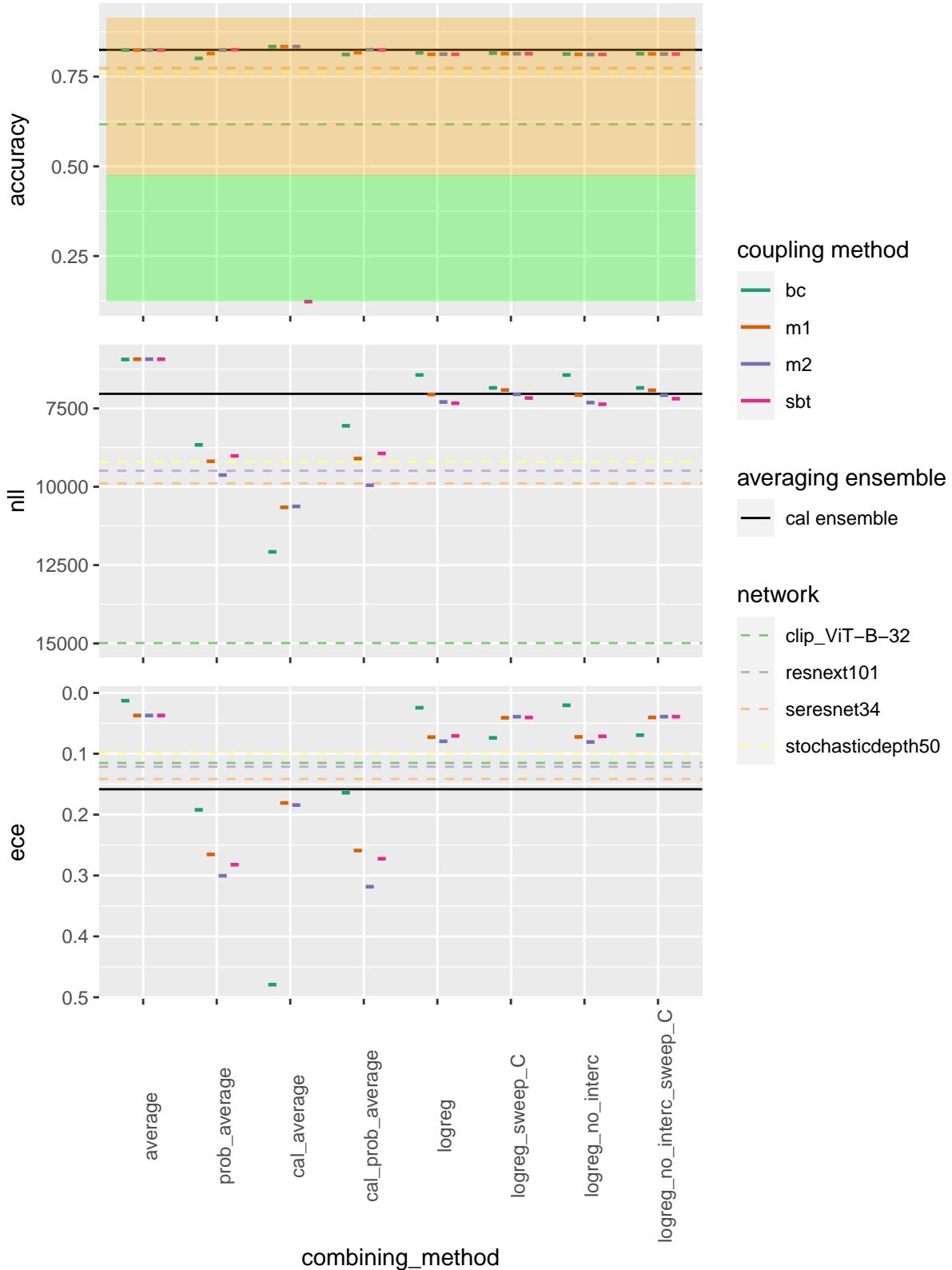
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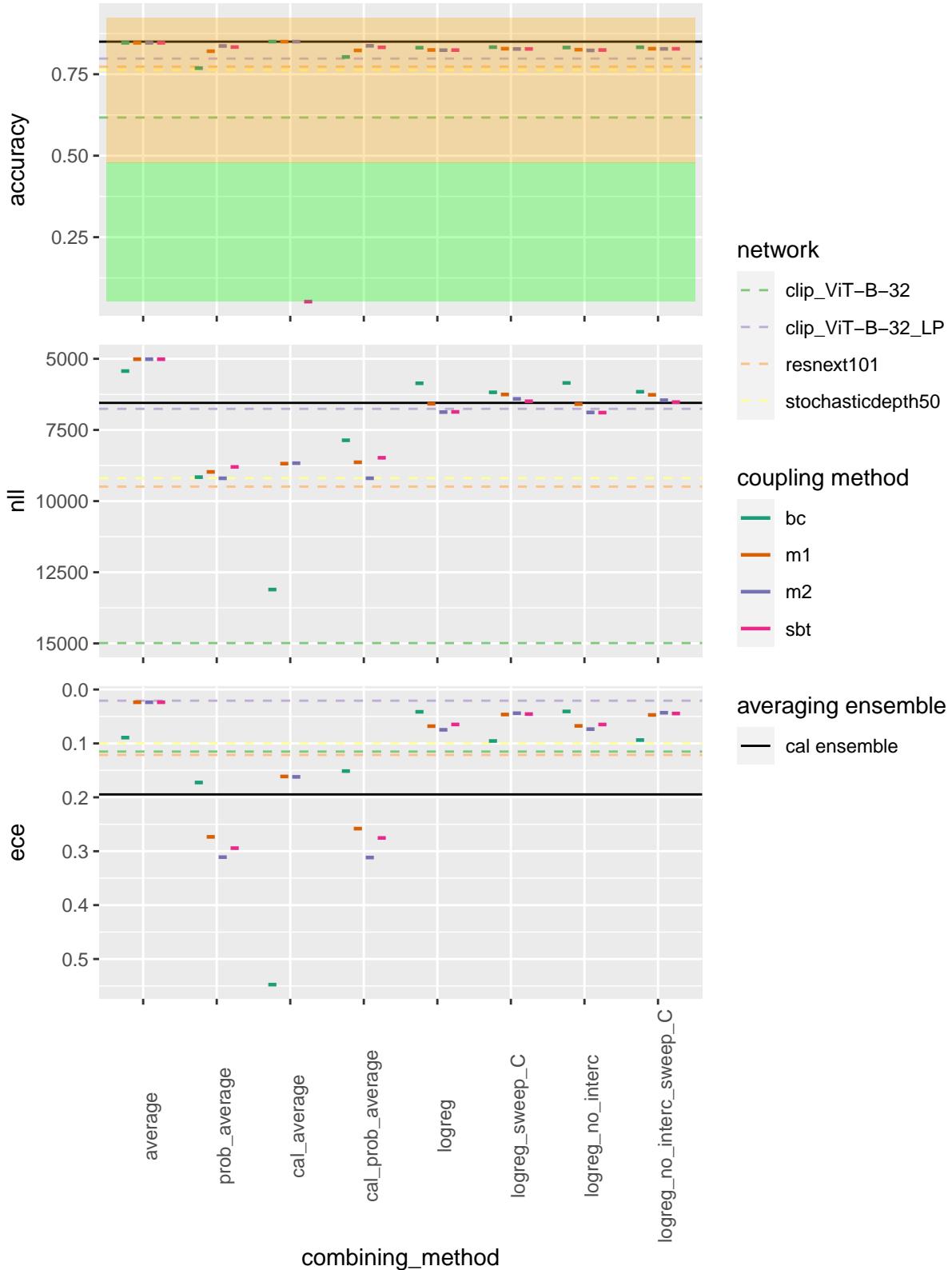
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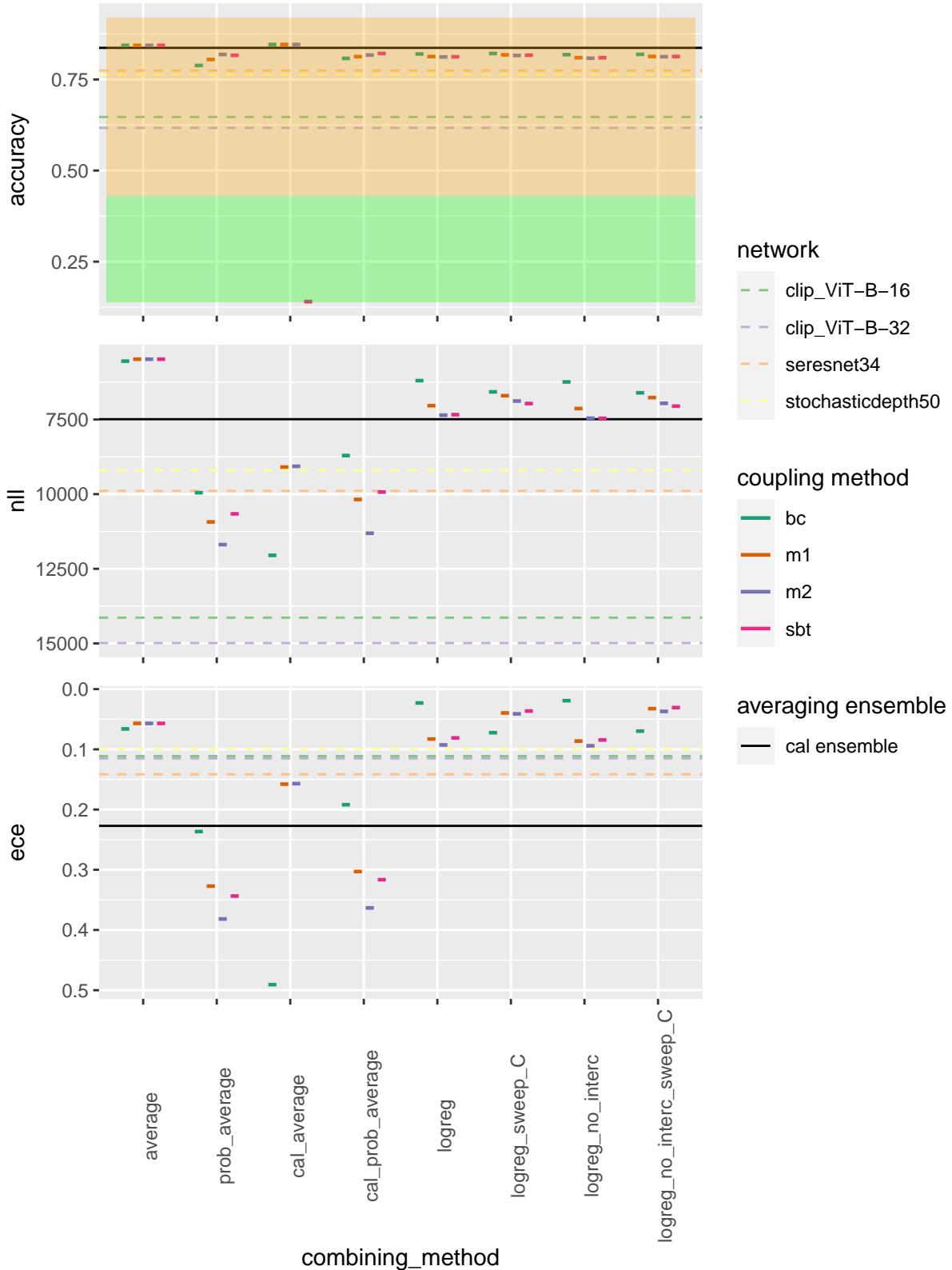
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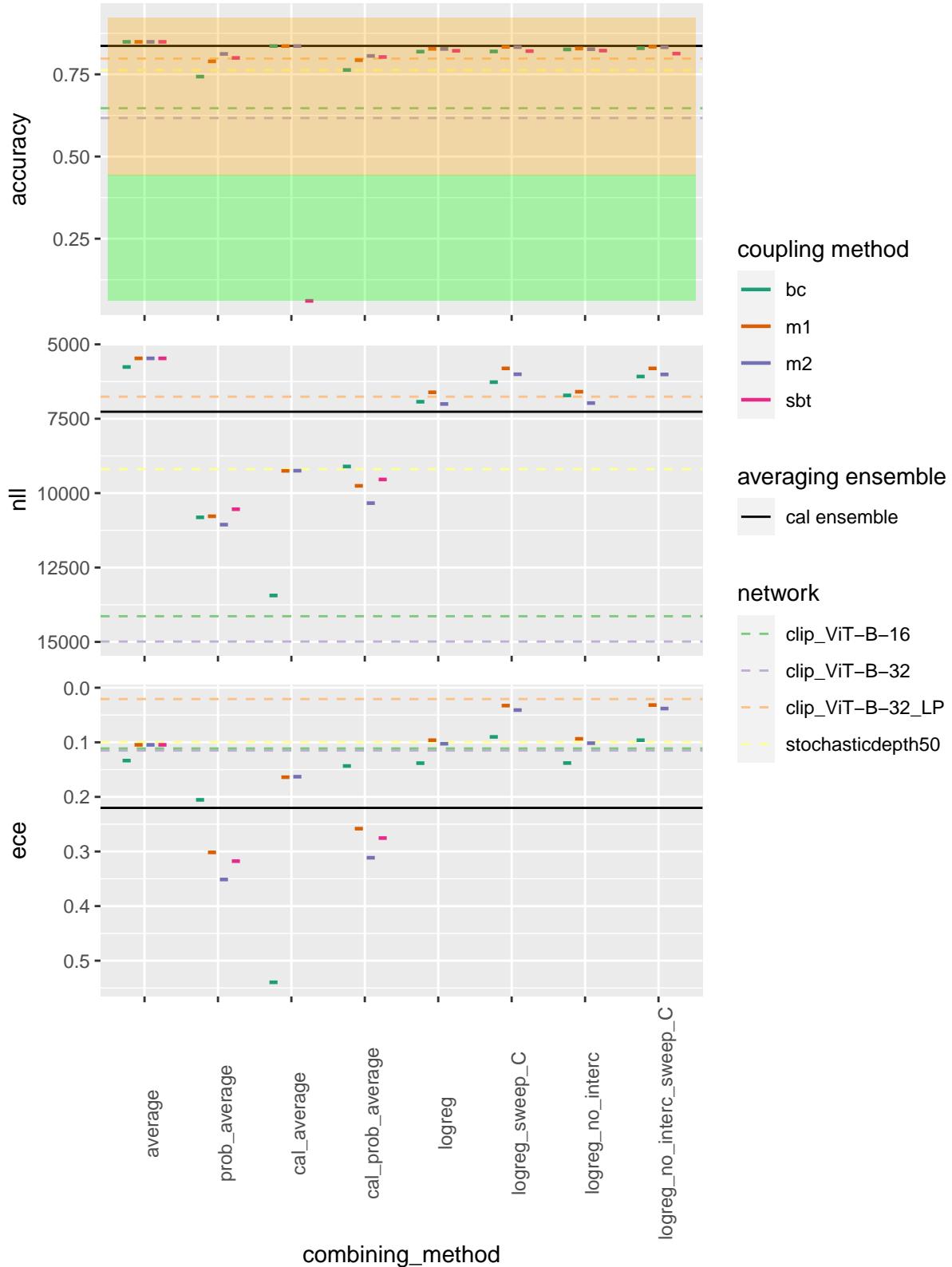
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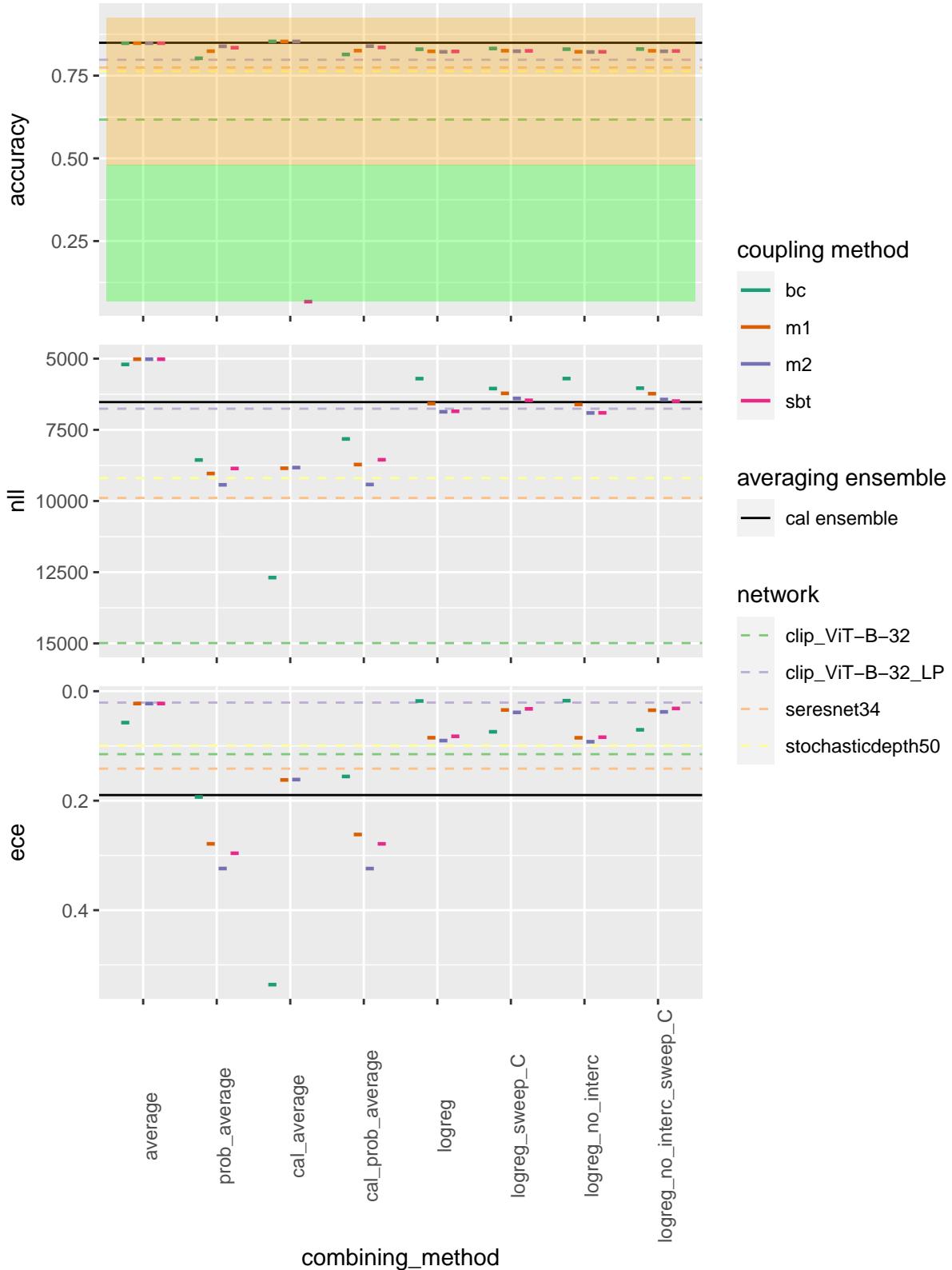
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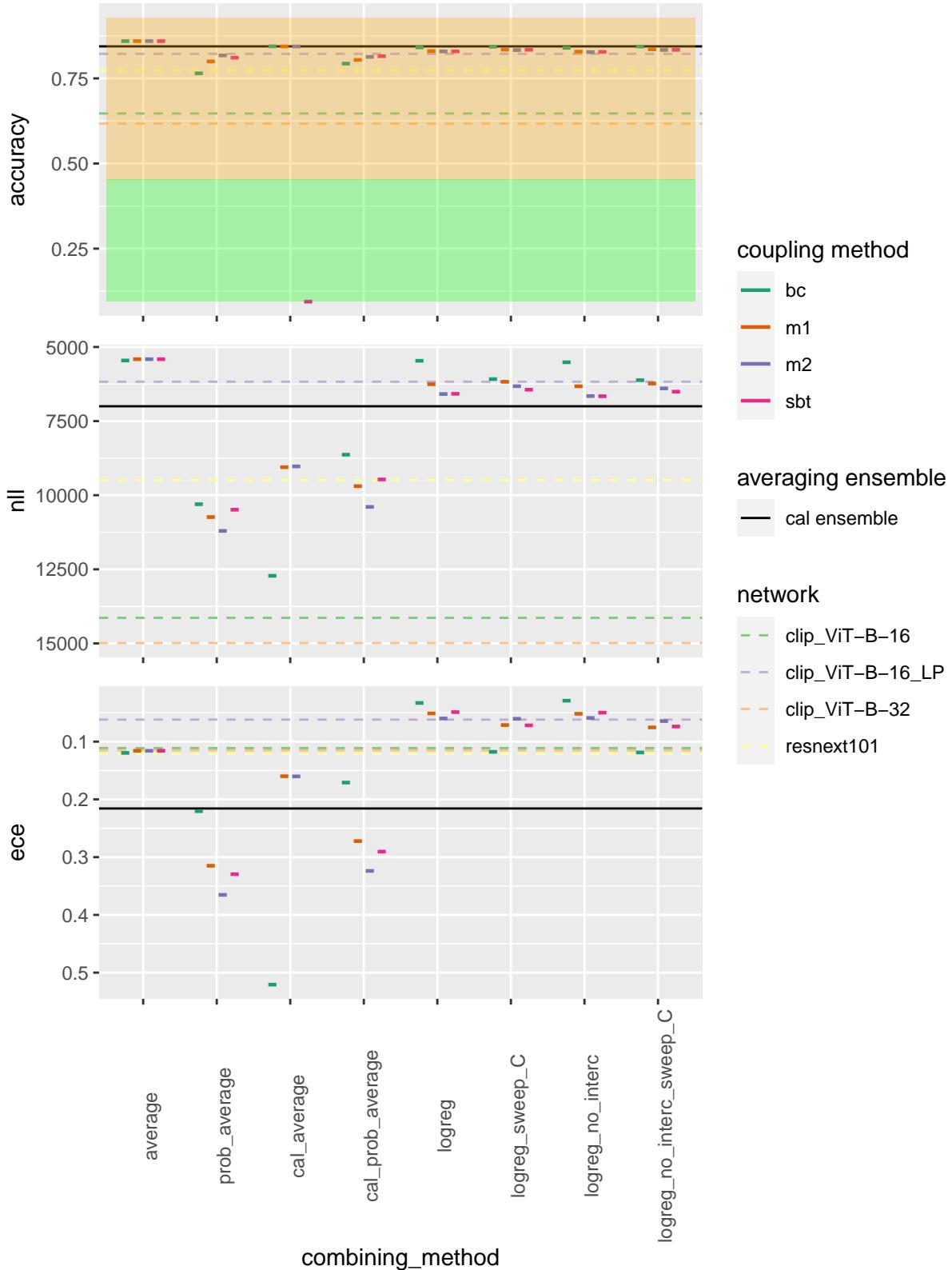
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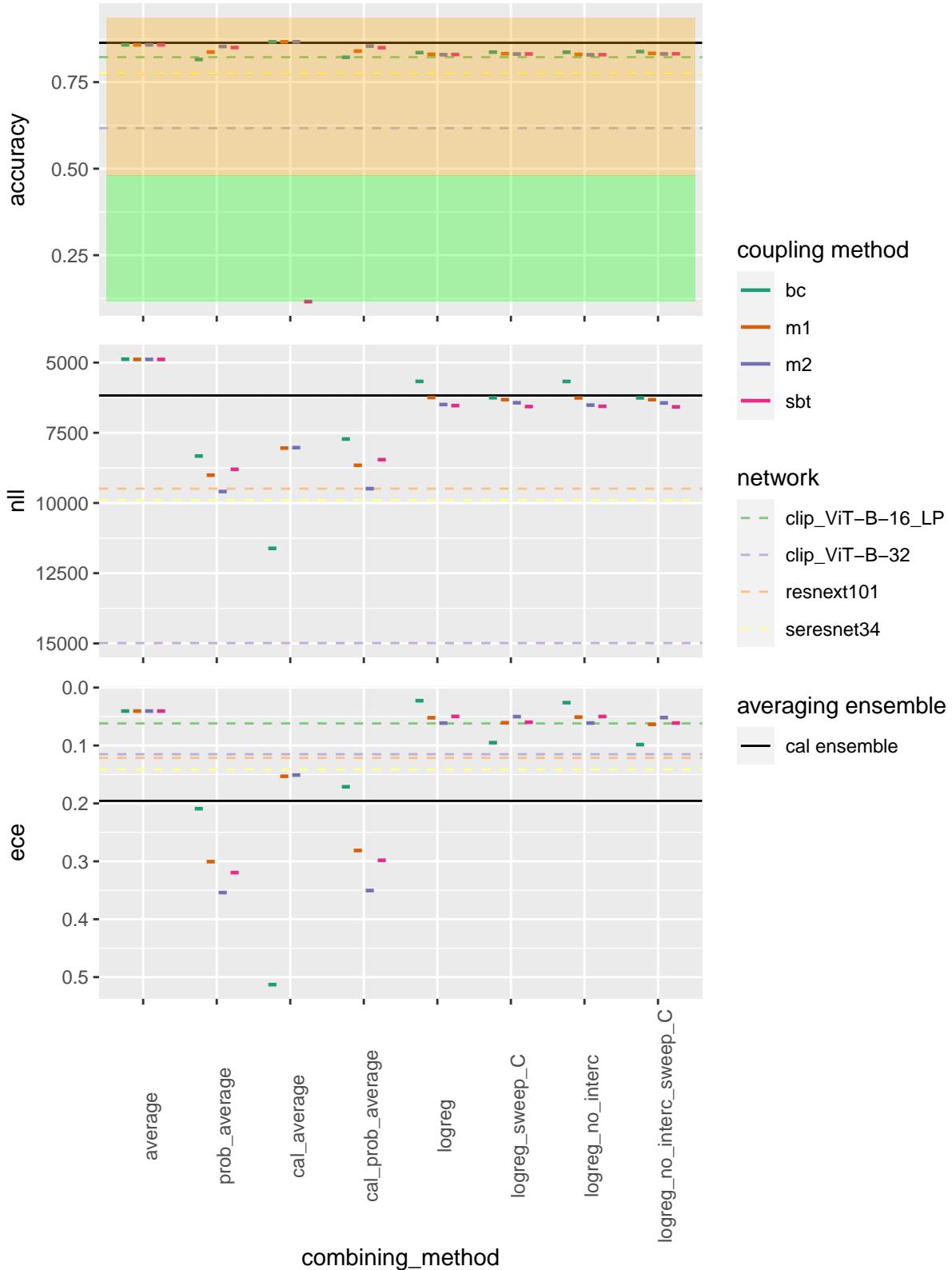
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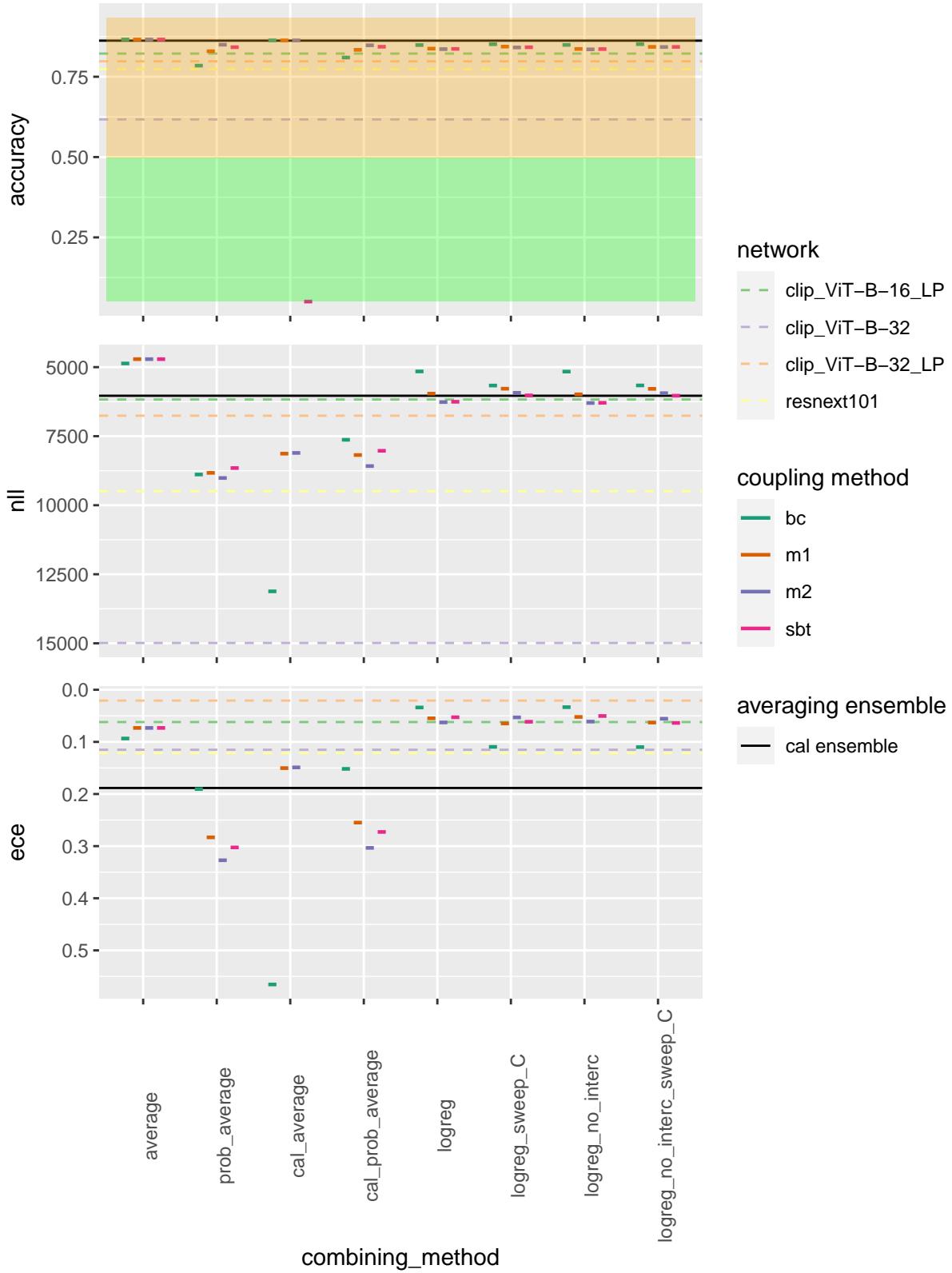
Ensemble metrics
Error inconsistency 0.475499987602234



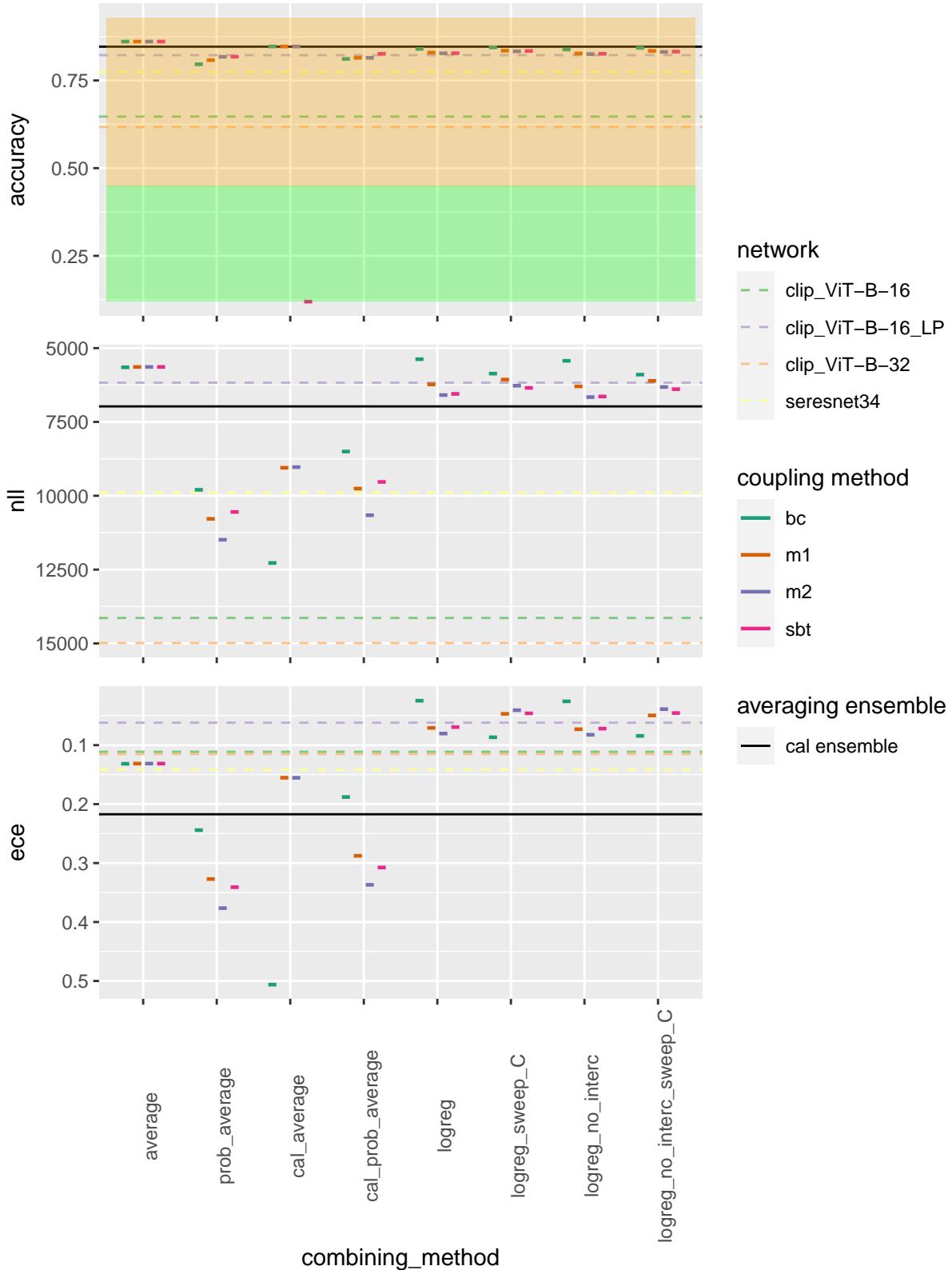
Ensemble metrics
Error inconsistency 0.455499976873398



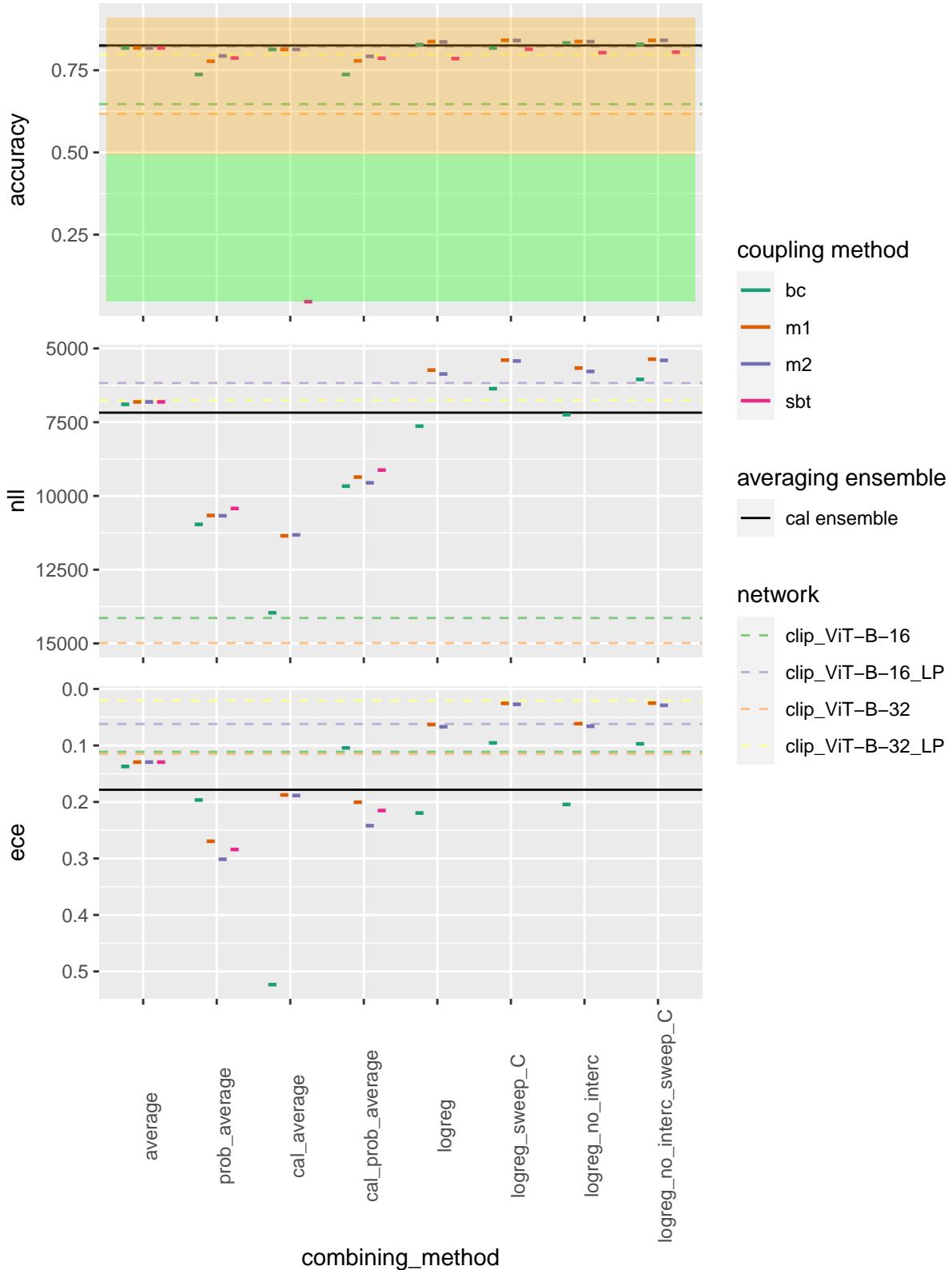
Ensemble metrics
Error inconsistency 0.436199992895126



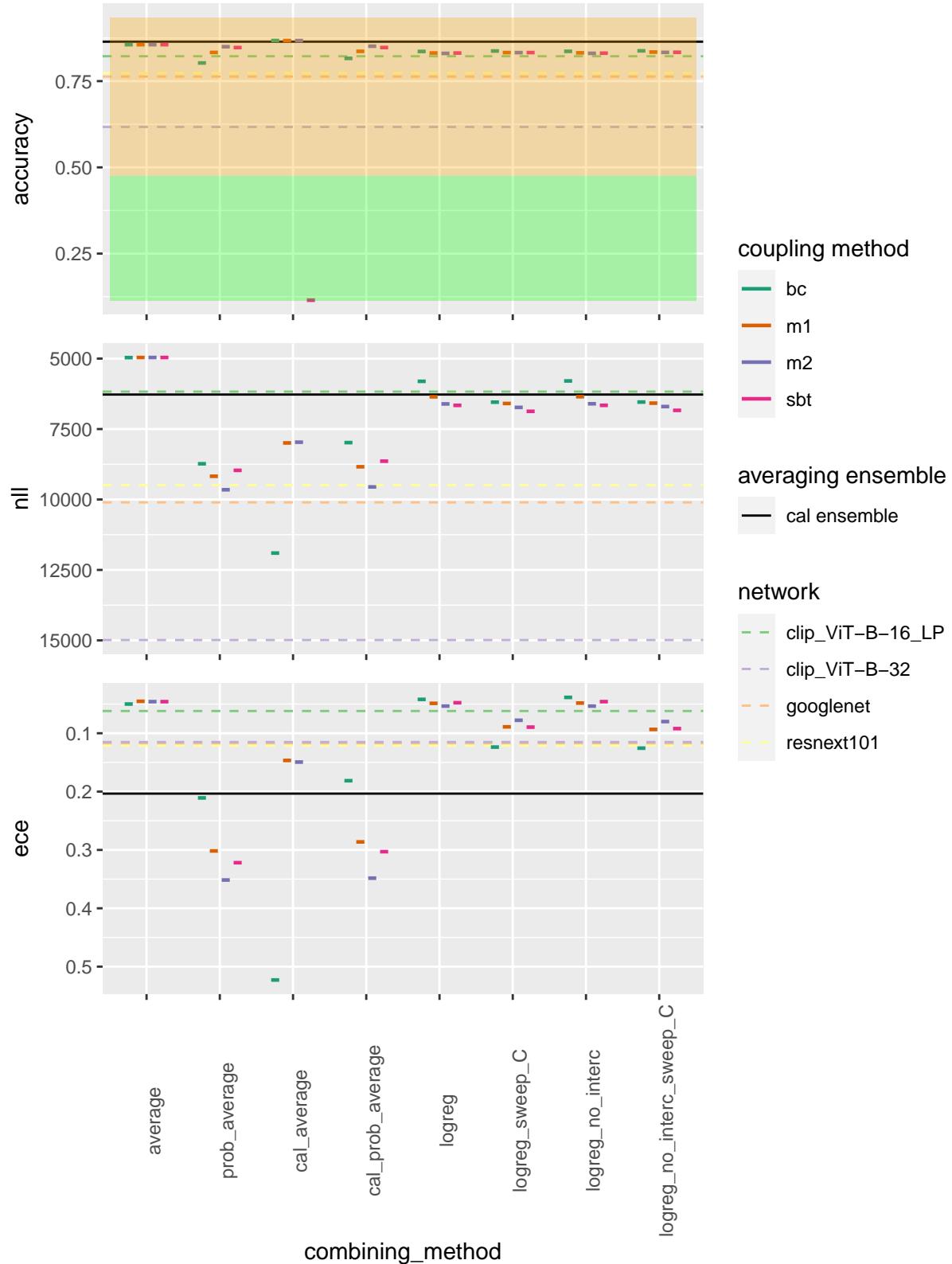
Ensemble metrics
Error inconsistency 0.479099988937378



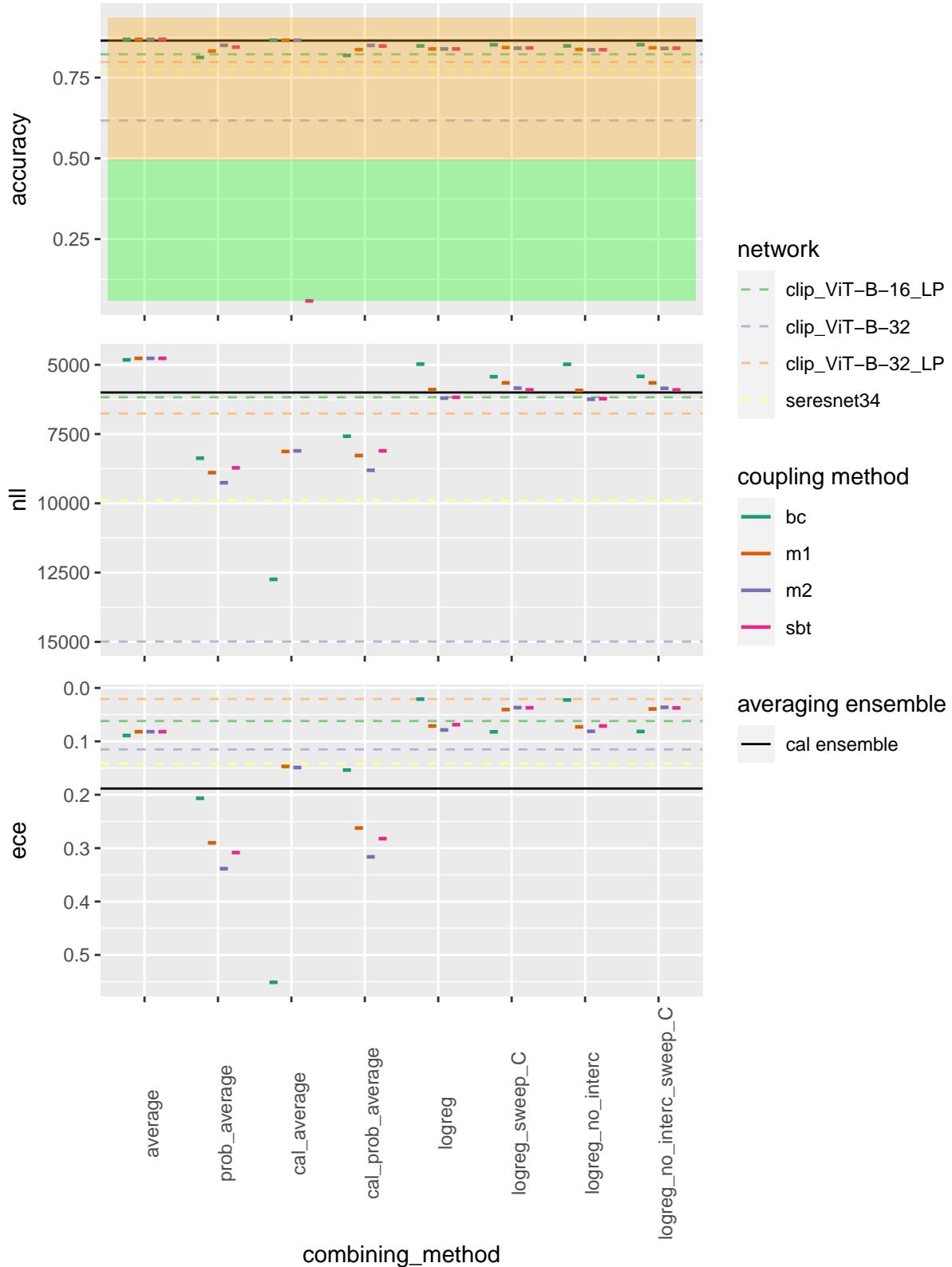
Ensemble metrics
Error inconsistency 0.416699975728989



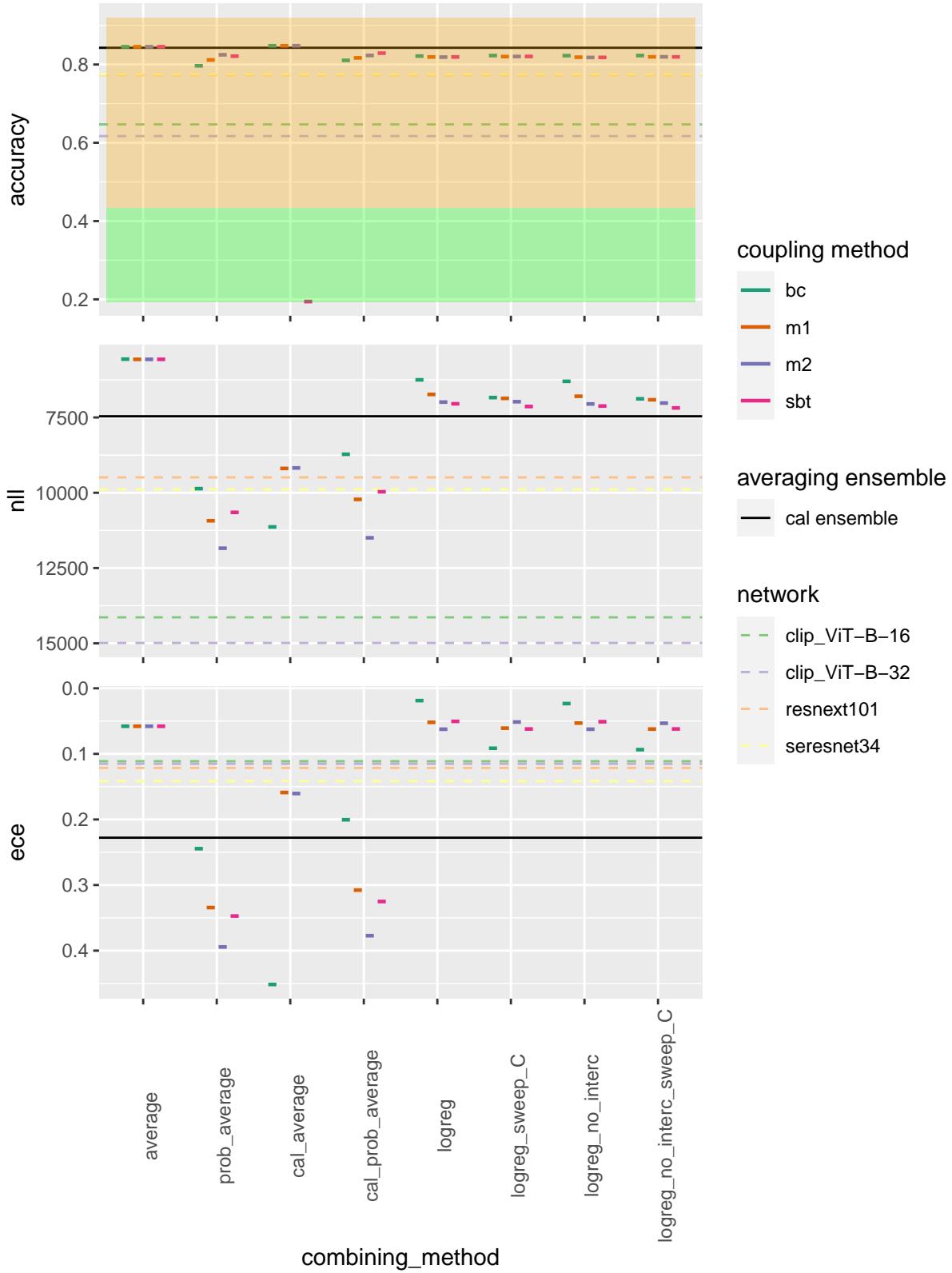
Ensemble metrics
Error inconsistency 0.458999991416931



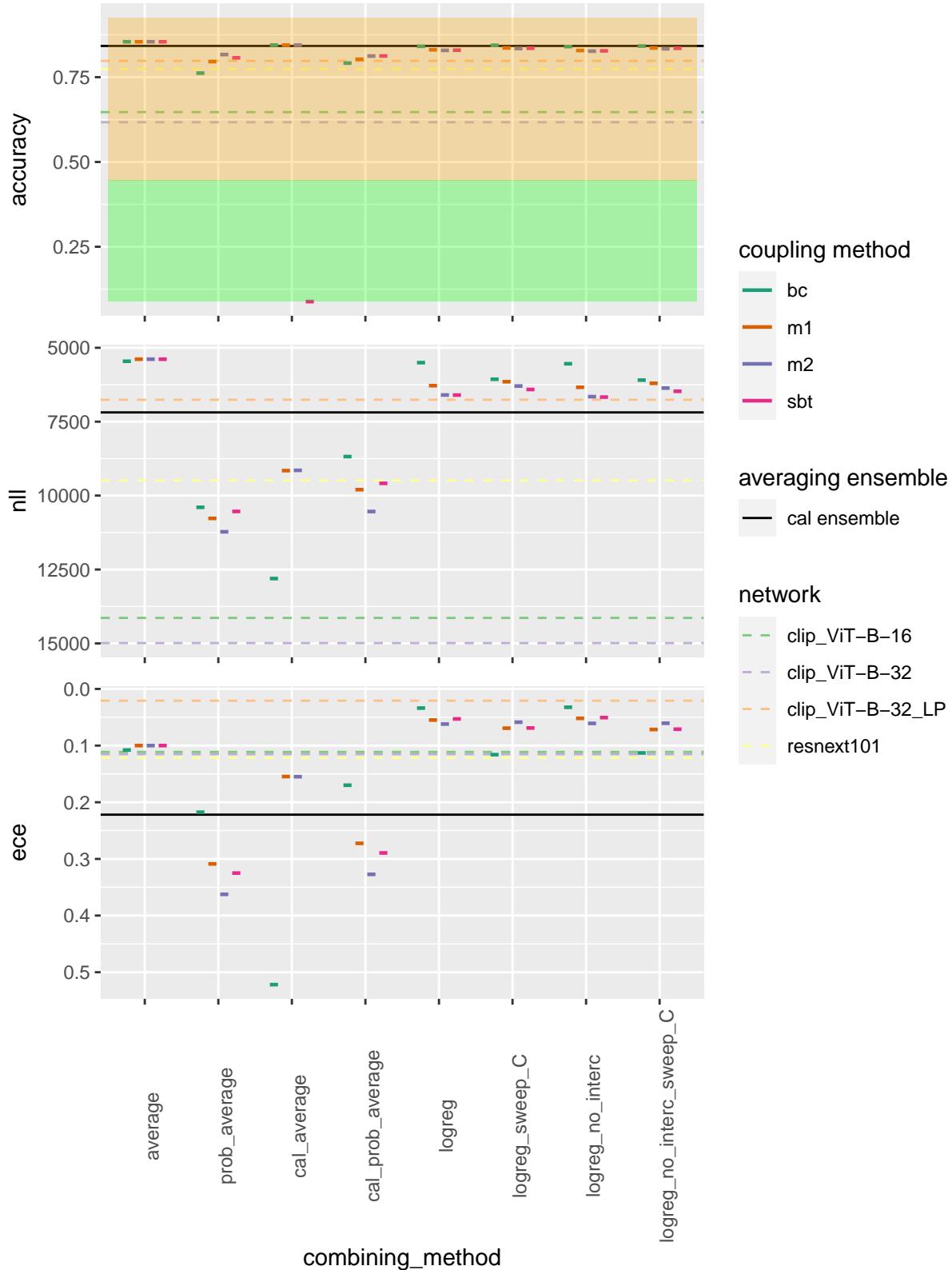
Ensemble metrics
Error inconsistency 0.440999984741211



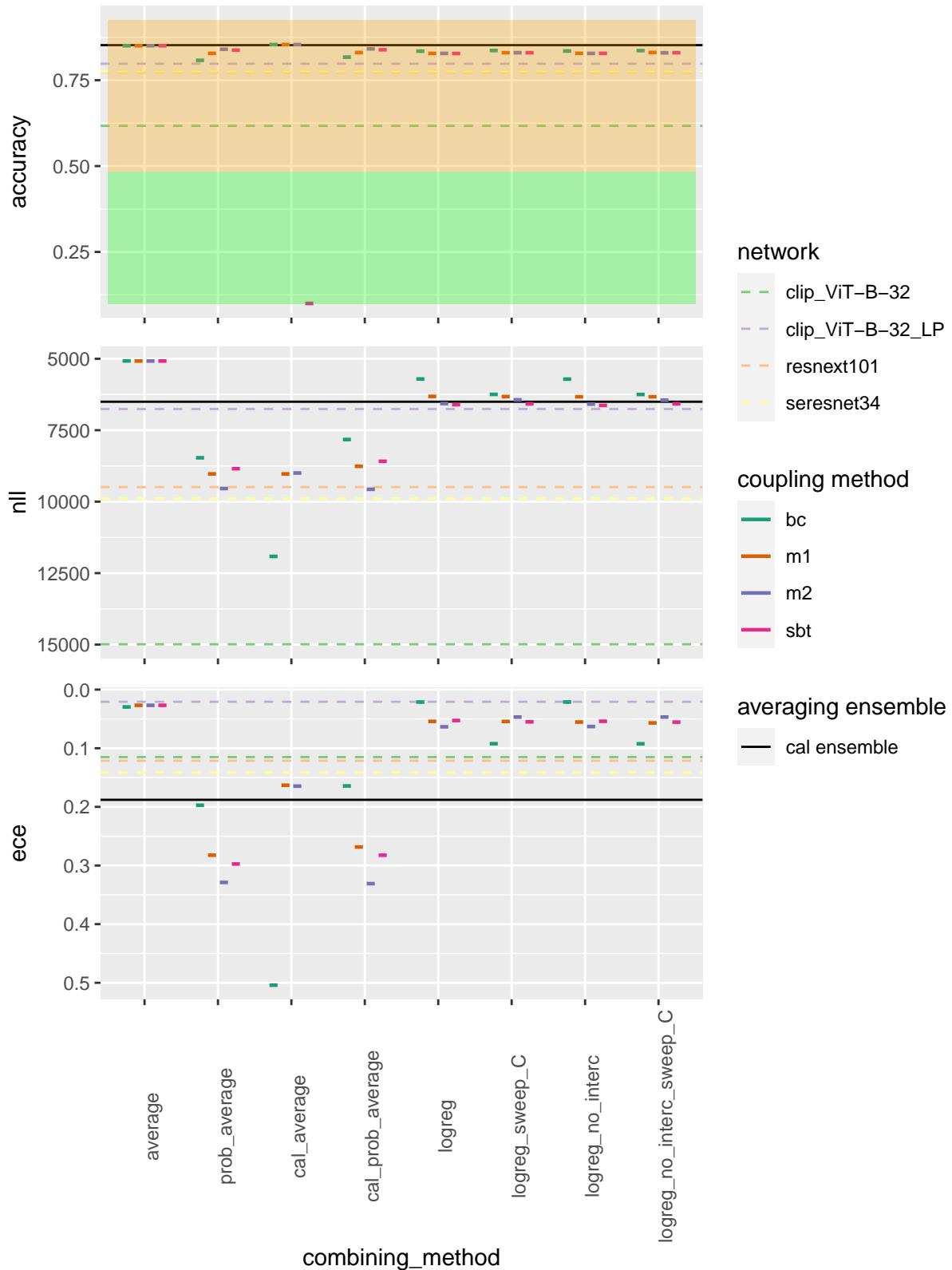
Ensemble metrics
Error inconsistency 0.486099988222122



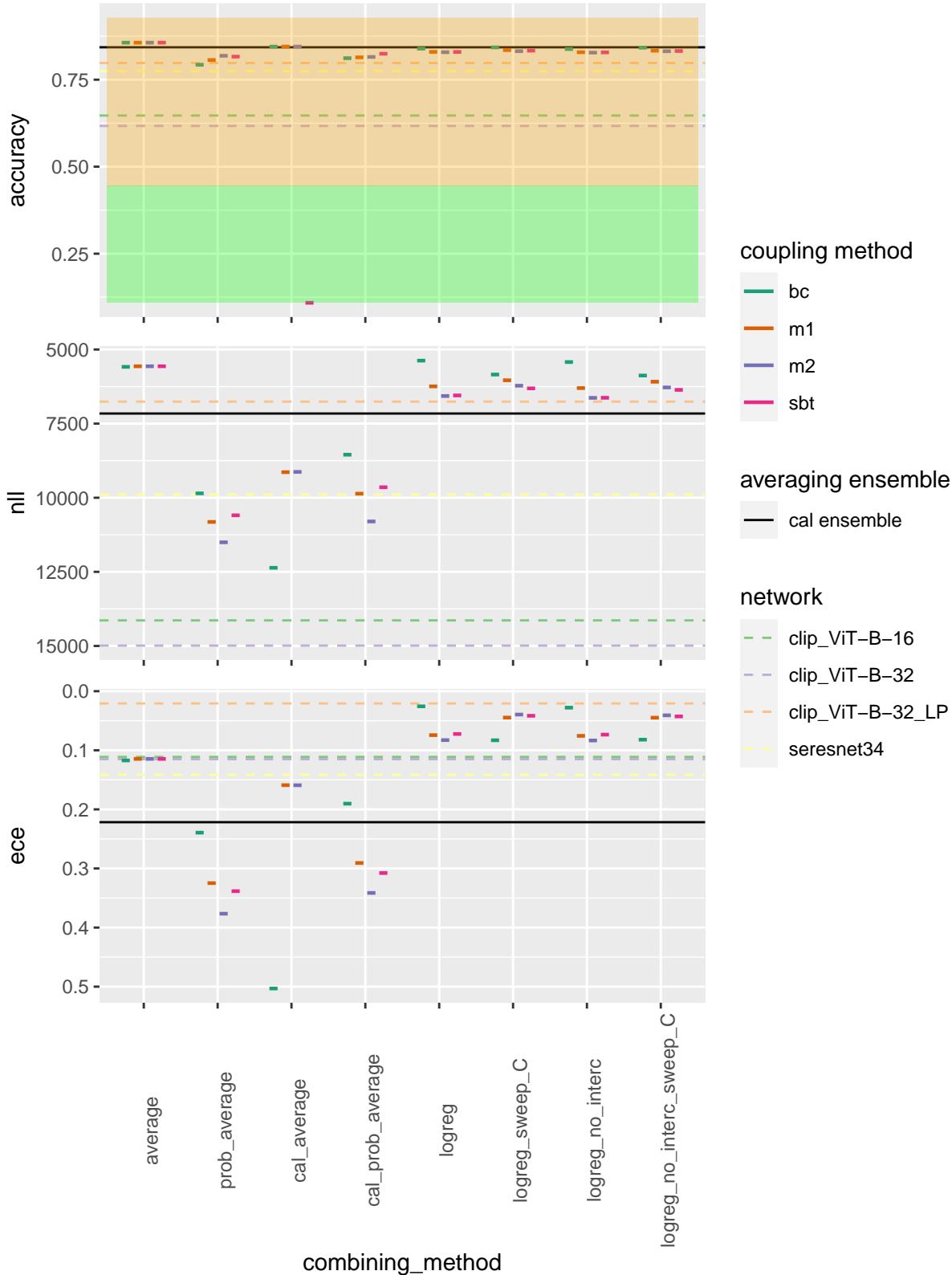
Ensemble metrics
Error inconsistency 0.47869998216629



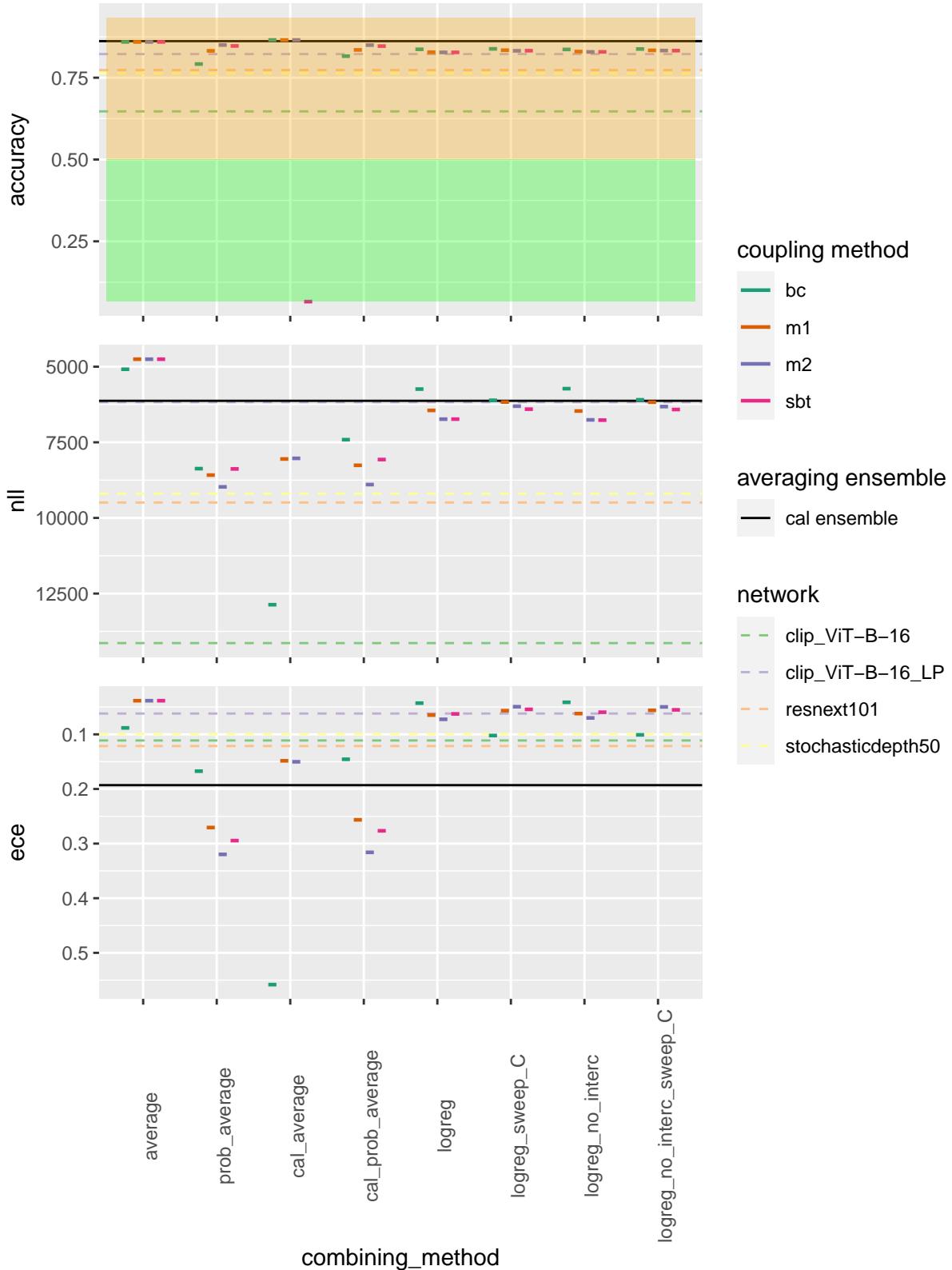
Ensemble metrics
Error inconsistency 0.441199988126755



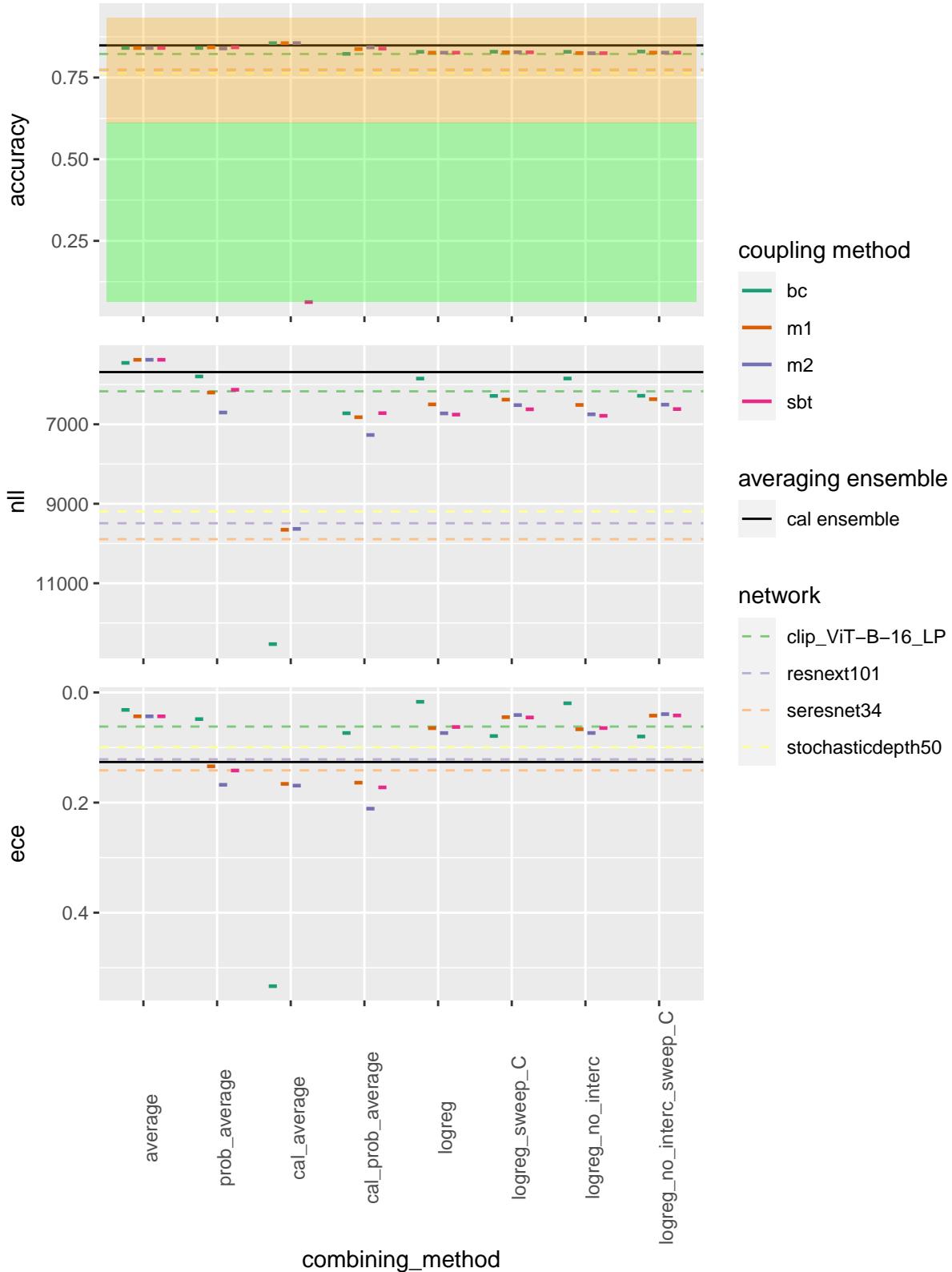
Ensemble metrics
Error inconsistency 0.482899993658066



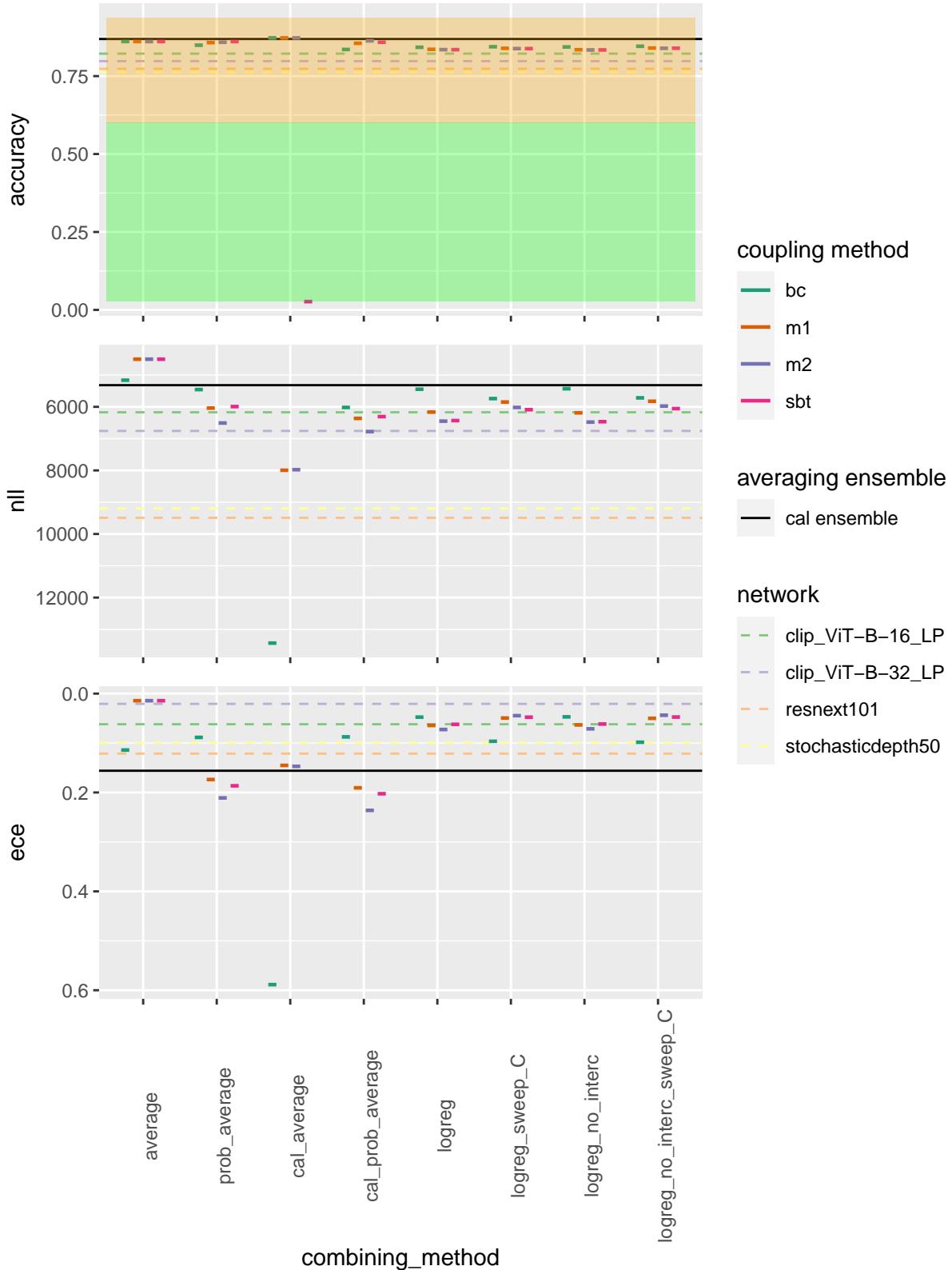
Ensemble metrics
Error inconsistency 0.433699995279312



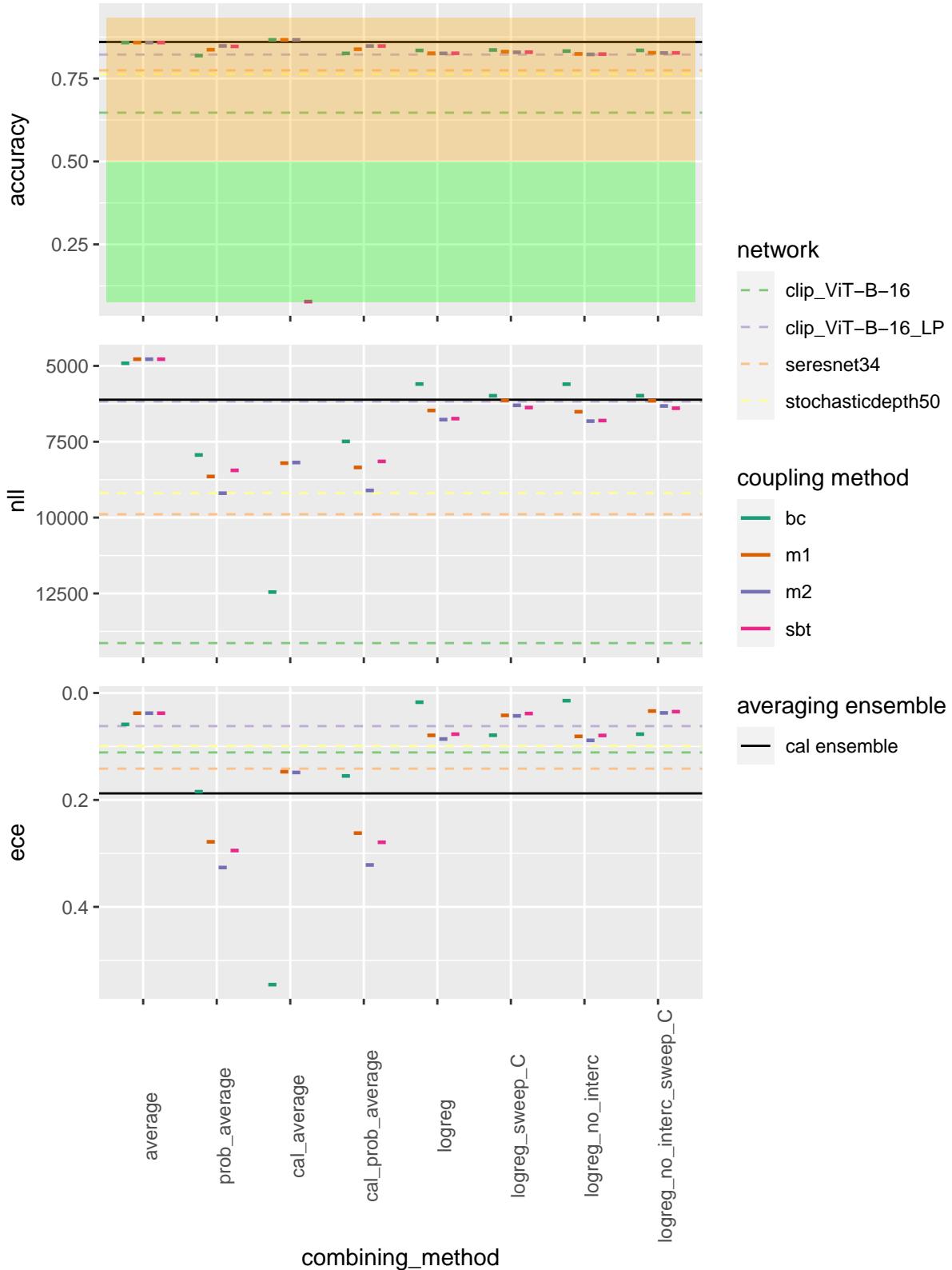
Ensemble metrics
Error inconsistency 0.321399986743927



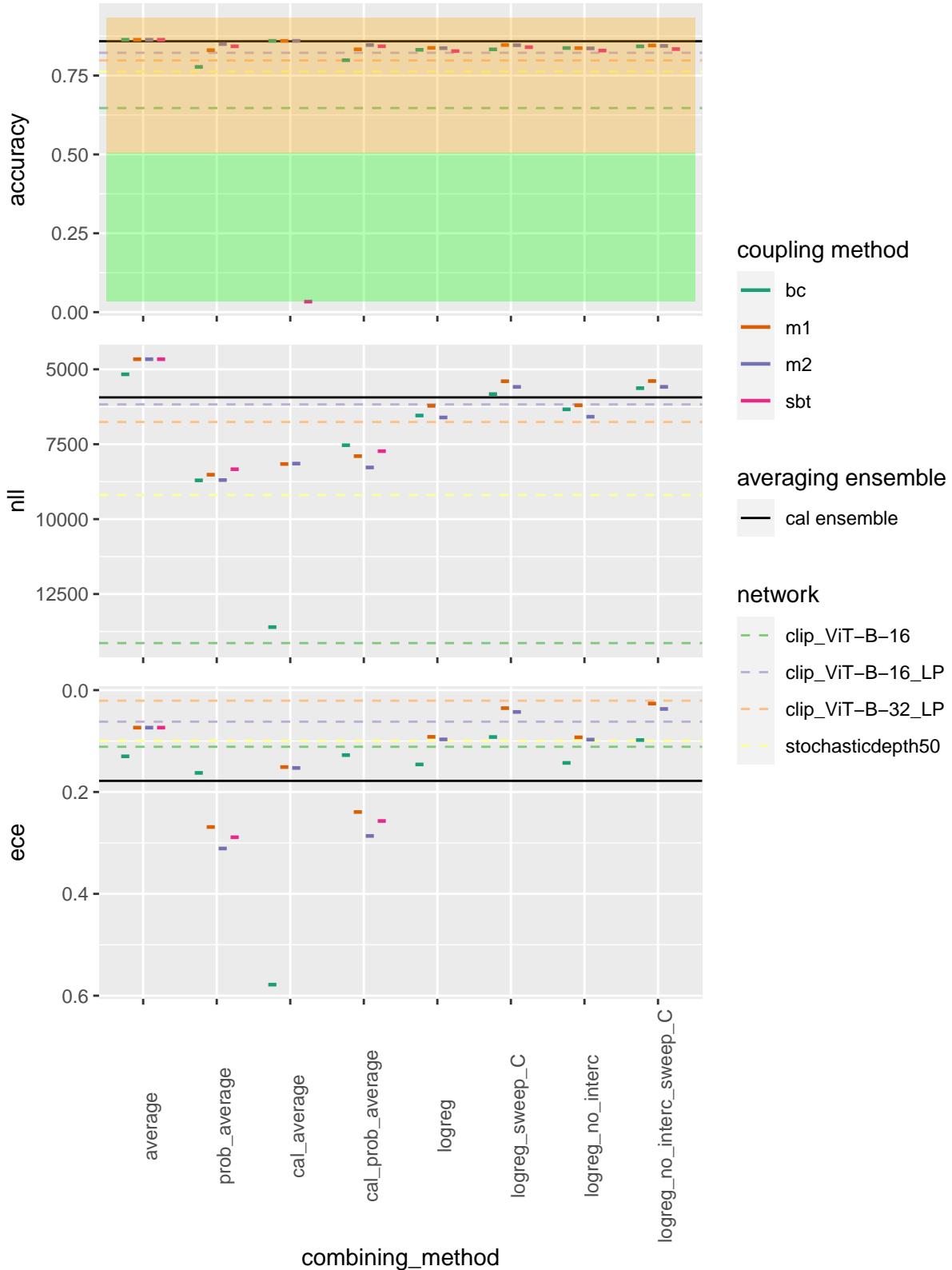
Ensemble metrics
Error inconsistency 0.337999999523163



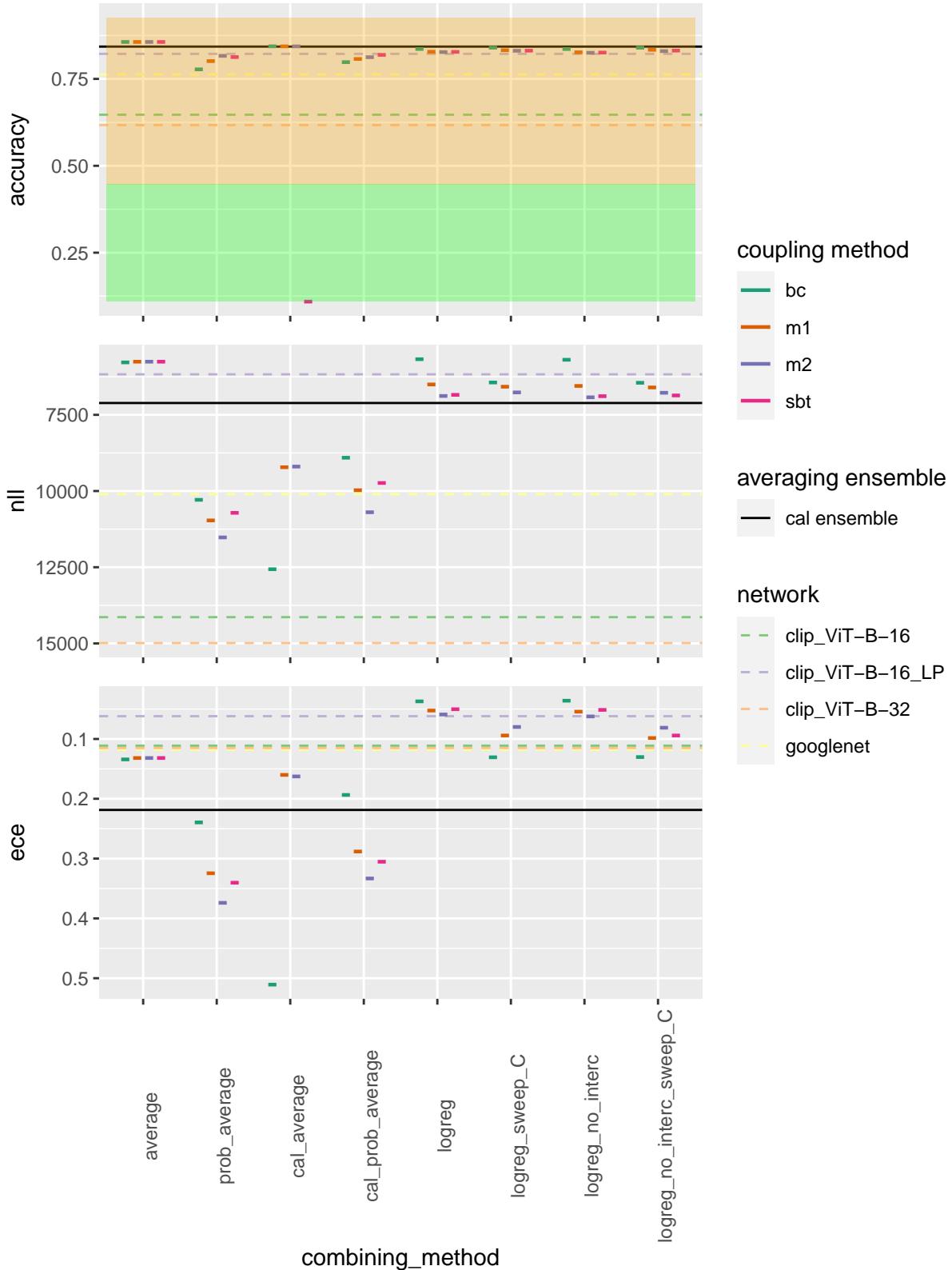
Ensemble metrics
Error inconsistency 0.433699995279312



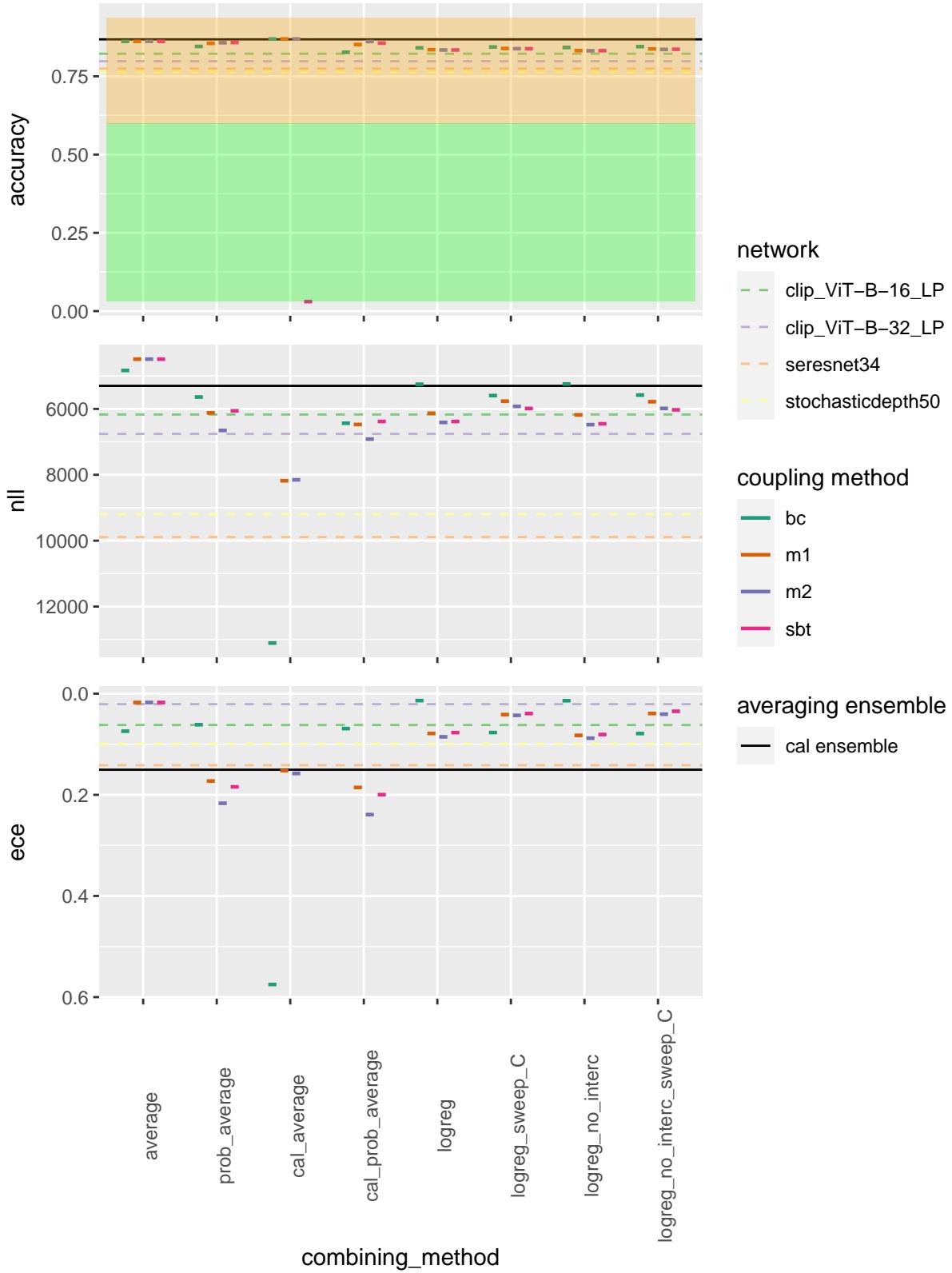
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Error inconsistency 0.429499983787537



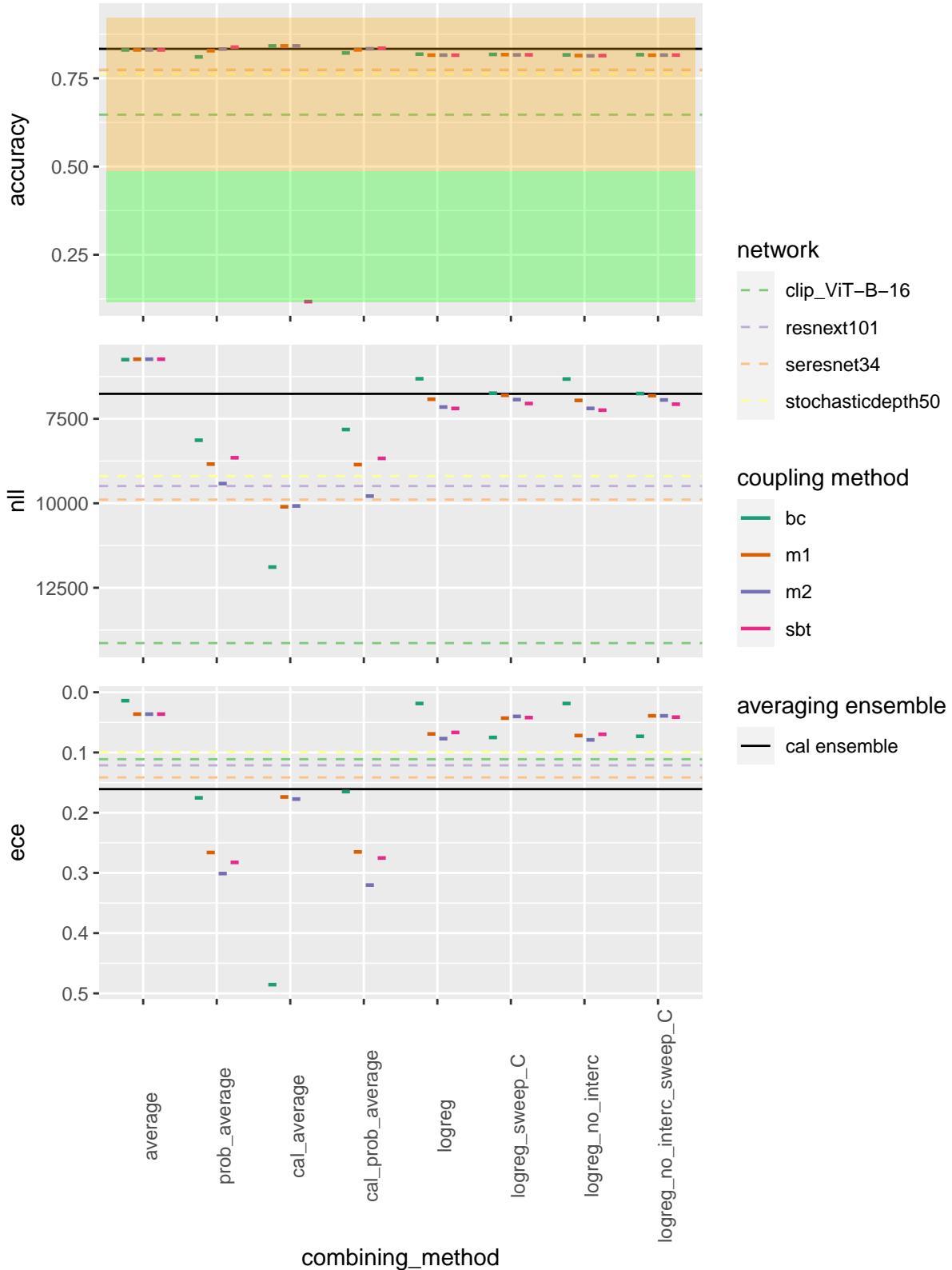
Ensemble metrics
Error inconsistency 0.479000002145767



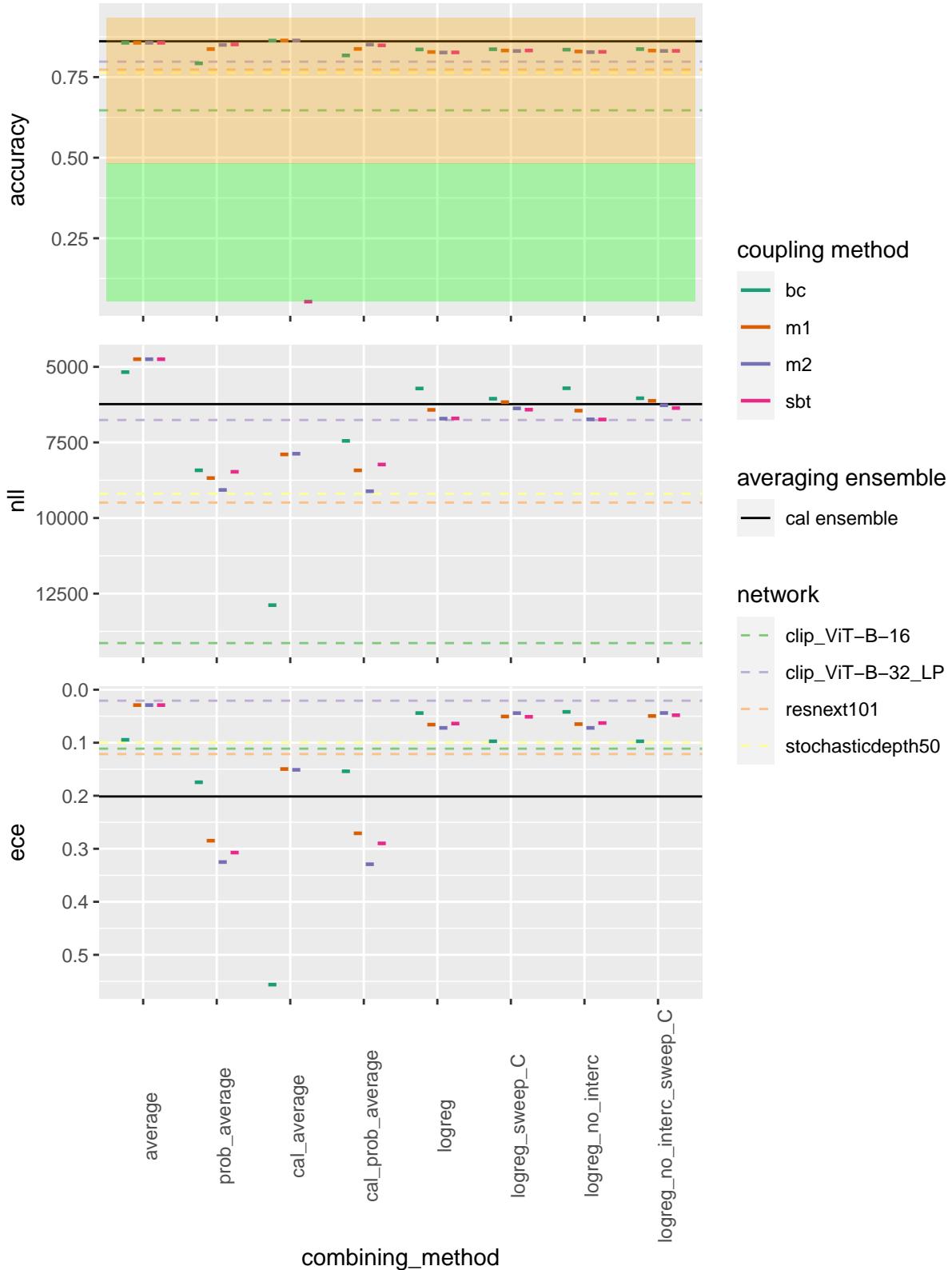
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Error inconsistency 0.338499993085861



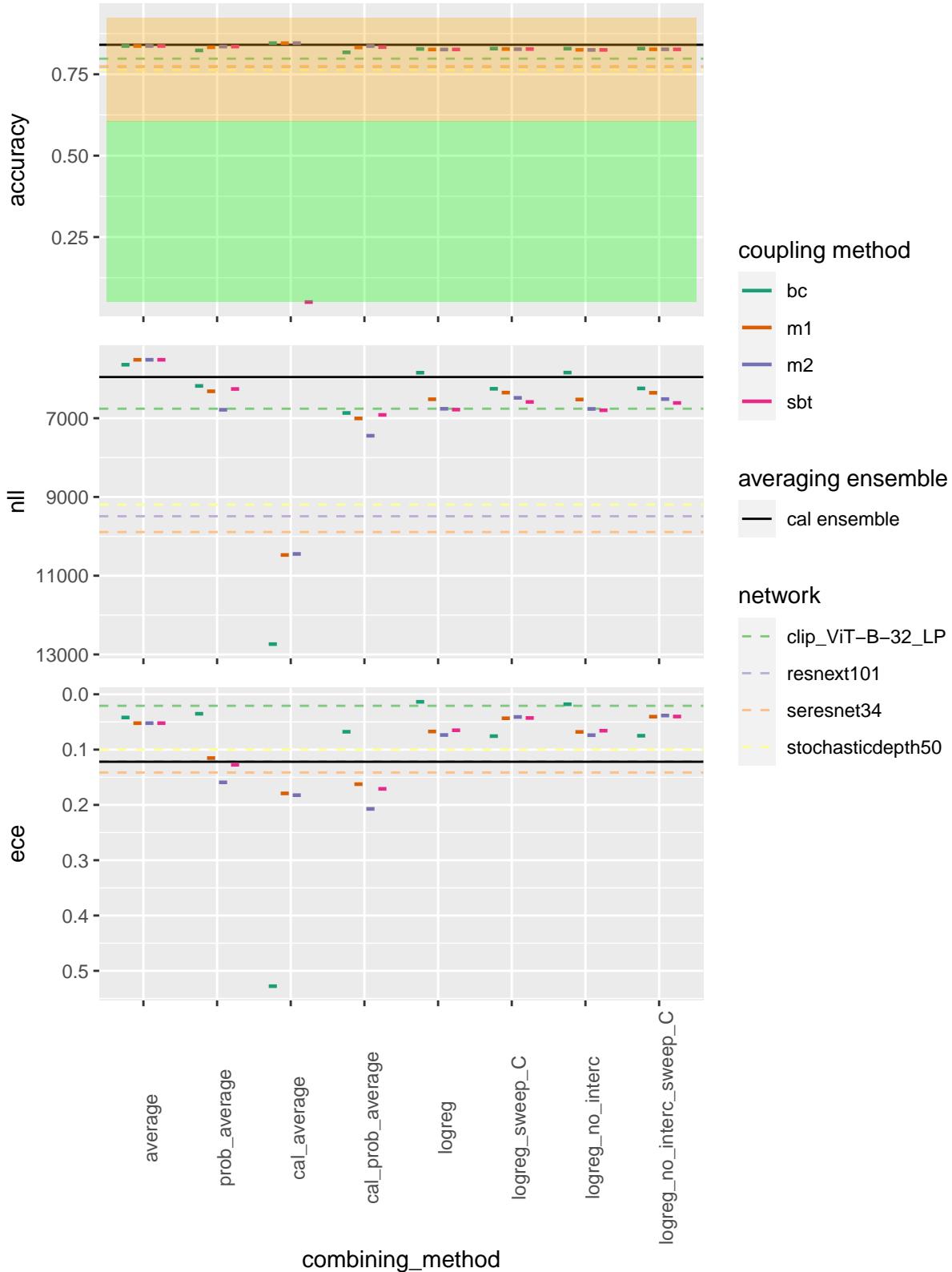
Ensemble metrics
Error inconsistency 0.435099989175797



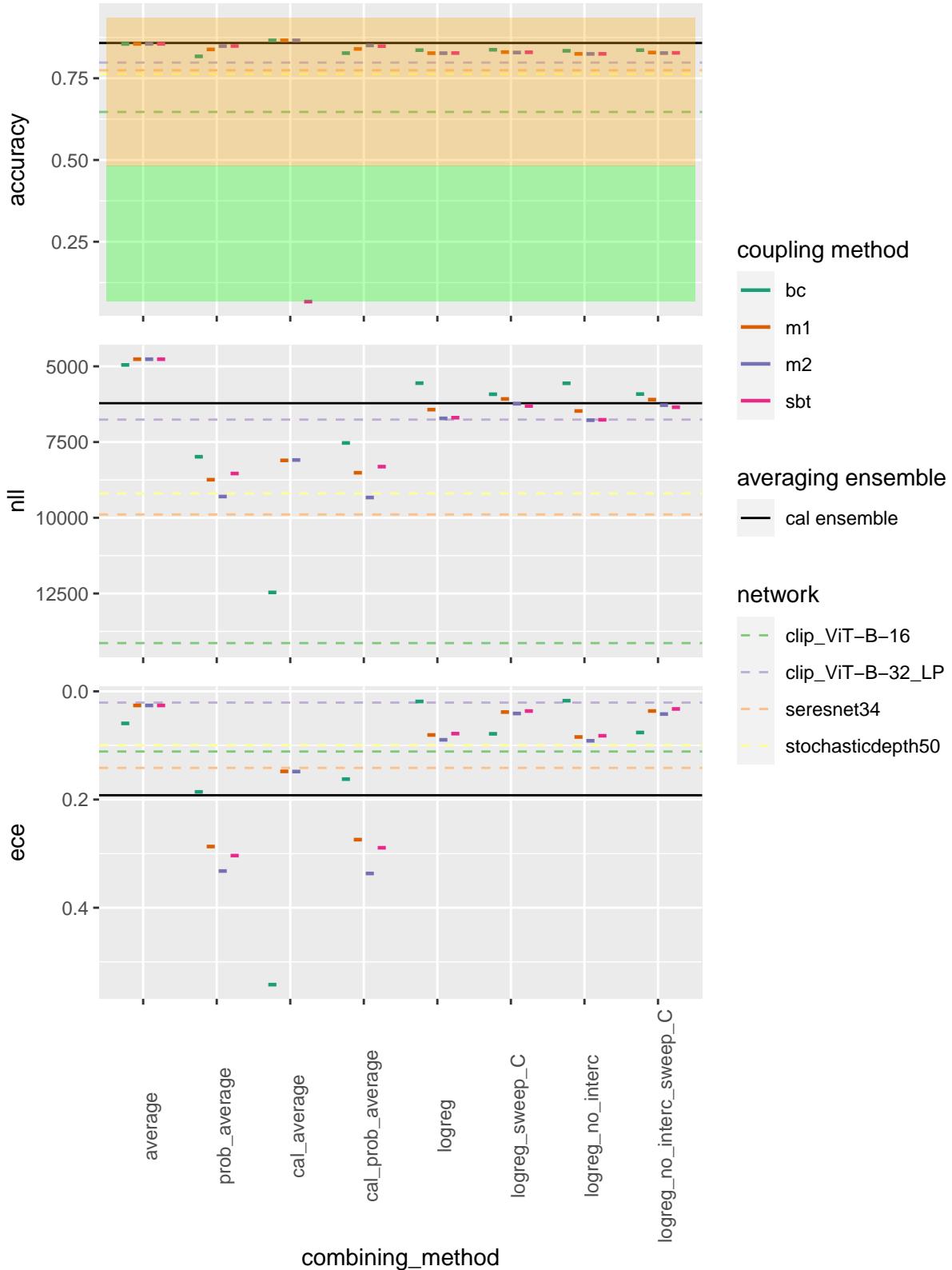
Ensemble metrics
Error inconsistency 0.452899992465973



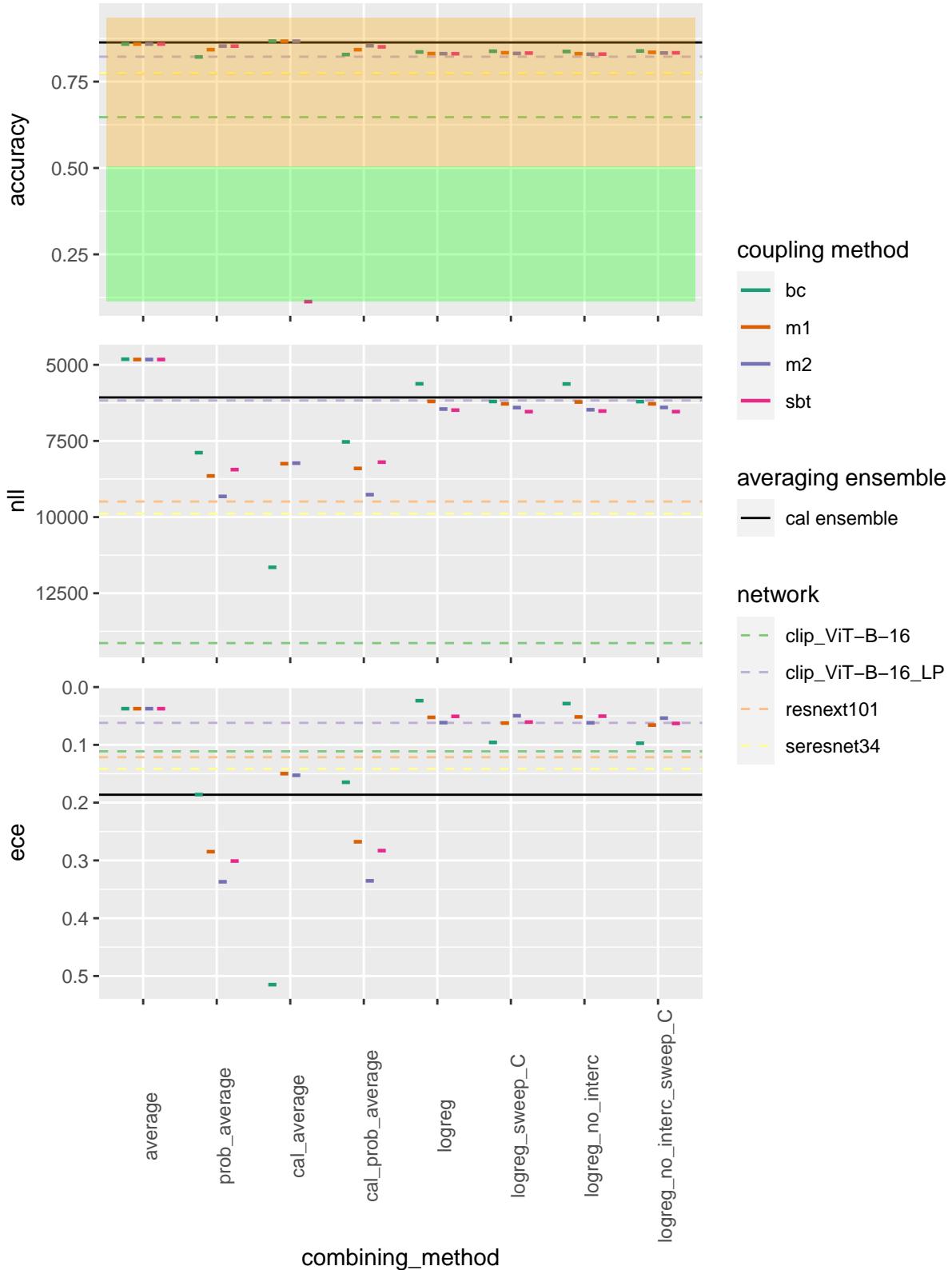
Ensemble metrics
Error inconsistency 0.319199979305267



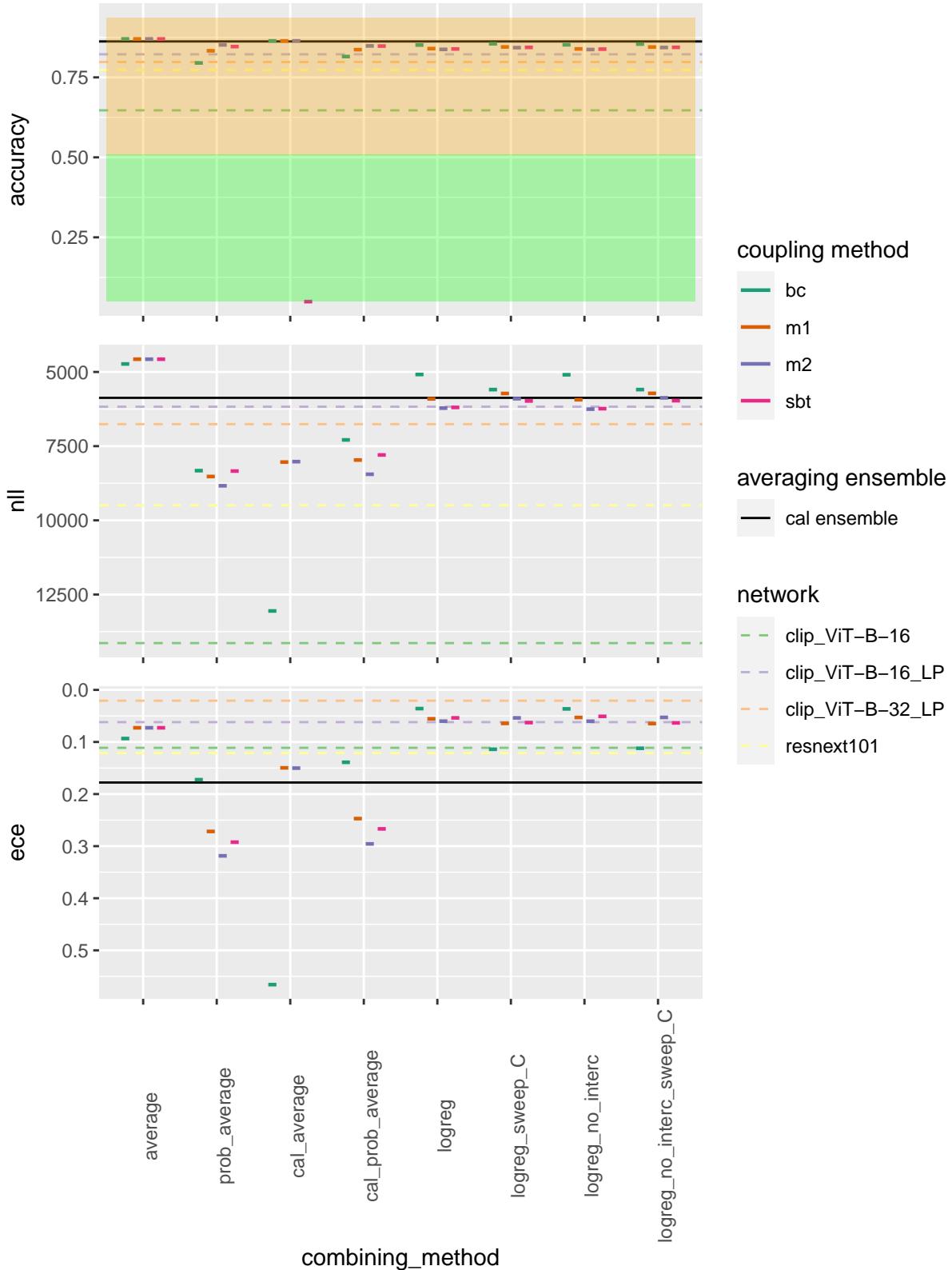
Ensemble metrics
Error inconsistency 0.453500002622604



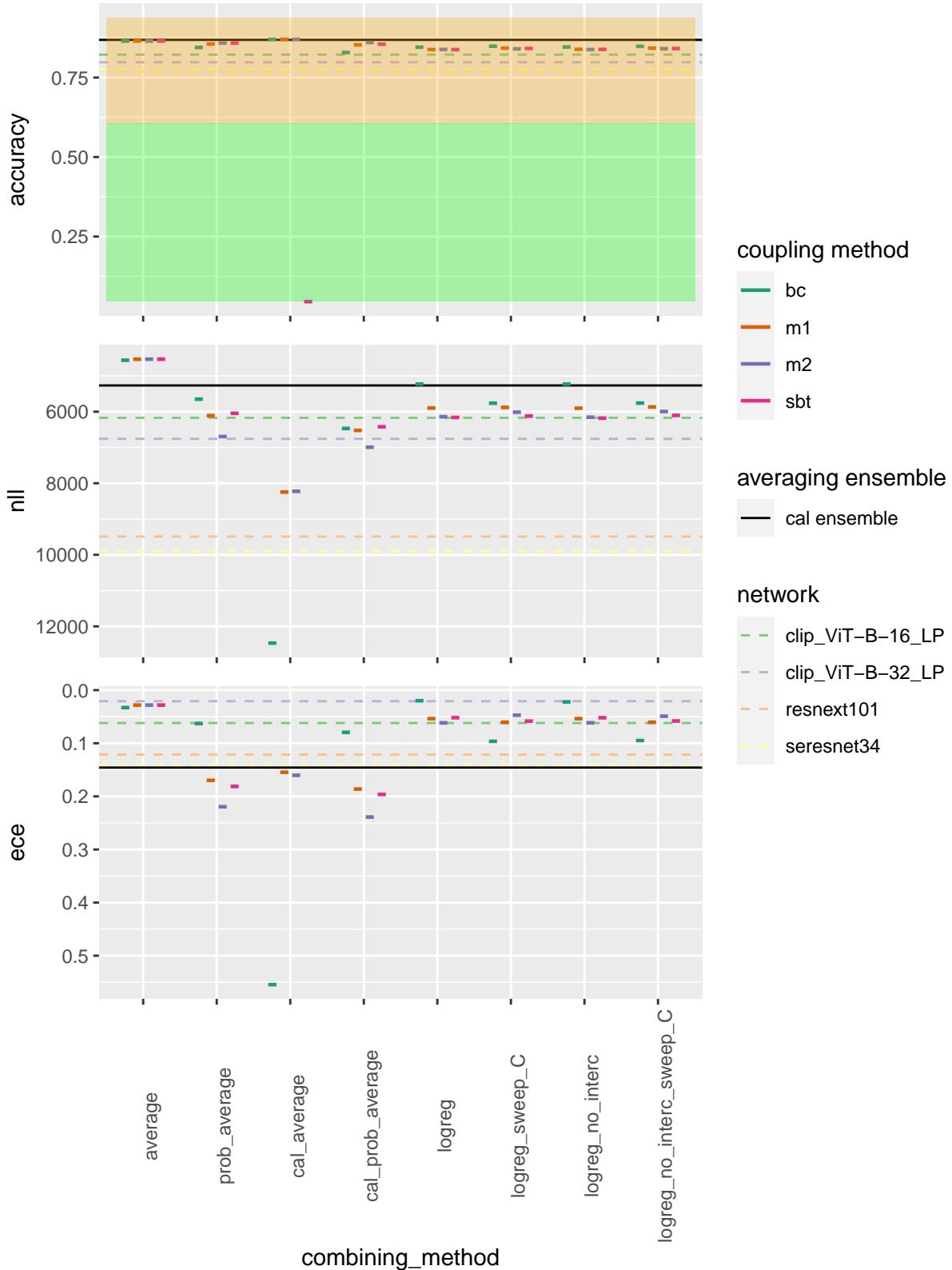
Ensemble metrics
Error inconsistency 0.431299984455109



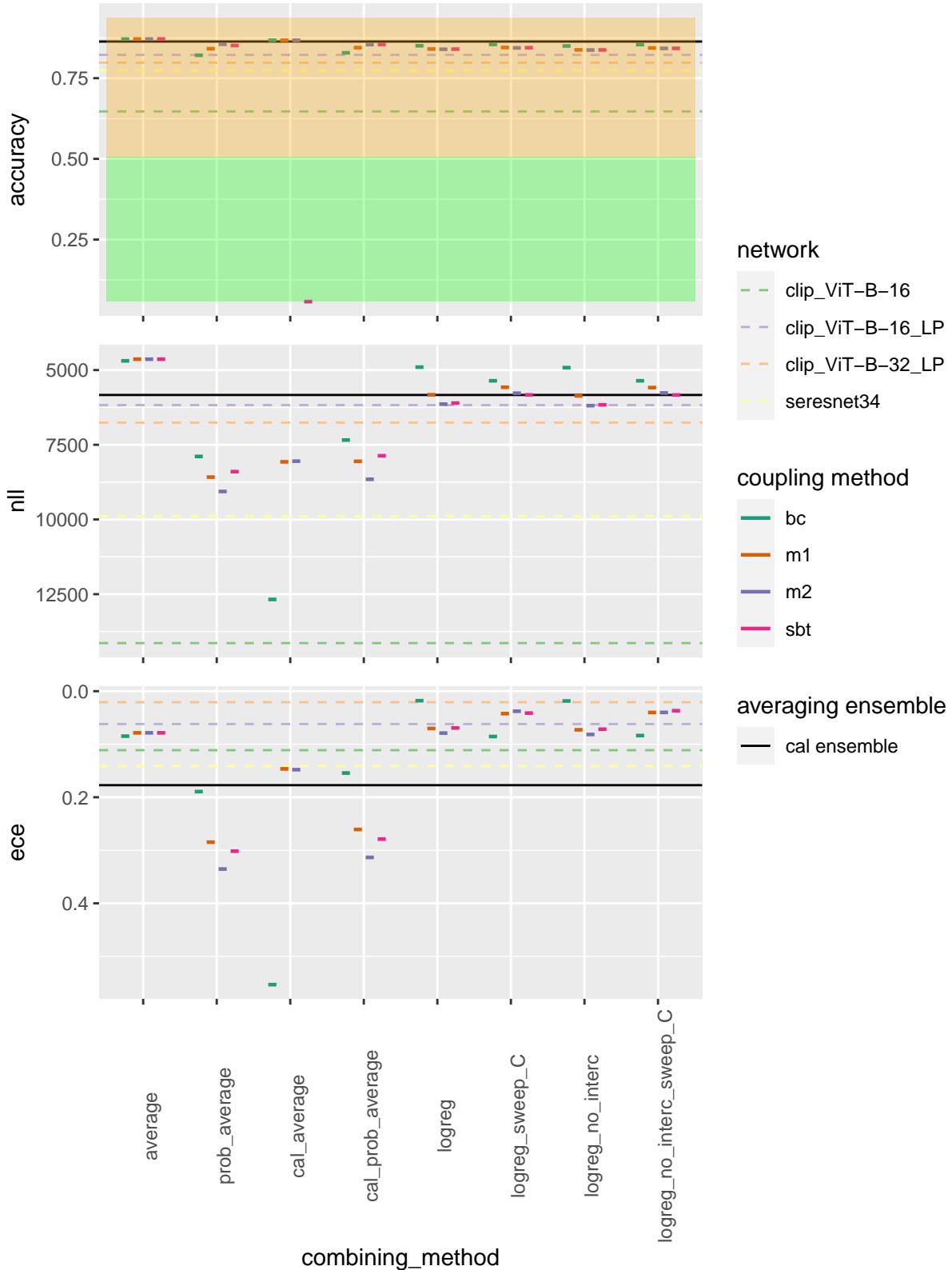
Ensemble metrics
Error inconsistency 0.427499979734421



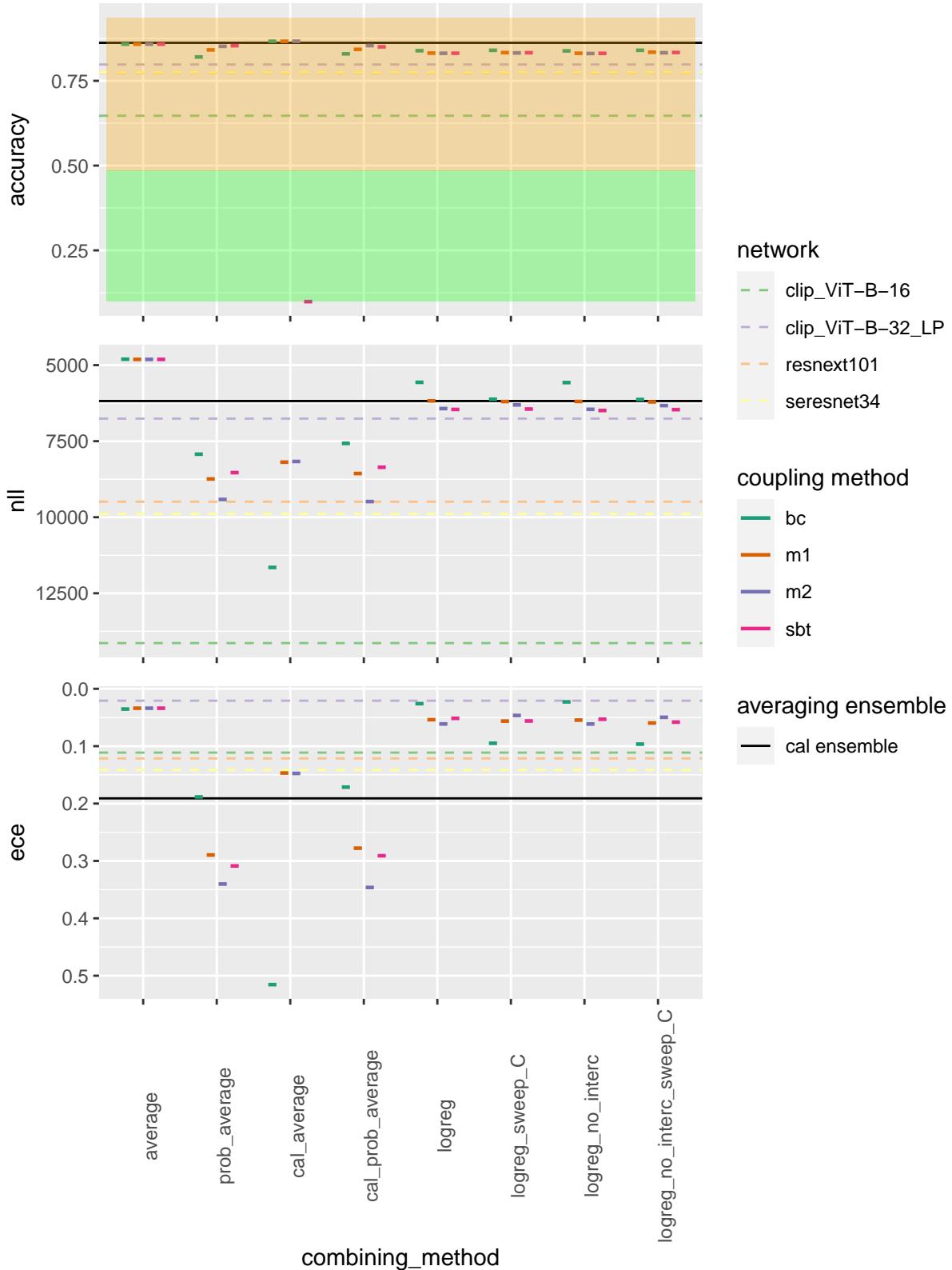
Ensemble metrics
Error inconsistency 0.333099991083145



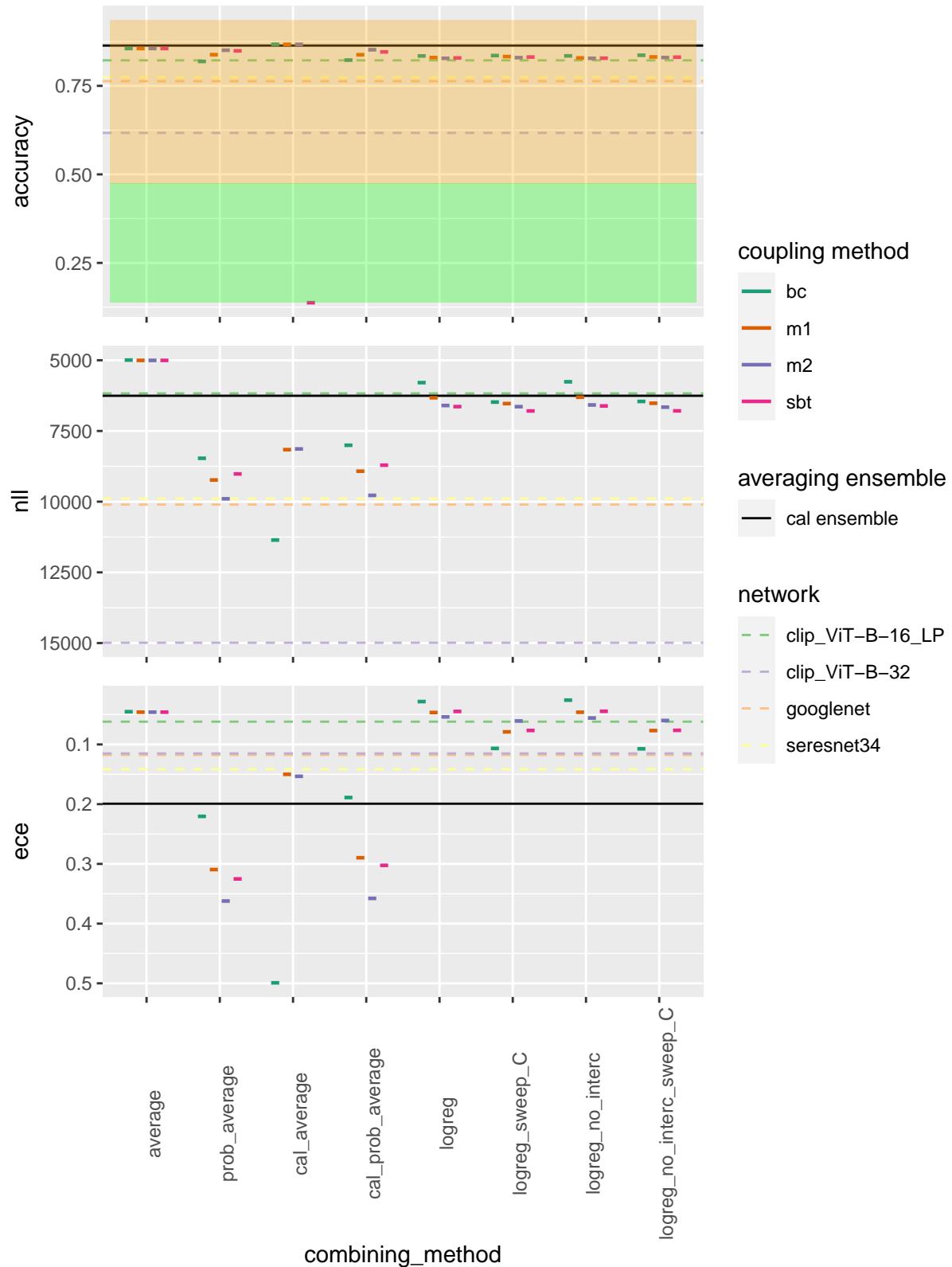
Ensemble metrics
Error inconsistency 0.431499987840652



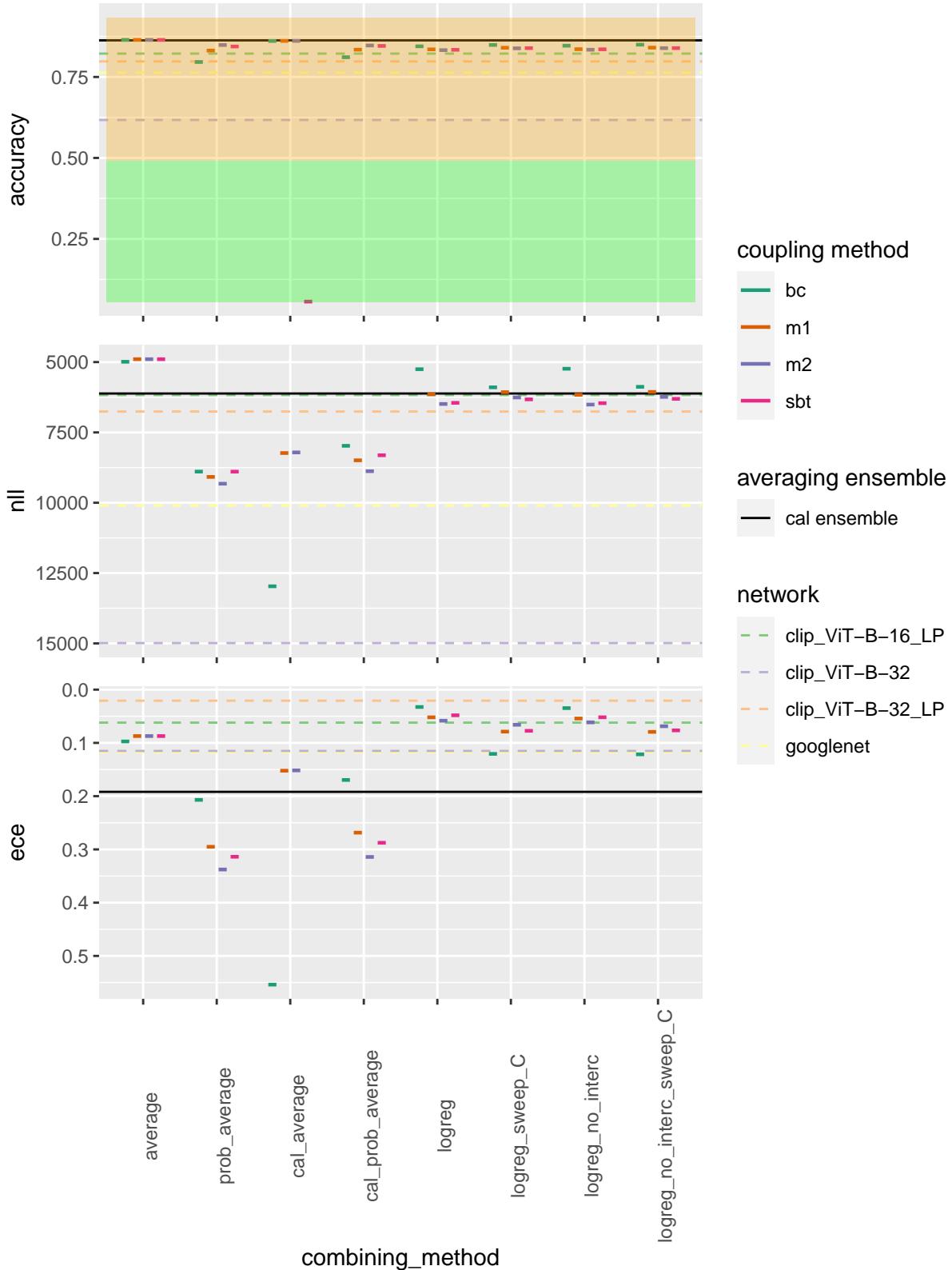
Ensemble metrics
Error inconsistency 0.451599985361099



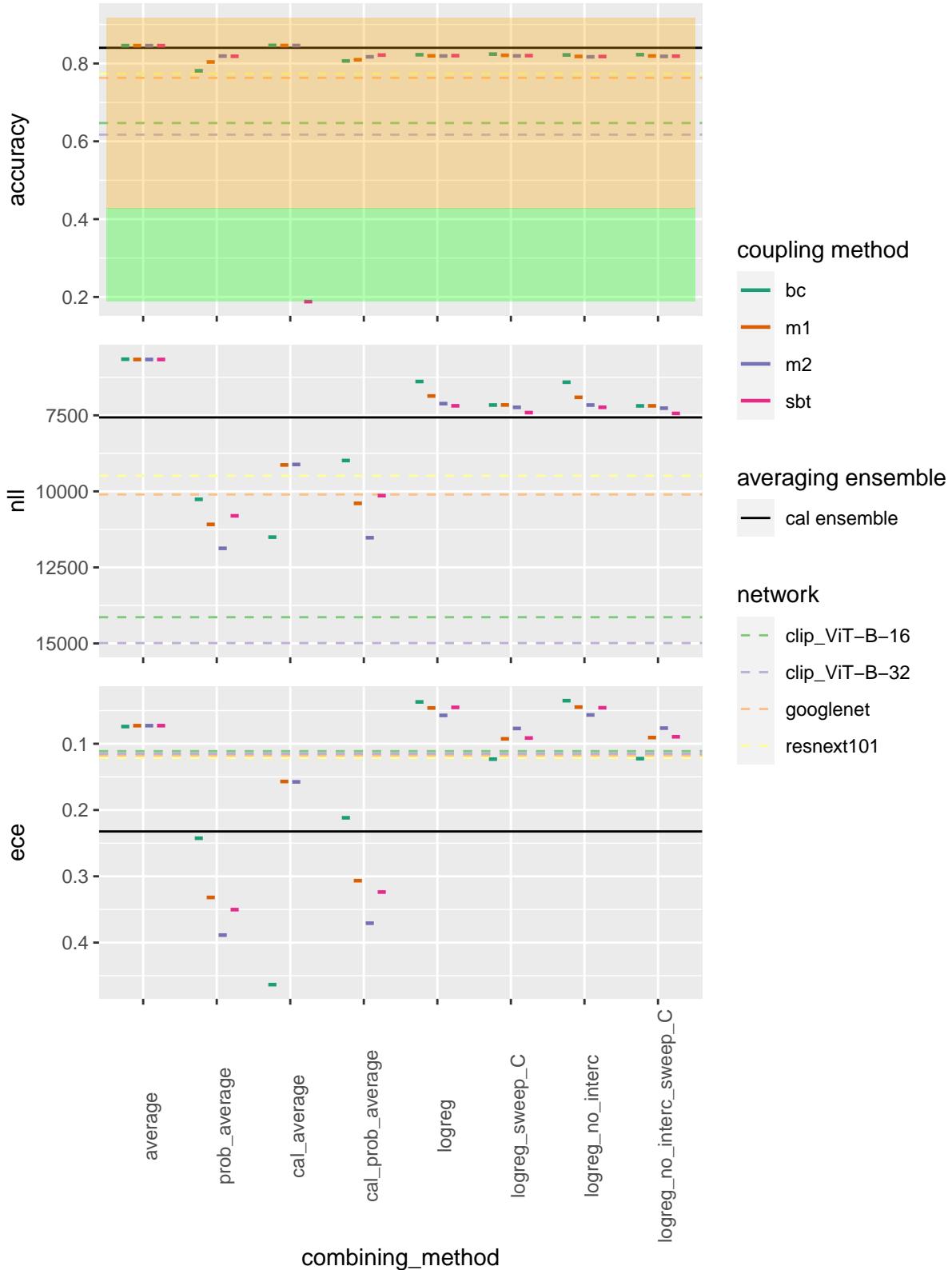
Ensemble metrics
Error inconsistency 0.461099982261658



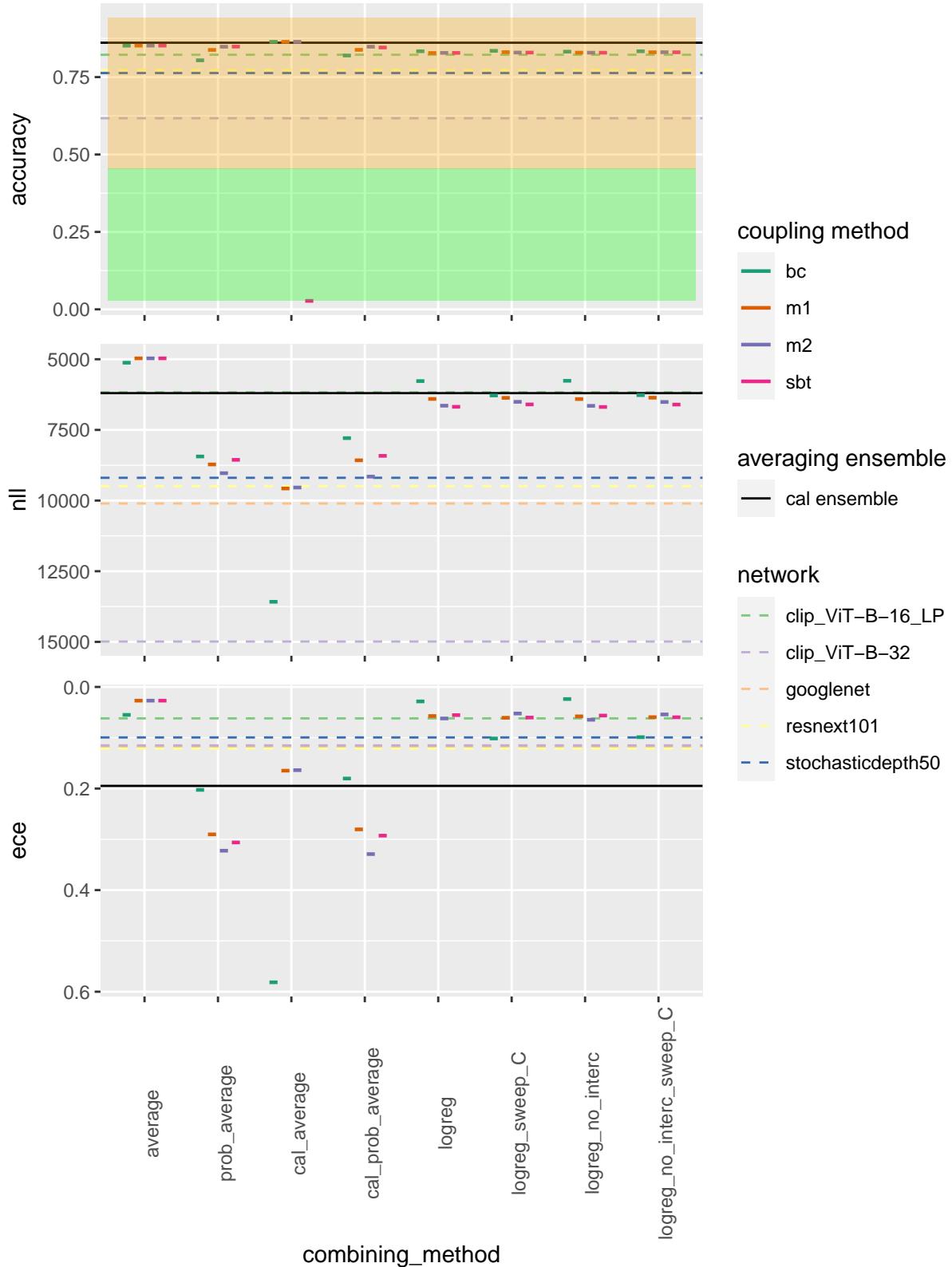
Ensemble metrics
Error inconsistency 0.441399991512299



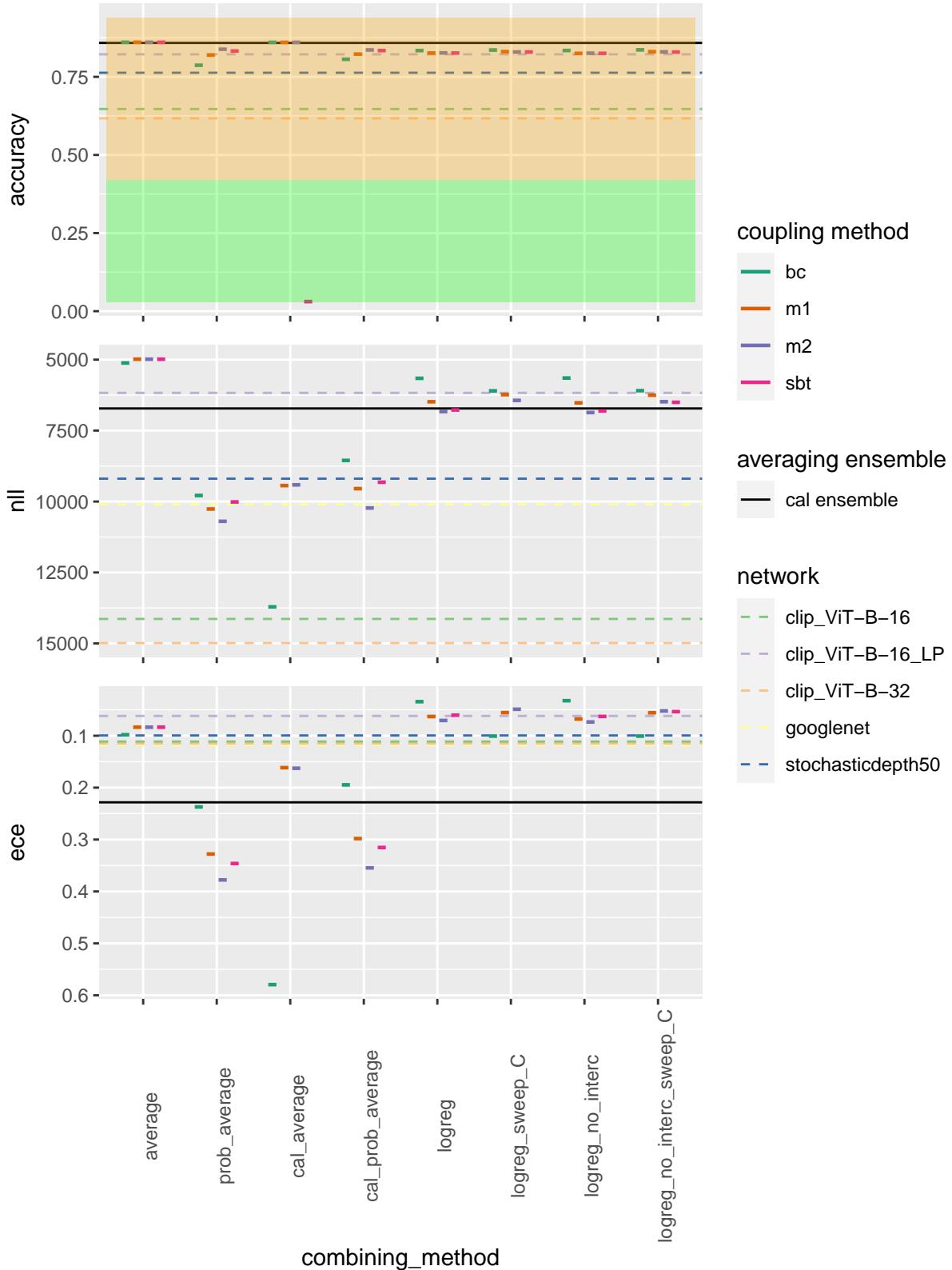
Ensemble metrics
Error inconsistency 0.489199995994568



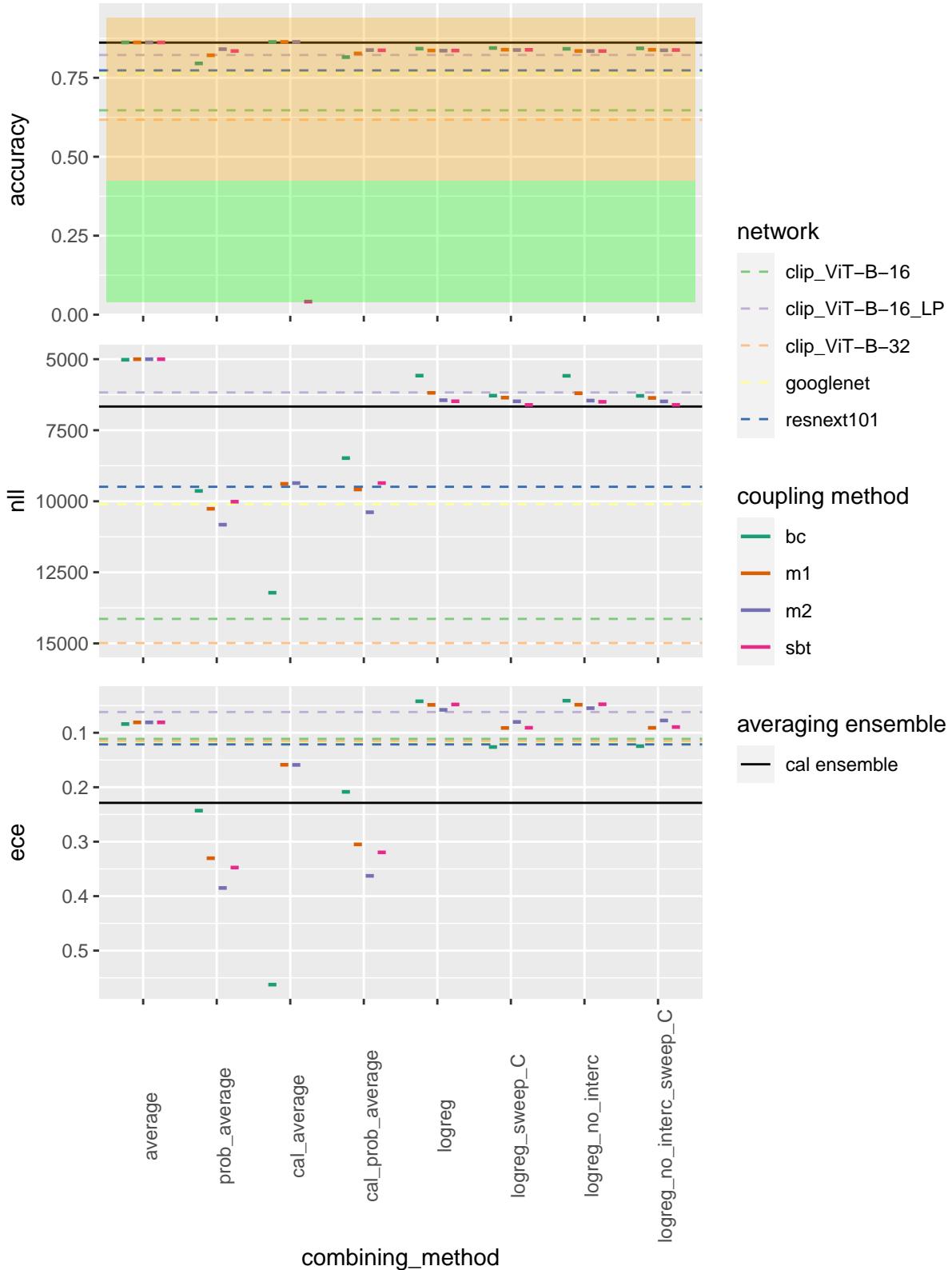
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Error inconsistency 0.488099992275238



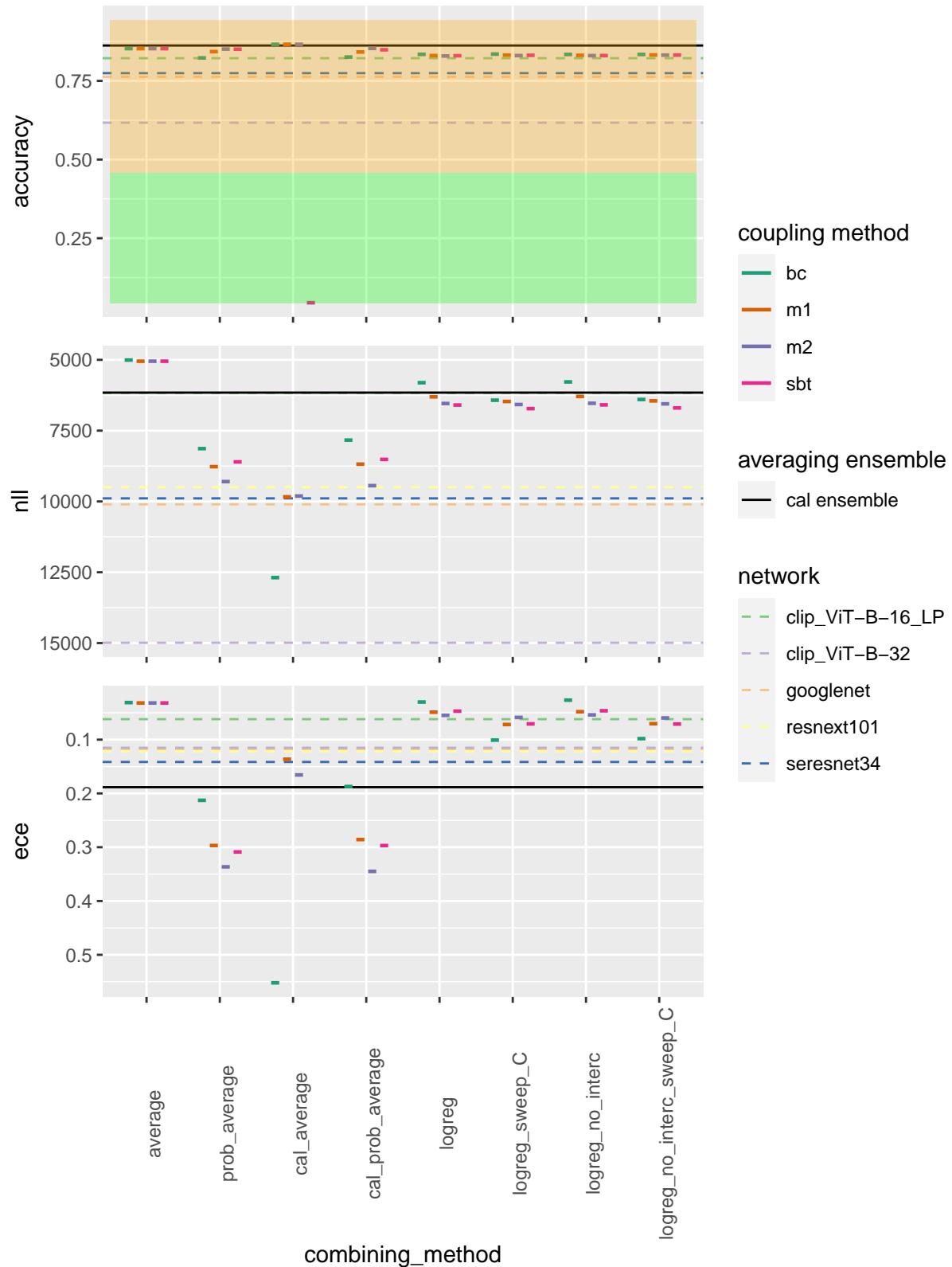
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Error inconsistency 0.519400000572205



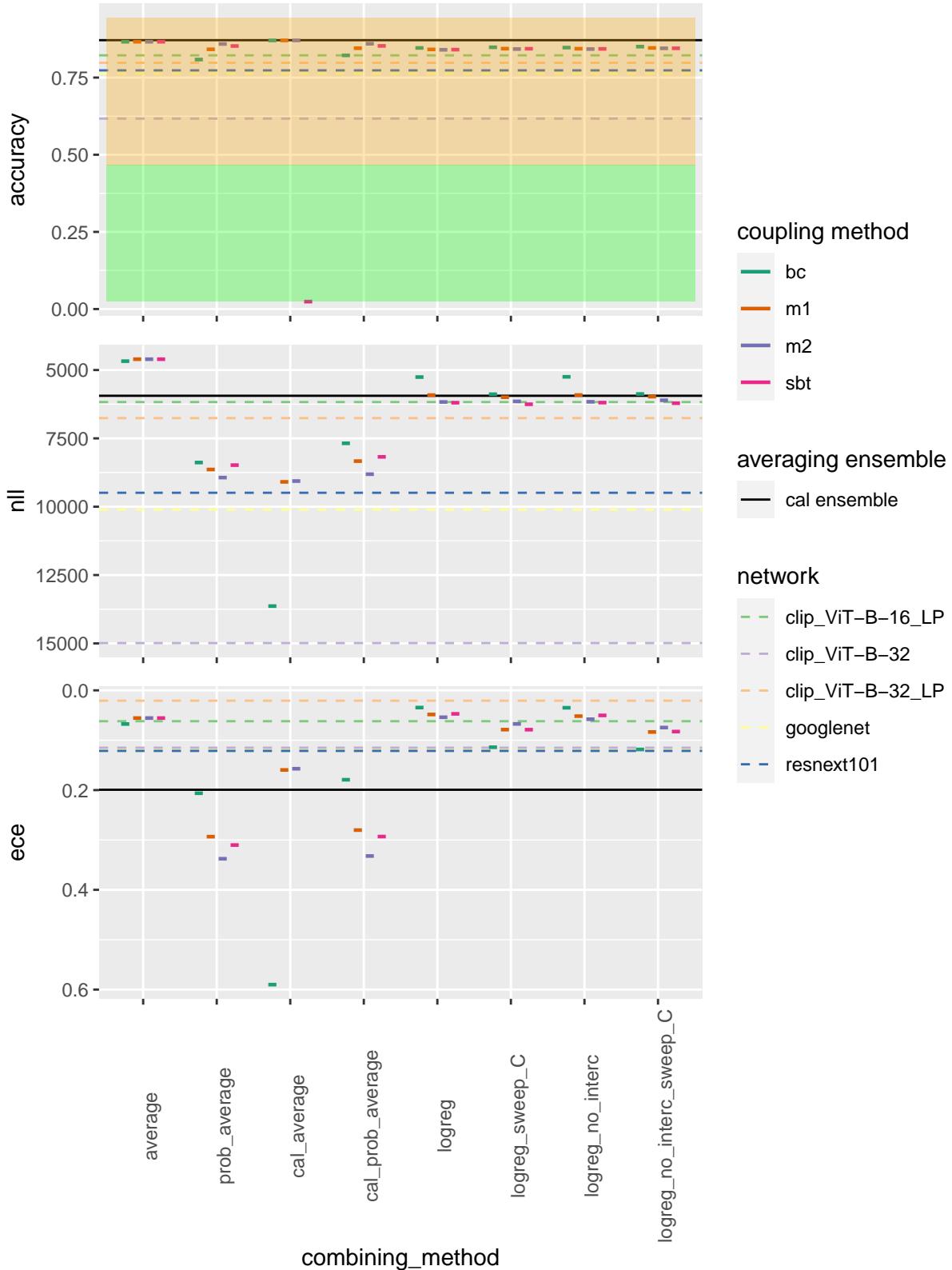
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Error inconsistency 0.515999972820282



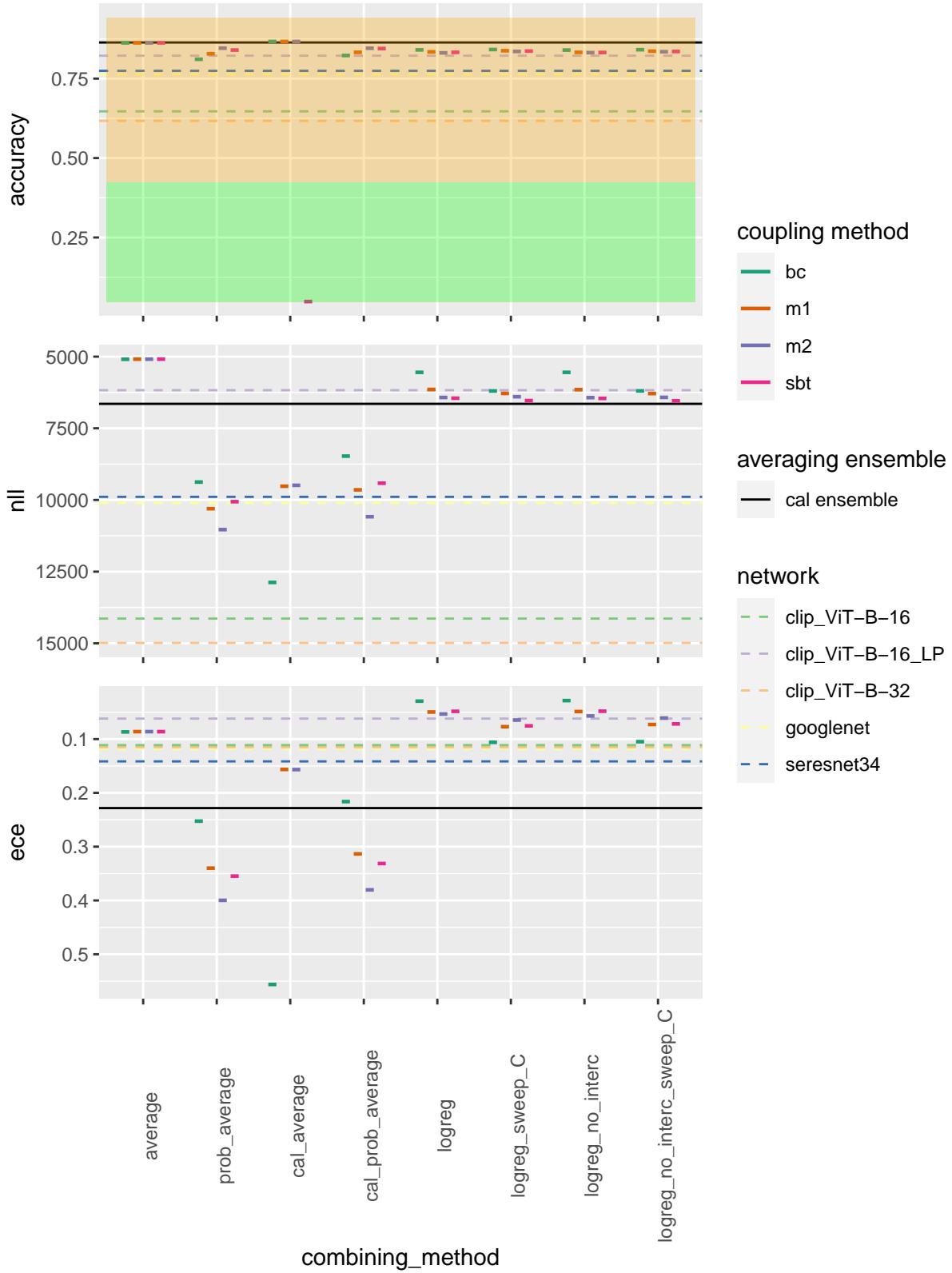
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Error inconsistency 0.485699981451034



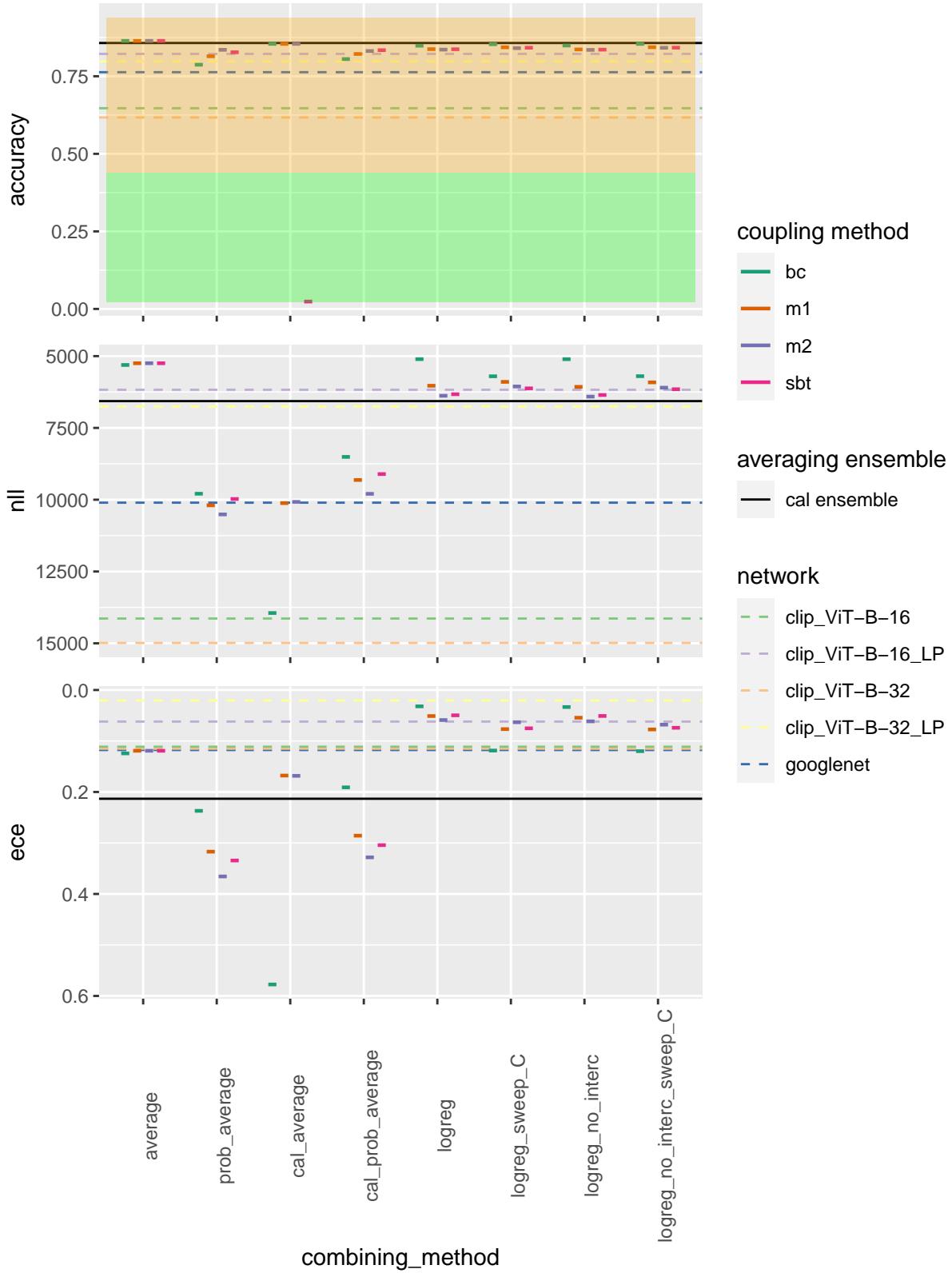
Ensemble metrics
Error inconsistency 0.477399975061417



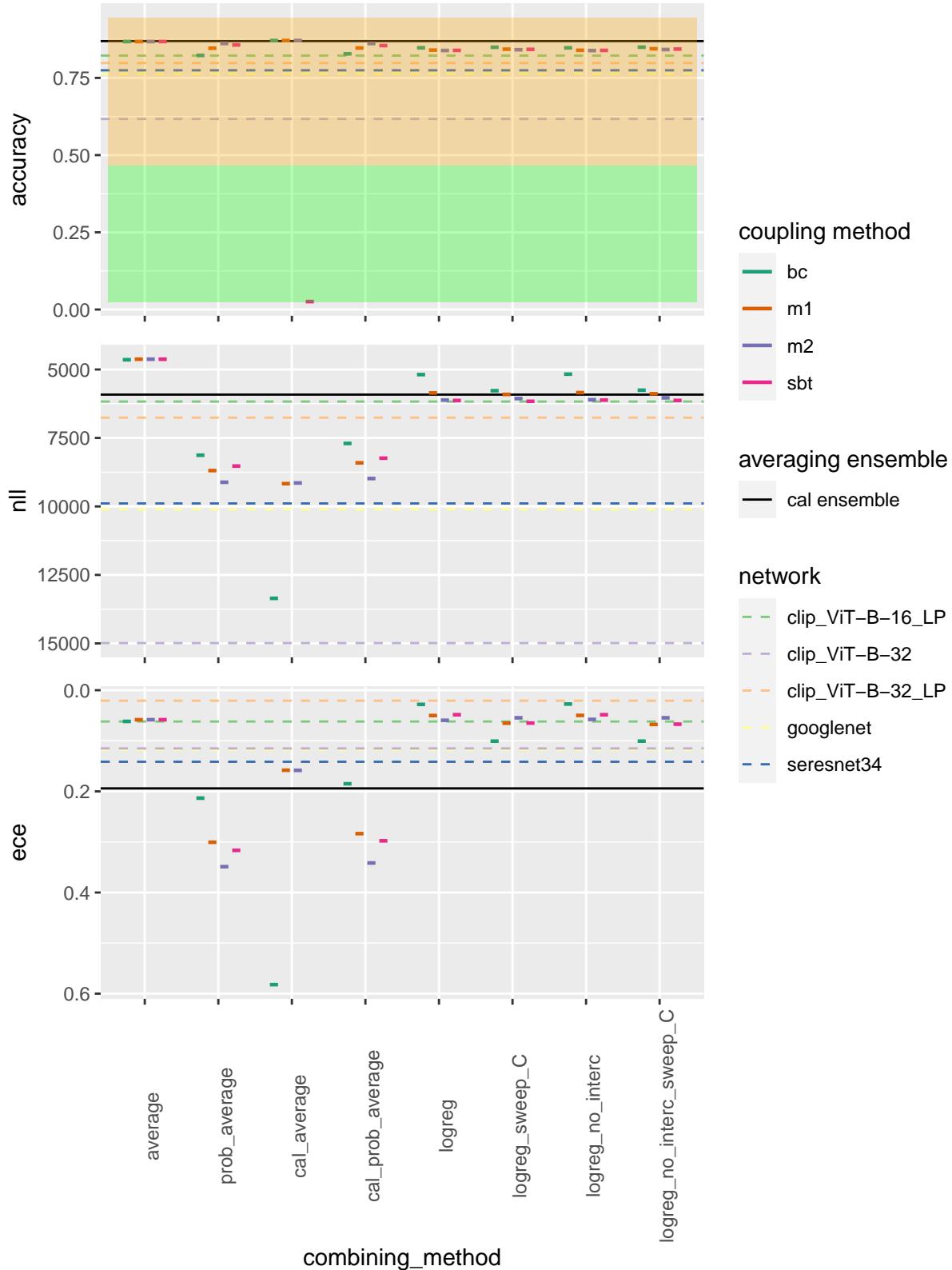
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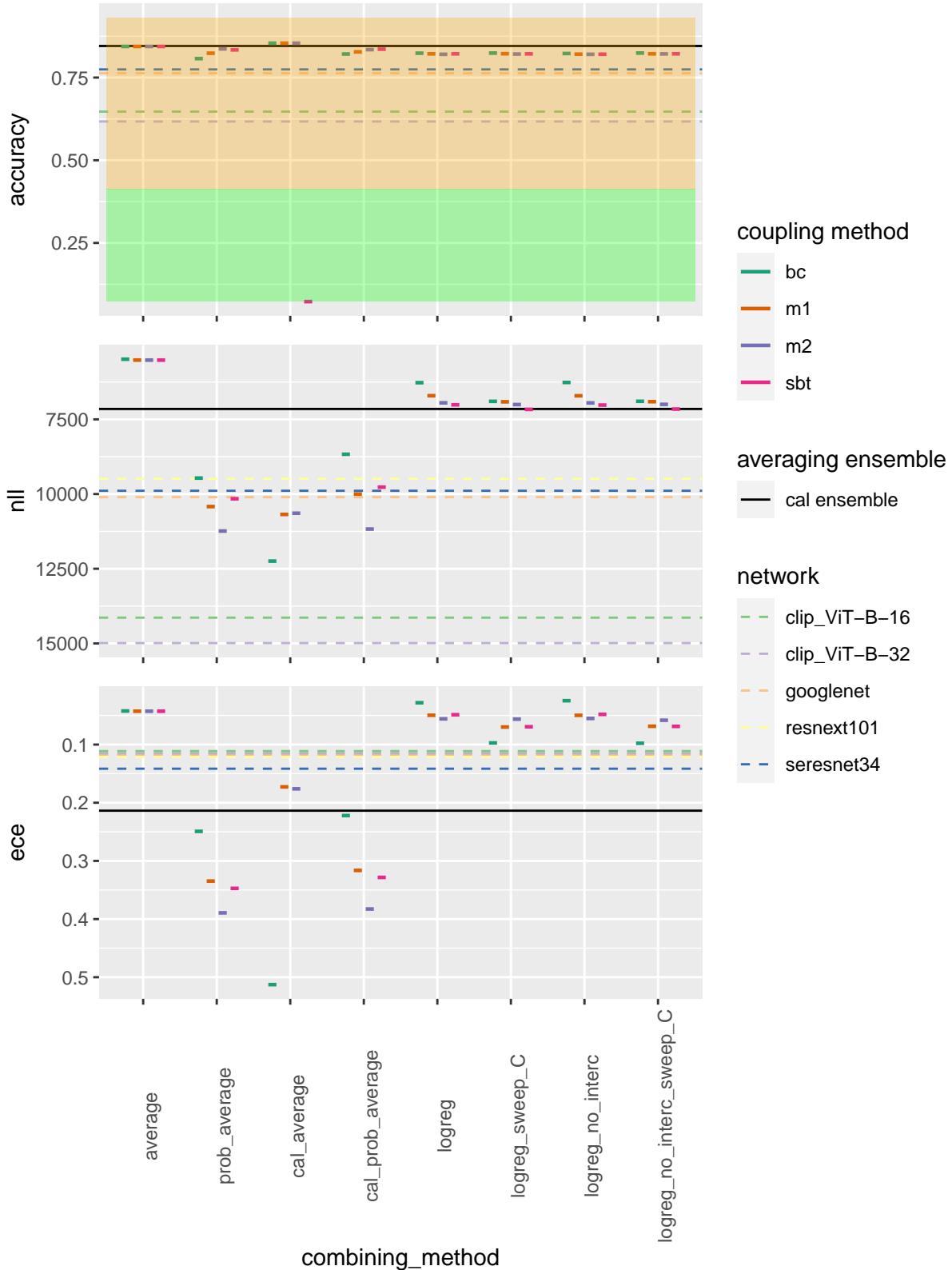
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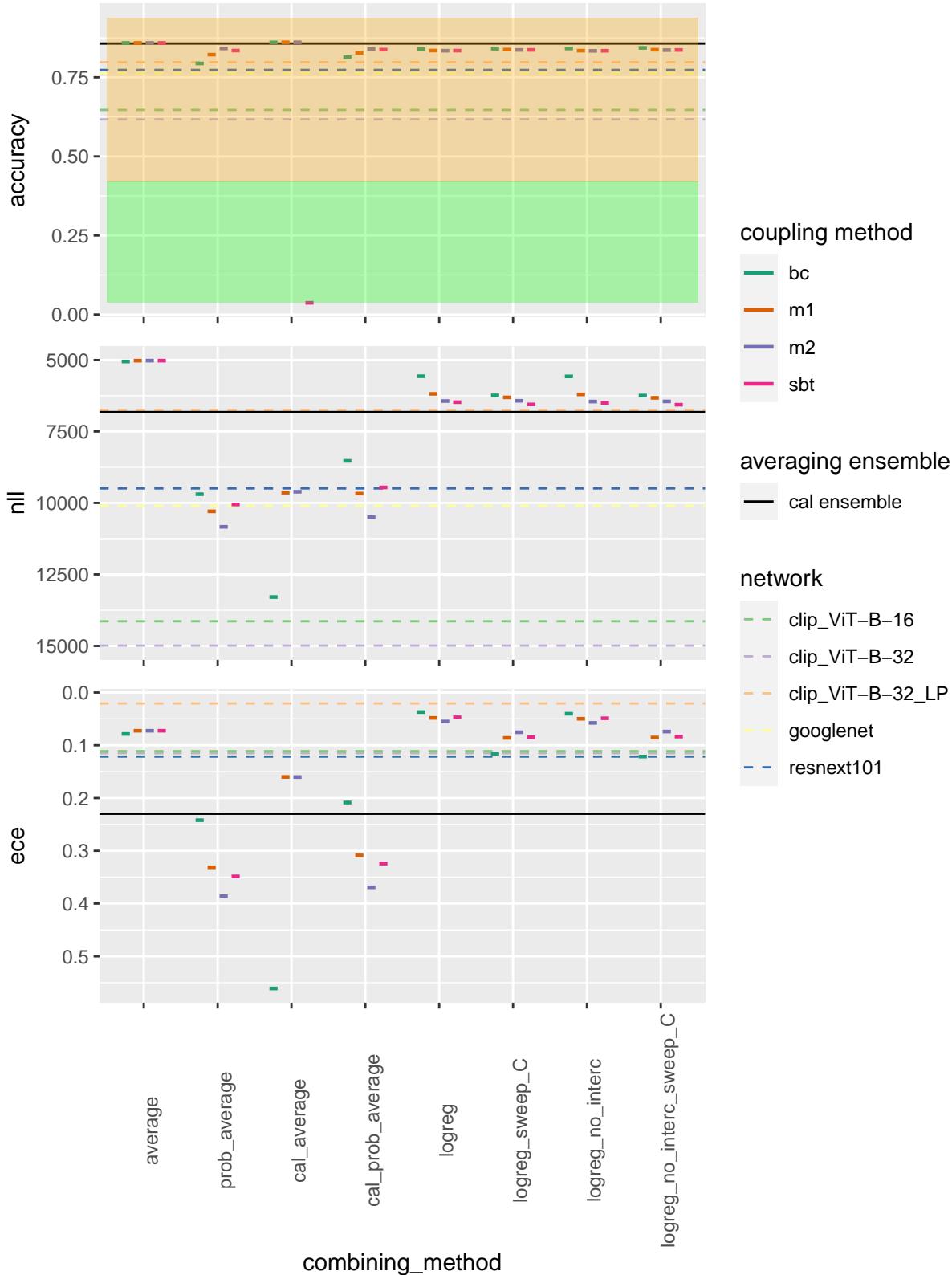
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Error inconsistency 0.47859999537468



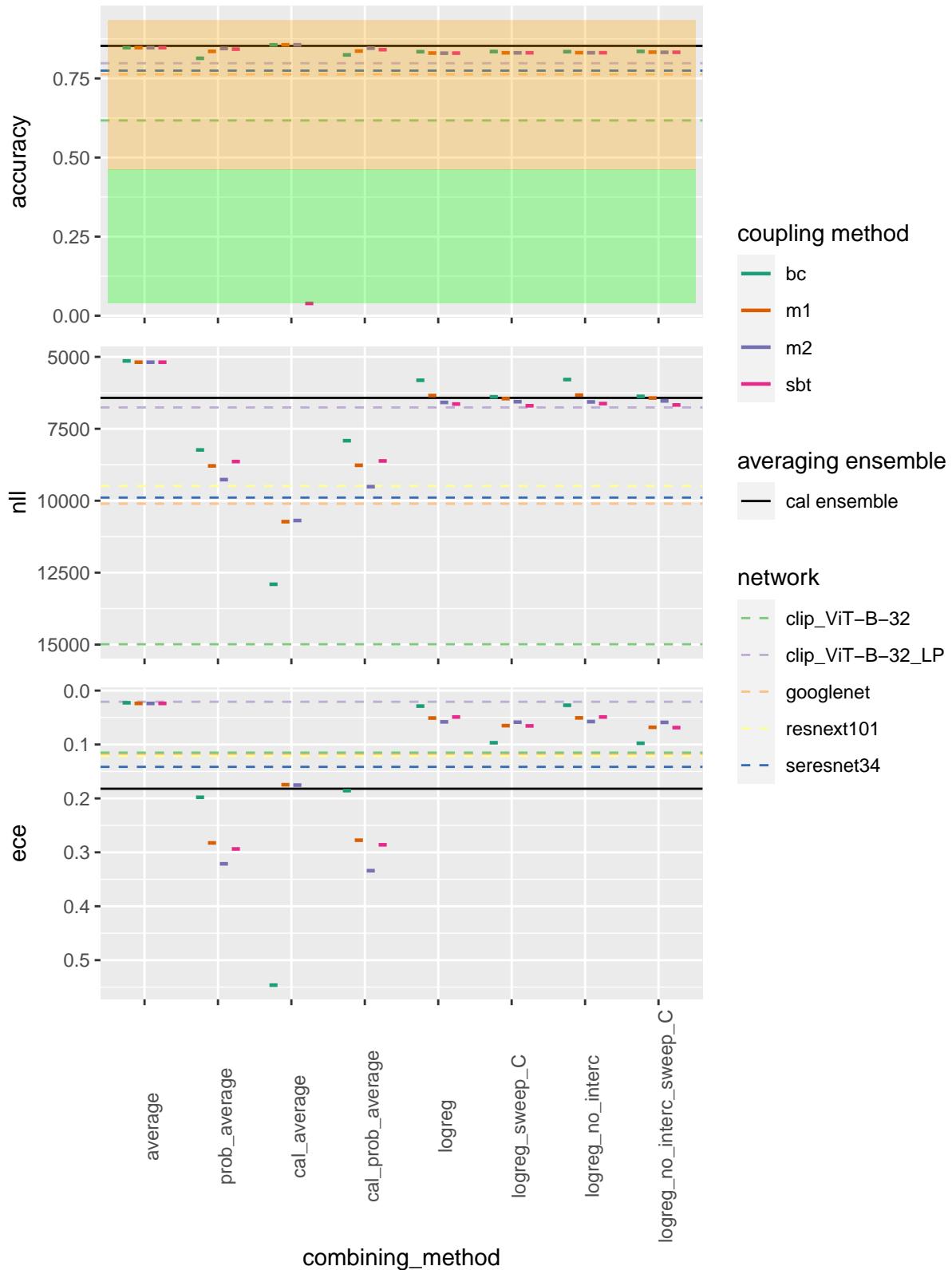
Ensemble metrics
Error inconsistency 0.517799973487854



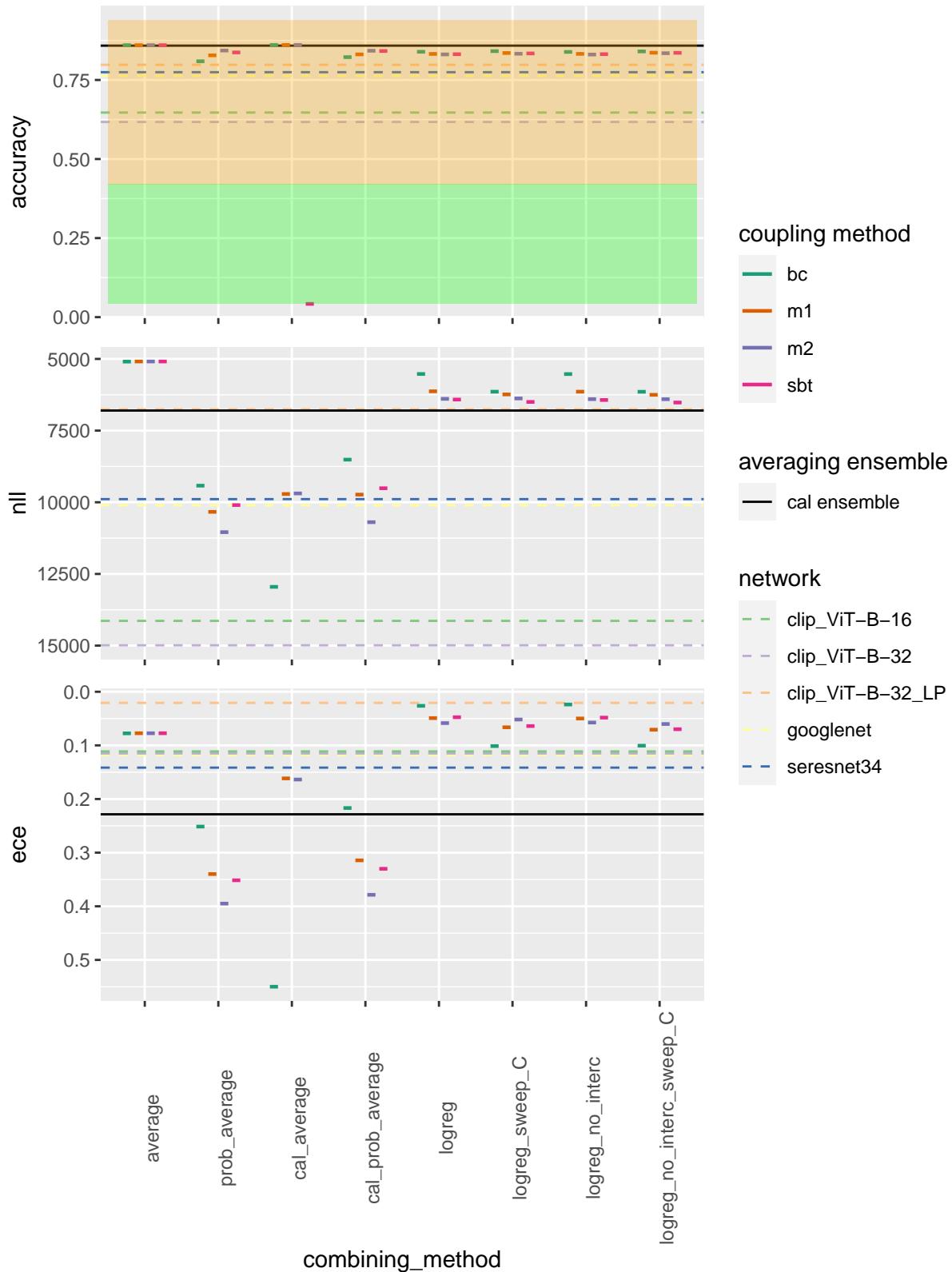
Ensemble metrics
Error inconsistency 0.518400013446808



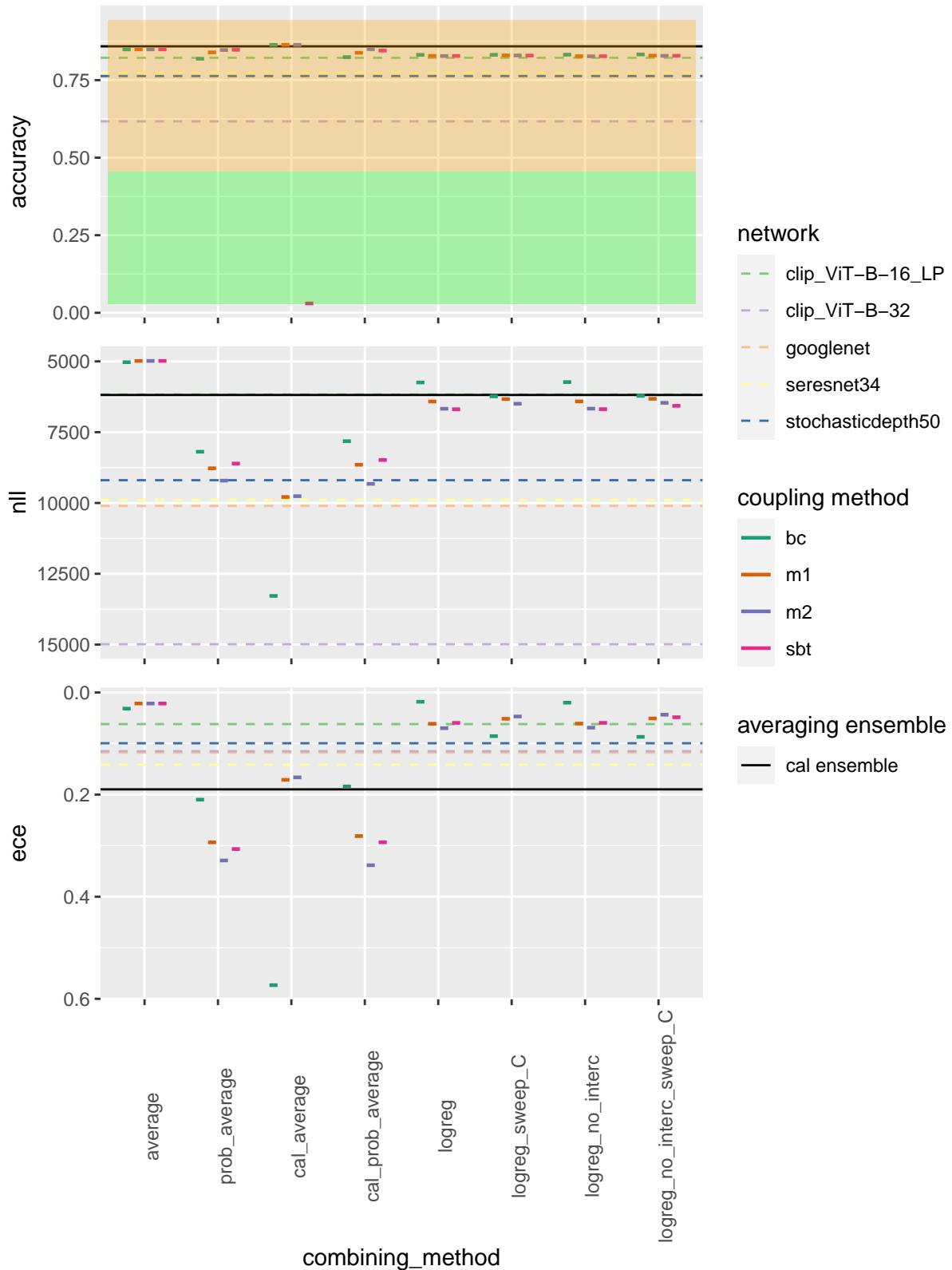
Ensemble metrics
Error inconsistency 0.472699999809265



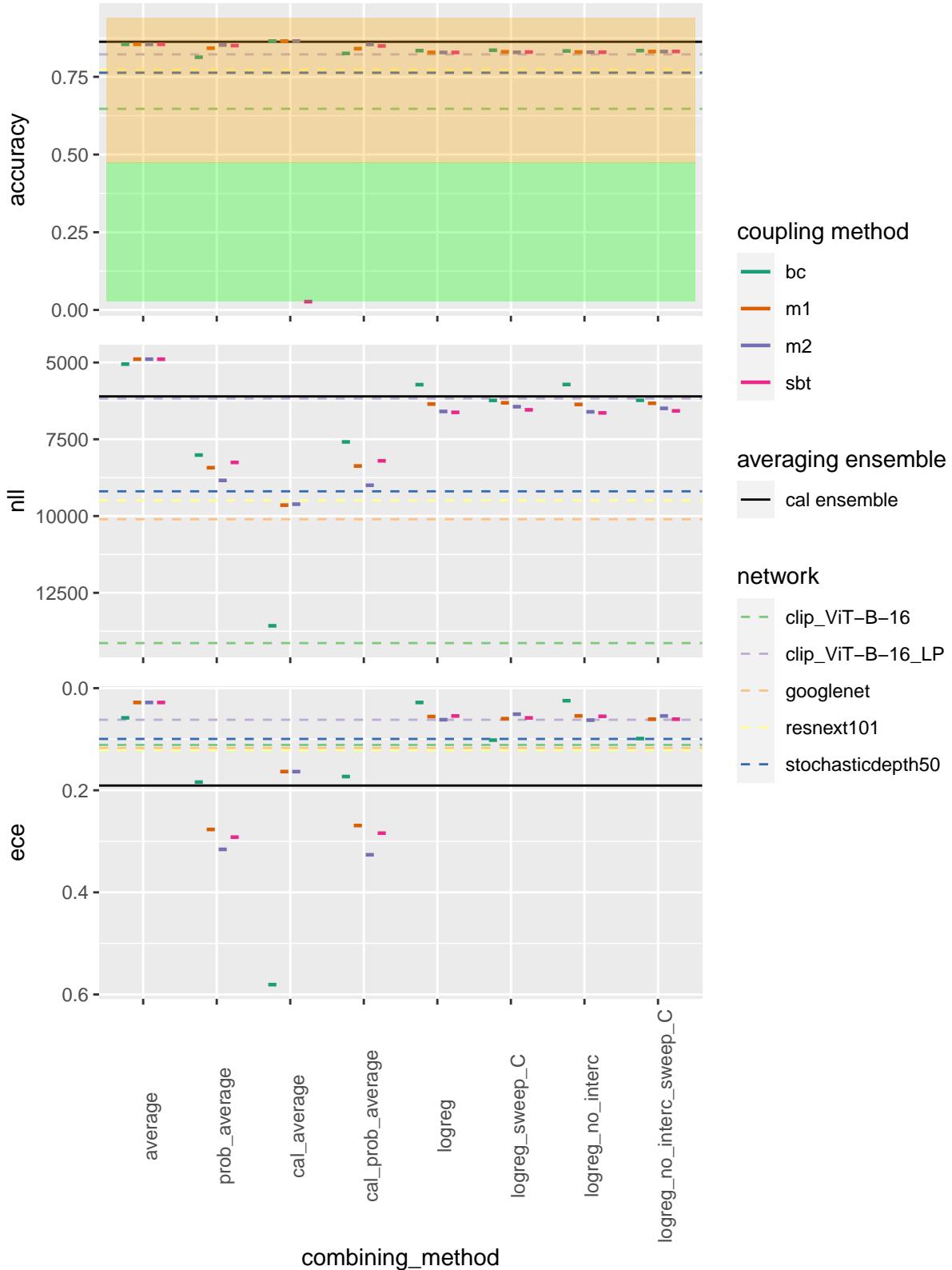
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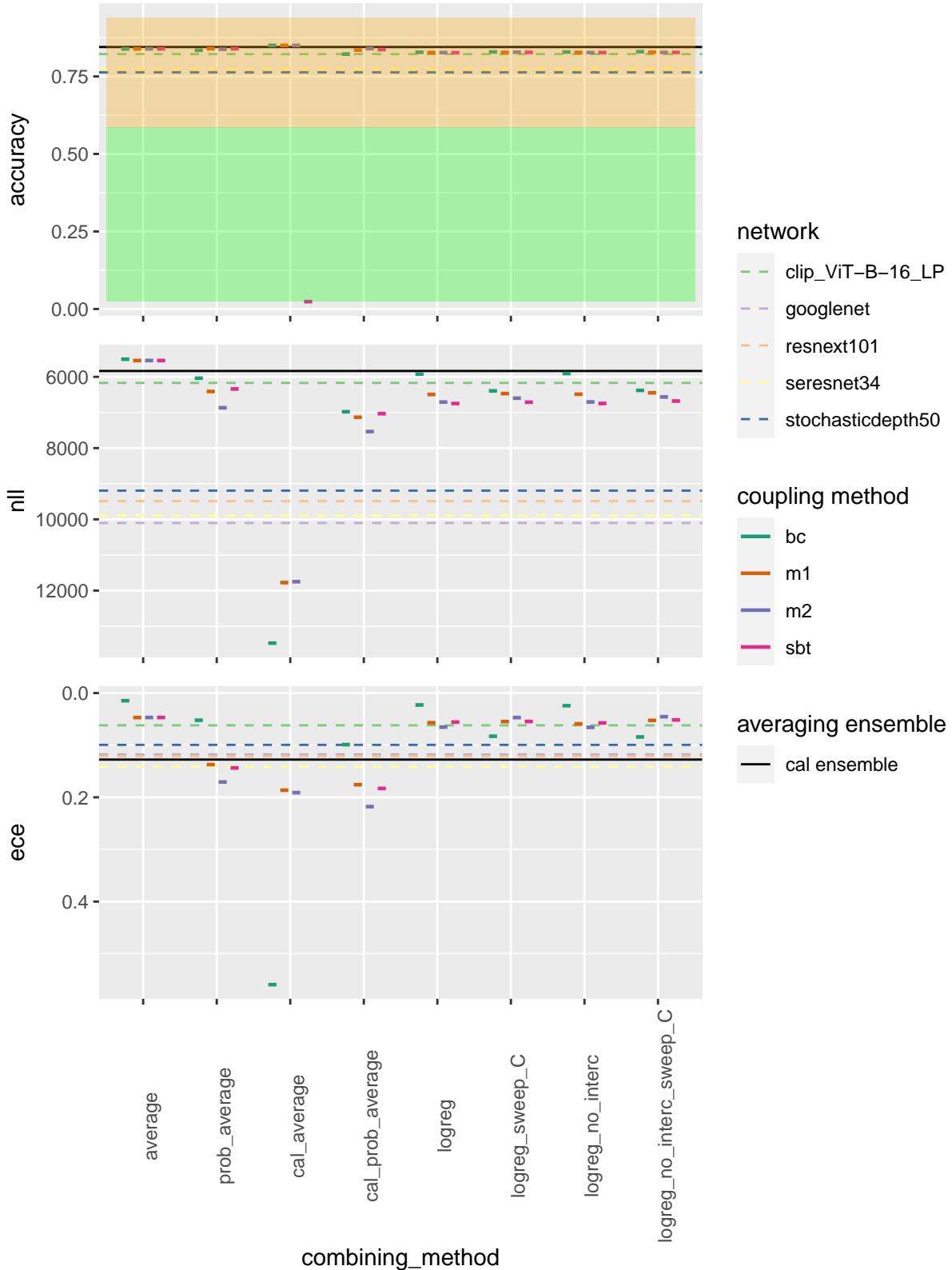
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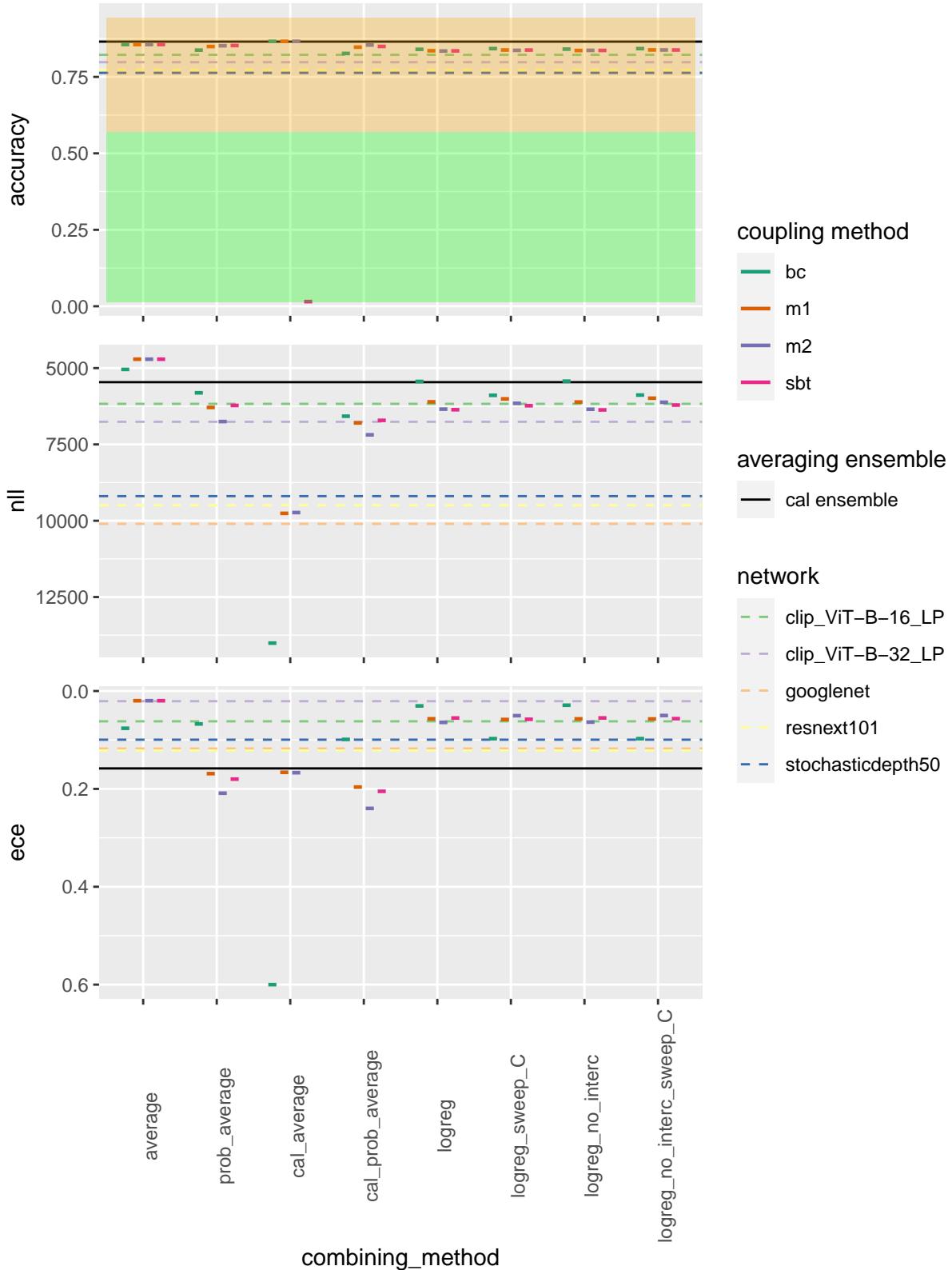
Ensemble metrics
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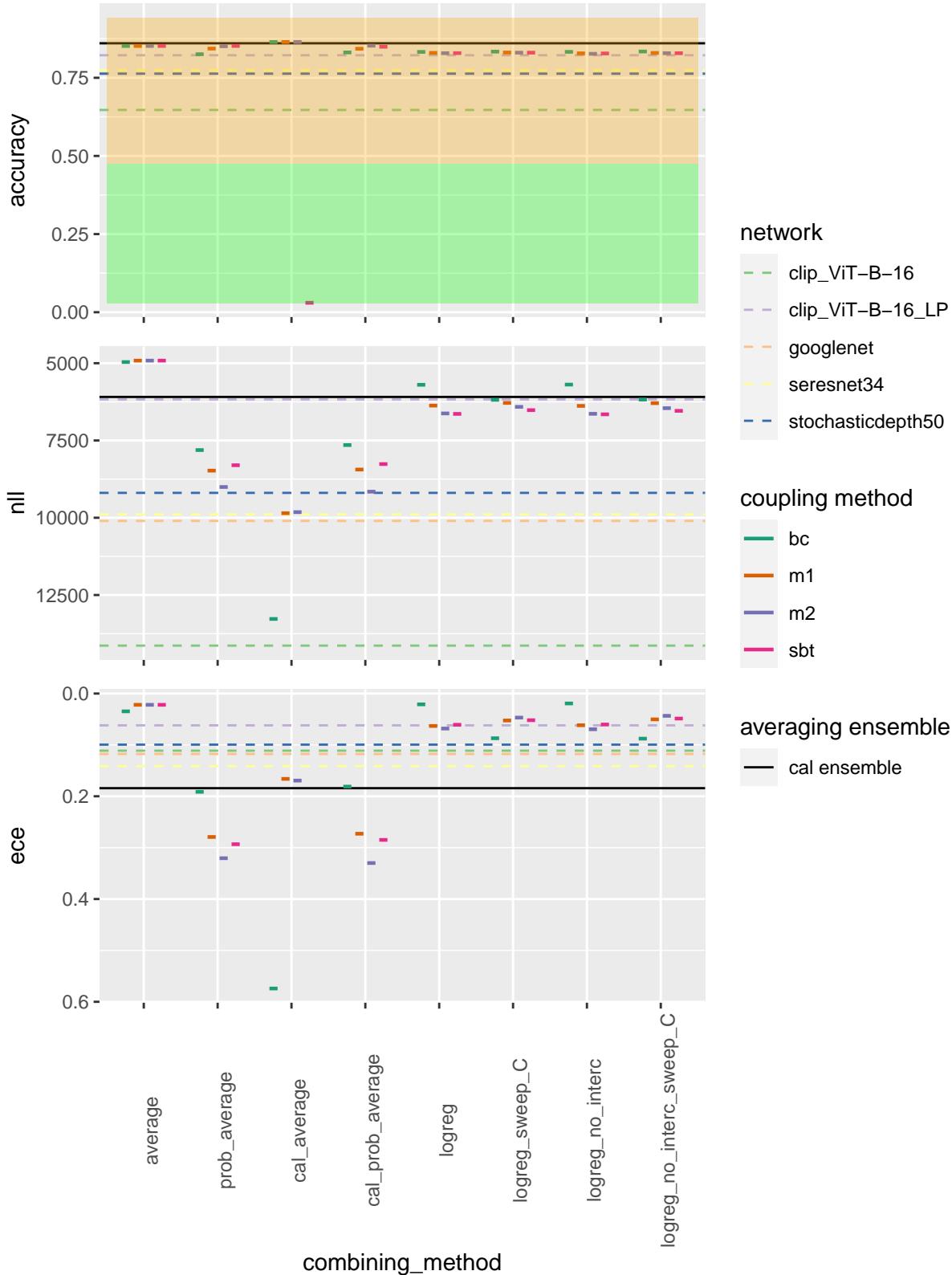
Ensemble metrics
Error inconsistency 0.353499978780746



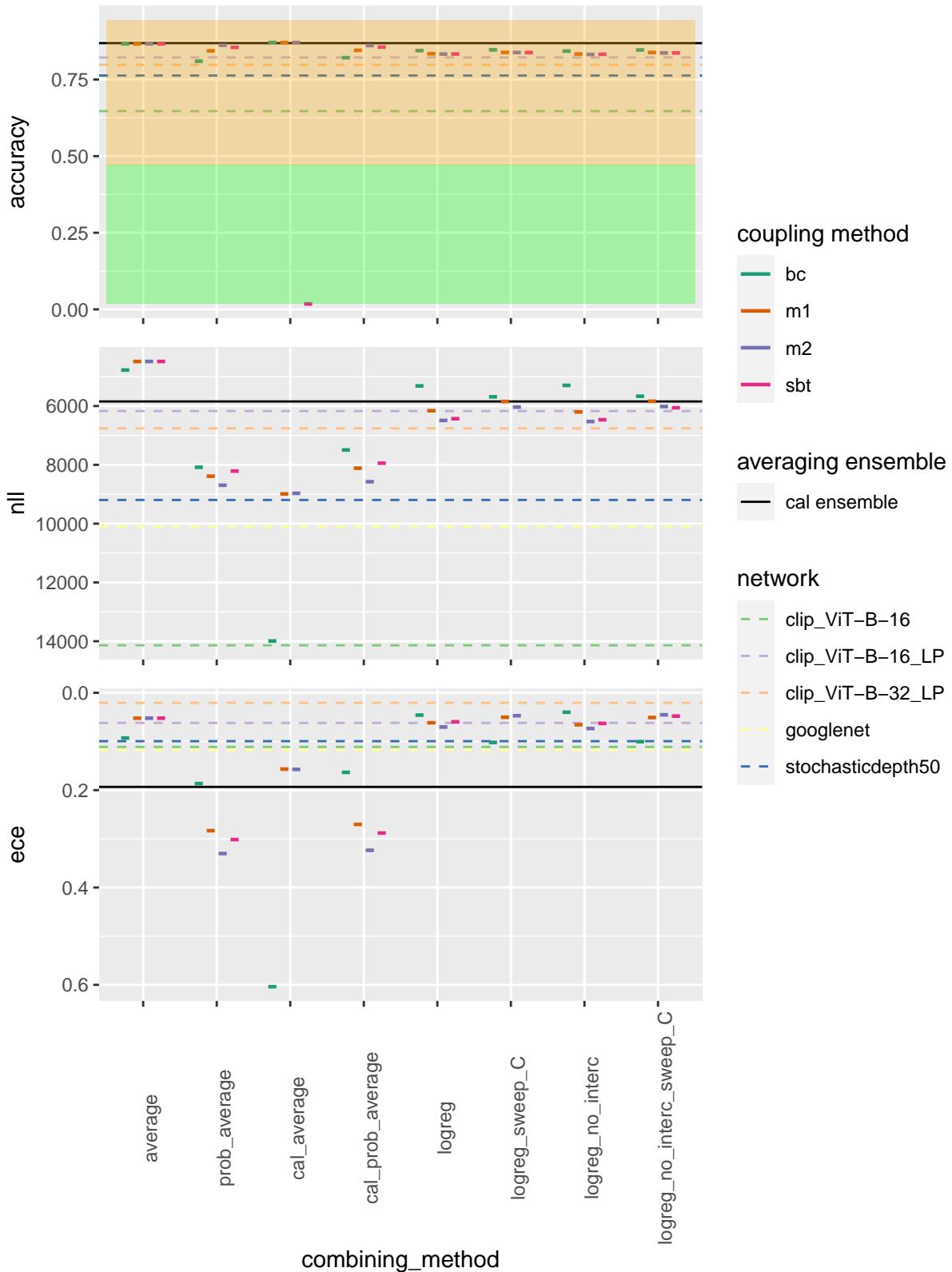
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Error inconsistency 0.373499989509583



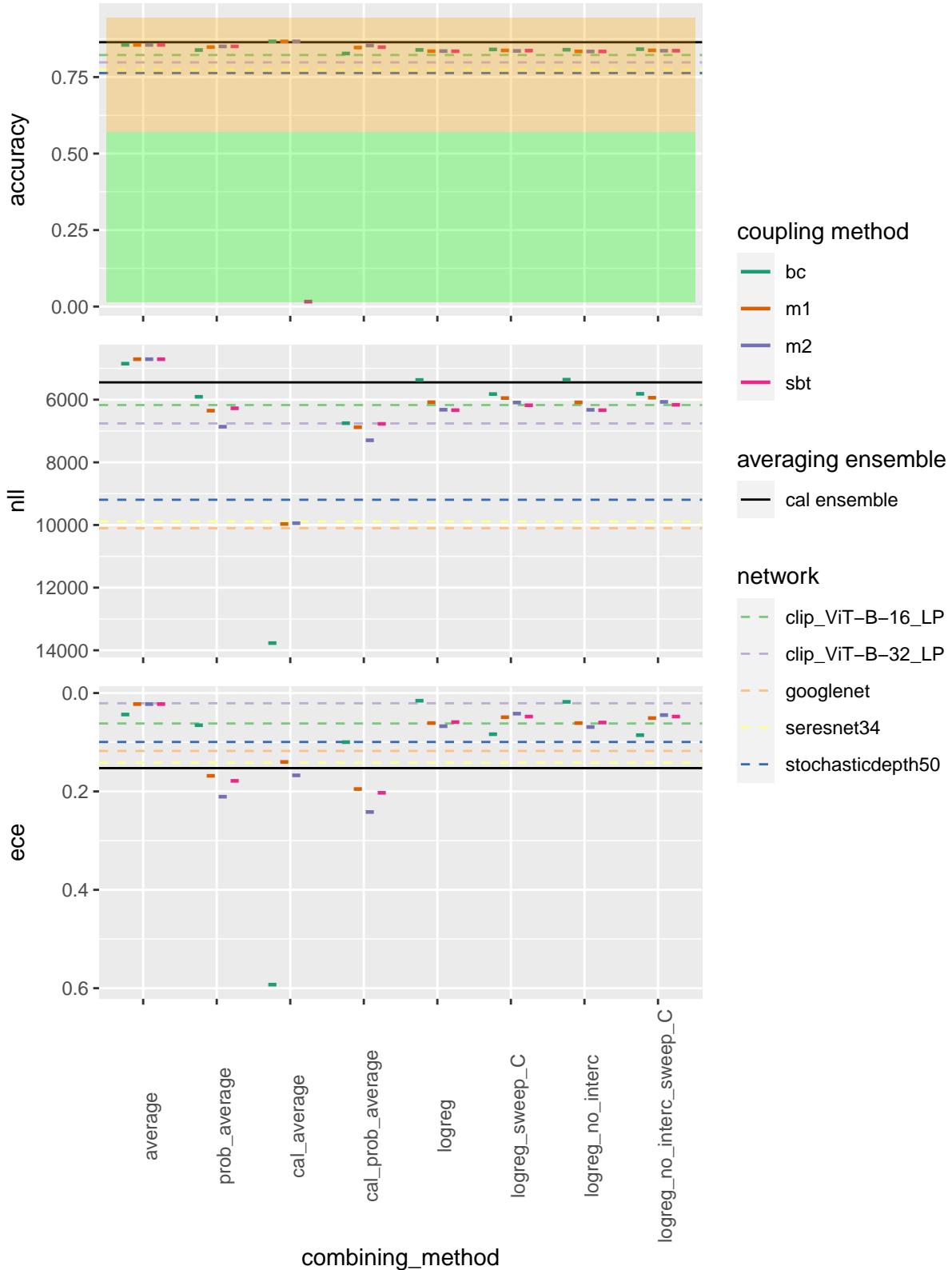
Ensemble metrics
Error inconsistency 0.466899991035461



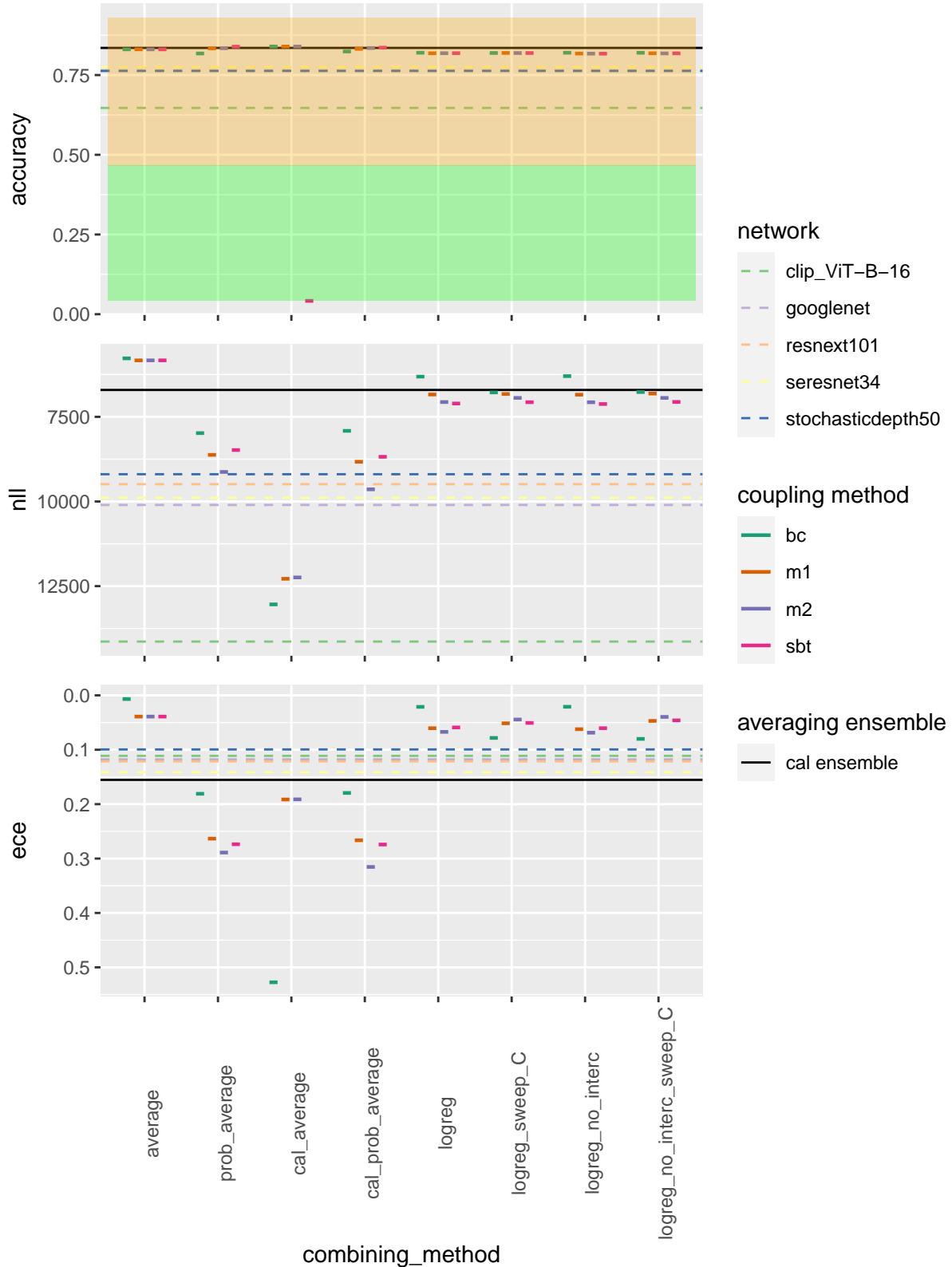
Ensemble metrics
Error inconsistency 0.472199976444244



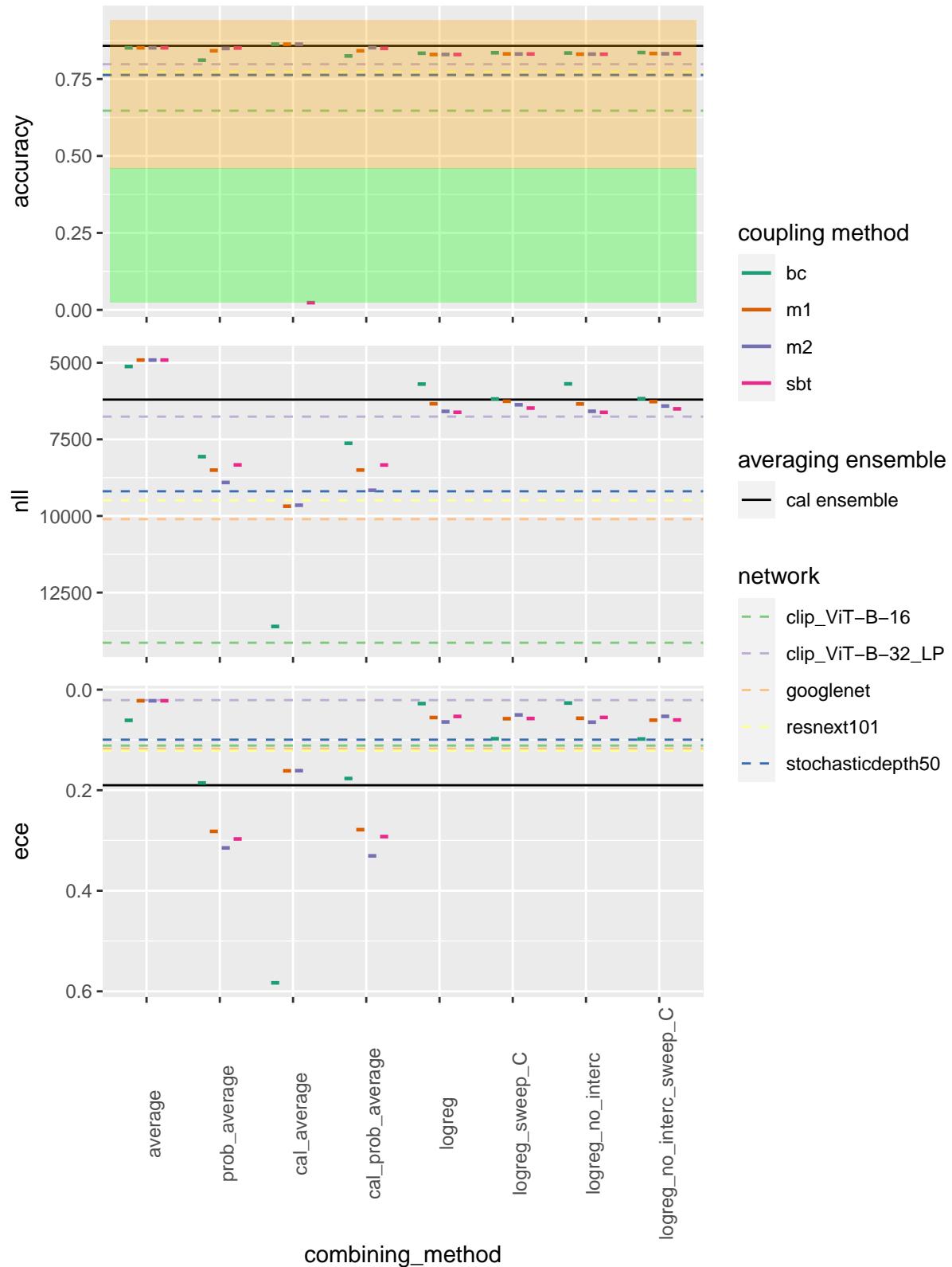
Ensemble metrics
Error inconsistency 0.373400002717972



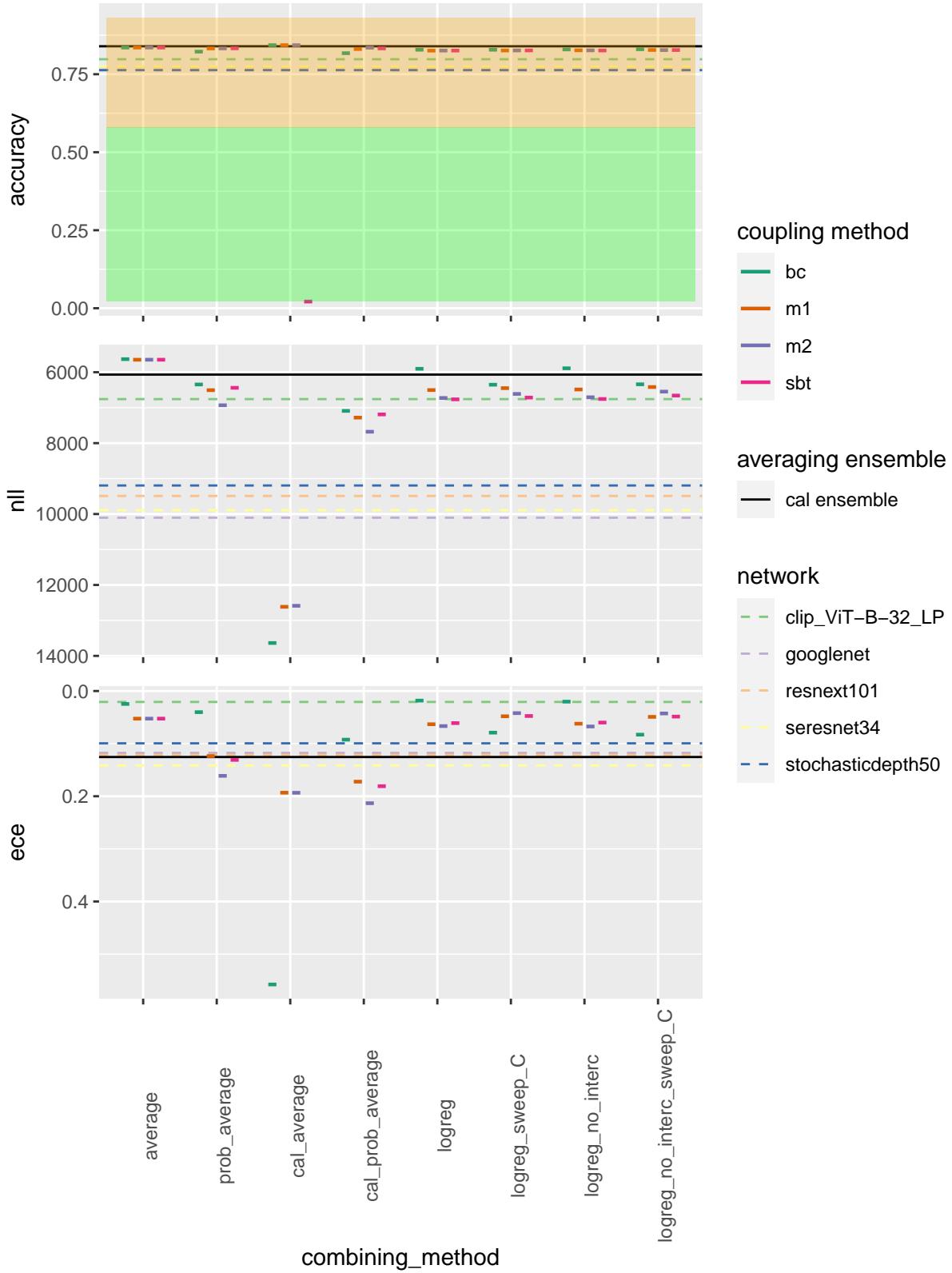
Ensemble metrics
Error inconsistency 0.463299989700317



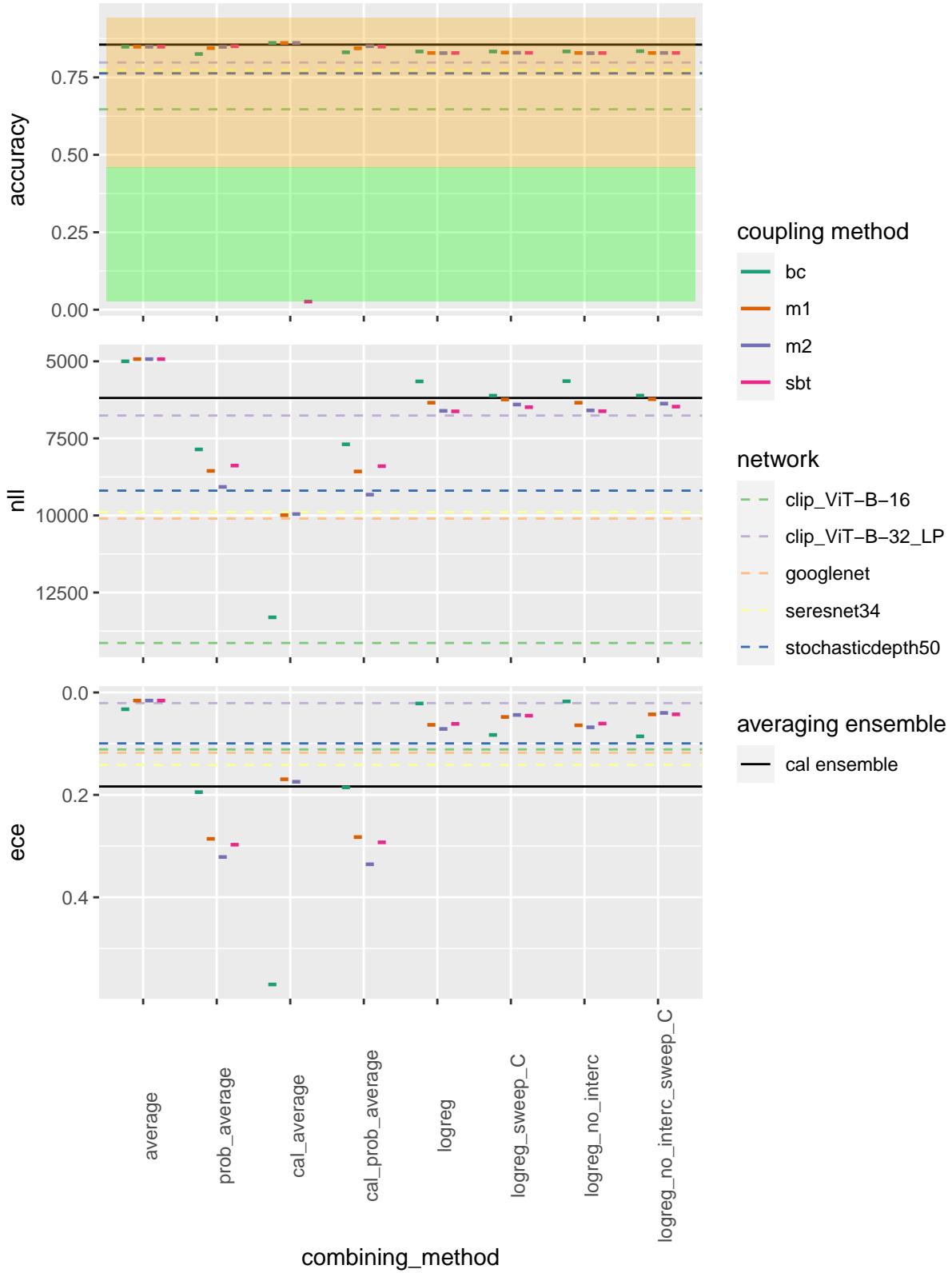
Ensemble metrics
Error inconsistency 0.482899993658066



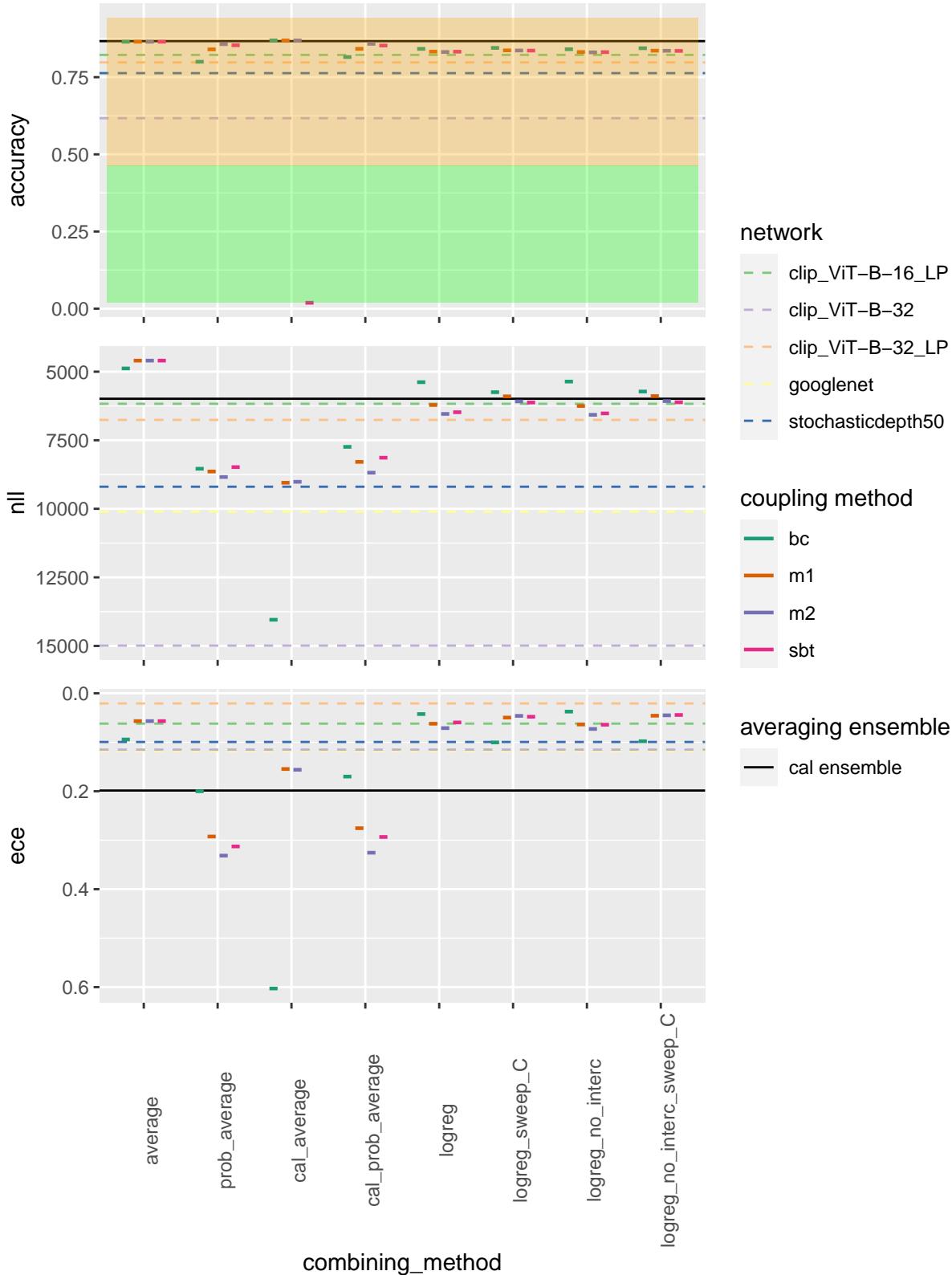
Ensemble metrics
Error inconsistency 0.351300001144409



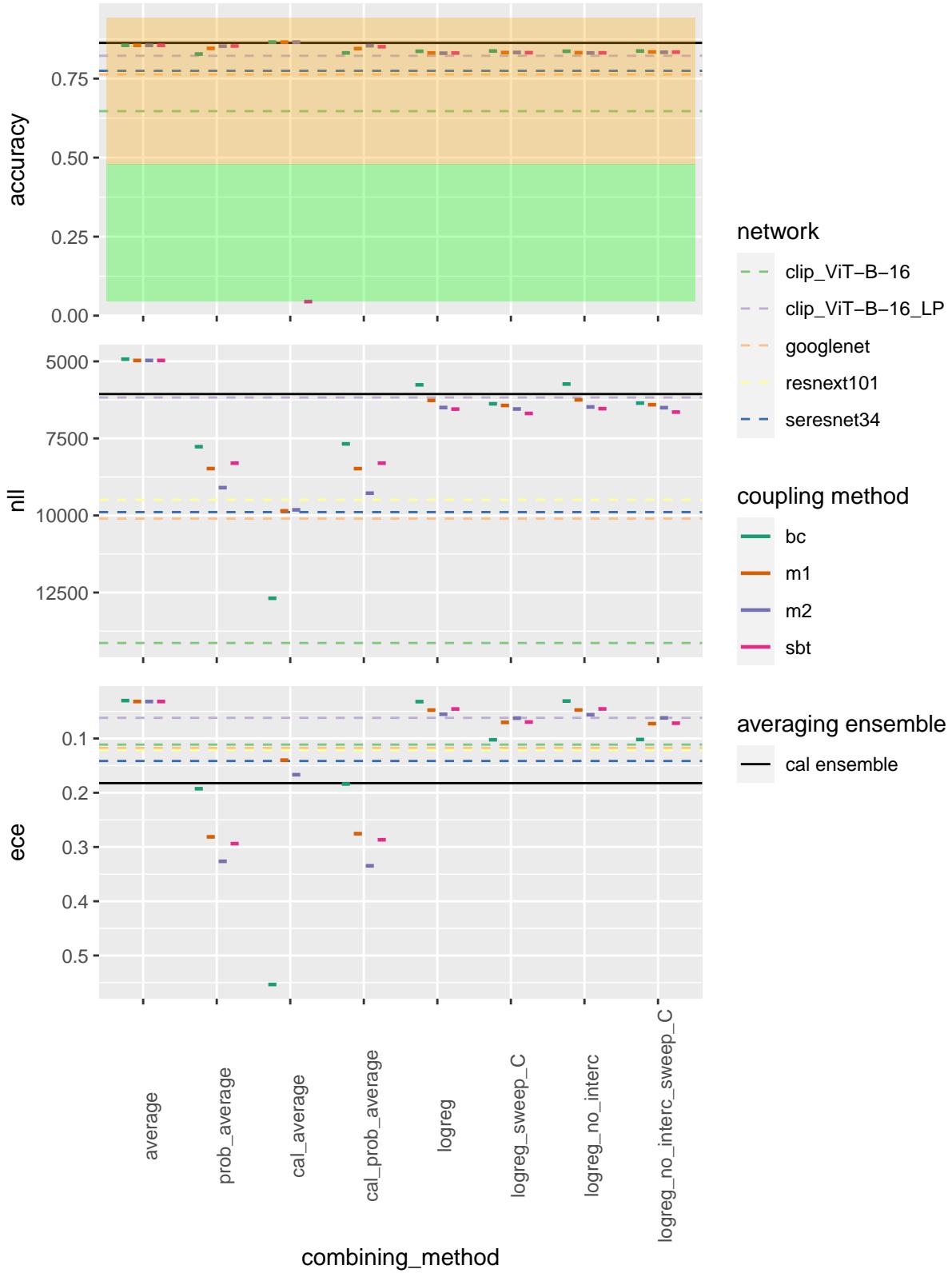
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Error inconsistency 0.48319998383522



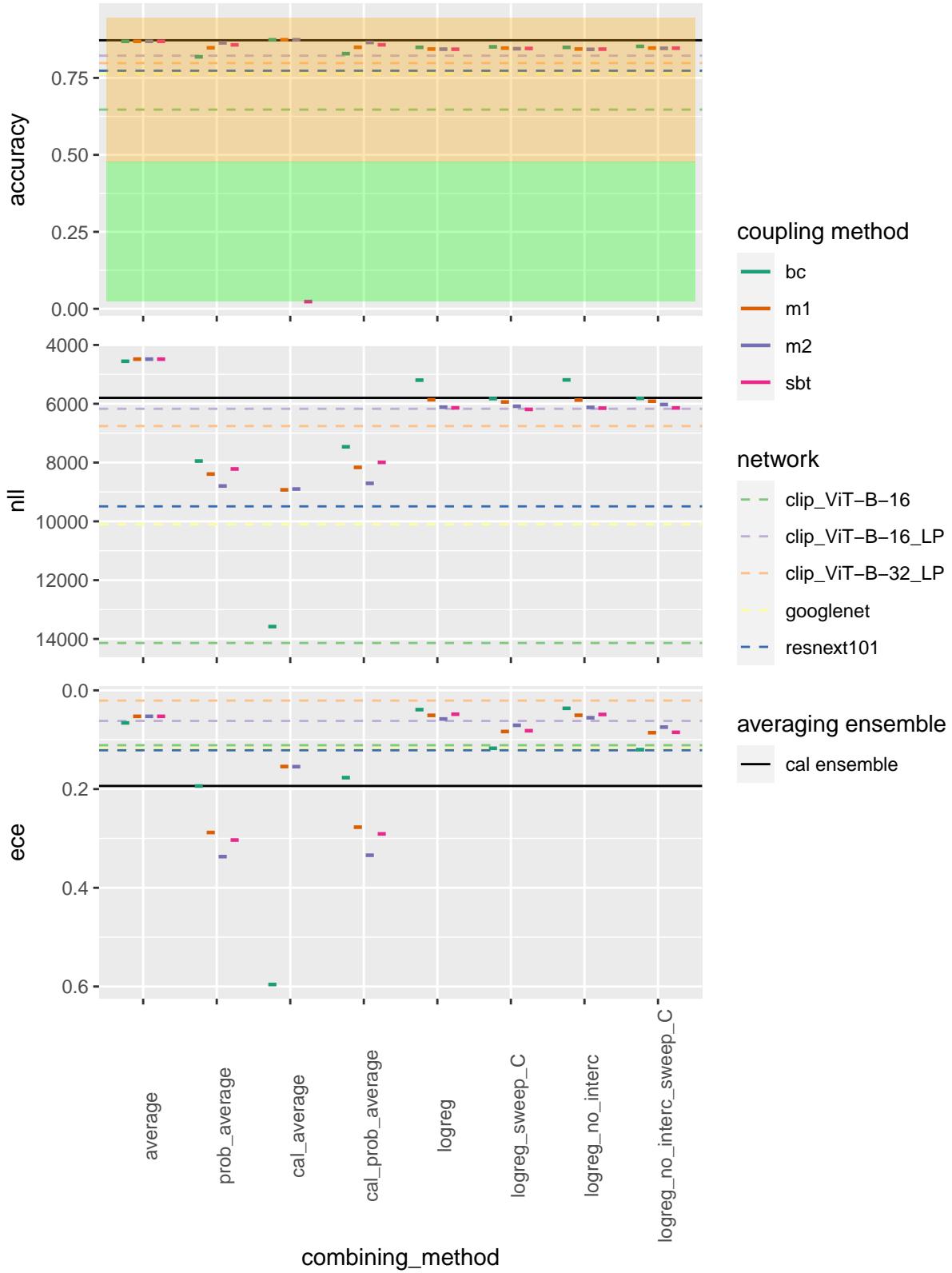
Ensemble metrics
Error inconsistency 0.480499982833862



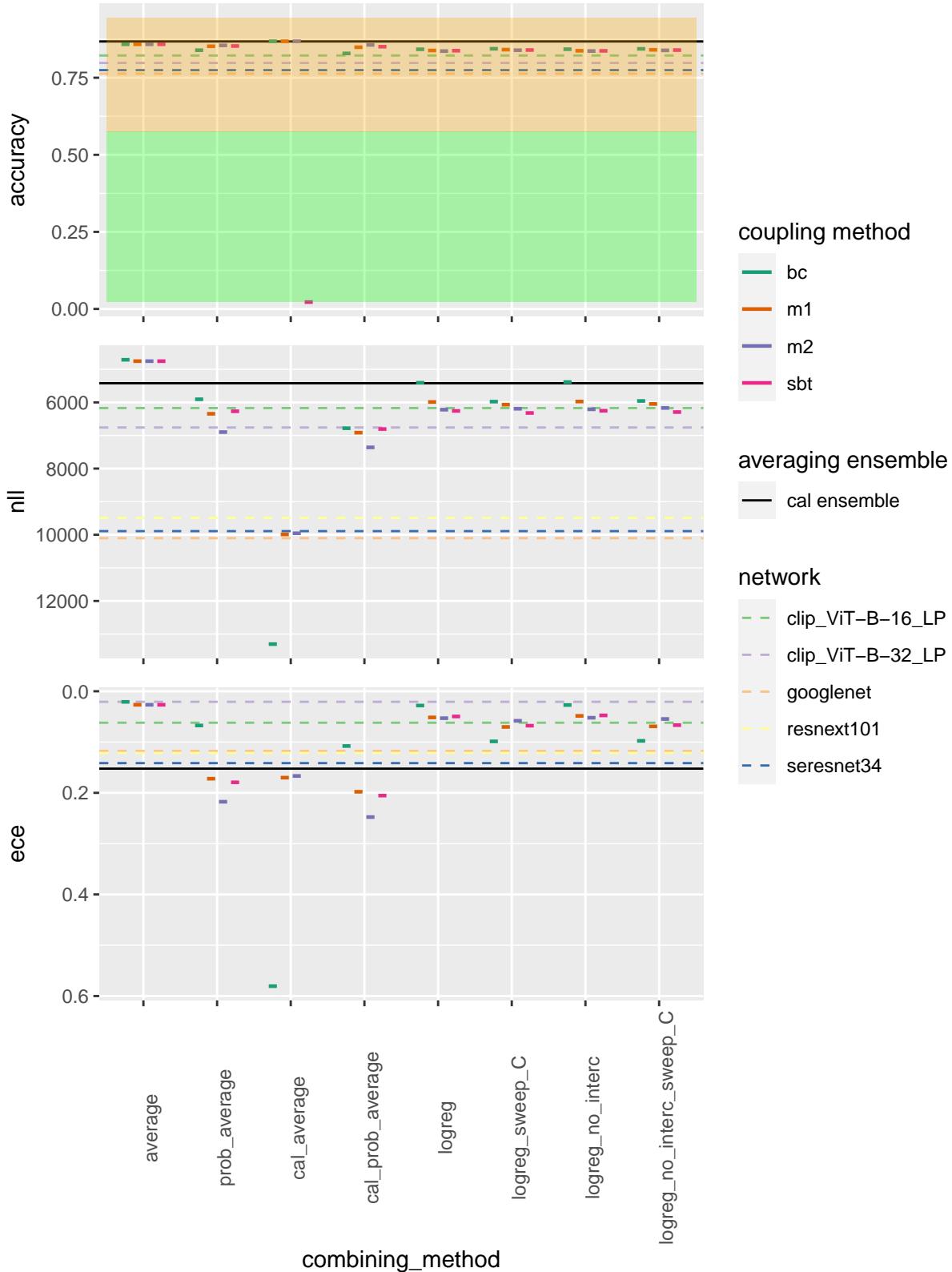
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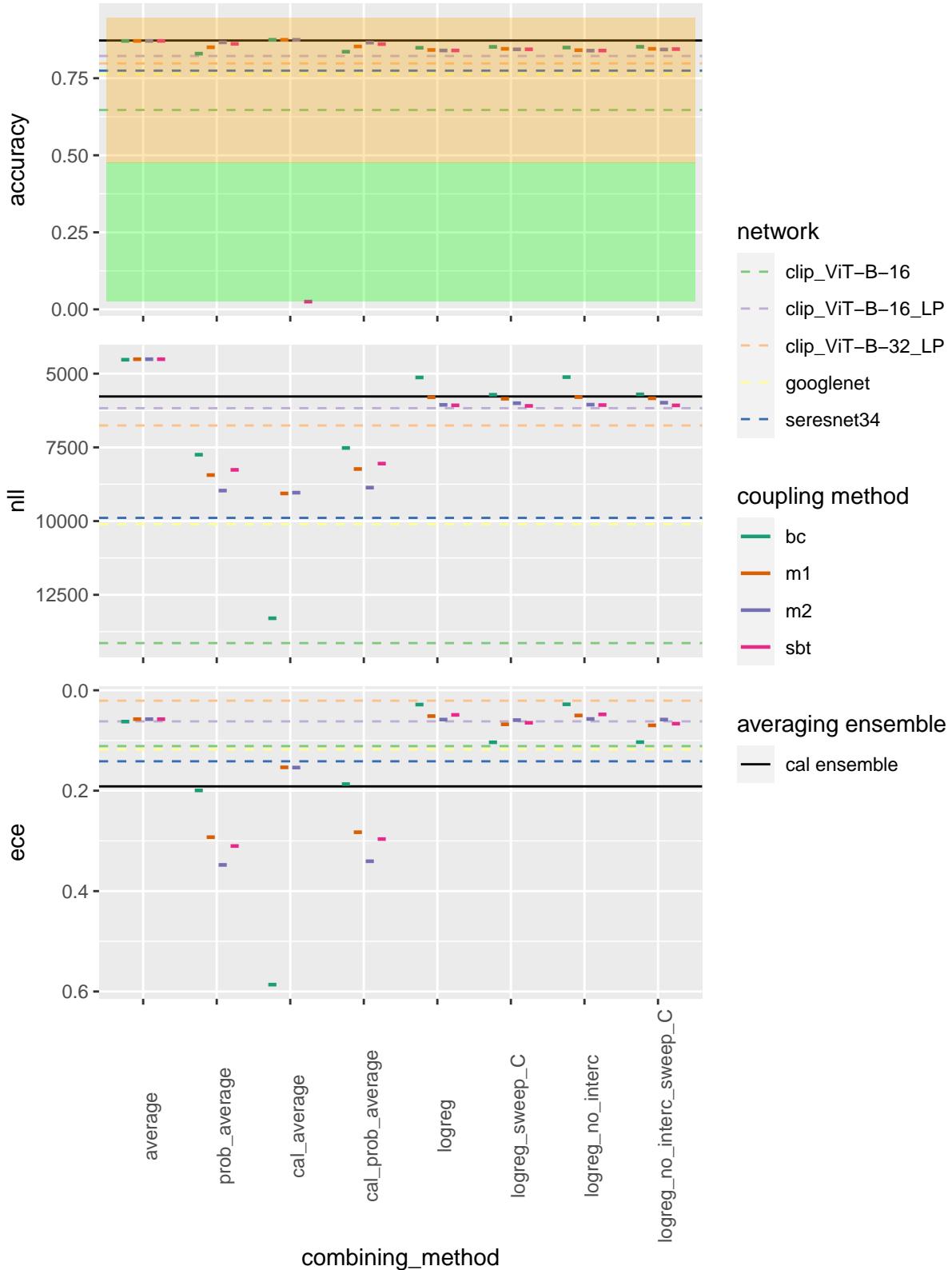
Ensemble metrics
Error inconsistency 0.469300001859665



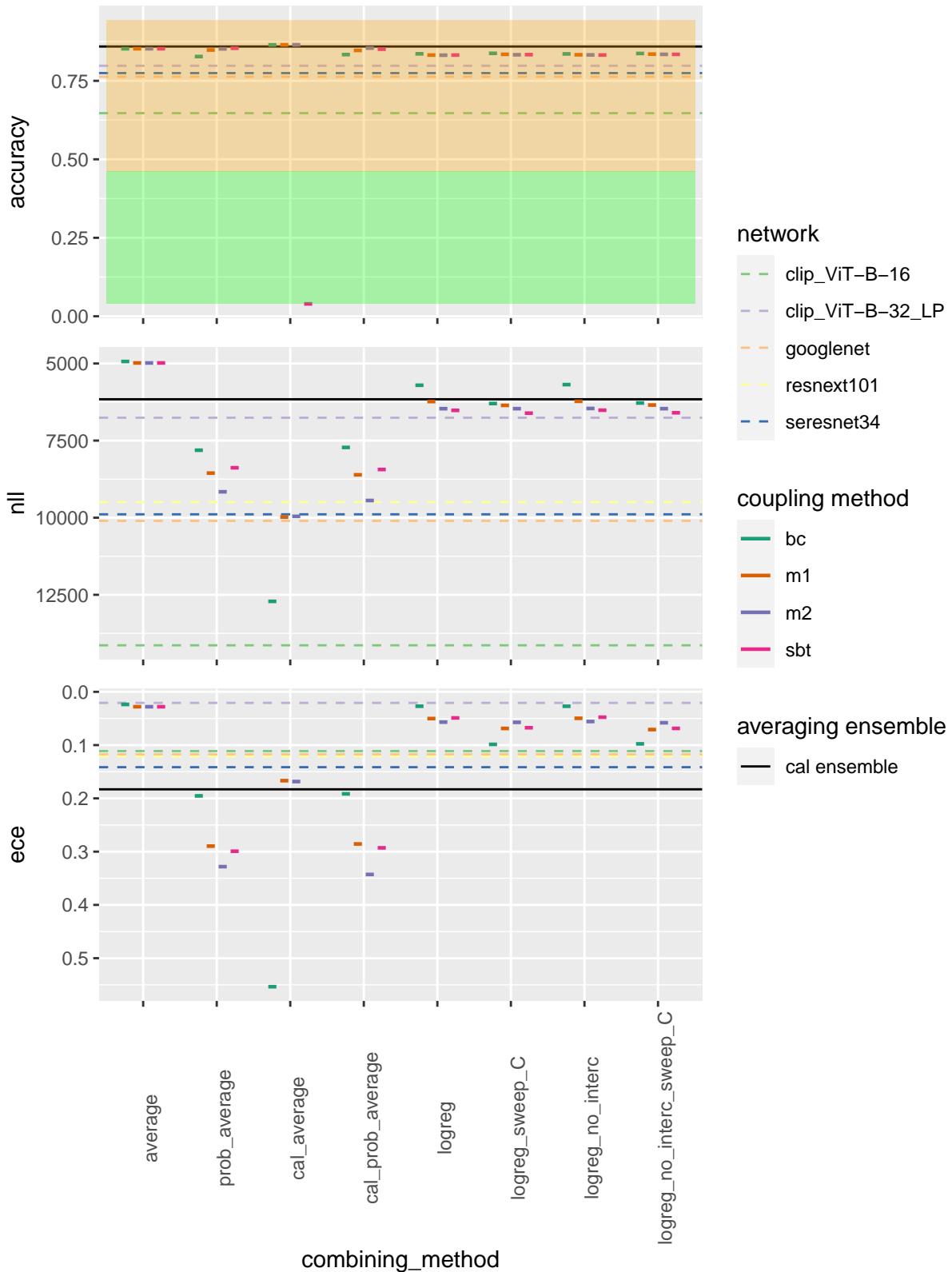
Ensemble metrics
Error inconsistency 0.369699984788895



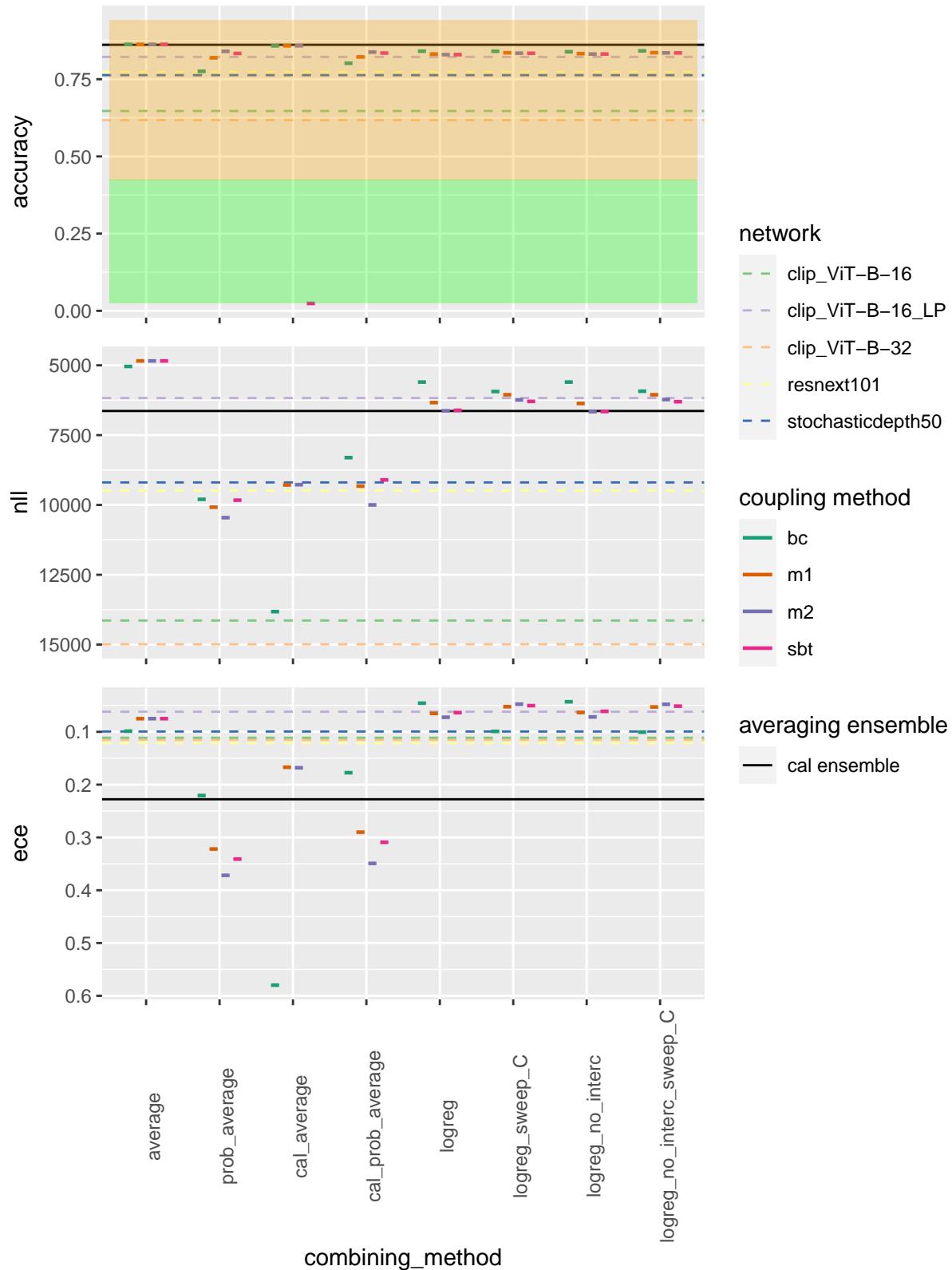
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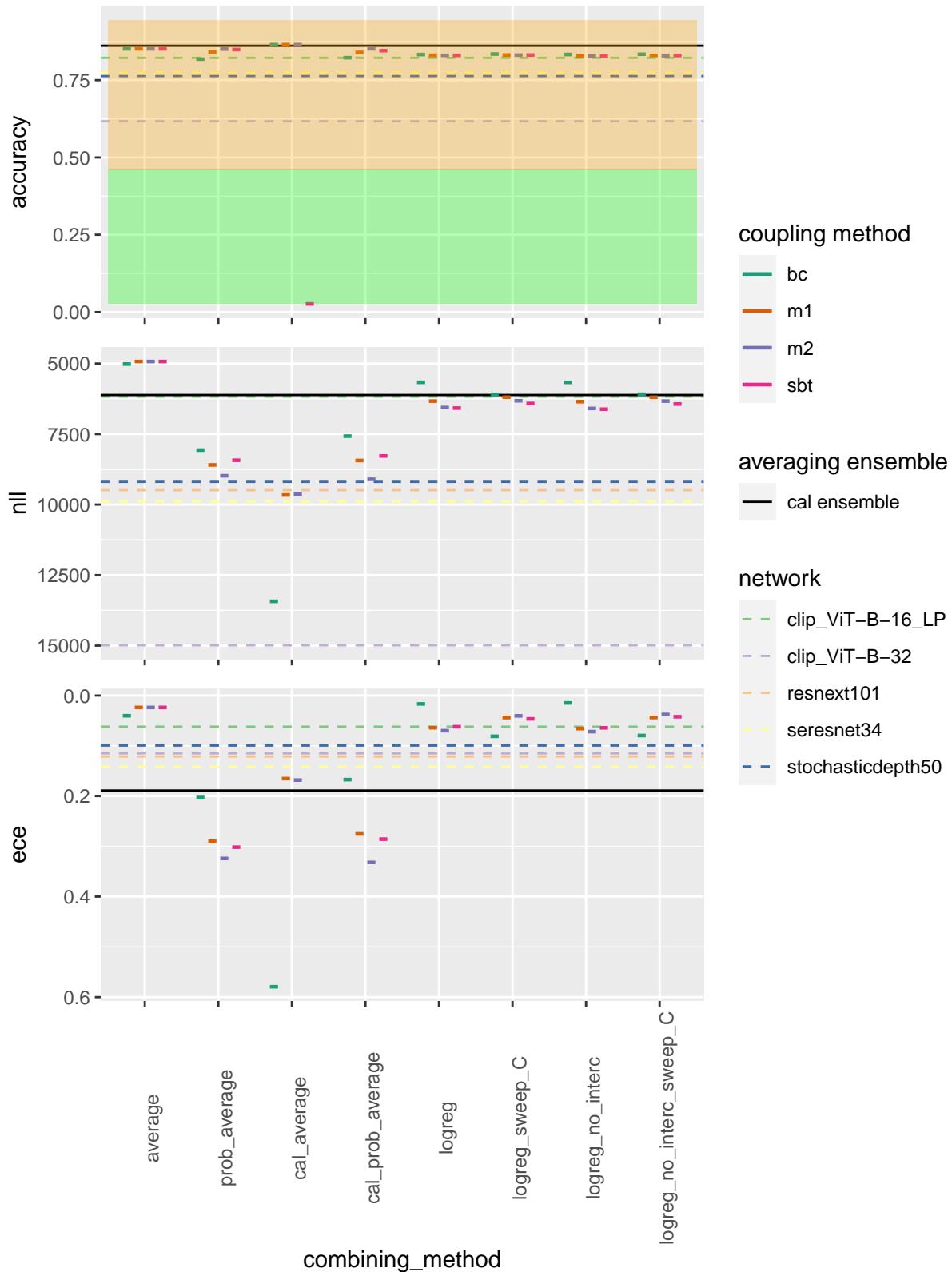
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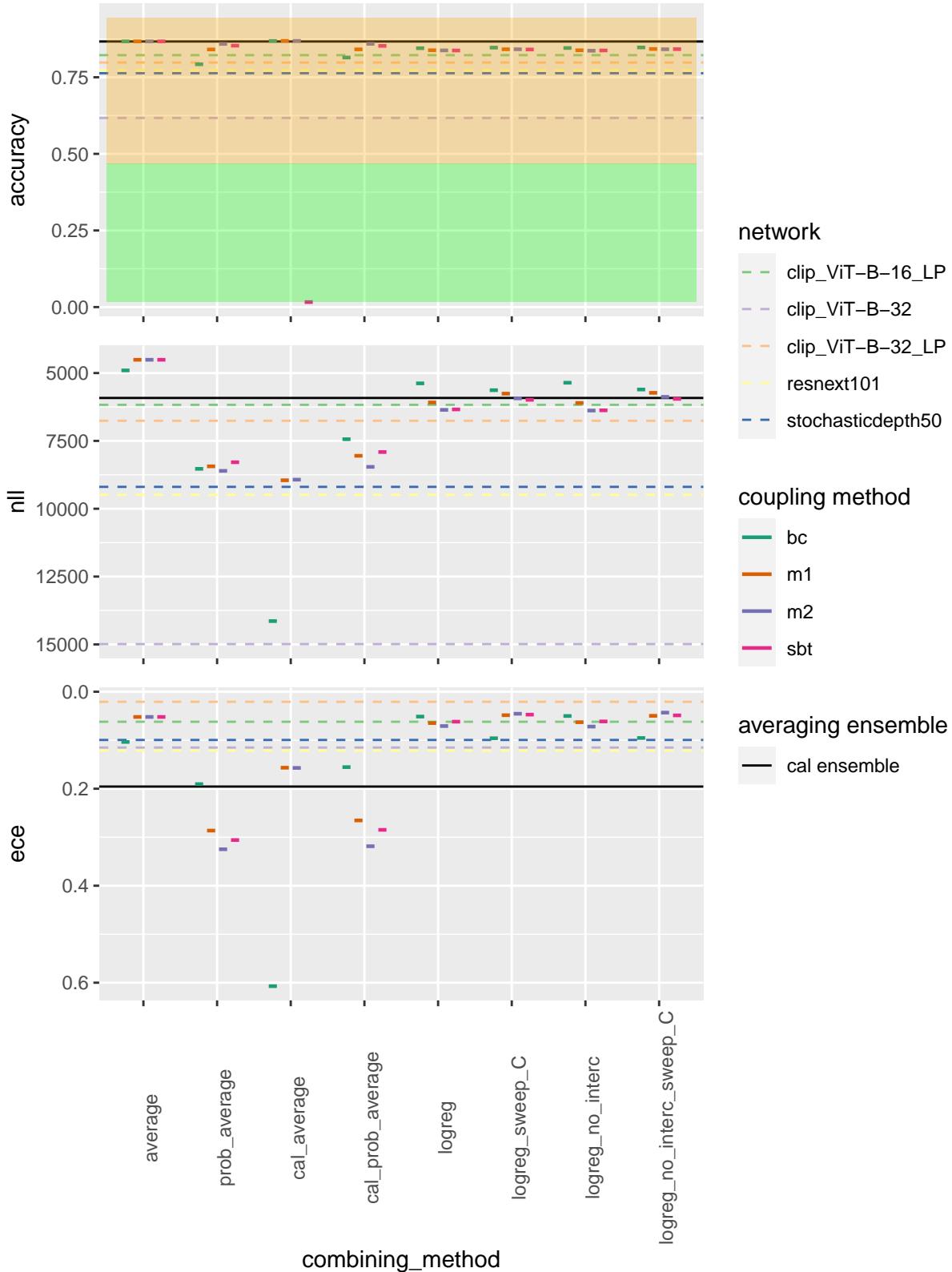
Ensemble metrics
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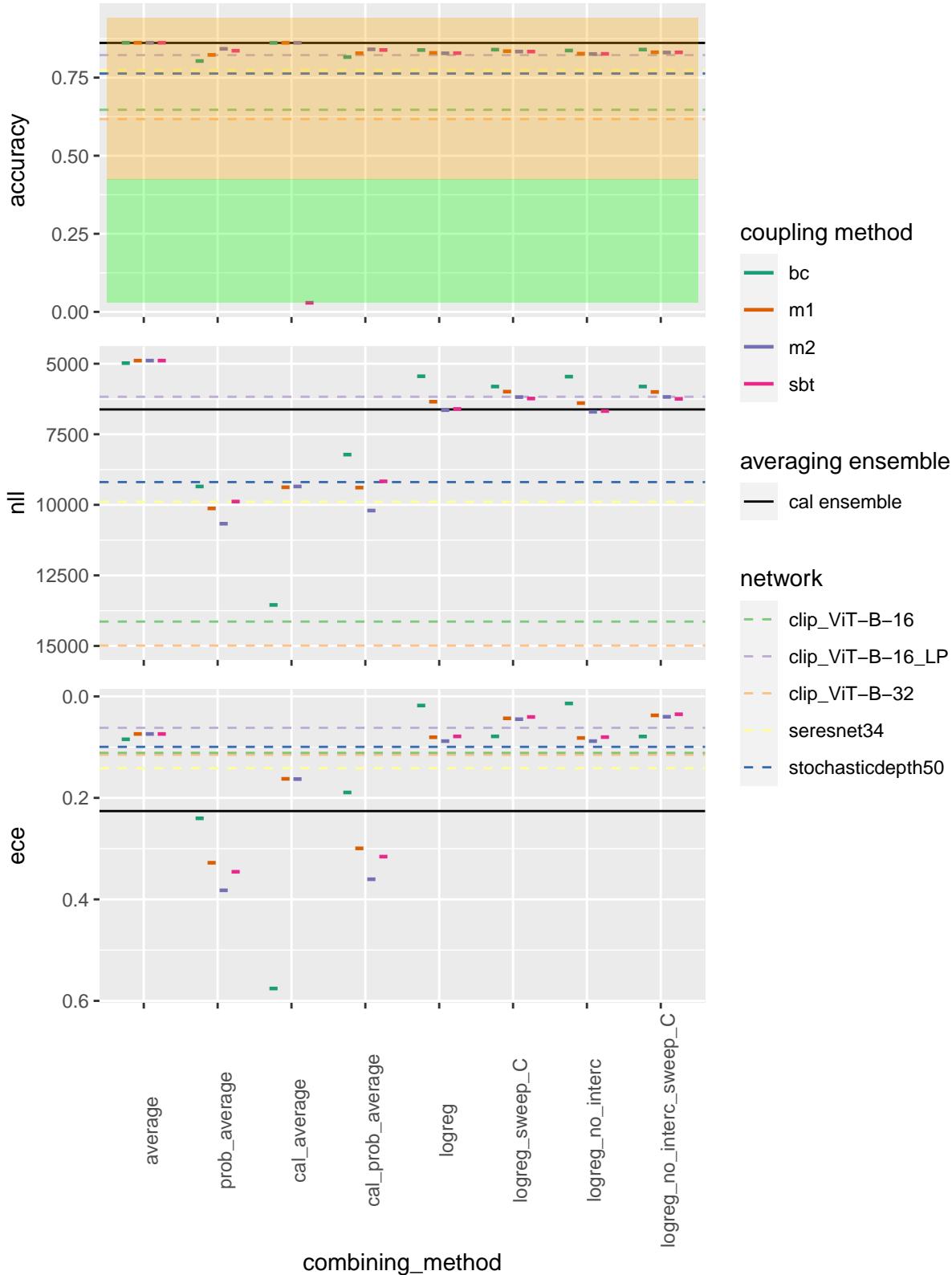
Ensemble metrics
Error inconsistency 0.484399974346161



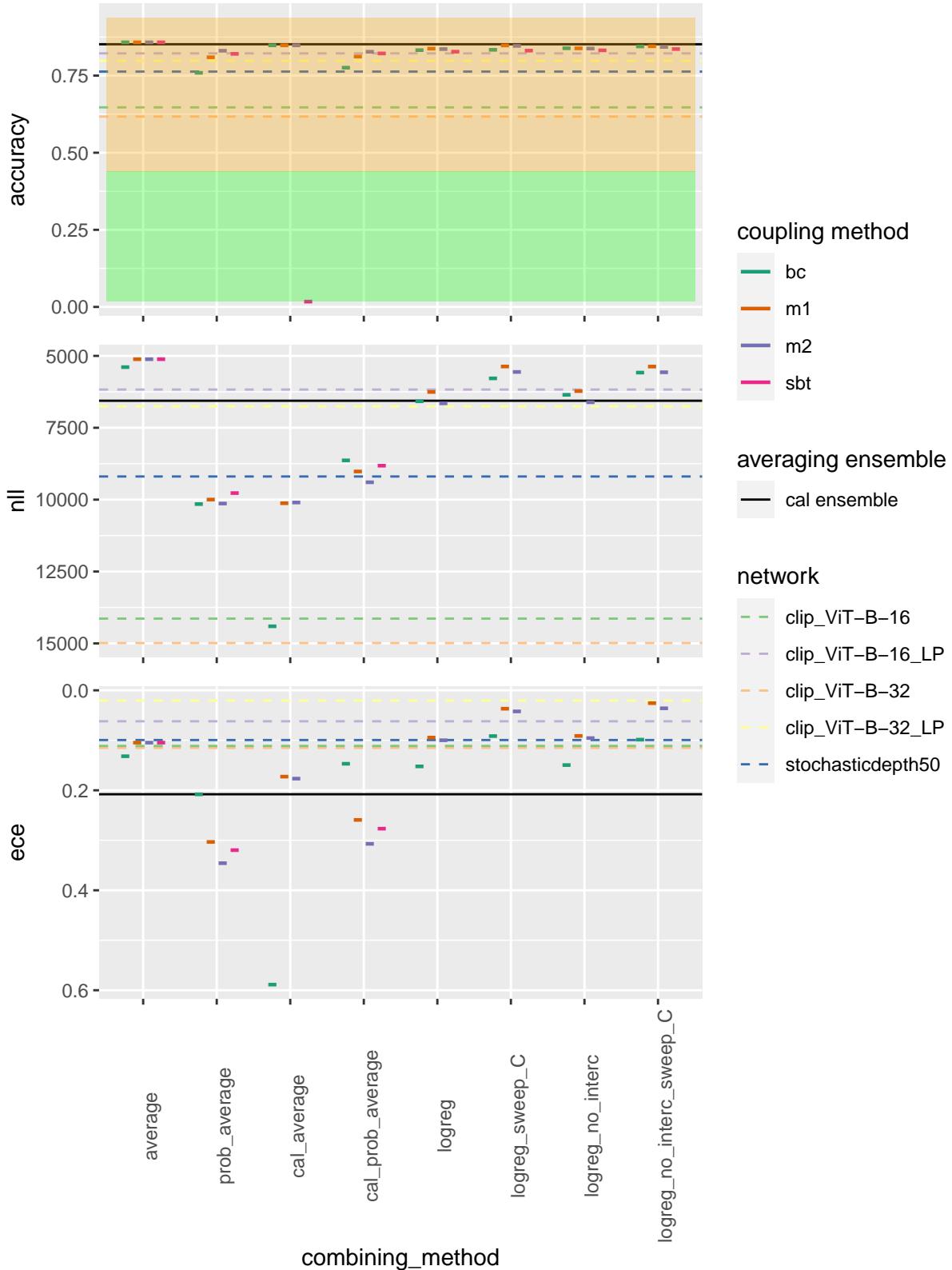
Ensemble metrics
Error inconsistency 0.476999998092651



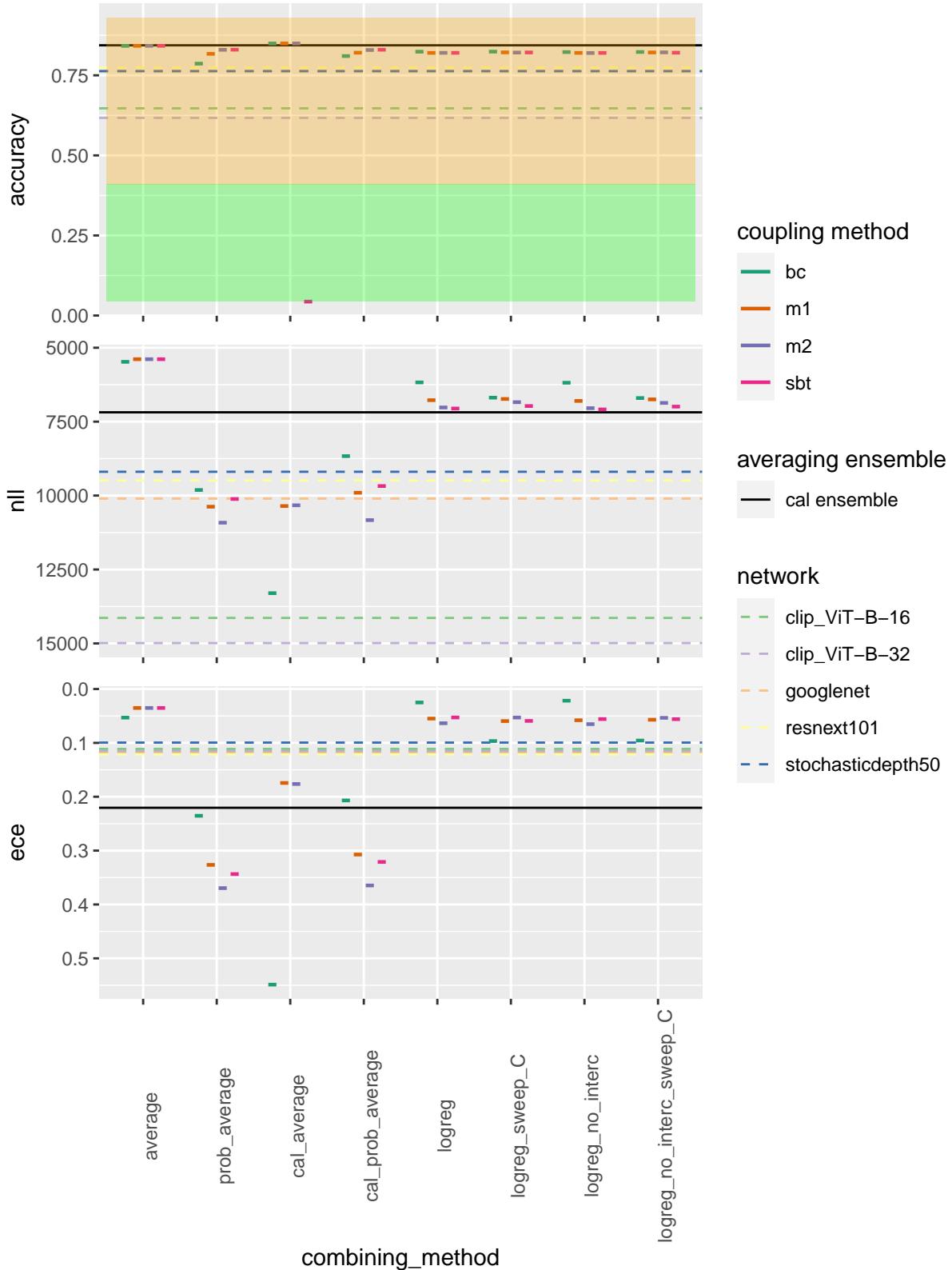
Ensemble metrics
Error inconsistency 0.51690000295639



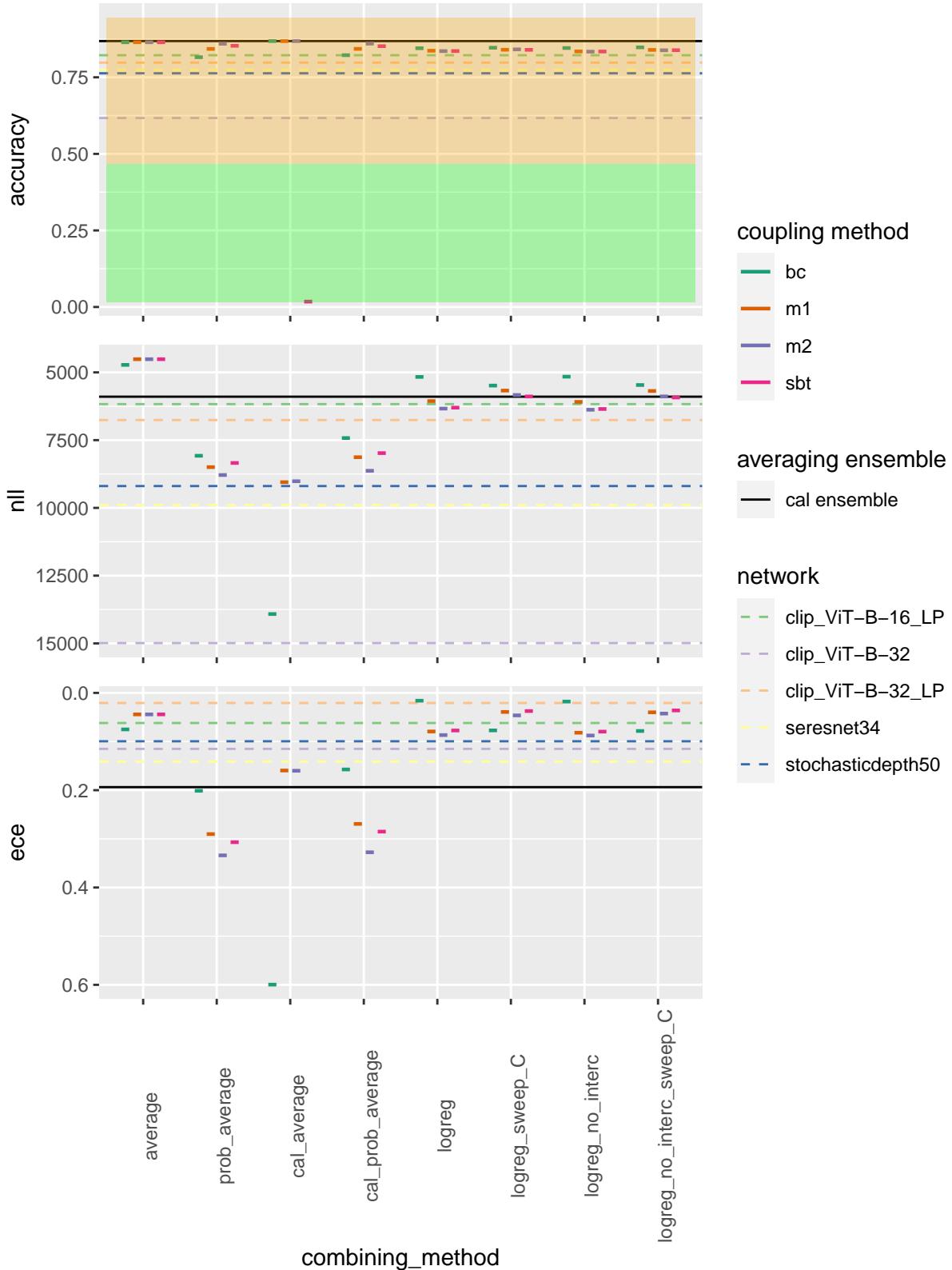
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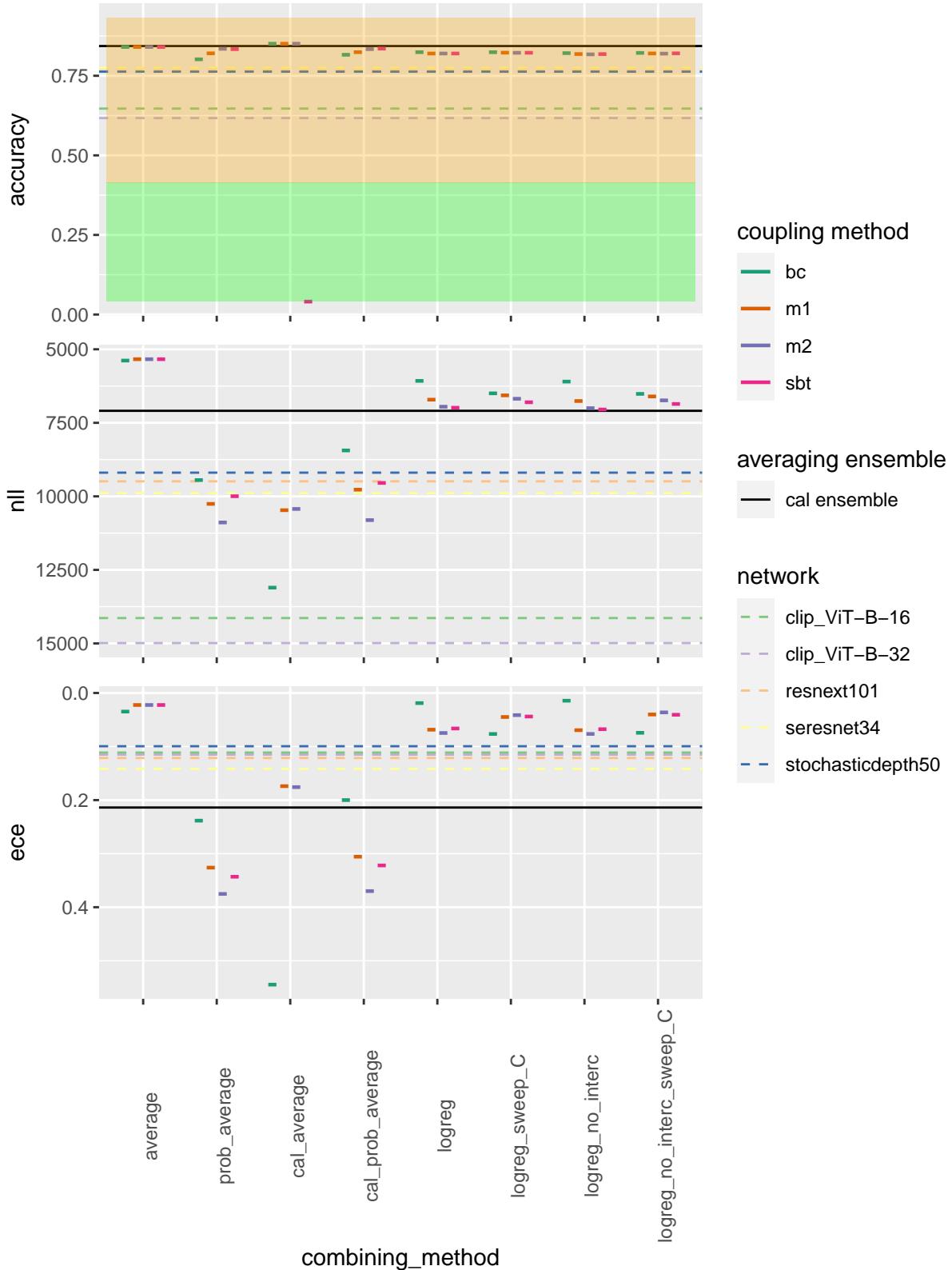
Ensemble metrics
Error inconsistency 0.520900011062622



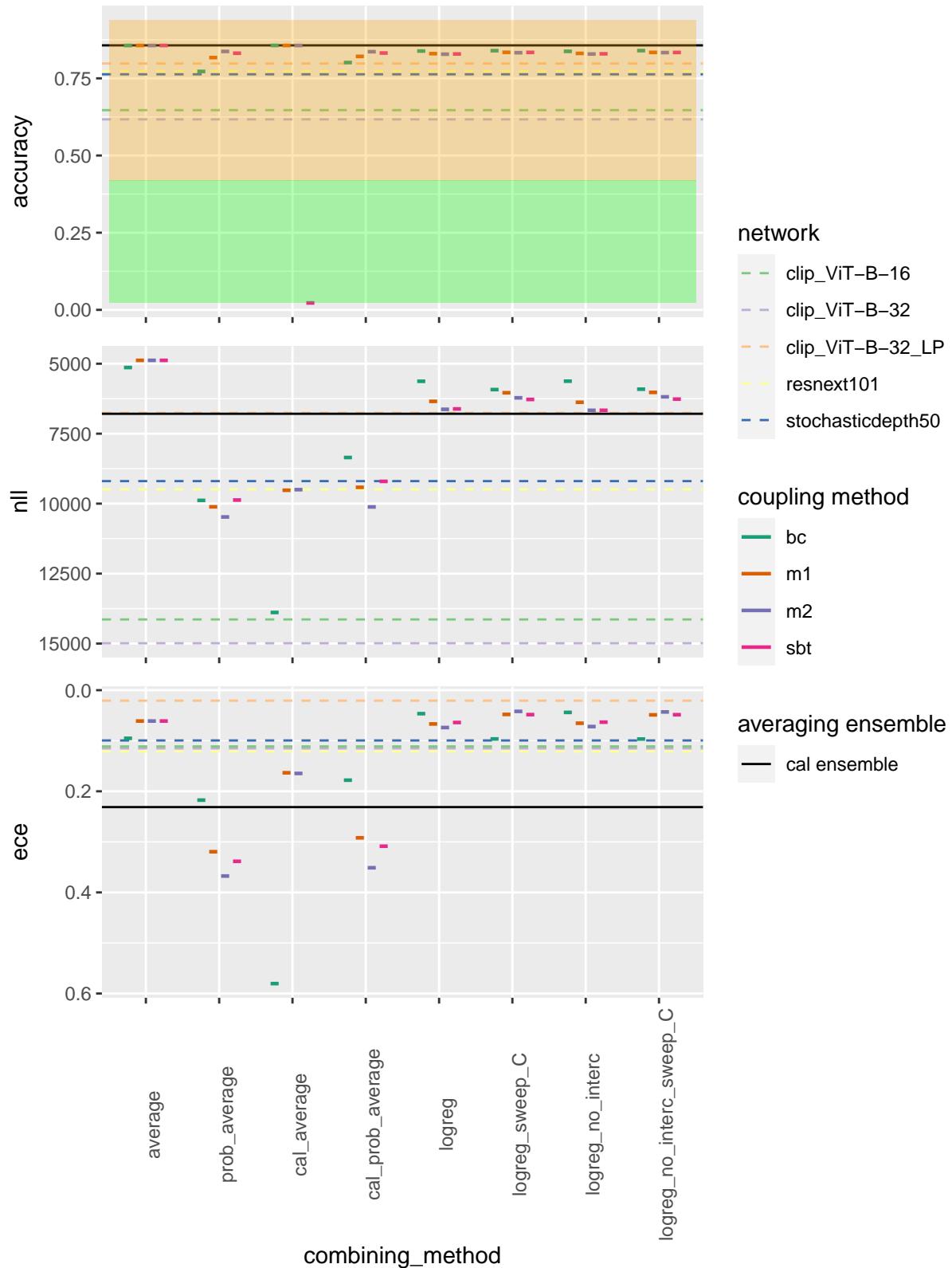
Ensemble metrics
Error inconsistency 0.477699995040893



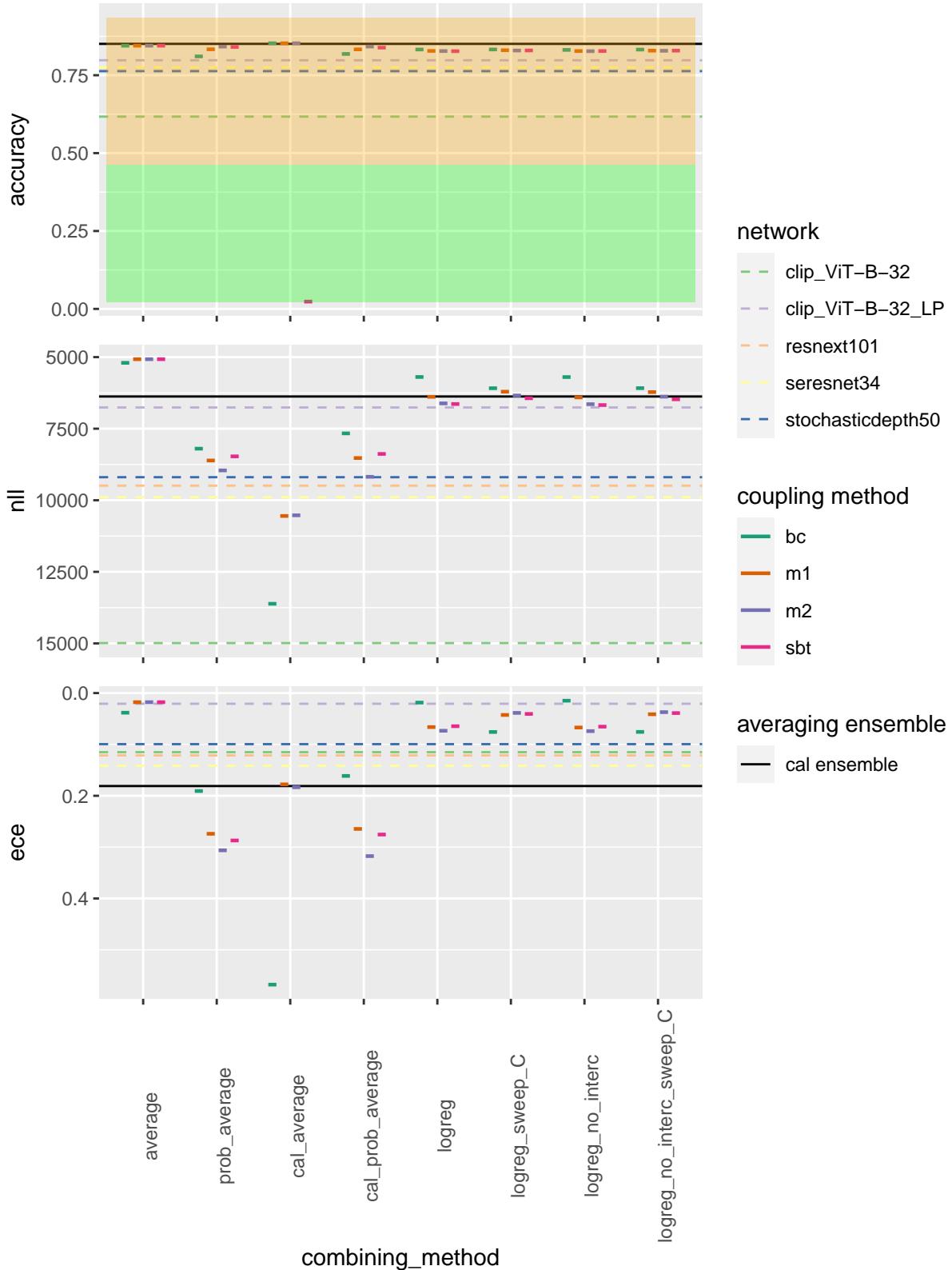
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Error inconsistency 0.517700016498566



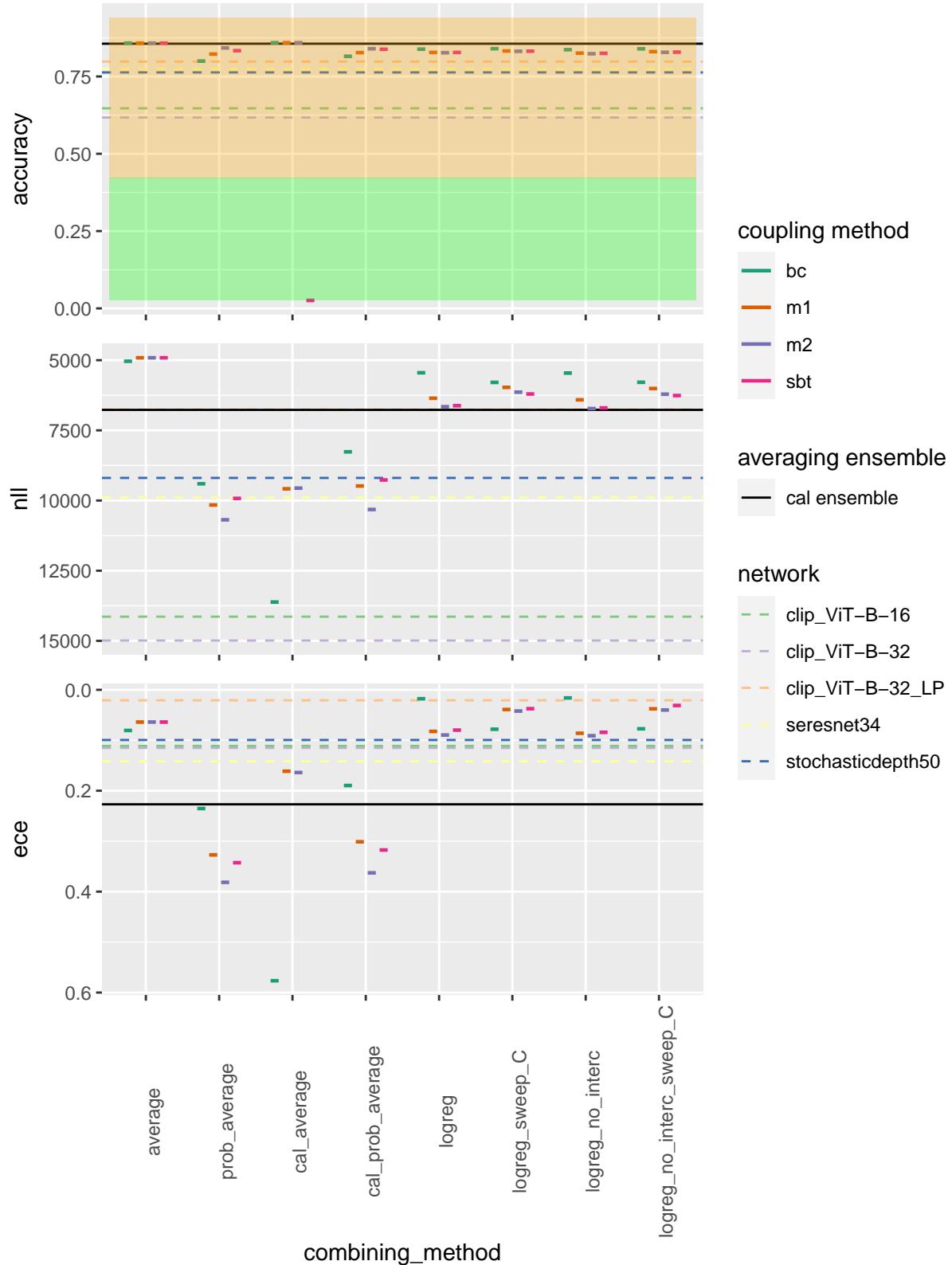
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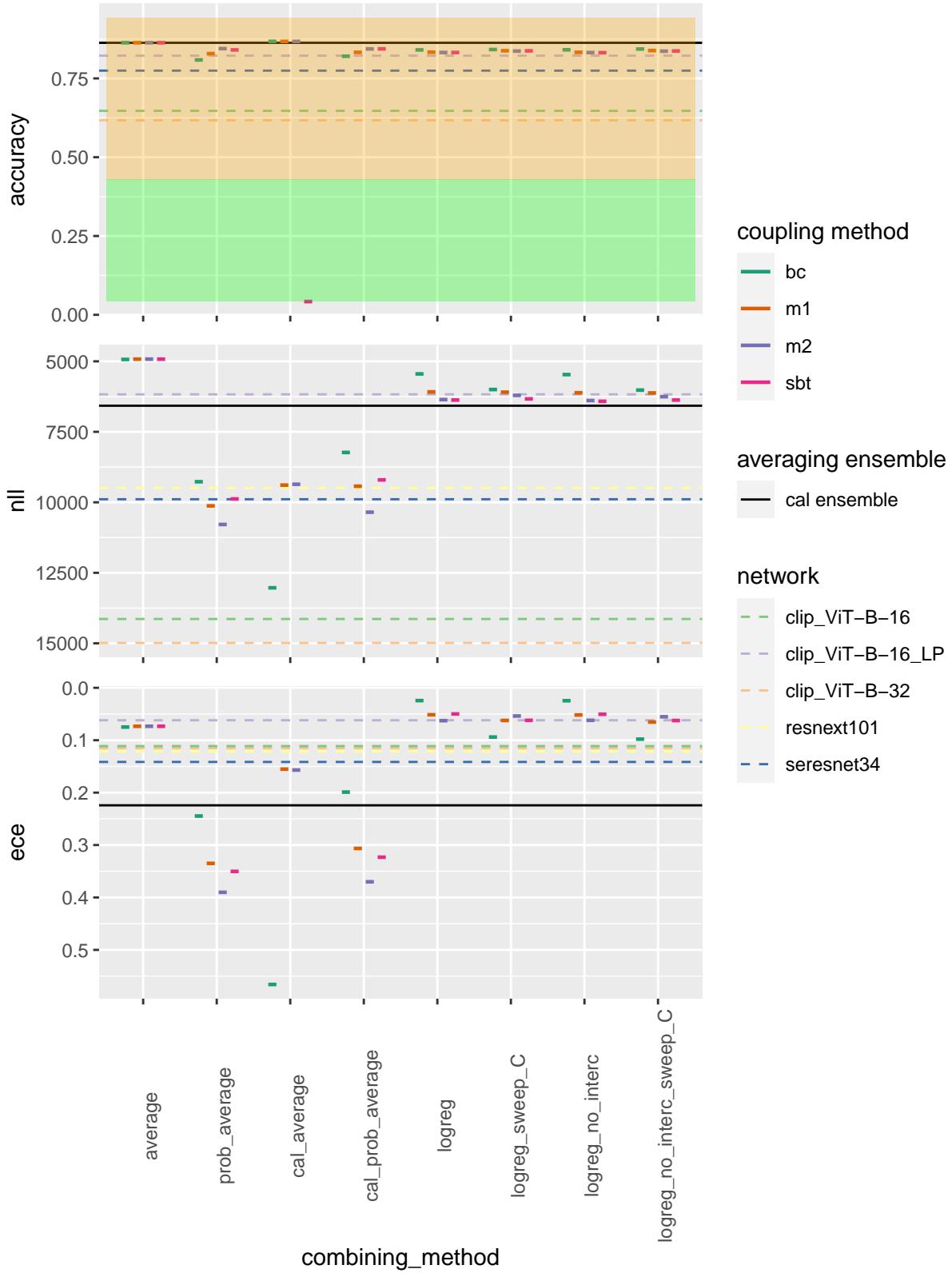
Ensemble metrics
Error inconsistency 0.472199976444244



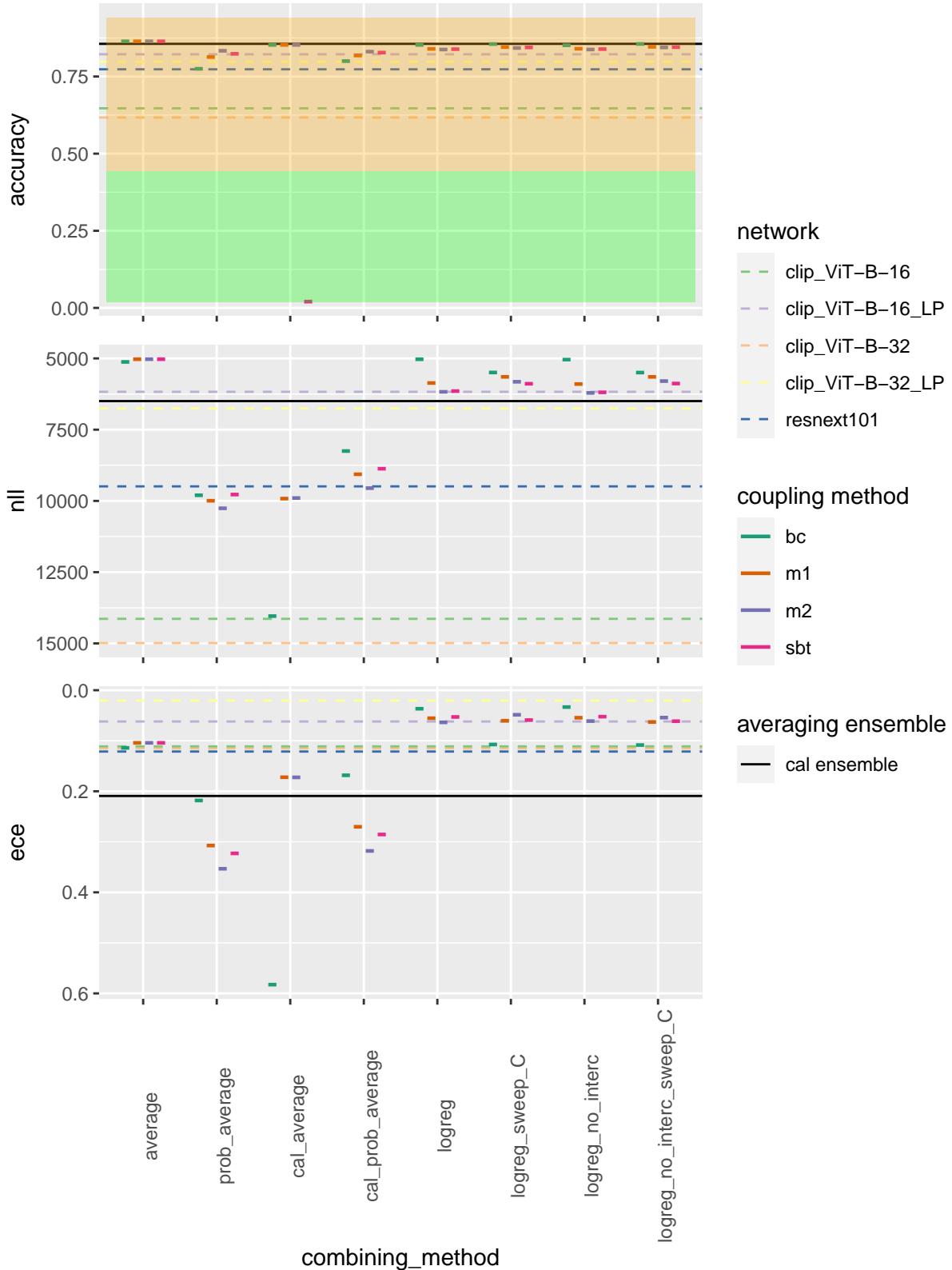
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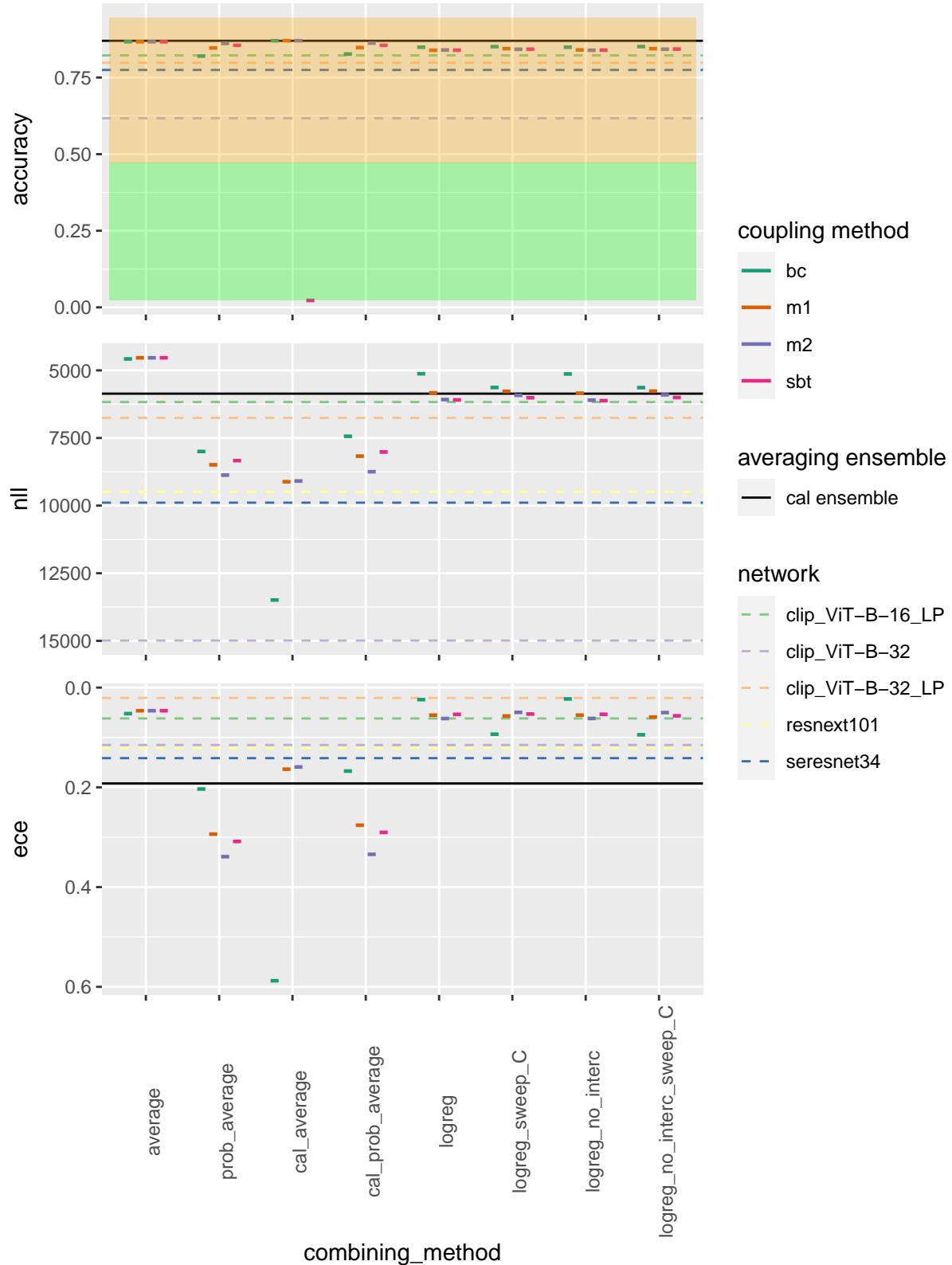
Ensemble metrics
Error inconsistency 0.513999998569489



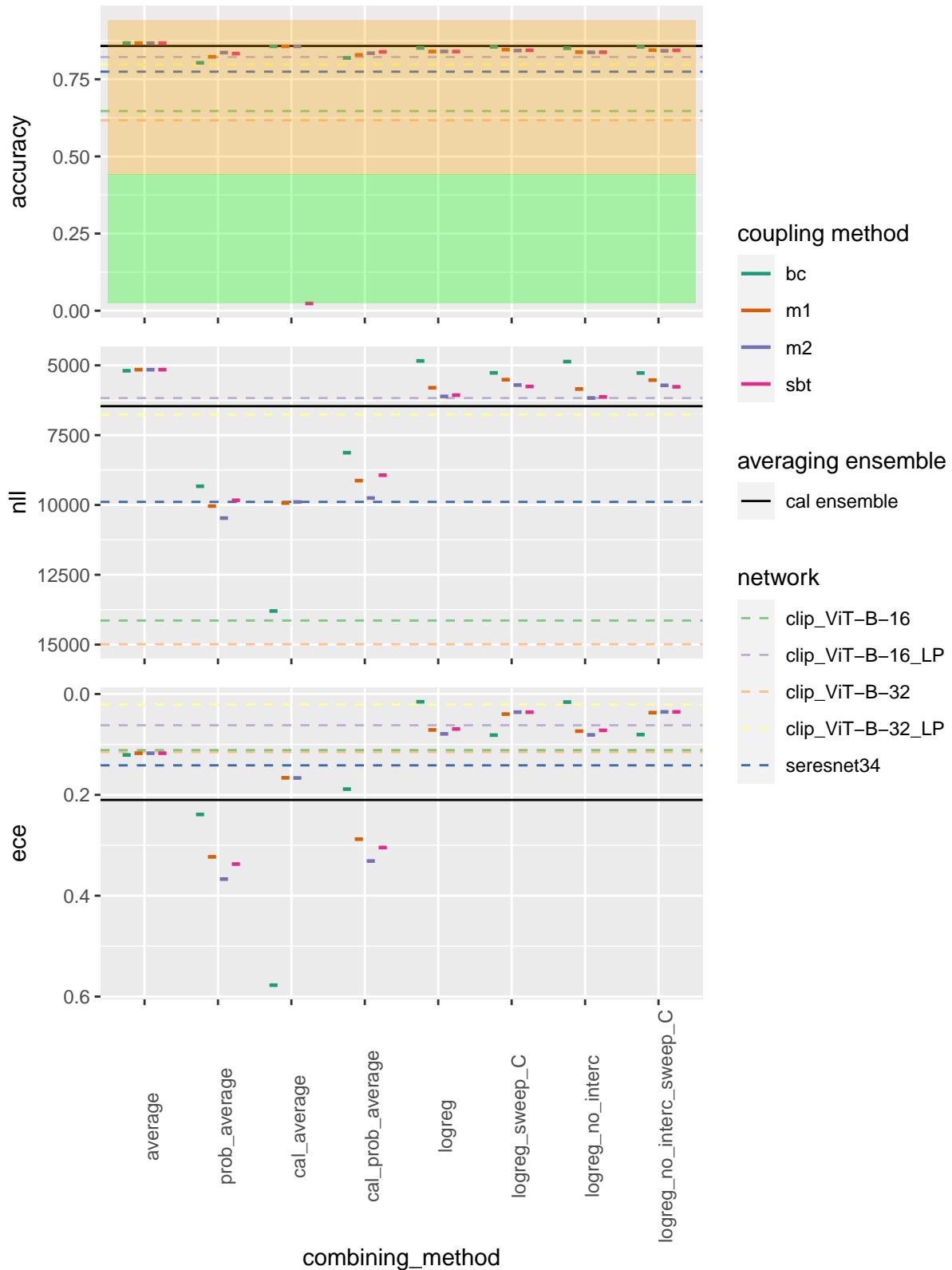
Ensemble metrics
Error inconsistency 0.497599989175797



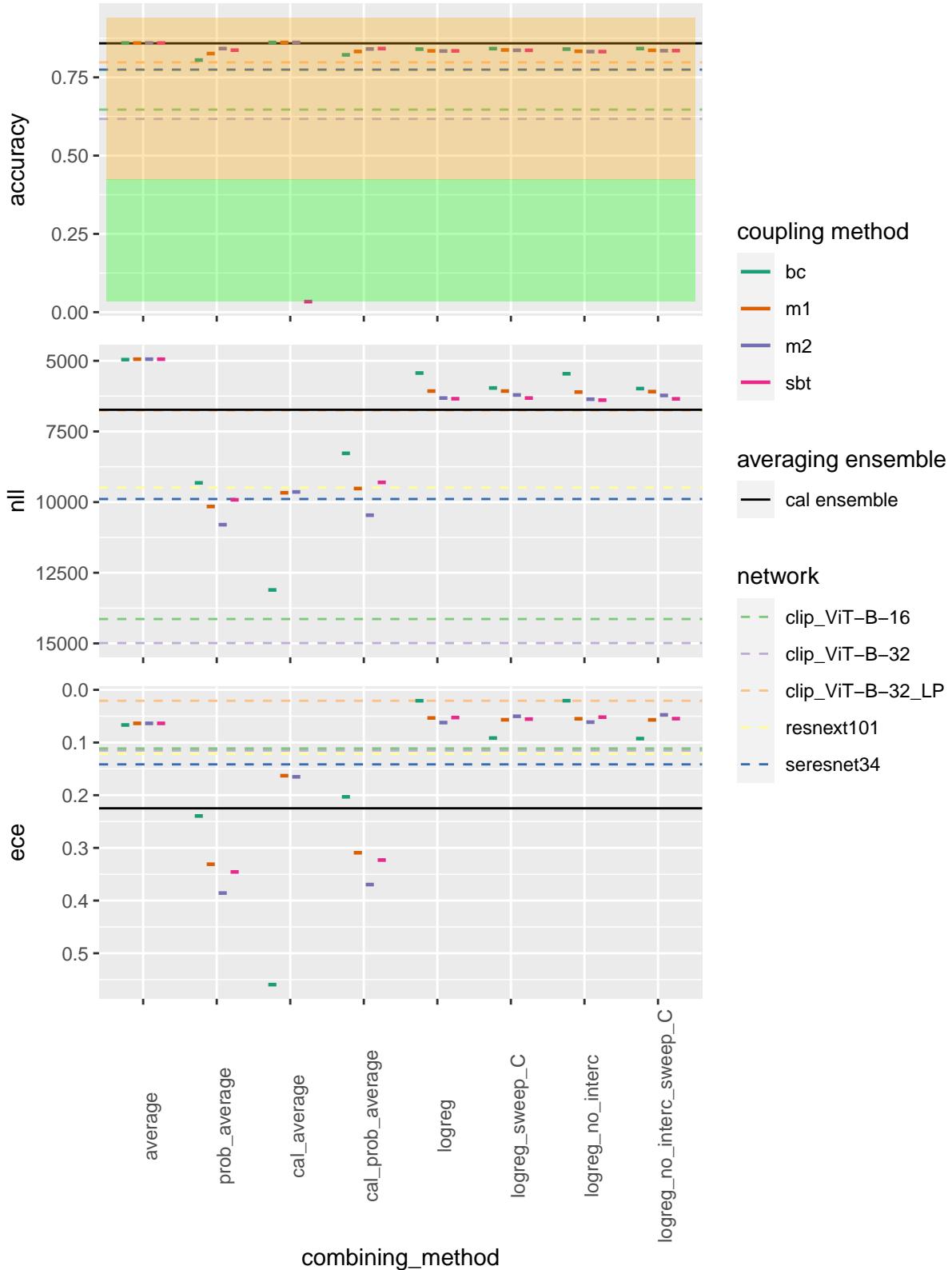
Ensemble metrics
Error inconsistency 0.473799973726273



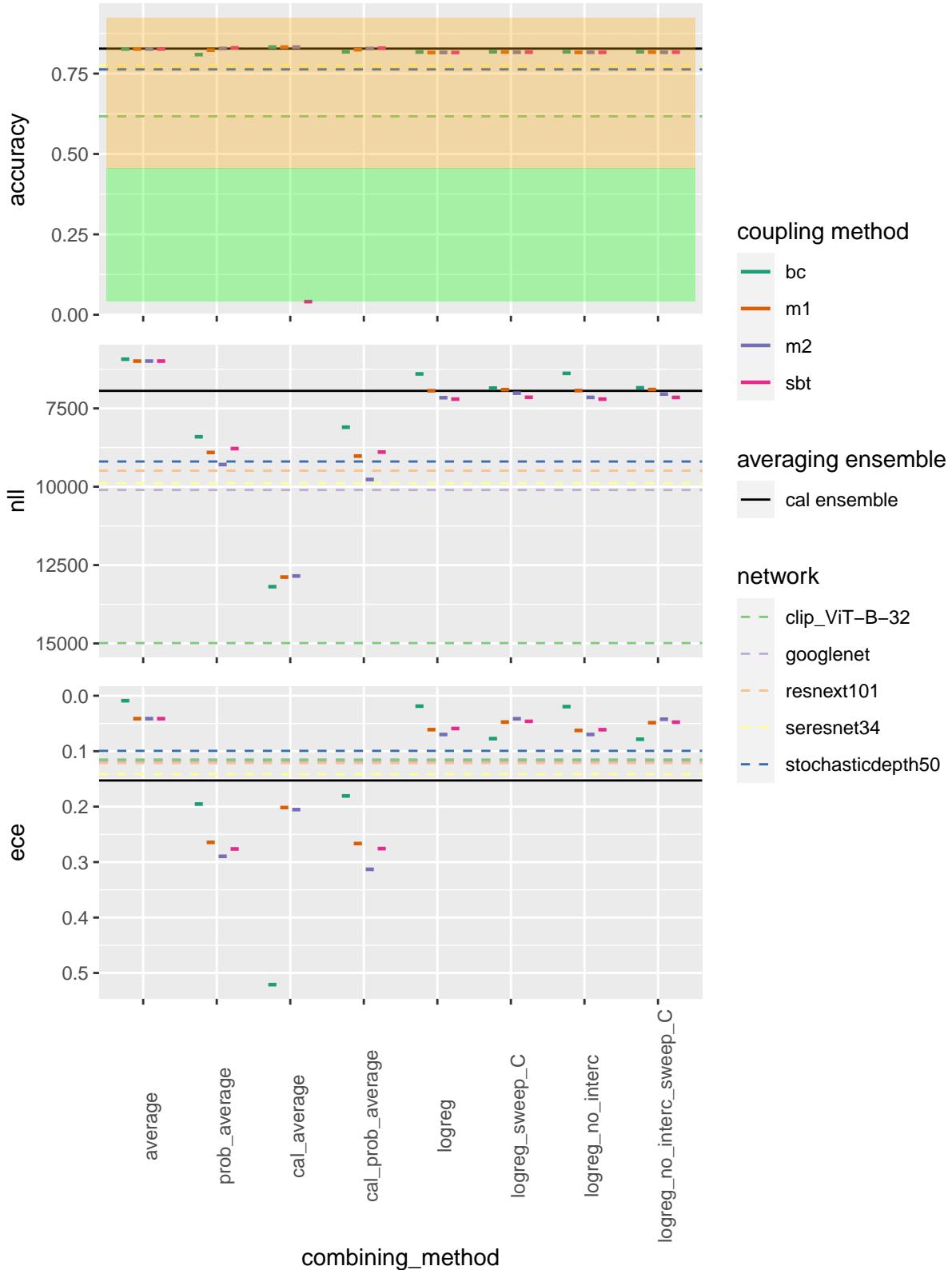
Ensemble metrics
Error inconsistency 0.501199960708618



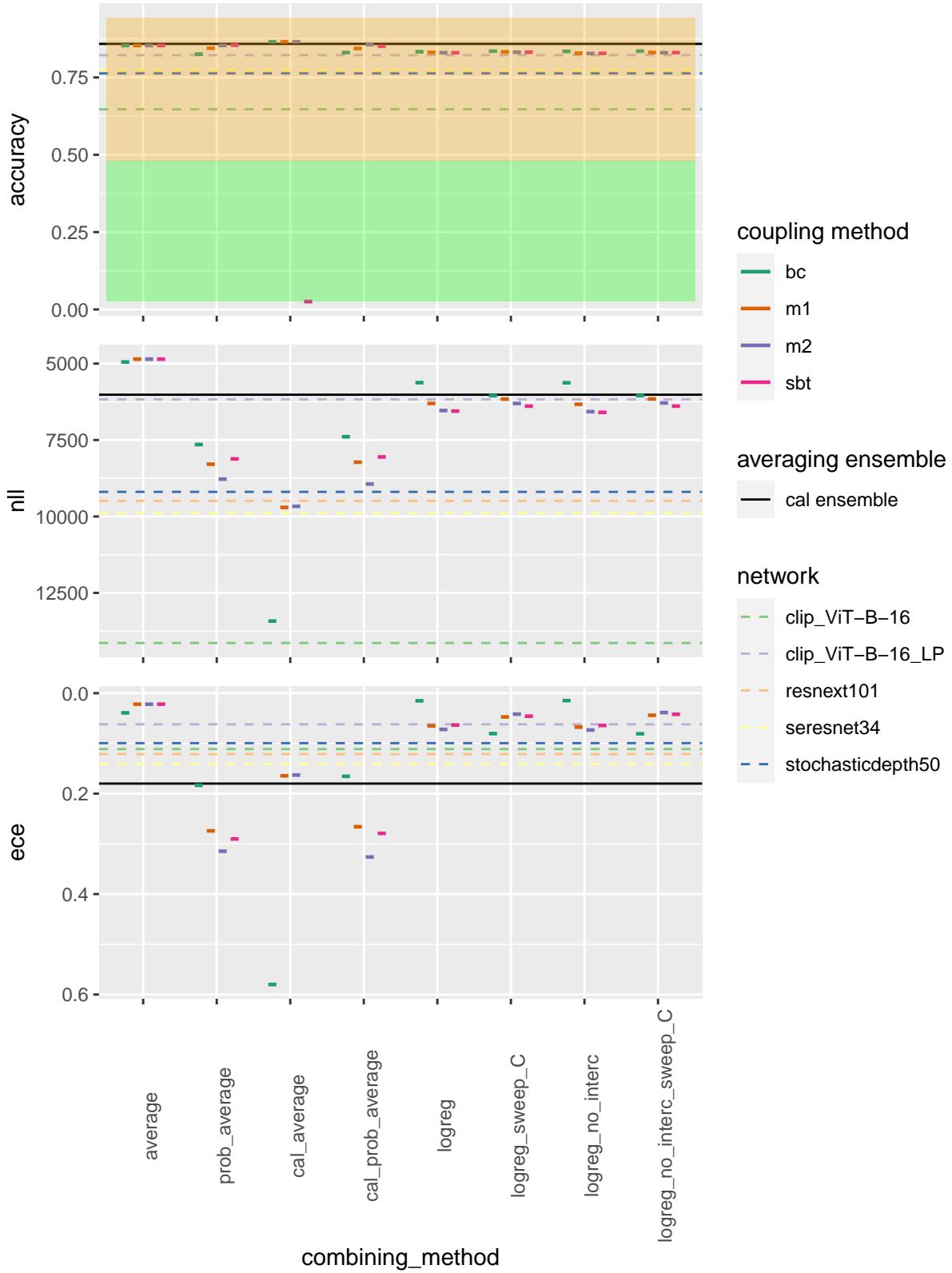
Ensemble metrics
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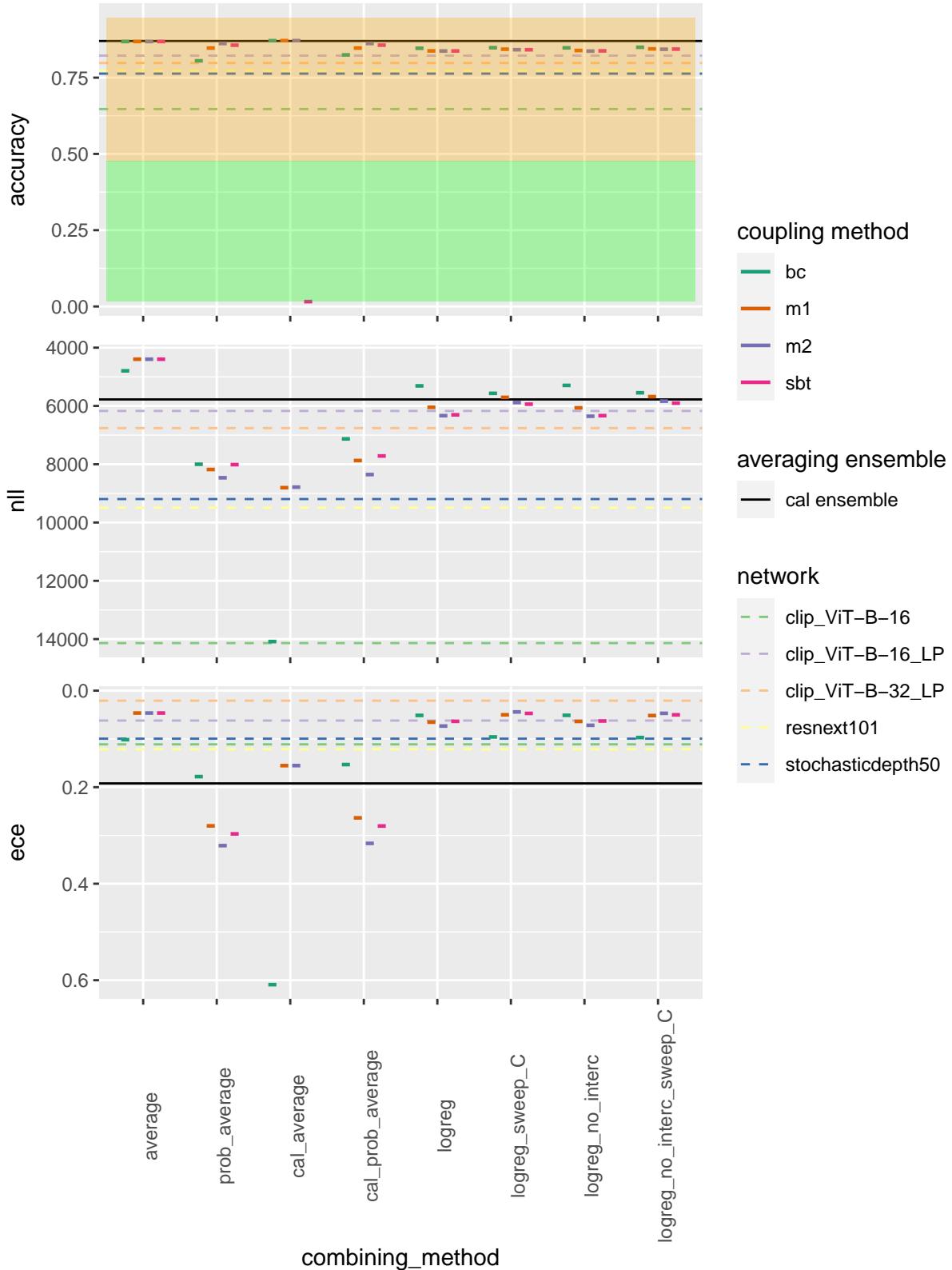
Ensemble metrics
Error inconsistency 0.468099981546402



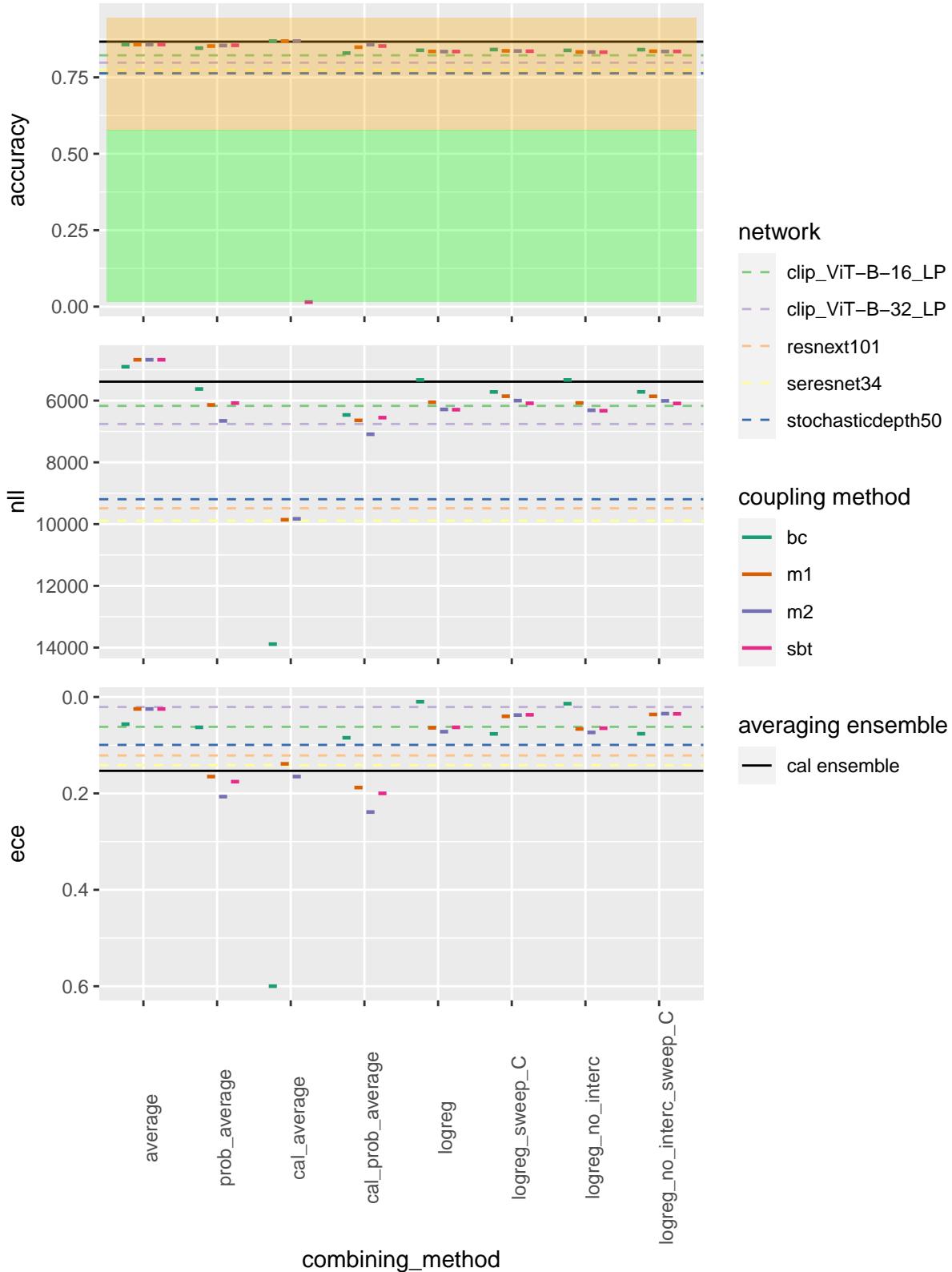
Ensemble metrics
Error inconsistency 0.46289998292923



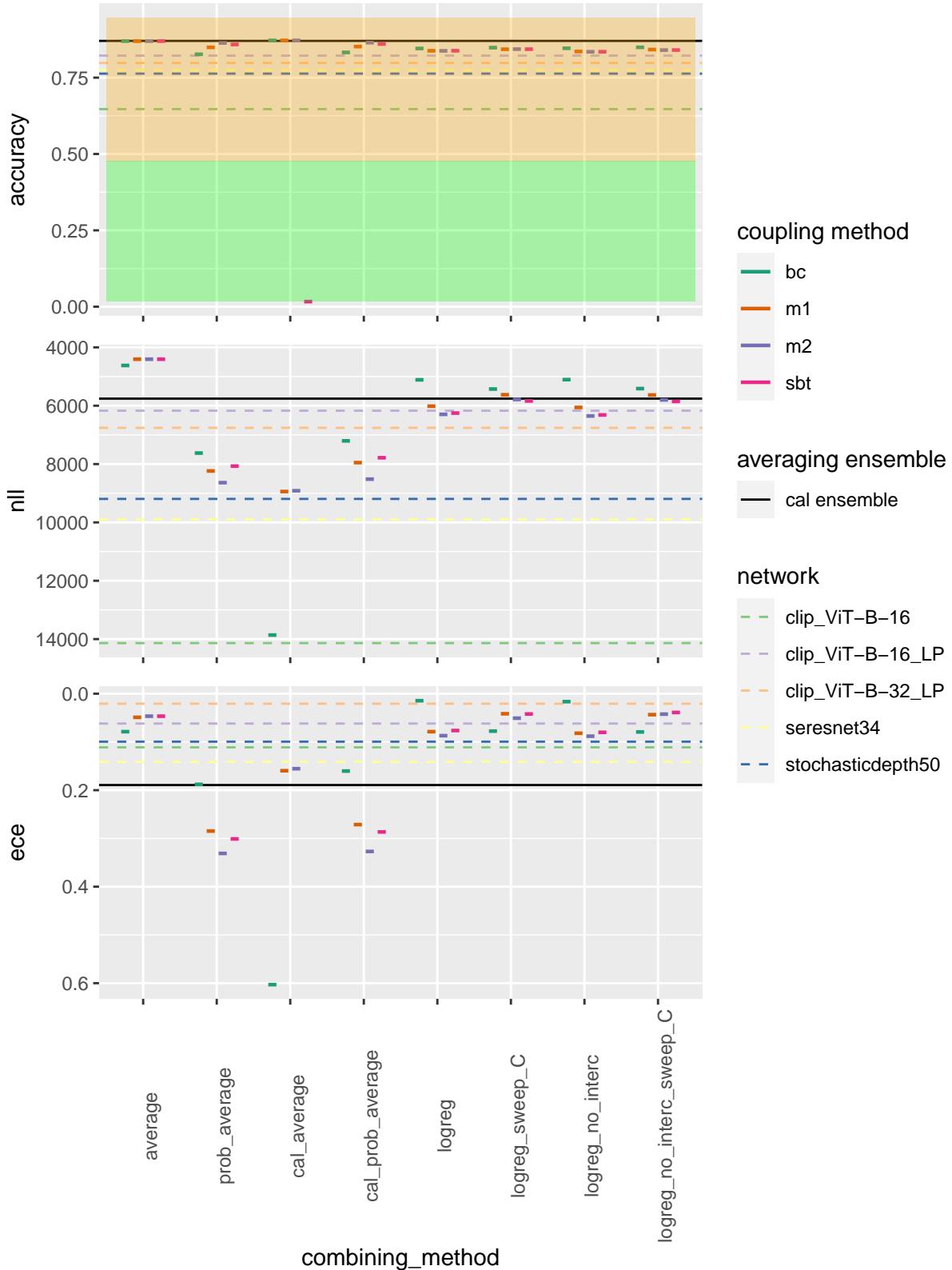
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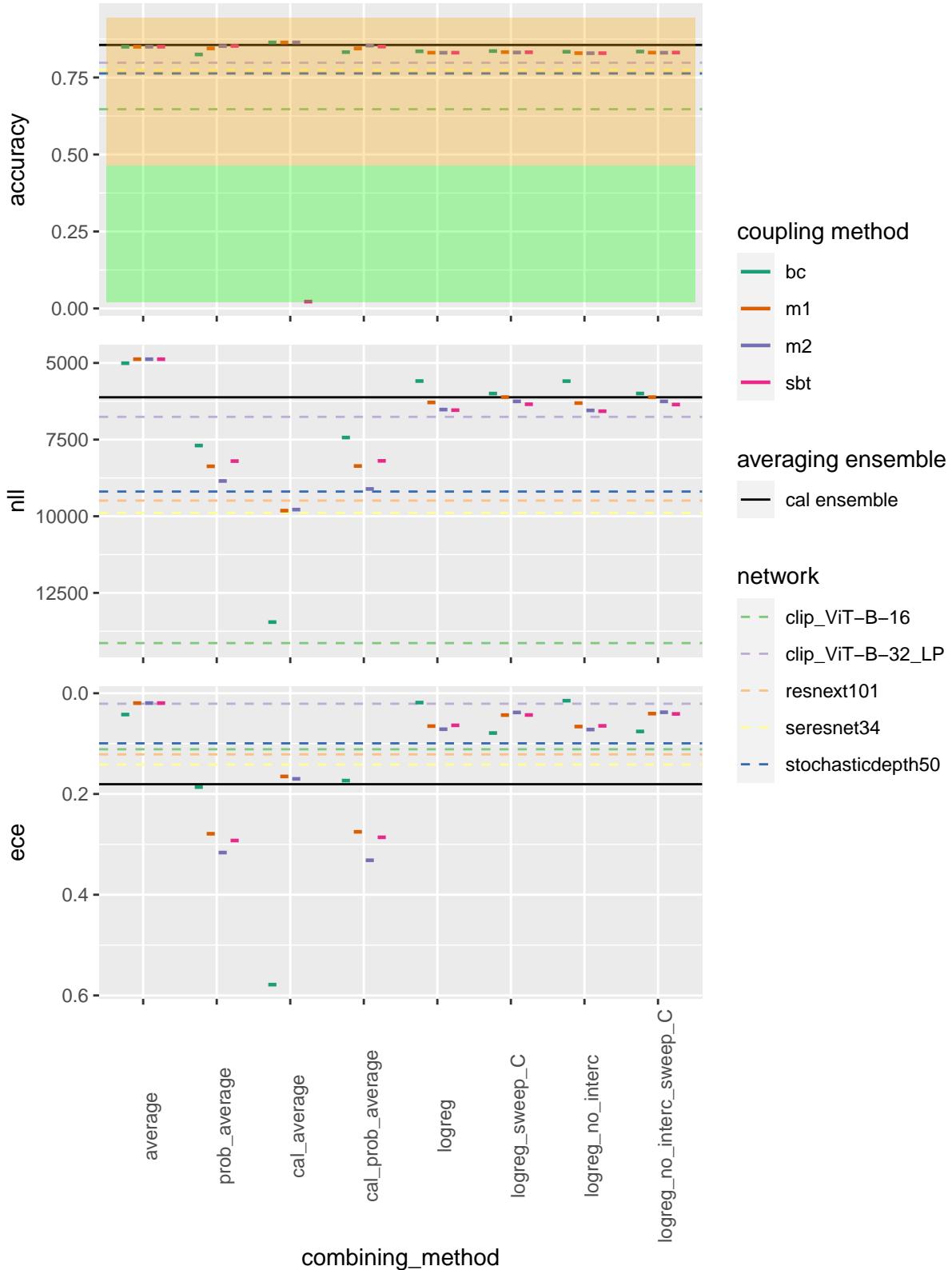
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Error inconsistency 0.368099987506866



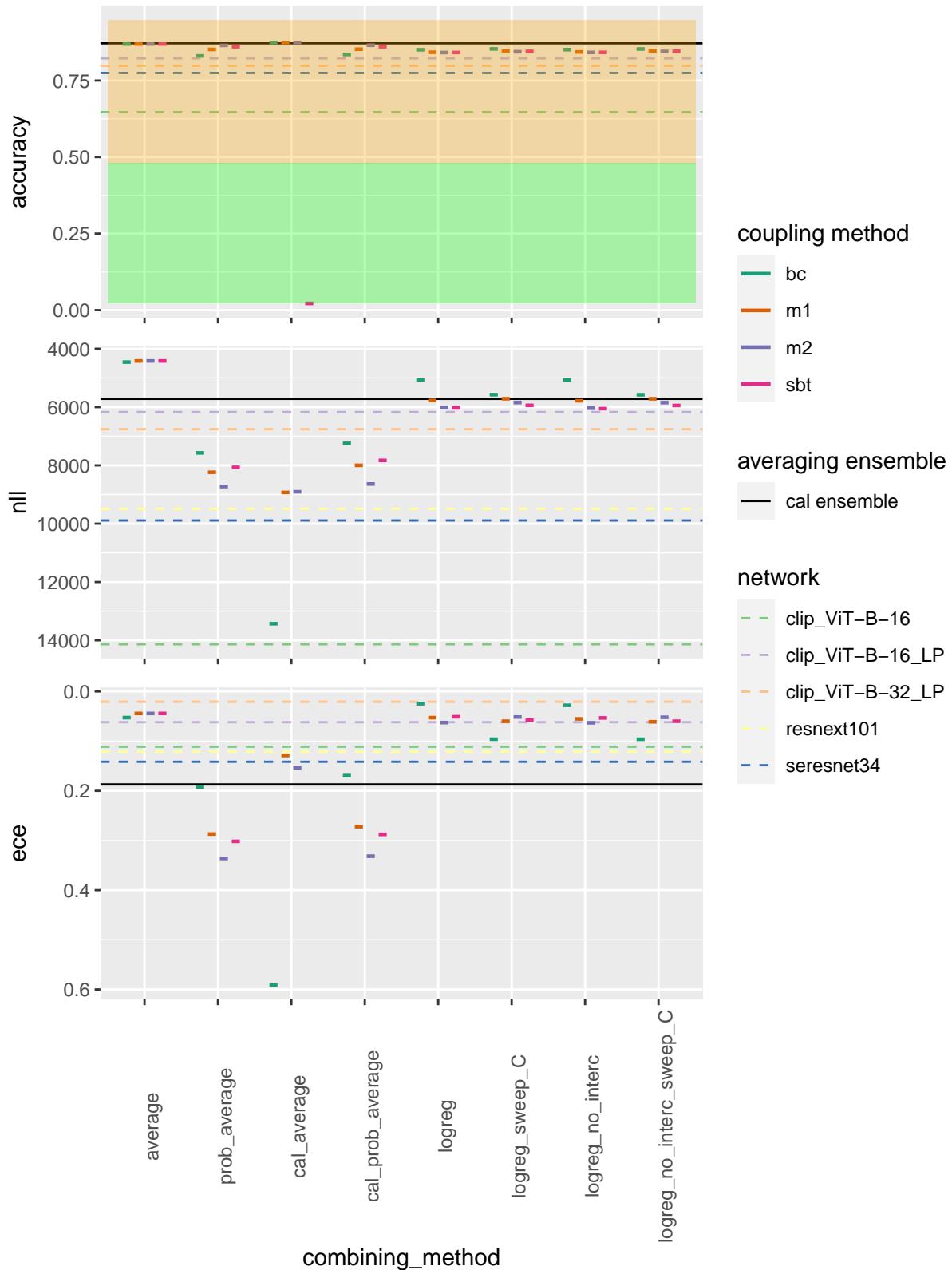
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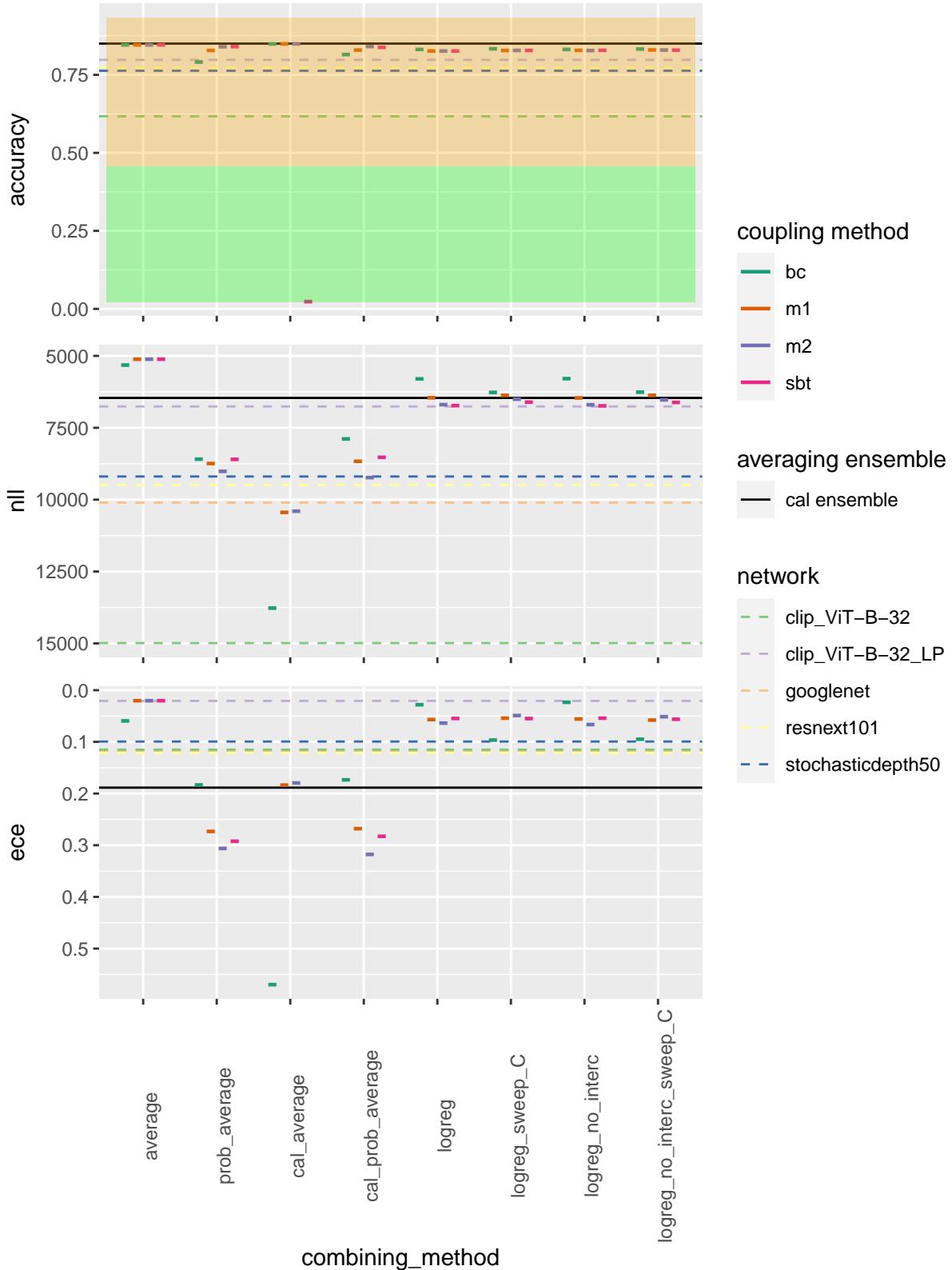
Ensemble metrics
Error inconsistency 0.480299979448318



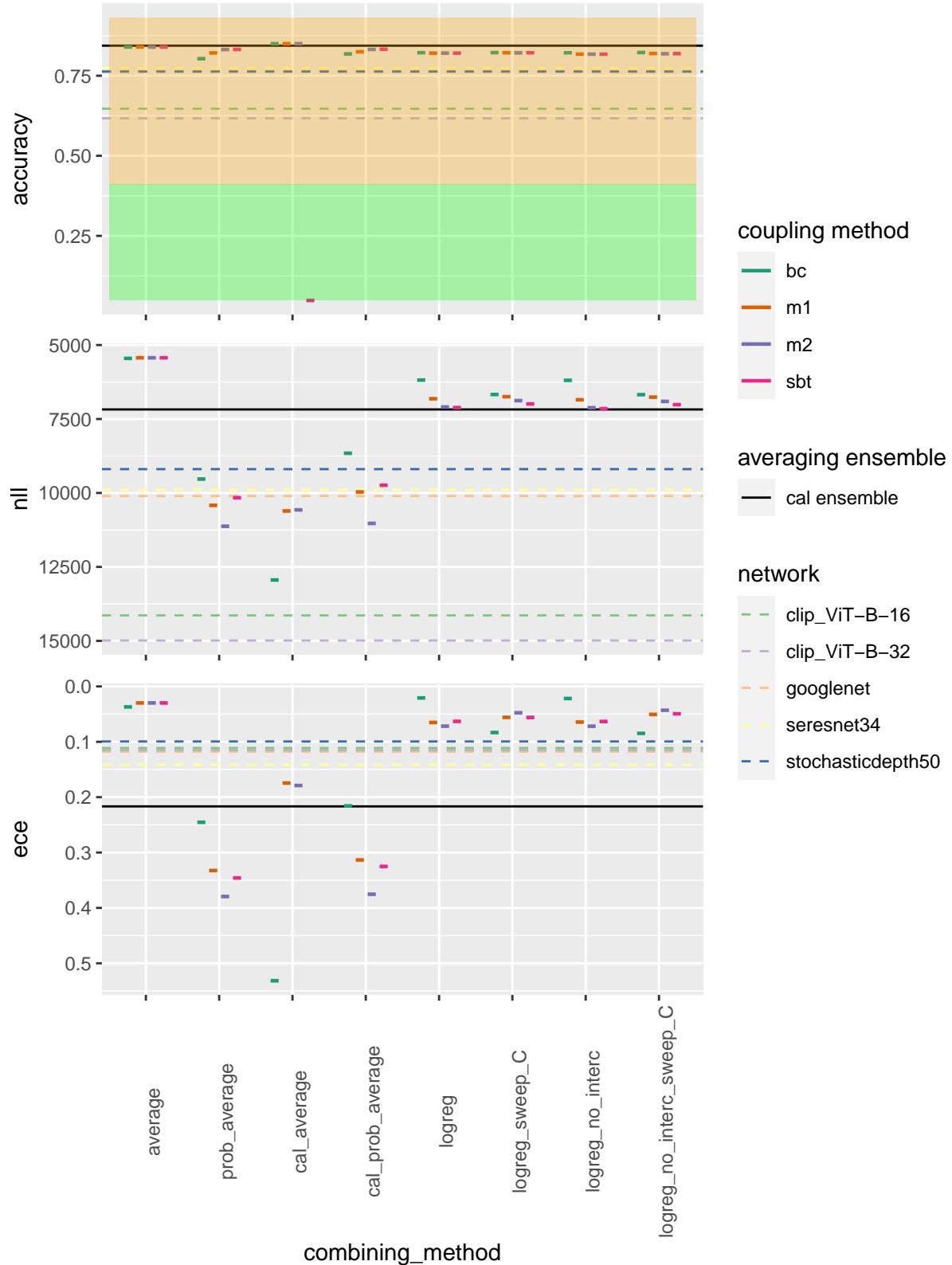
Ensemble metrics
Error inconsistency 0.467299997806549



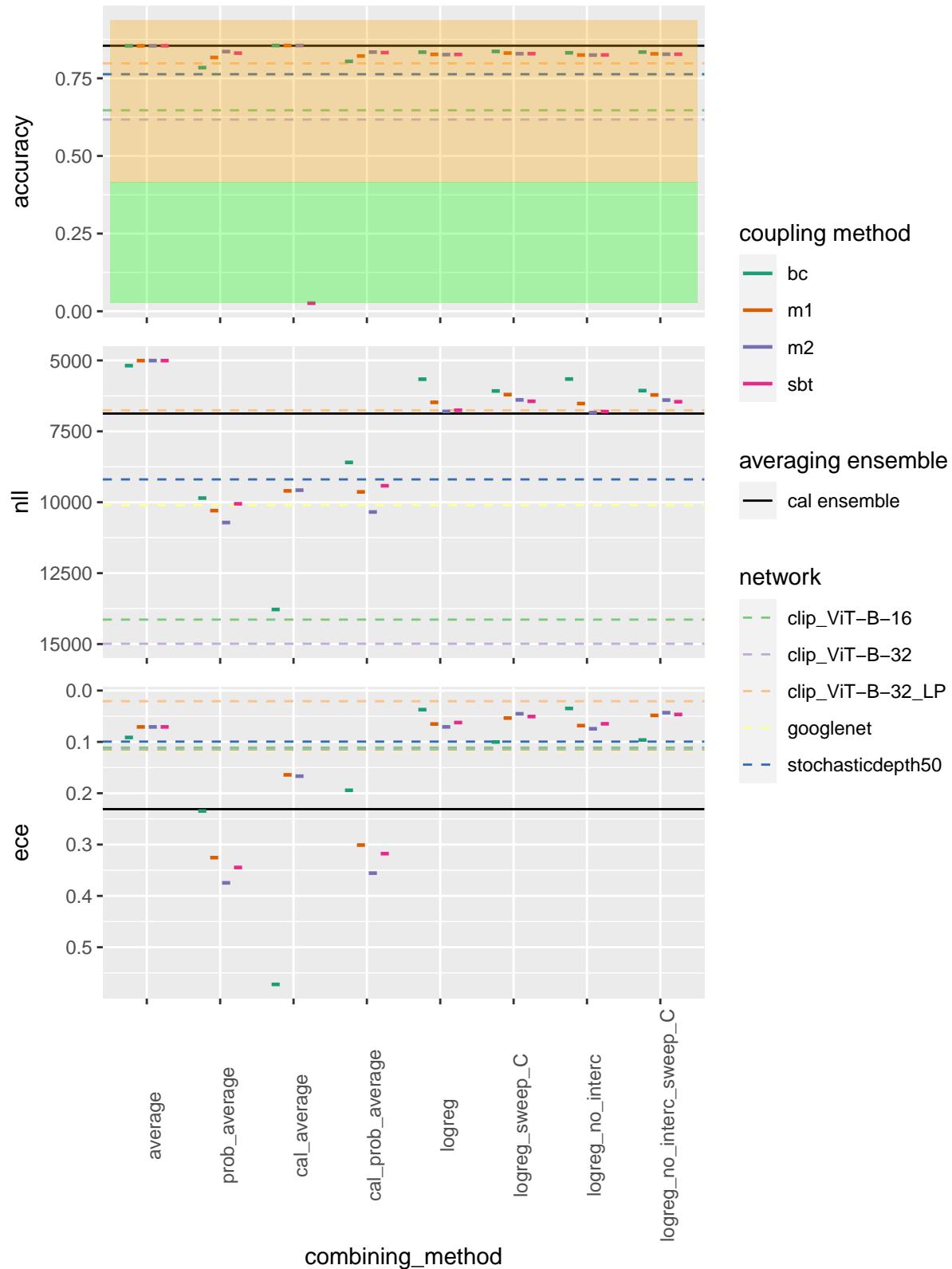
Ensemble metrics
Error inconsistency 0.476300001144409



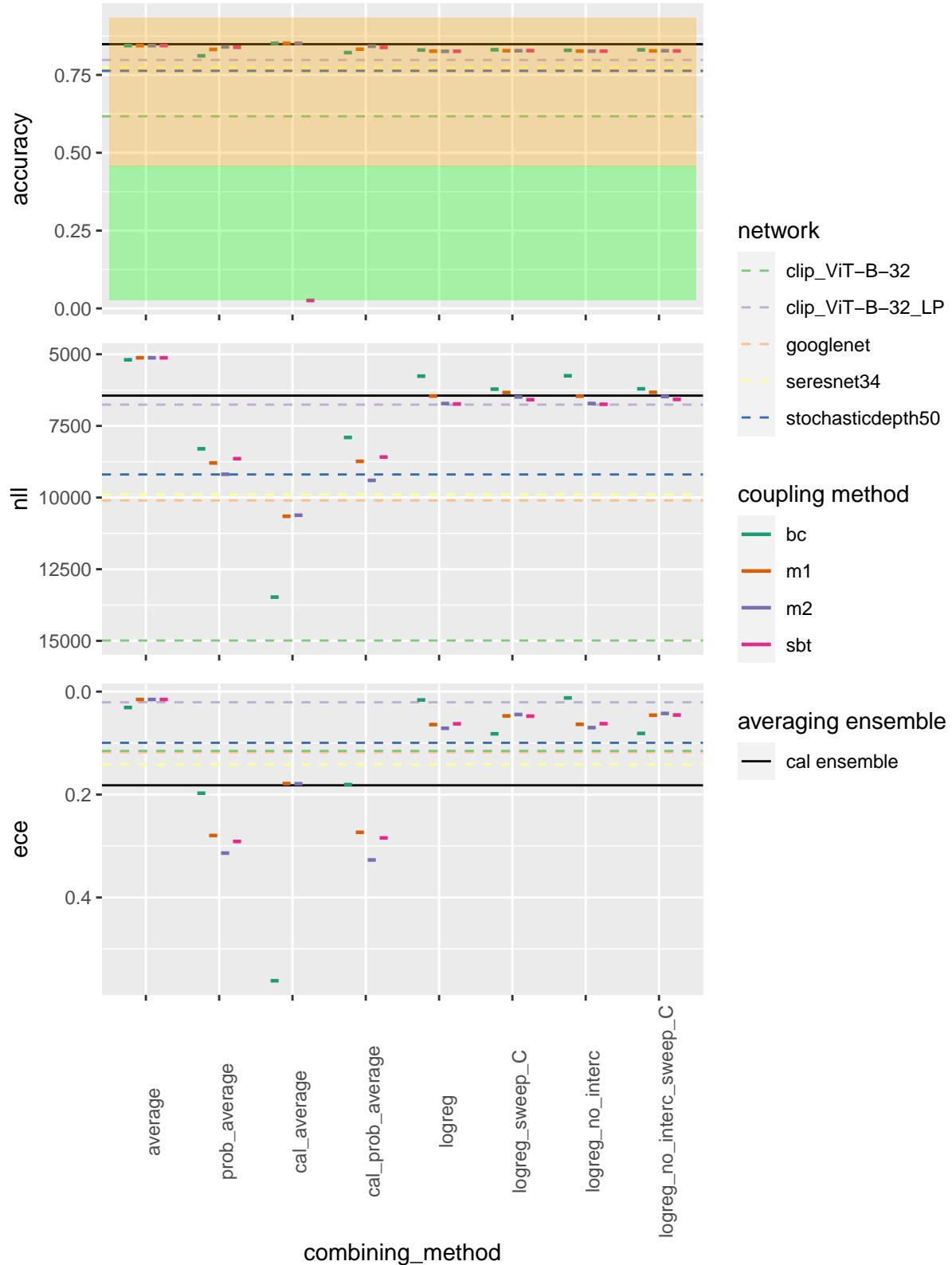
Ensemble metrics
Error inconsistency 0.521200001239777



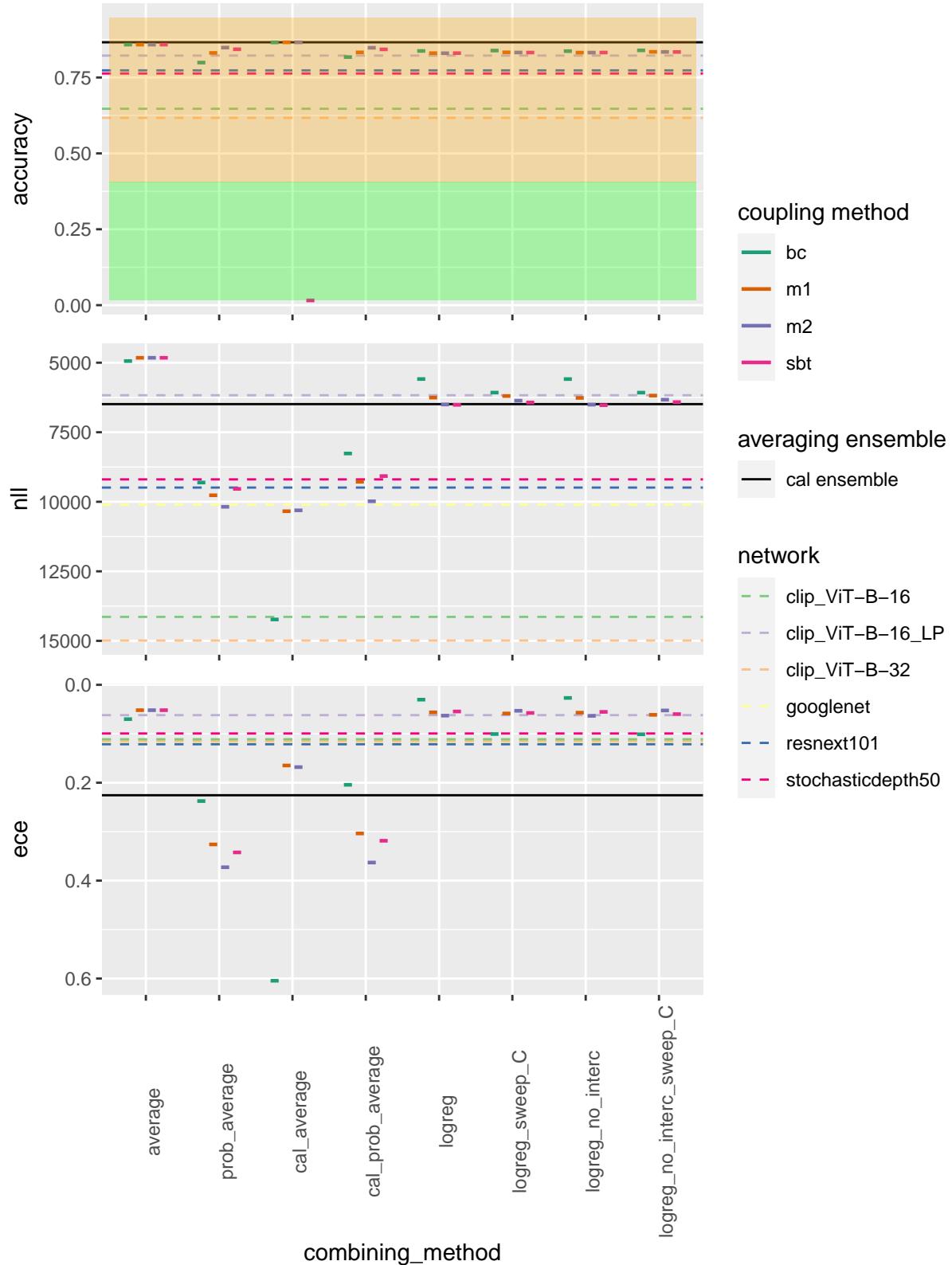
Ensemble metrics
Error inconsistency 0.521600008010864



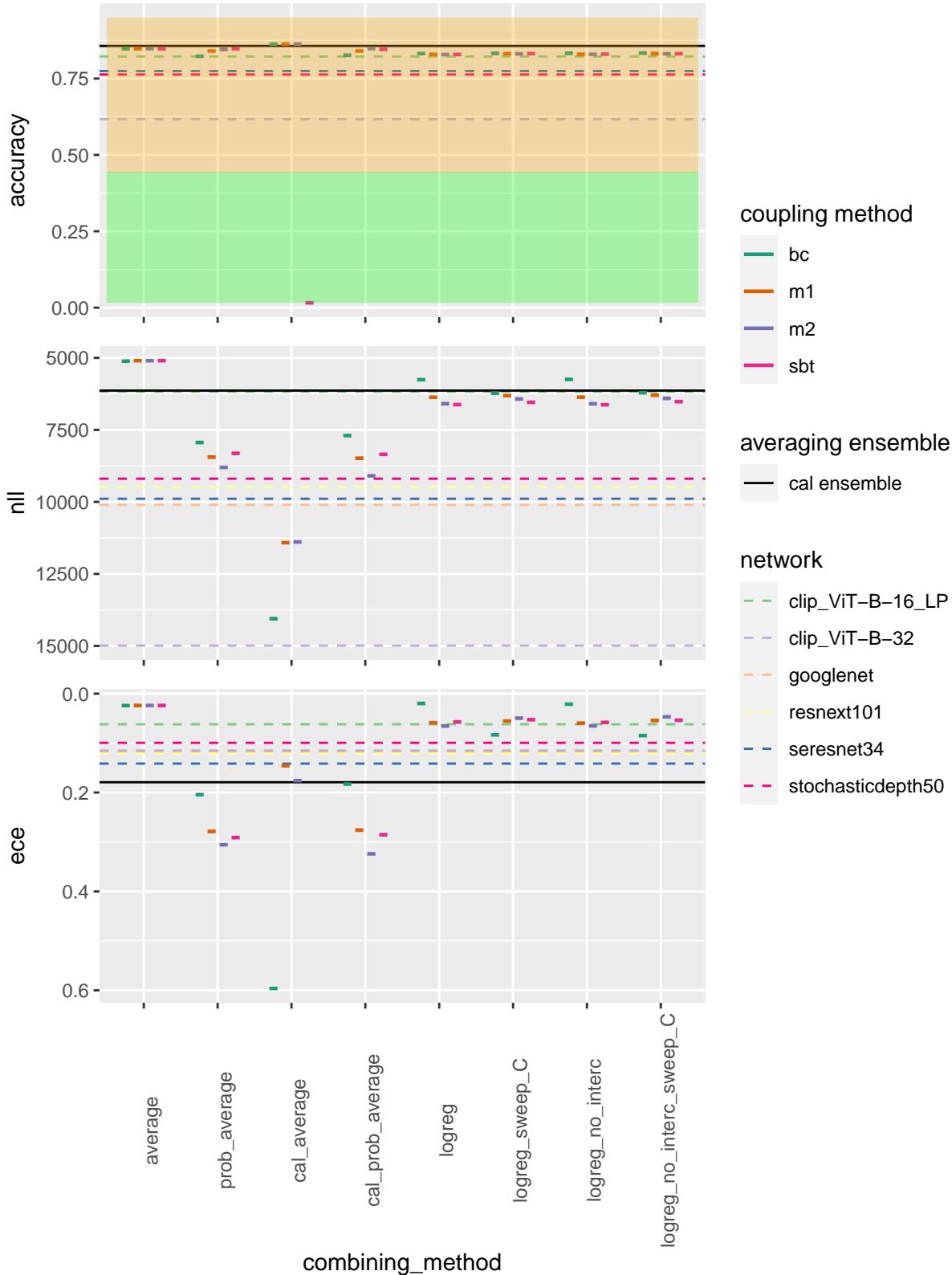
Ensemble metrics
Error inconsistency 0.476199984550476



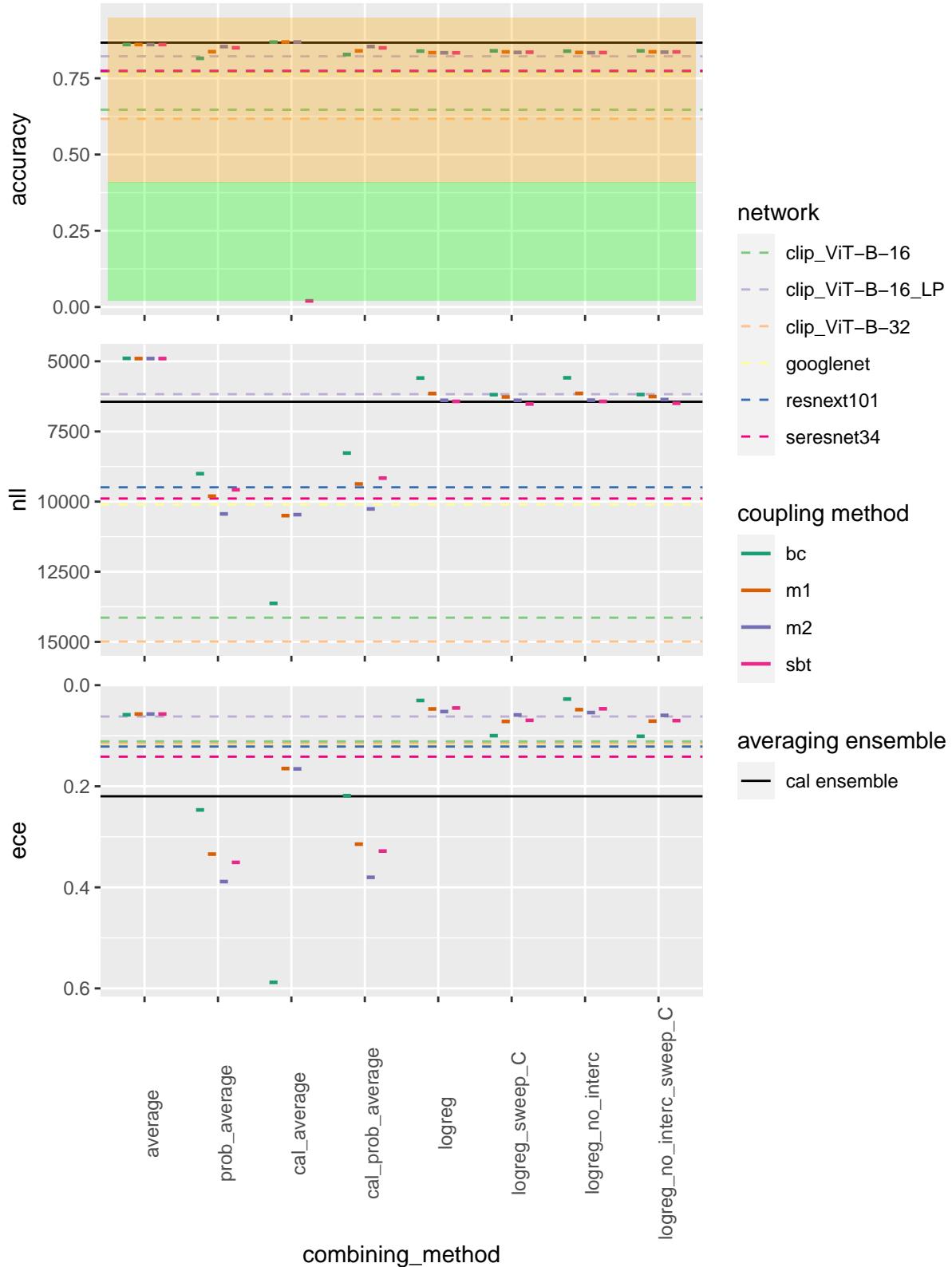
Ensemble metrics
Error inconsistency 0.541799962520599



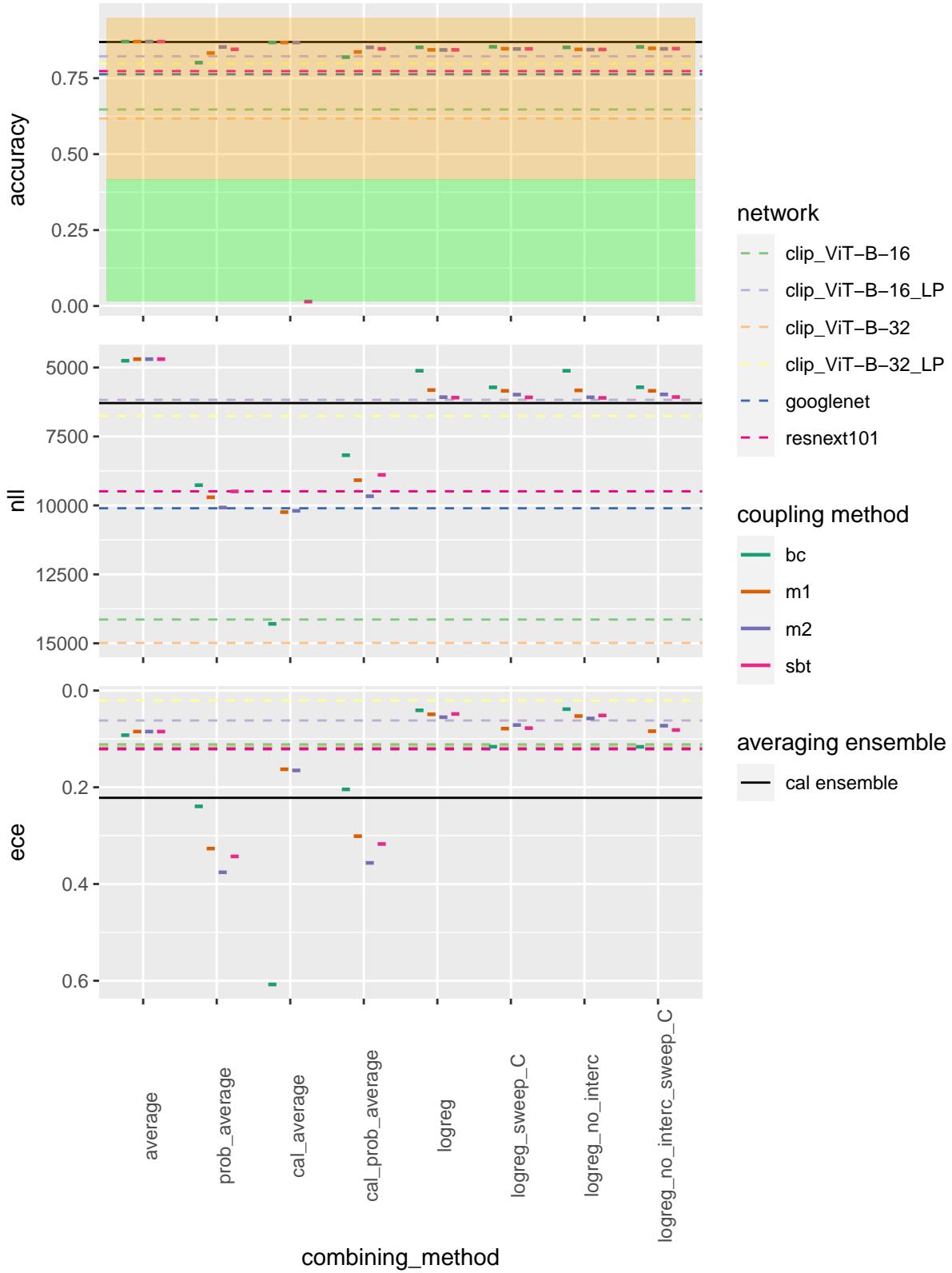
Ensemble metrics
Error inconsistency 0.506099998950958



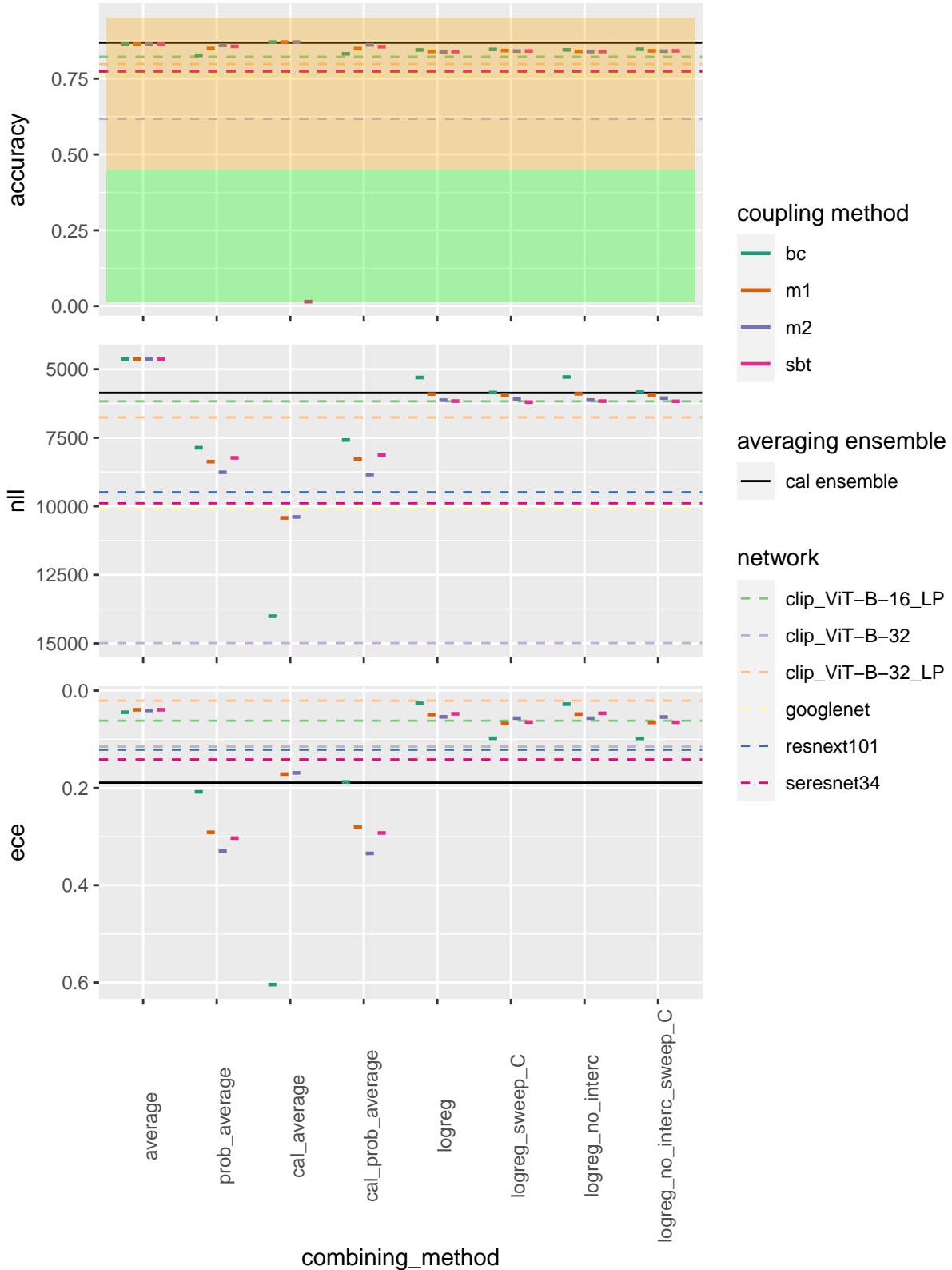
Ensemble metrics
Error inconsistency 0.539799988269806



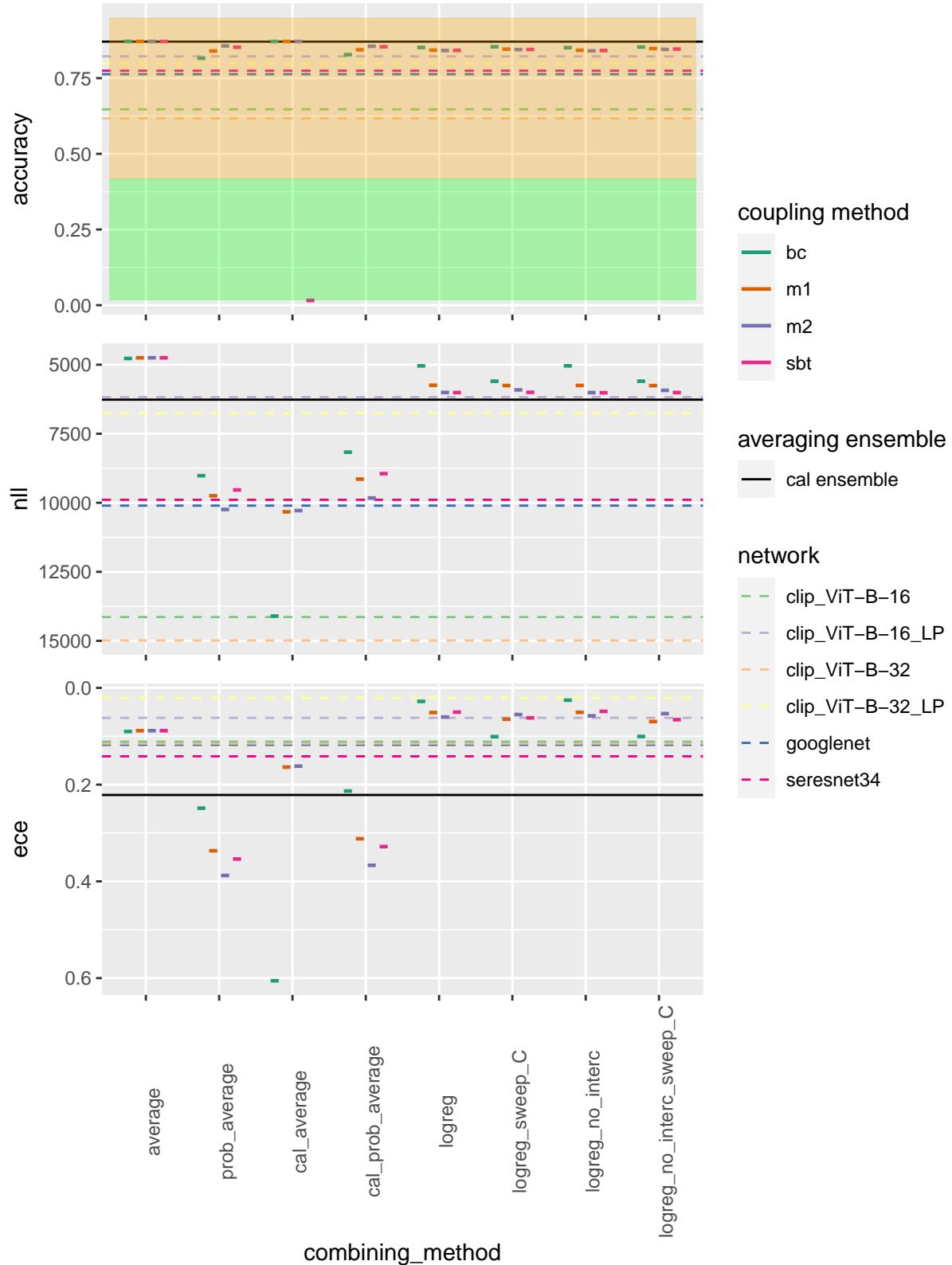
Ensemble metrics
Error inconsistency 0.532000005245209



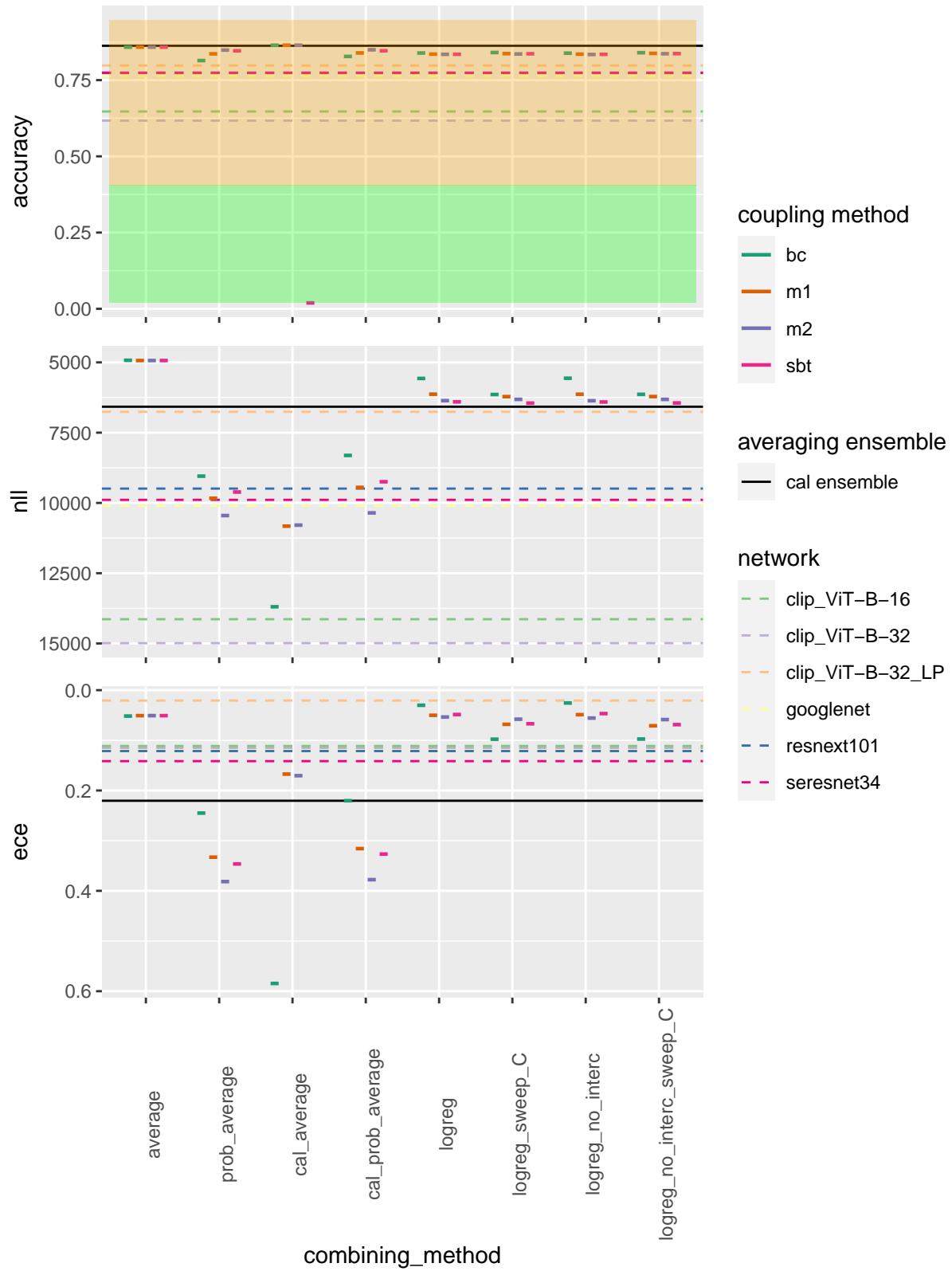
Ensemble metrics
Error inconsistency 0.500400006771088



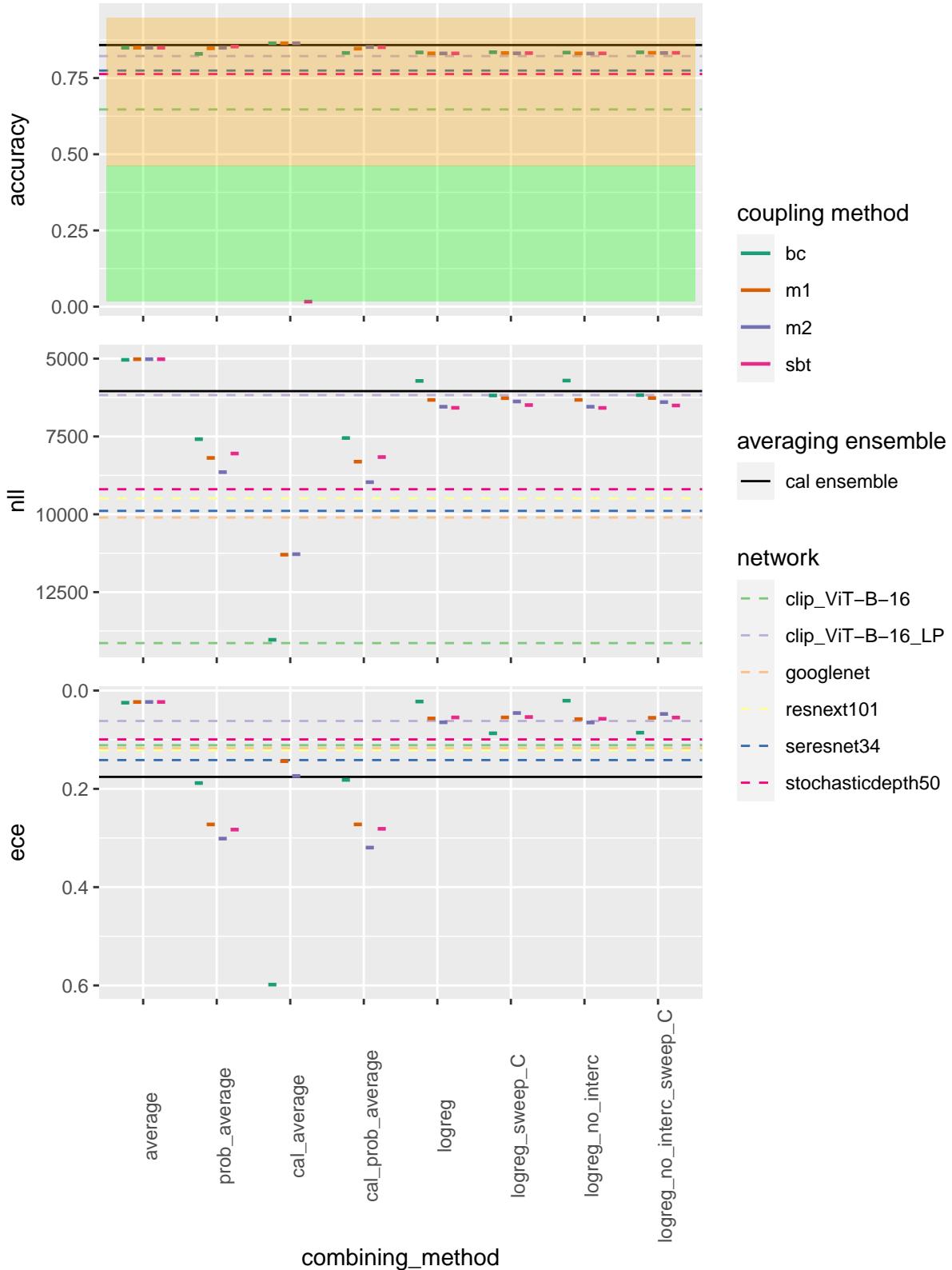
Ensemble metrics
Error inconsistency 0.533199965953827



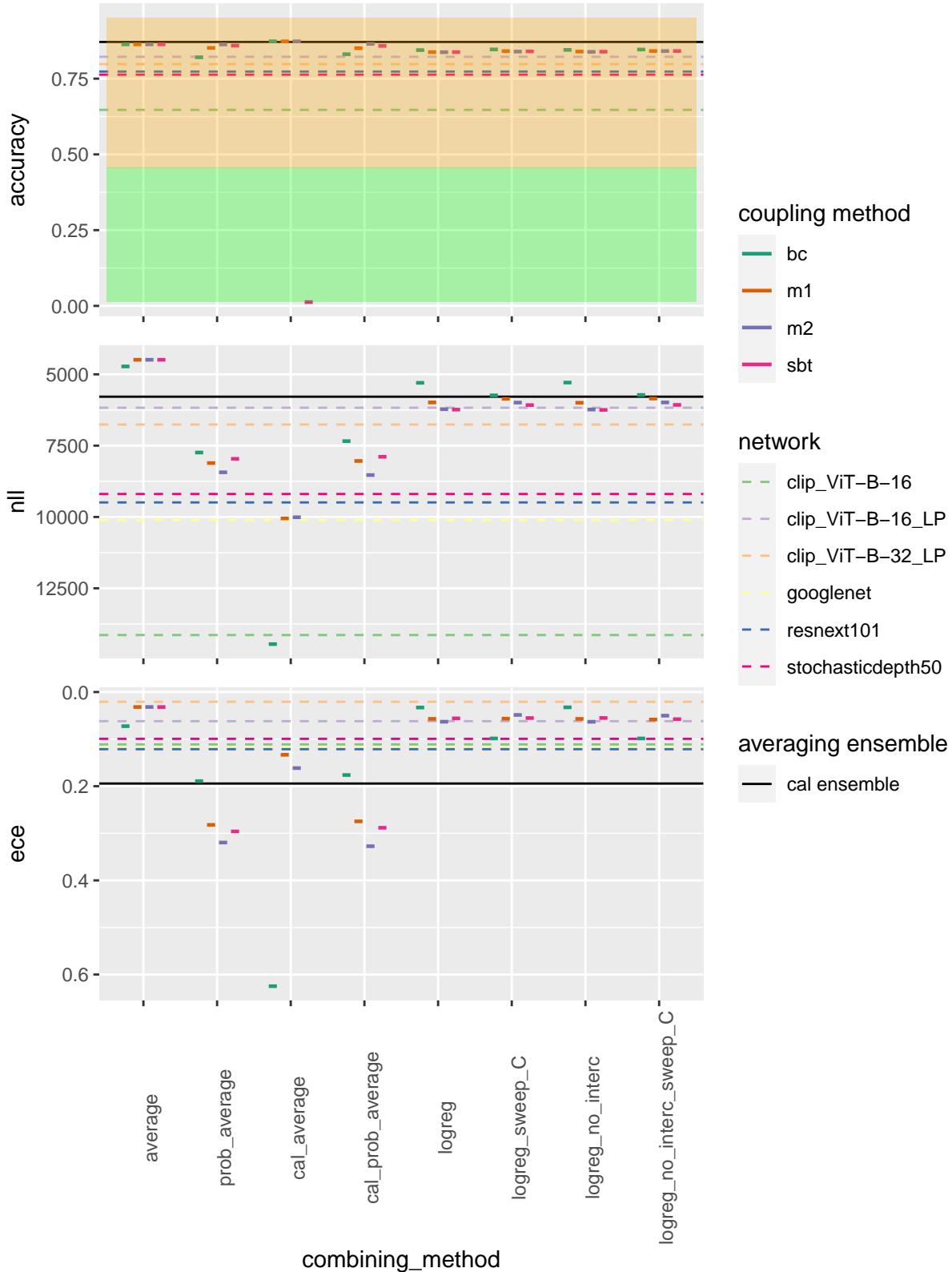
Ensemble metrics
Error inconsistency 0.541400015354156



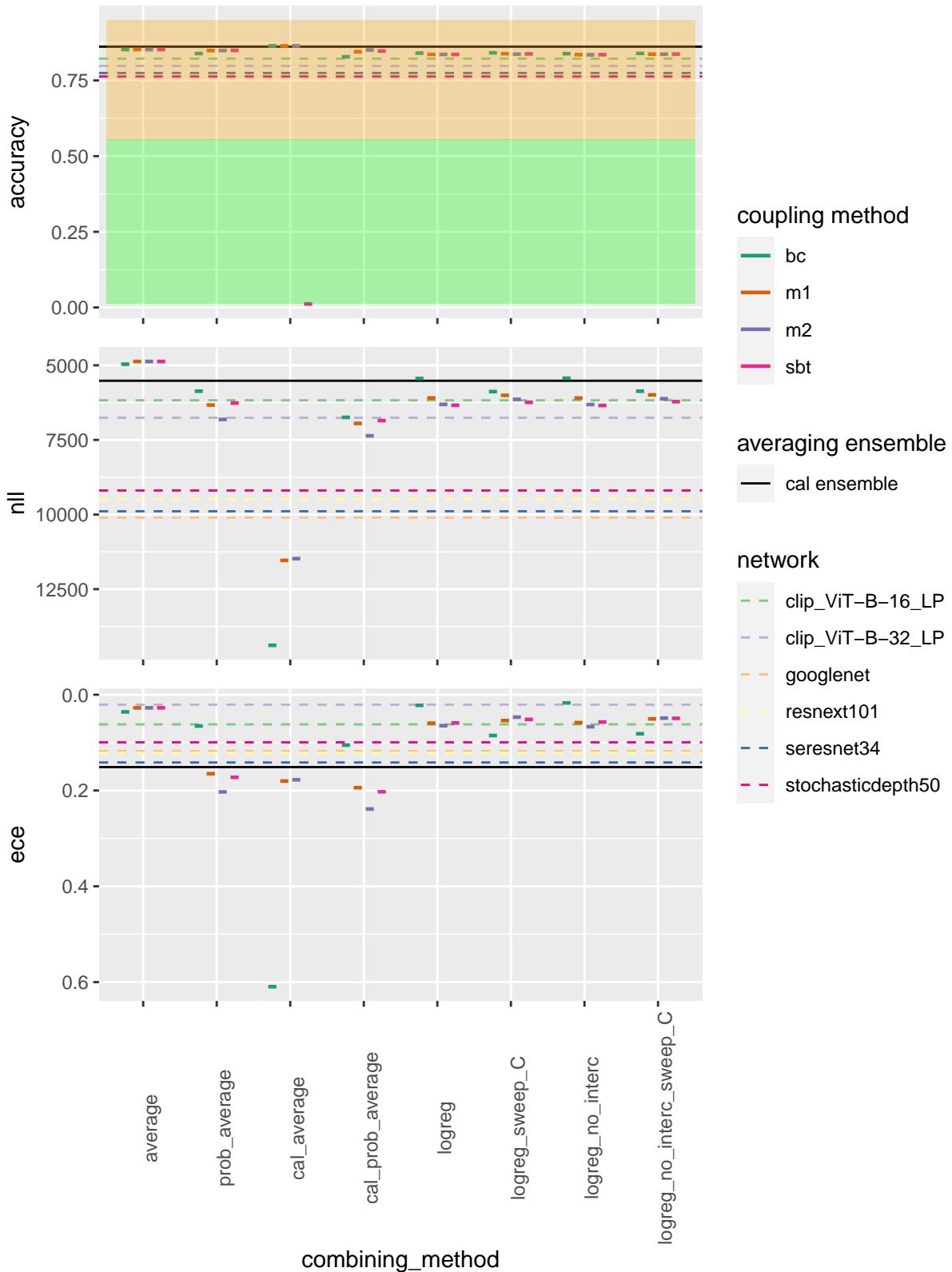
Ensemble metrics
Error inconsistency 0.486699998378754



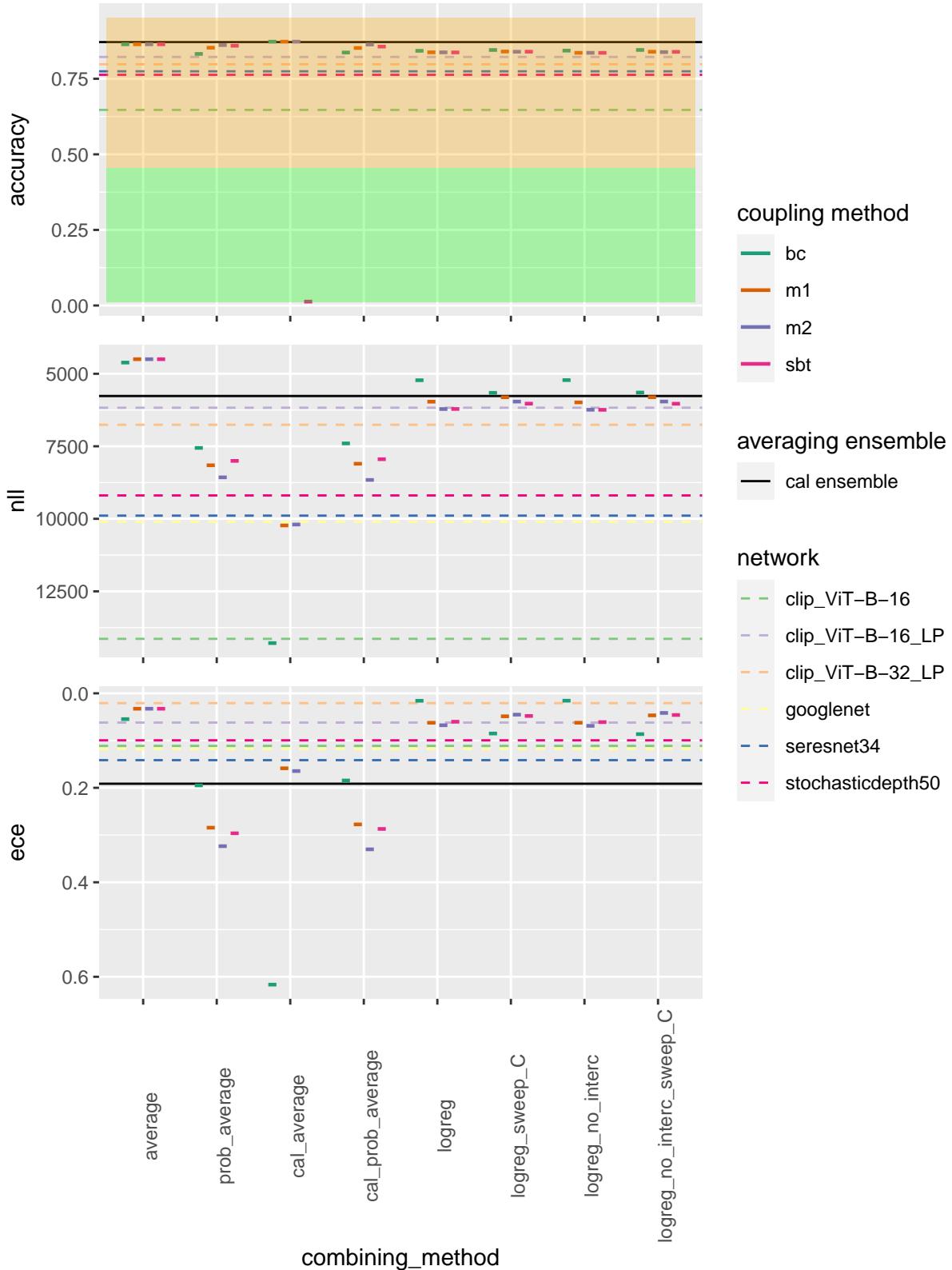
Ensemble metrics
Error inconsistency 0.496099978685379



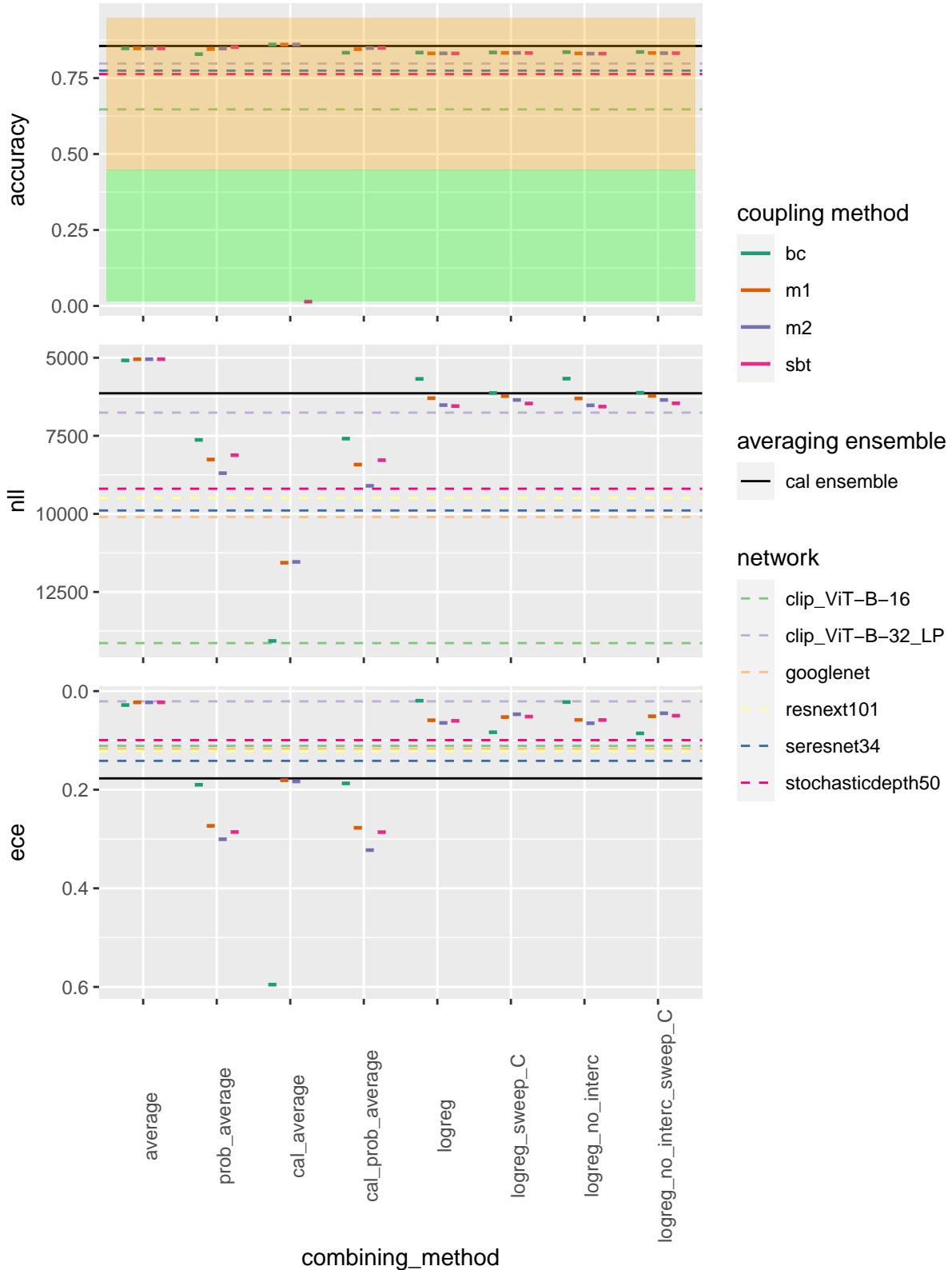
Ensemble metrics
Error inconsistency 0.394899994134903



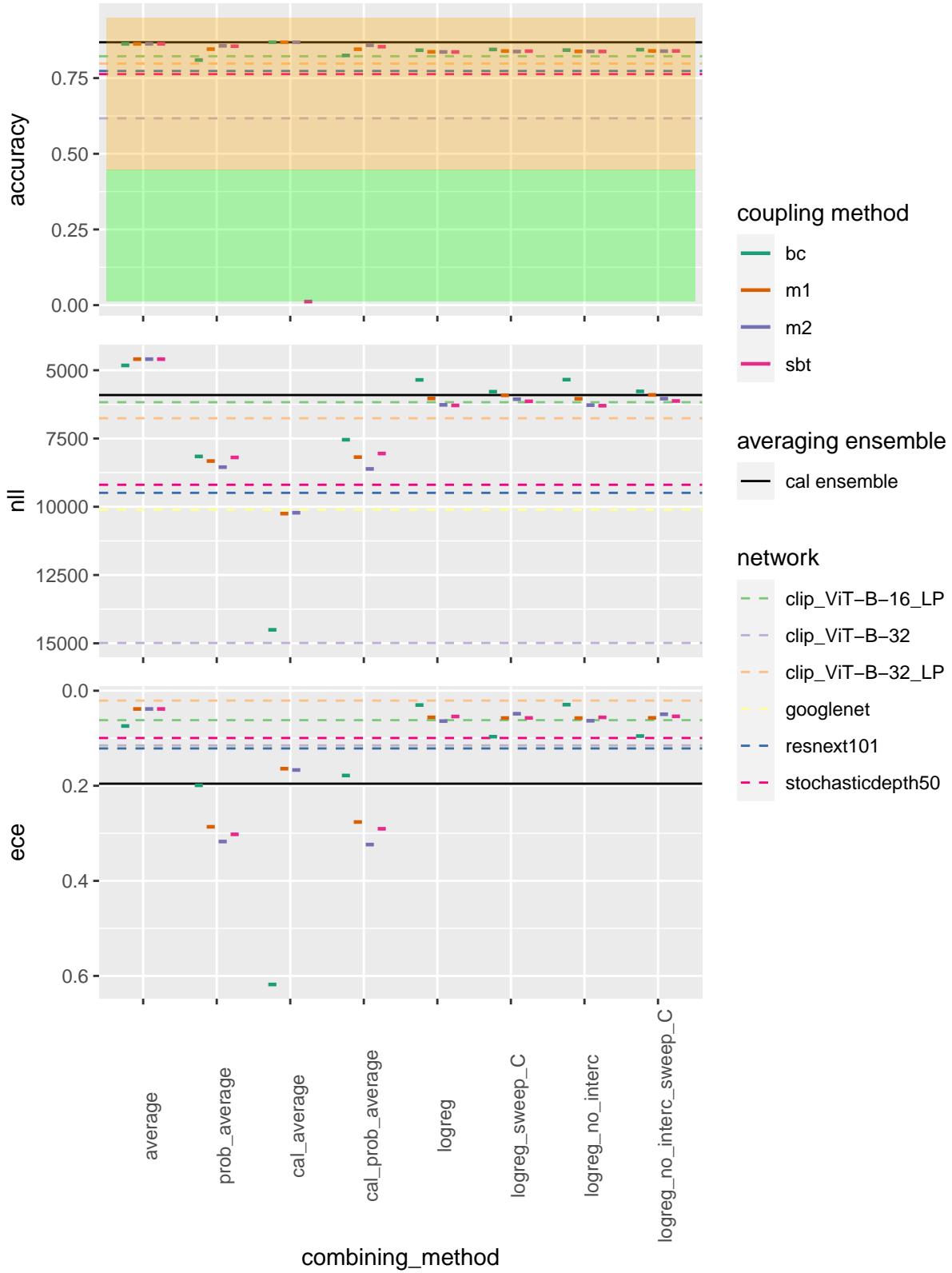
Ensemble metrics
Error inconsistency 0.496799975633621



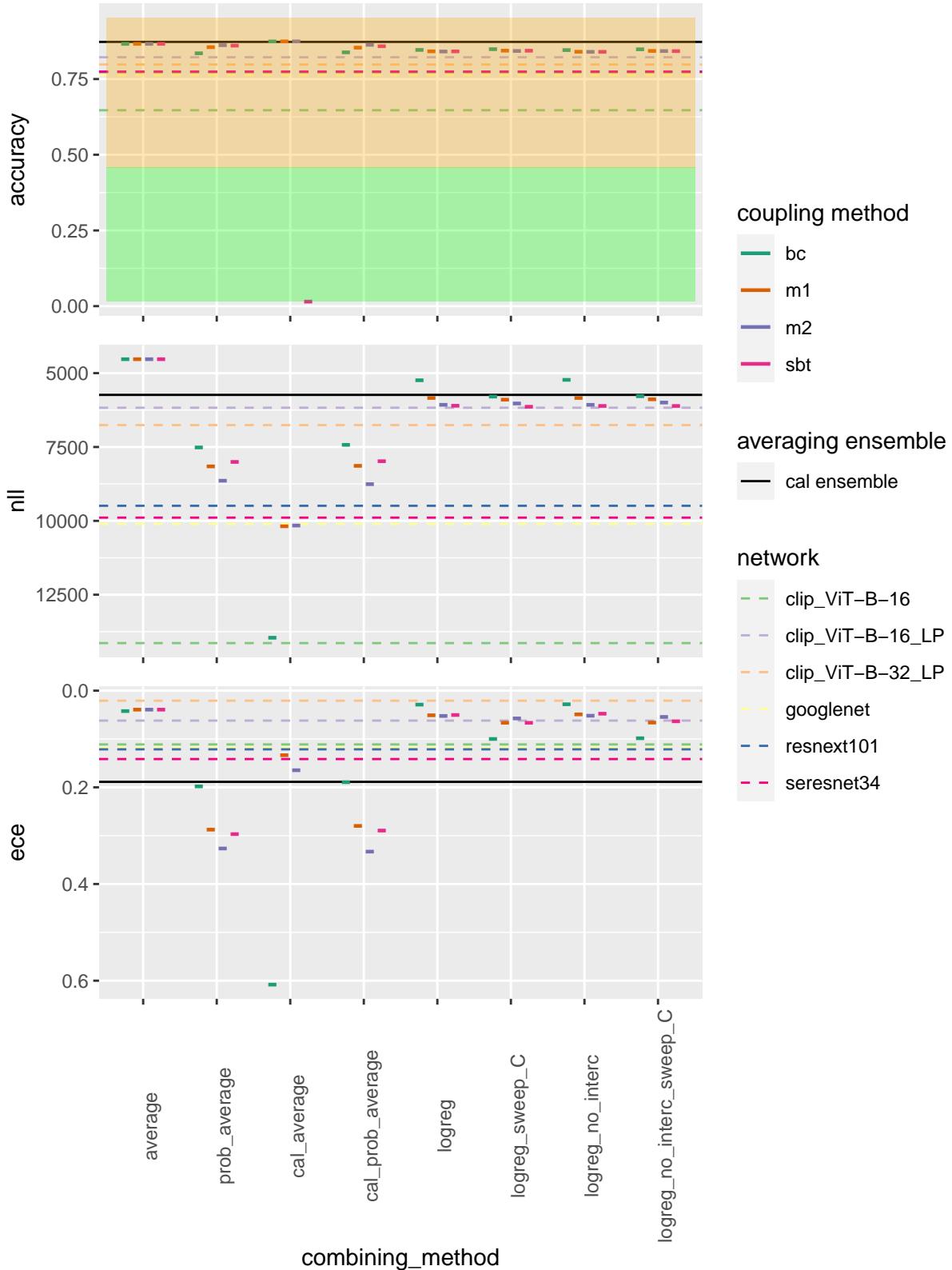
Ensemble metrics
Error inconsistency 0.502099990844727



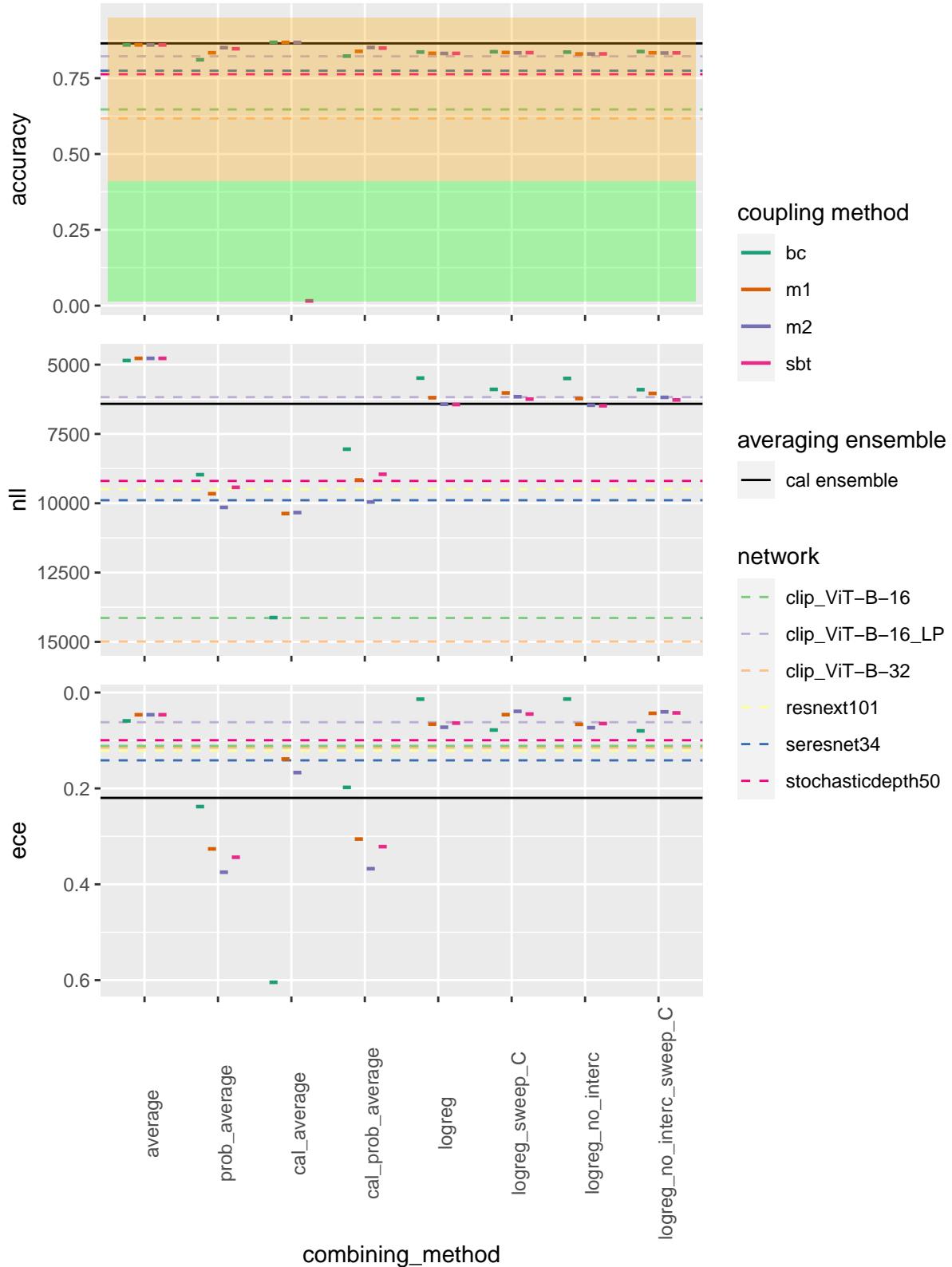
Ensemble metrics
Error inconsistency 0.503199994564056



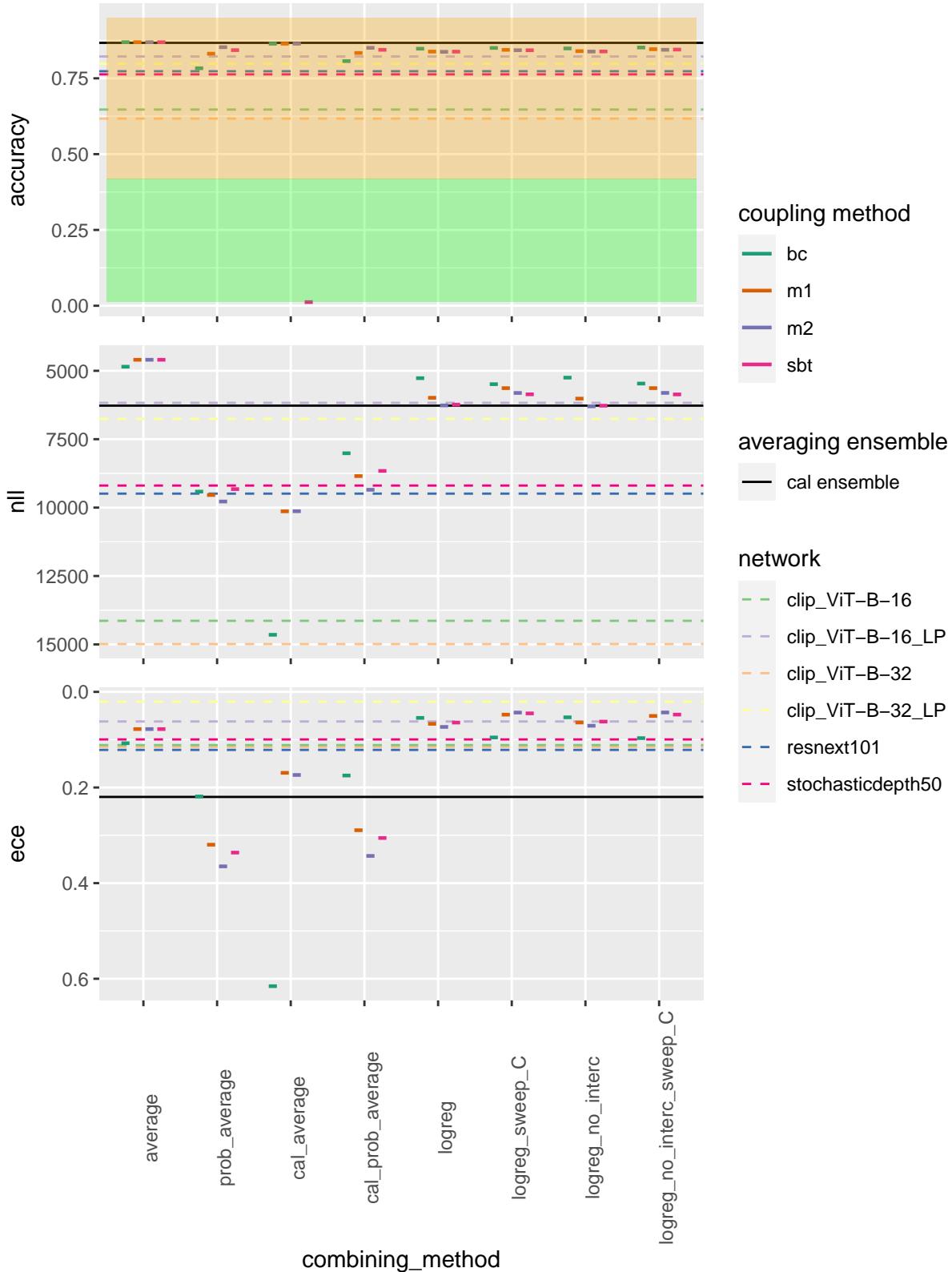
Ensemble metrics
Error inconsistency 0.494599997997284



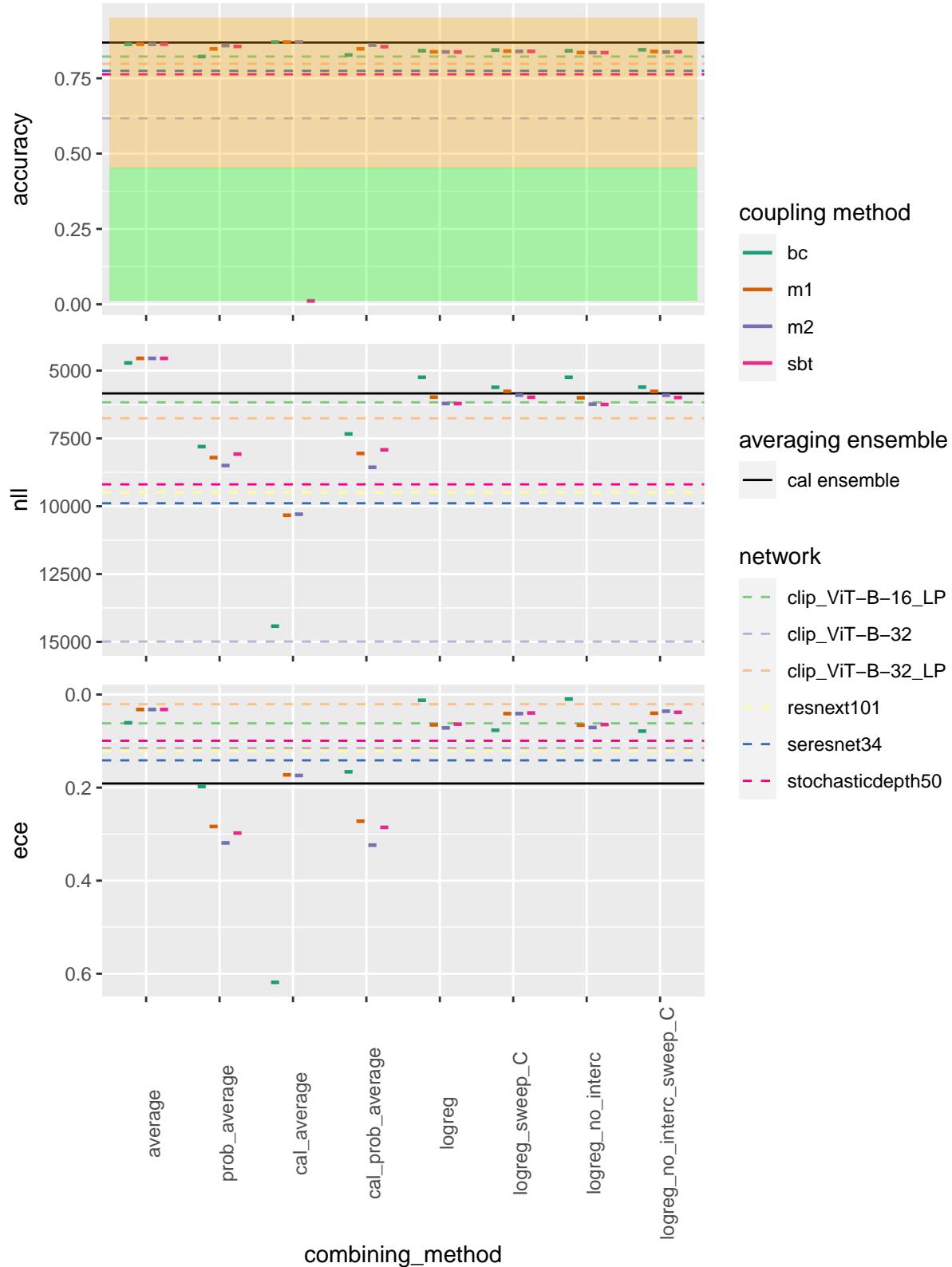
Ensemble metrics
Error inconsistency 0.538999974727631



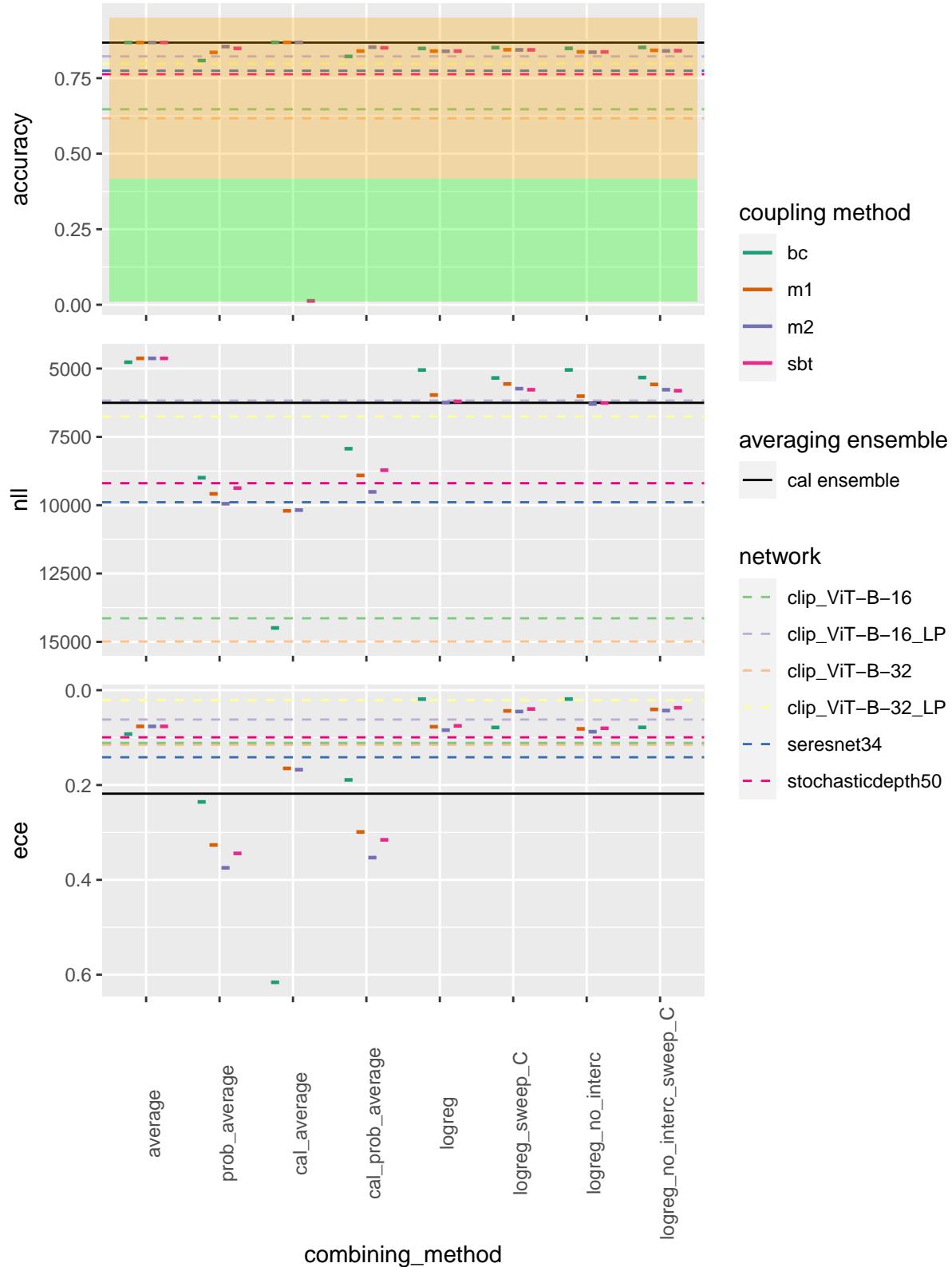
Ensemble metrics
Error inconsistency 0.532899975776672



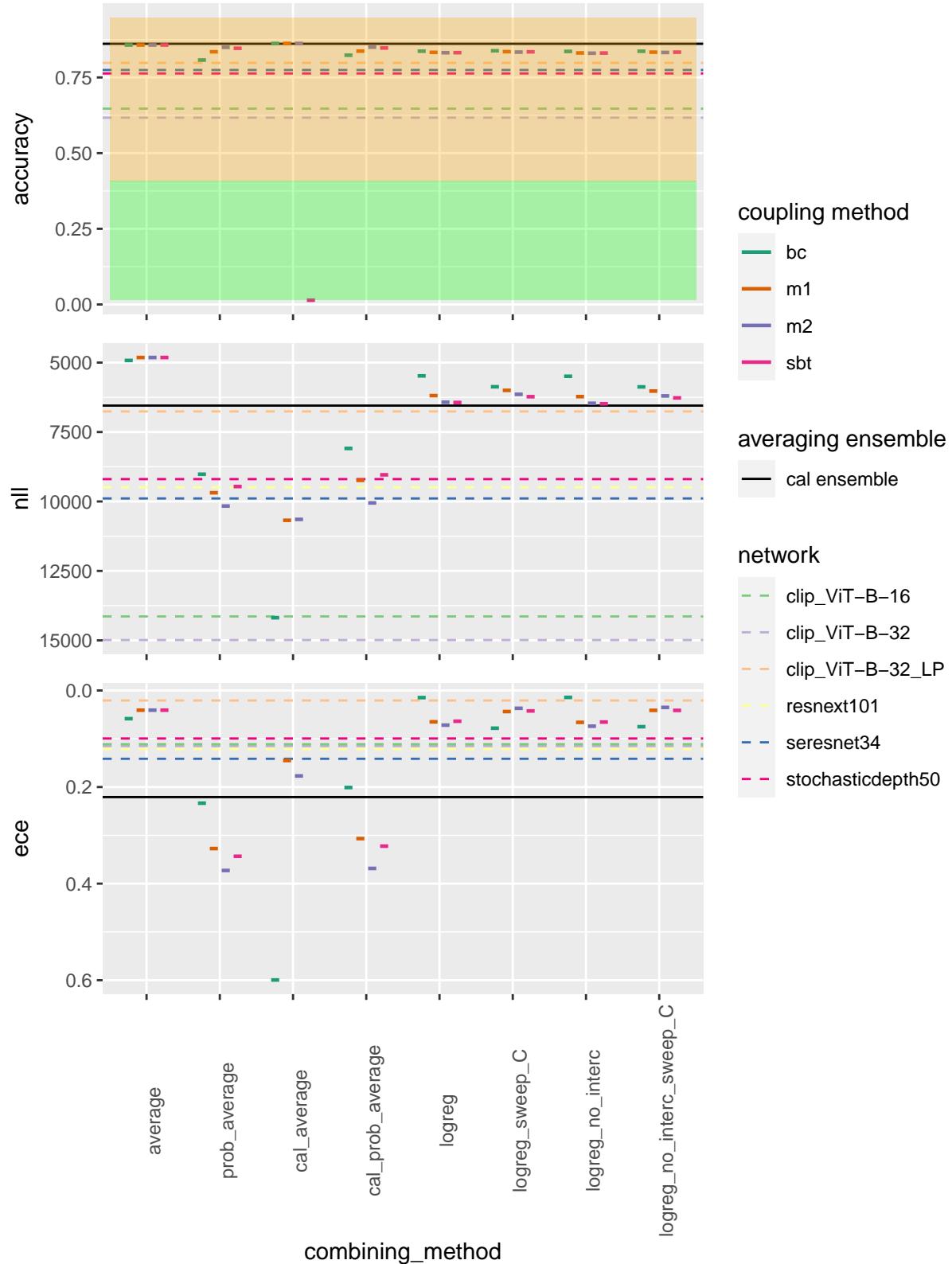
Ensemble metrics
Error inconsistency 0.499199986457825



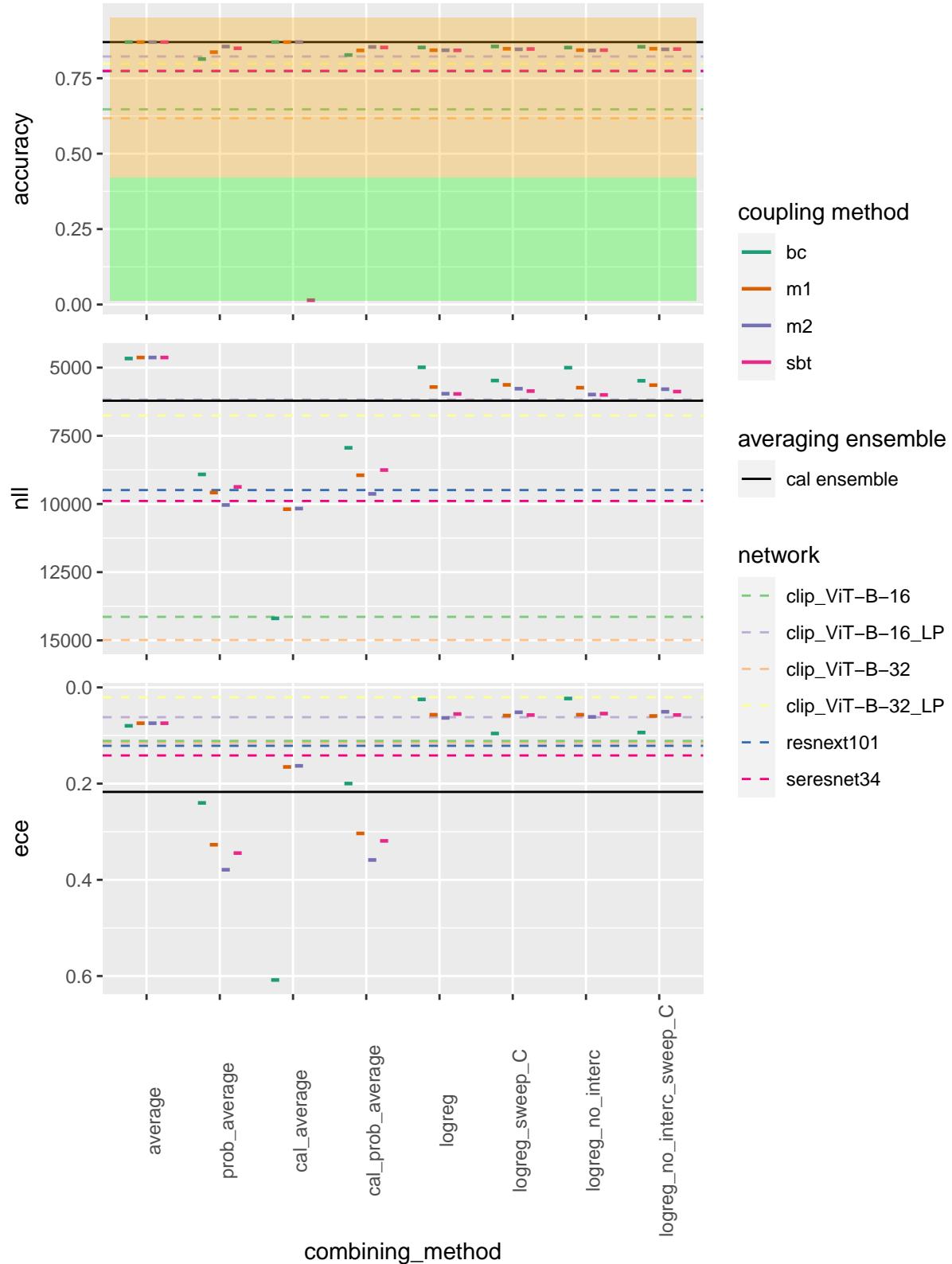
Ensemble metrics
Error inconsistency 0.532899975776672



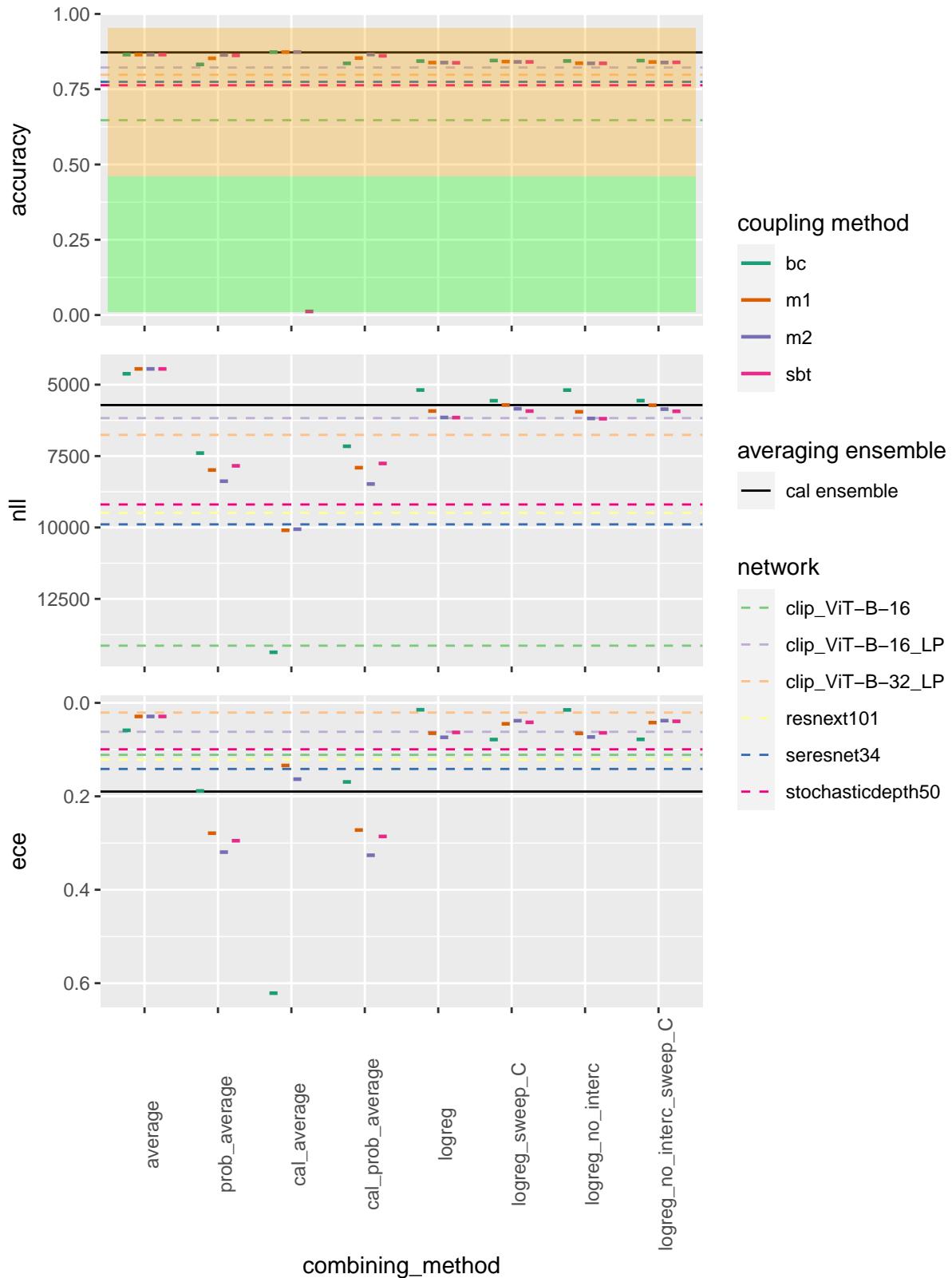
Ensemble metrics
Error inconsistency 0.541000008583069



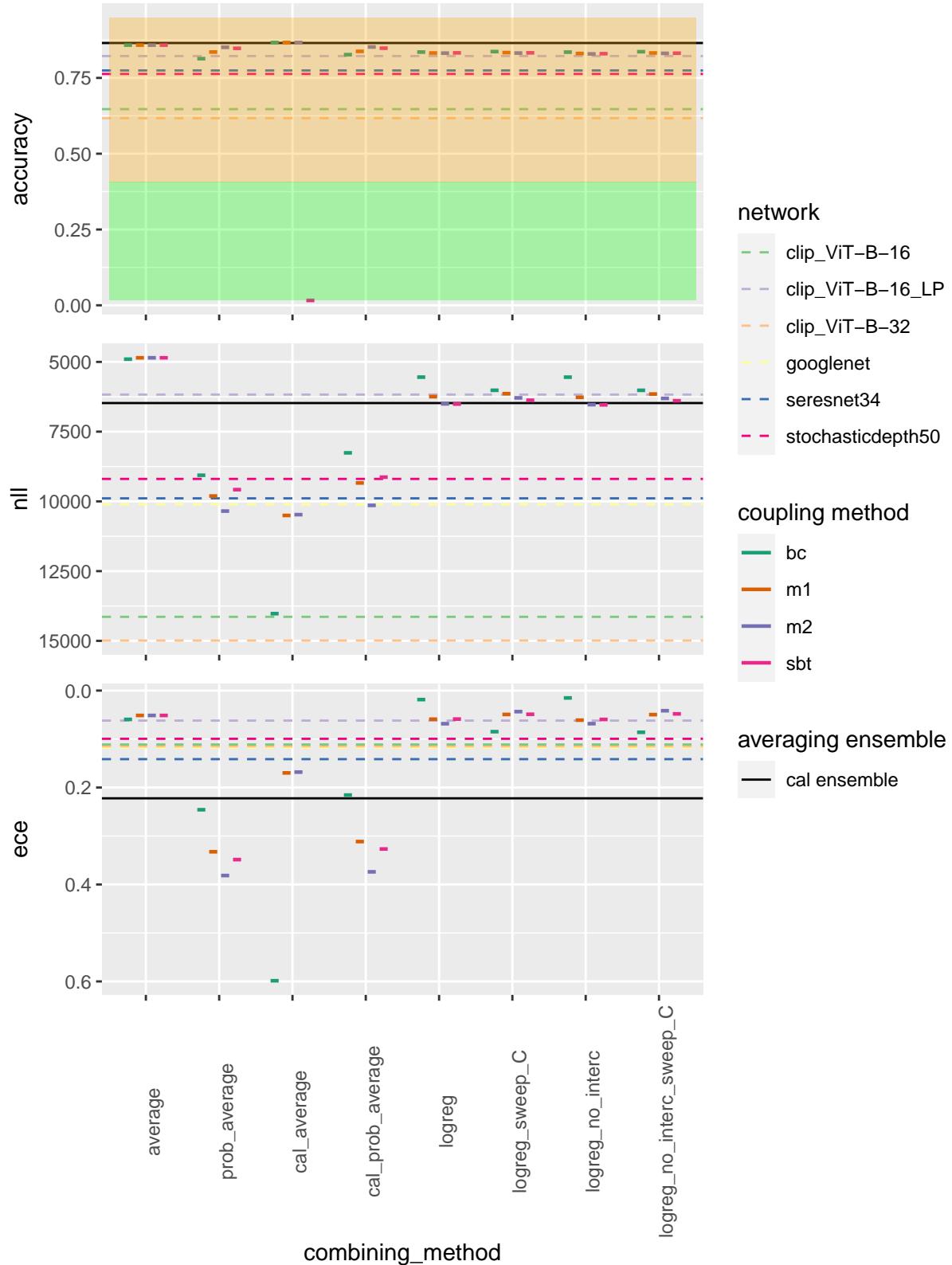
Ensemble metrics
Error inconsistency 0.529900014400482



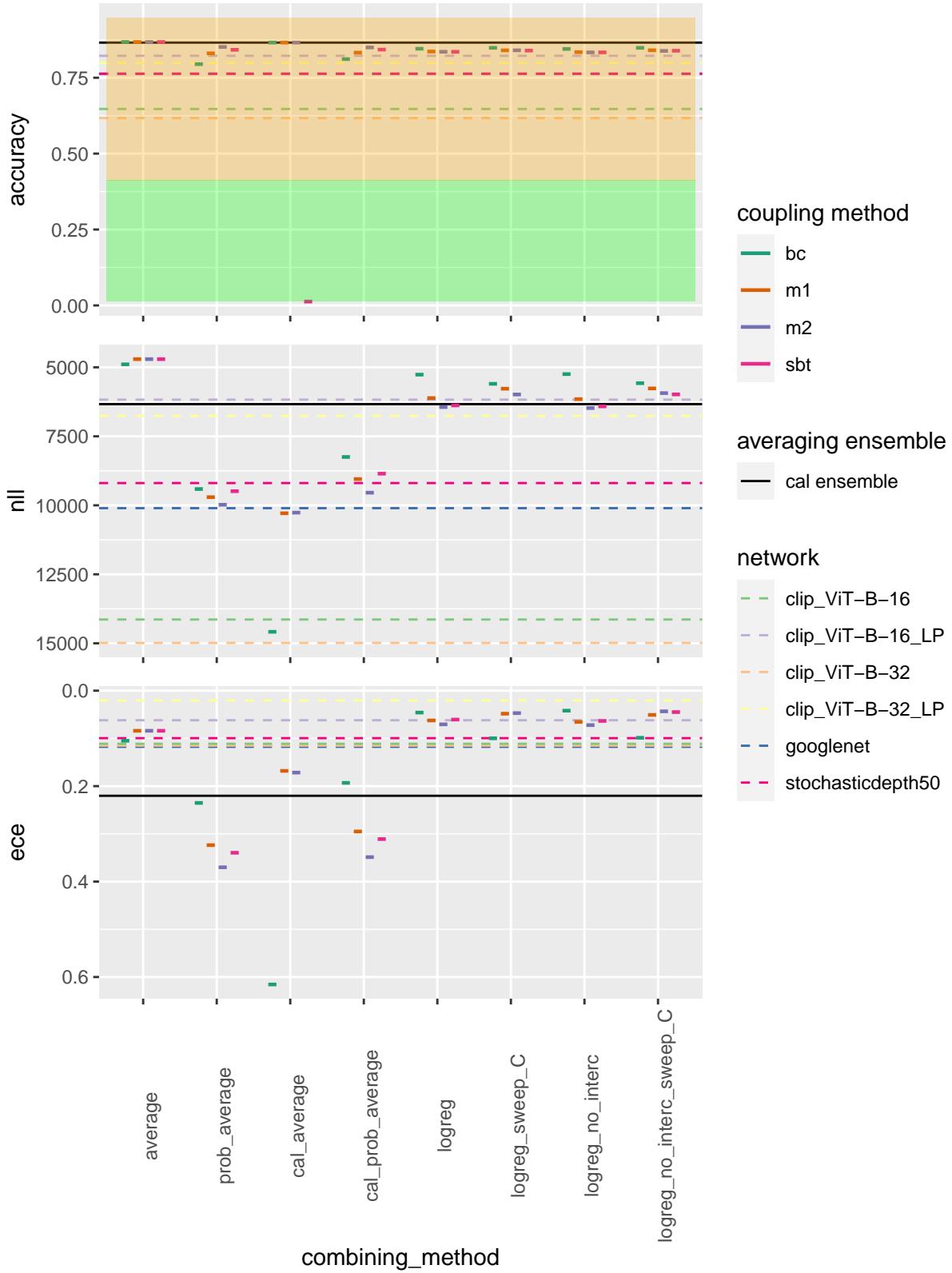
Ensemble metrics
Error inconsistency 0.493099987506866



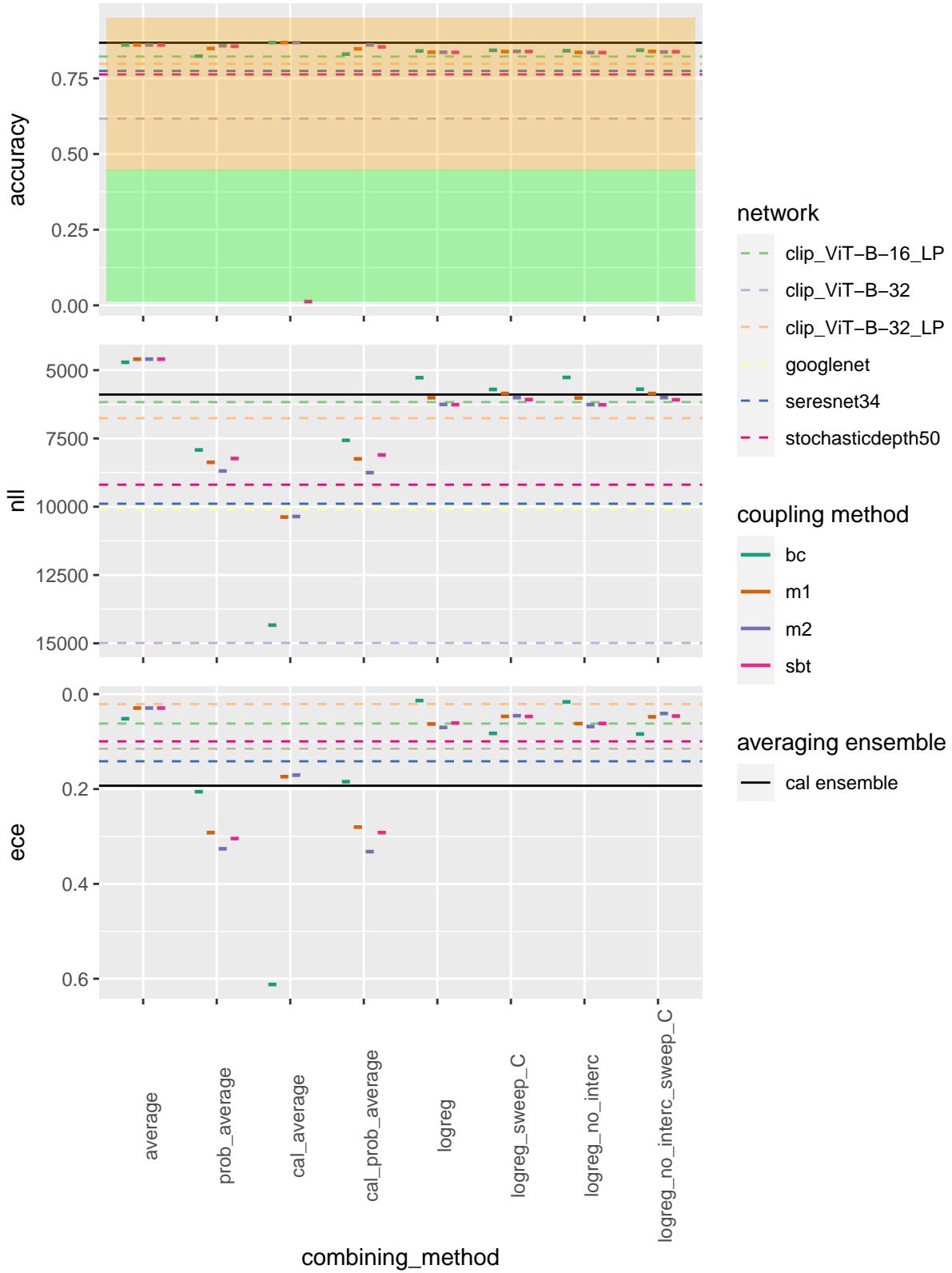
Ensemble metrics
Error inconsistency 0.542599976062775



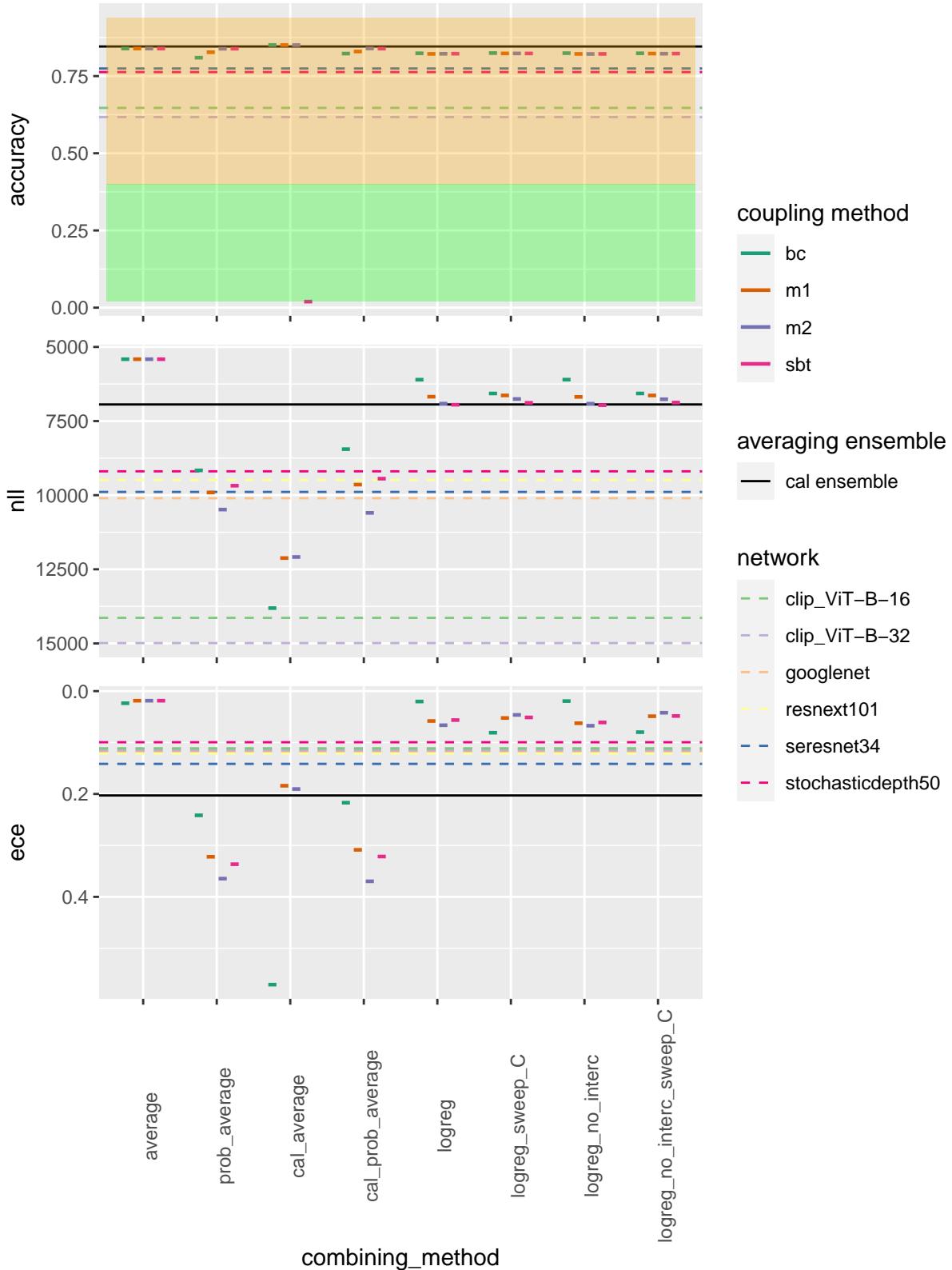
Ensemble metrics
Error inconsistency 0.535099983215332



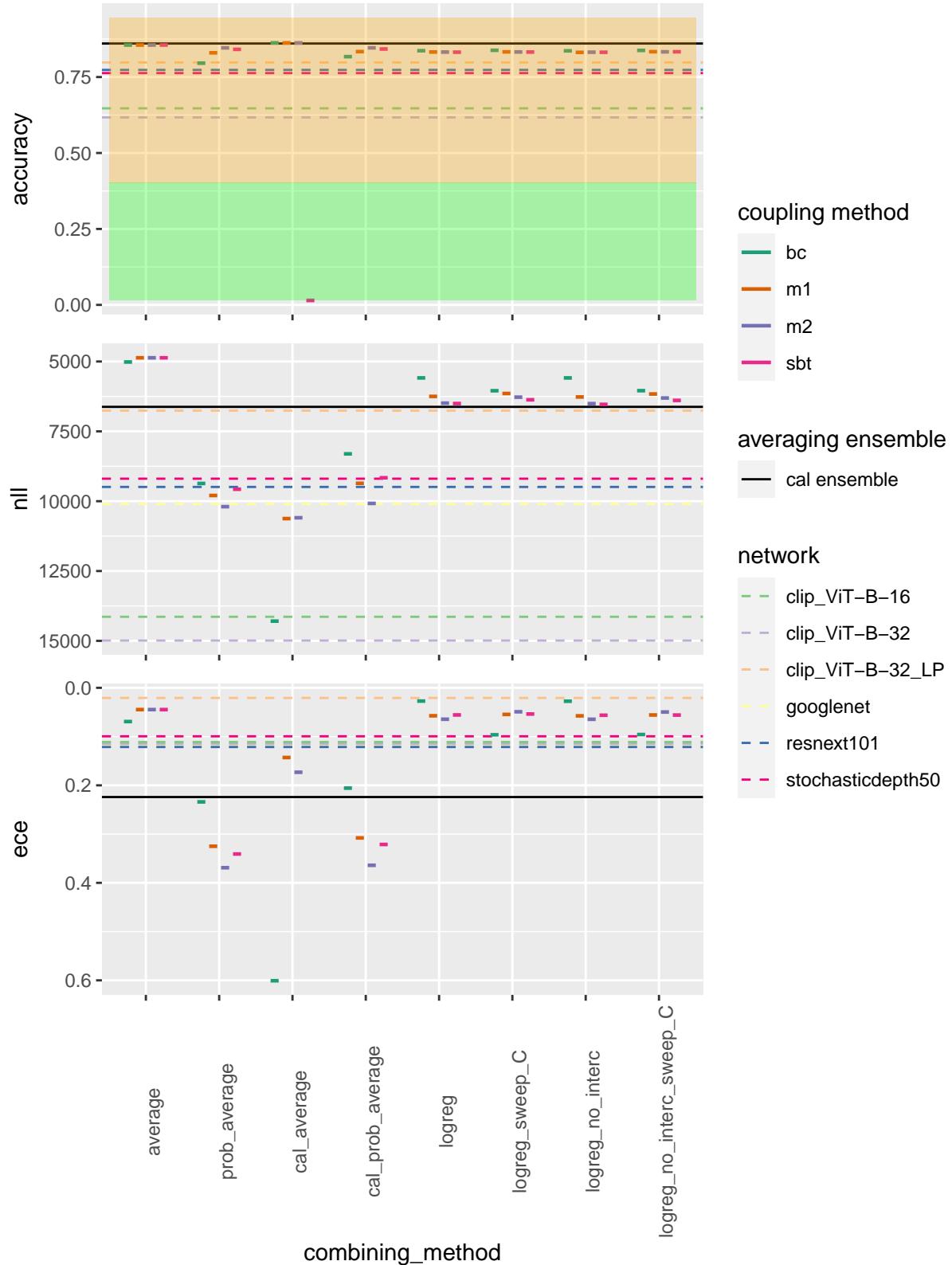
Ensemble metrics
Error inconsistency 0.503600001335144



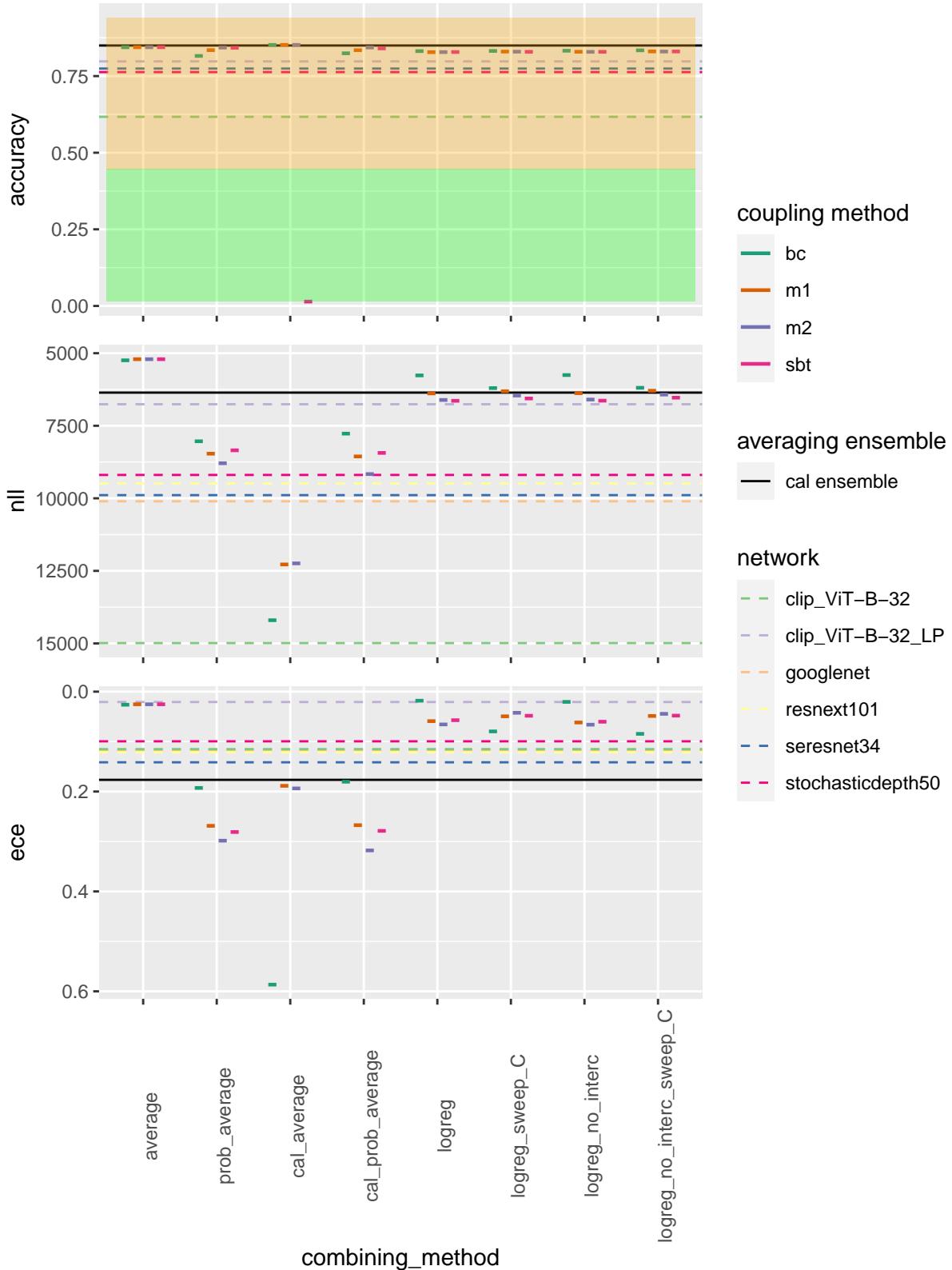
Ensemble metrics
Error inconsistency 0.539699971675873



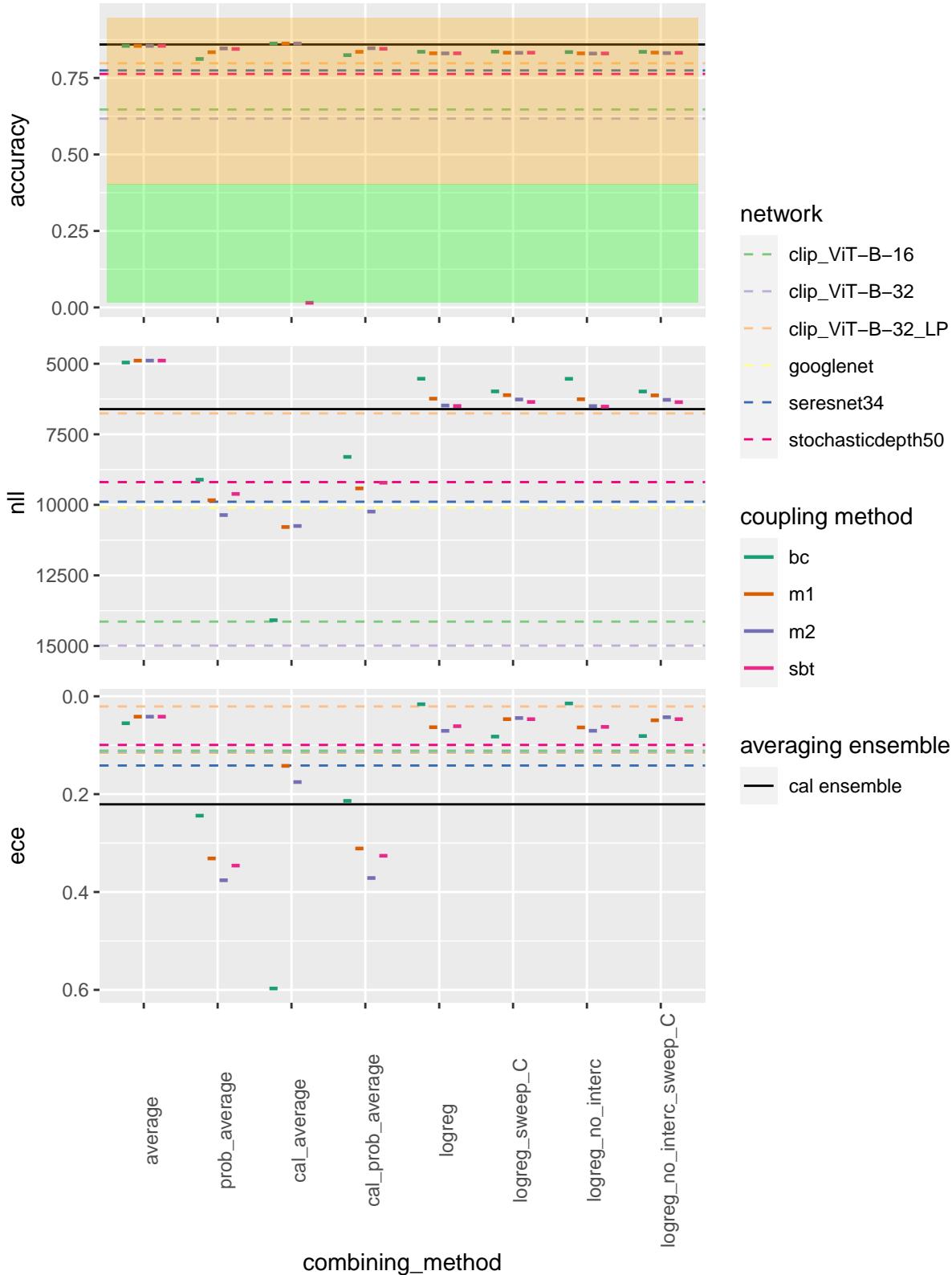
Ensemble metrics
Error inconsistency 0.543900012969971



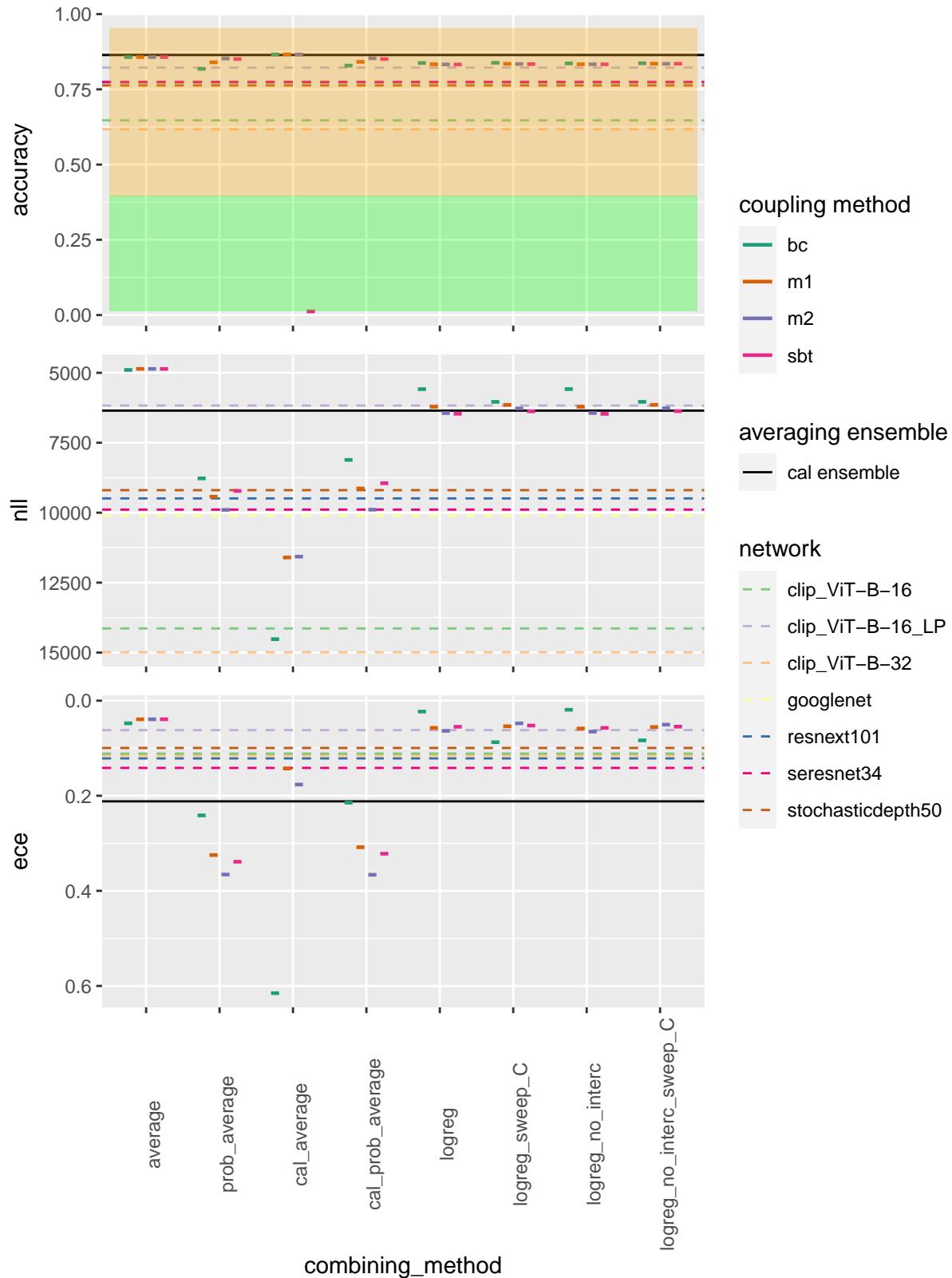
Ensemble metrics
Error inconsistency 0.494800001382828



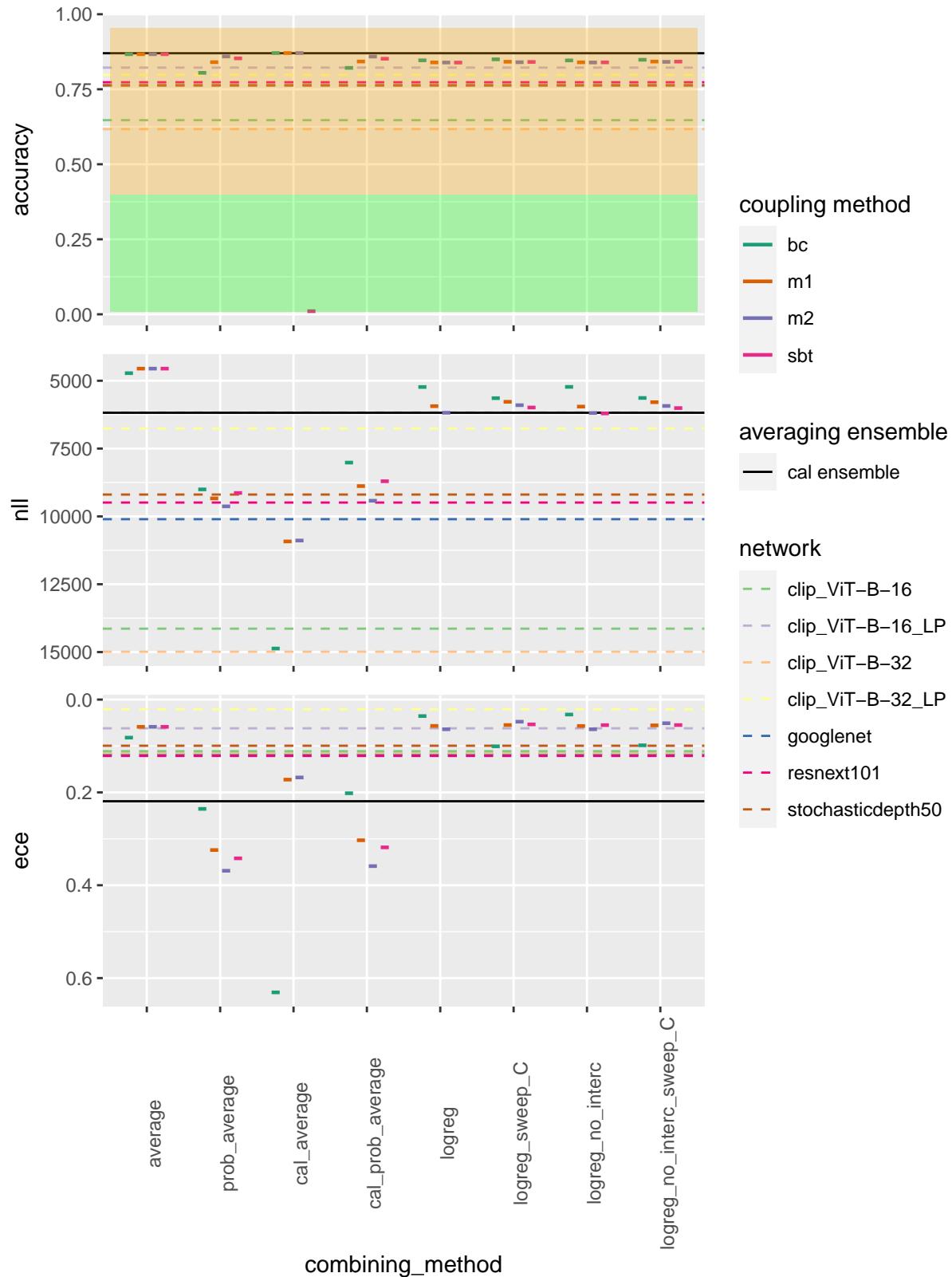
Ensemble metrics
Error inconsistency 0.544099986553192



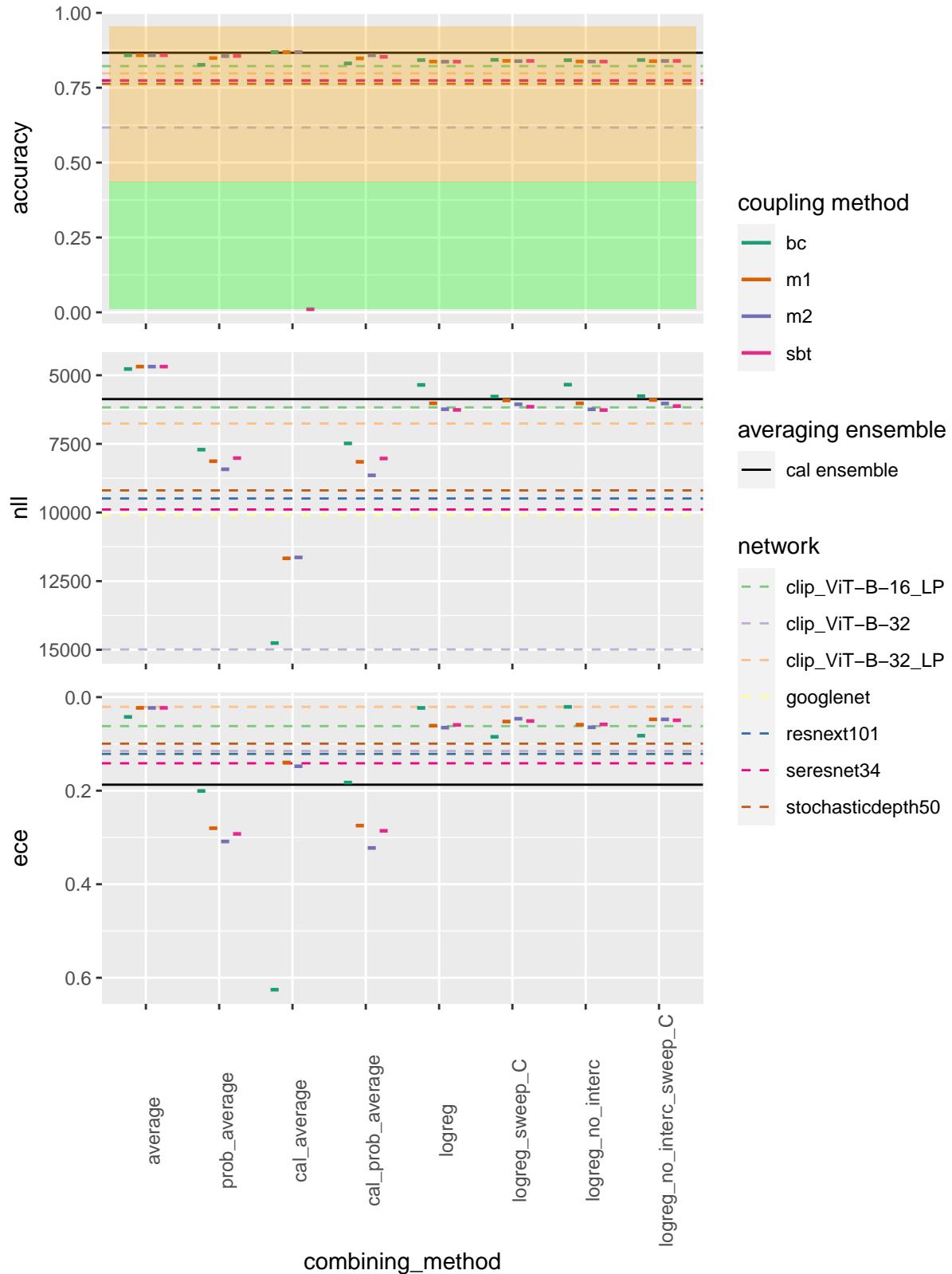
Ensemble metrics
Error inconsistency 0.557699978351593



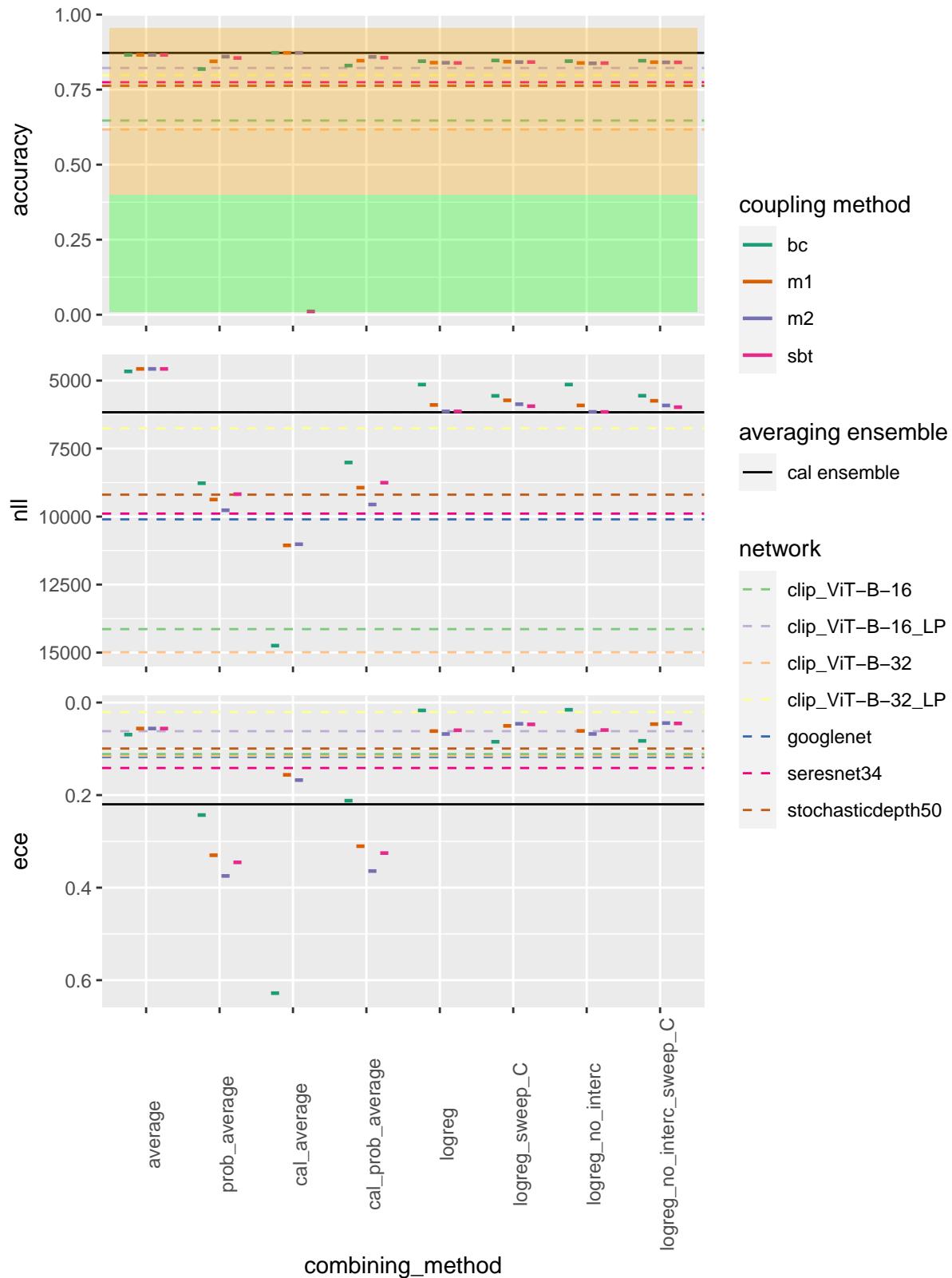
Ensemble metrics
Error inconsistency 0.555099964141846



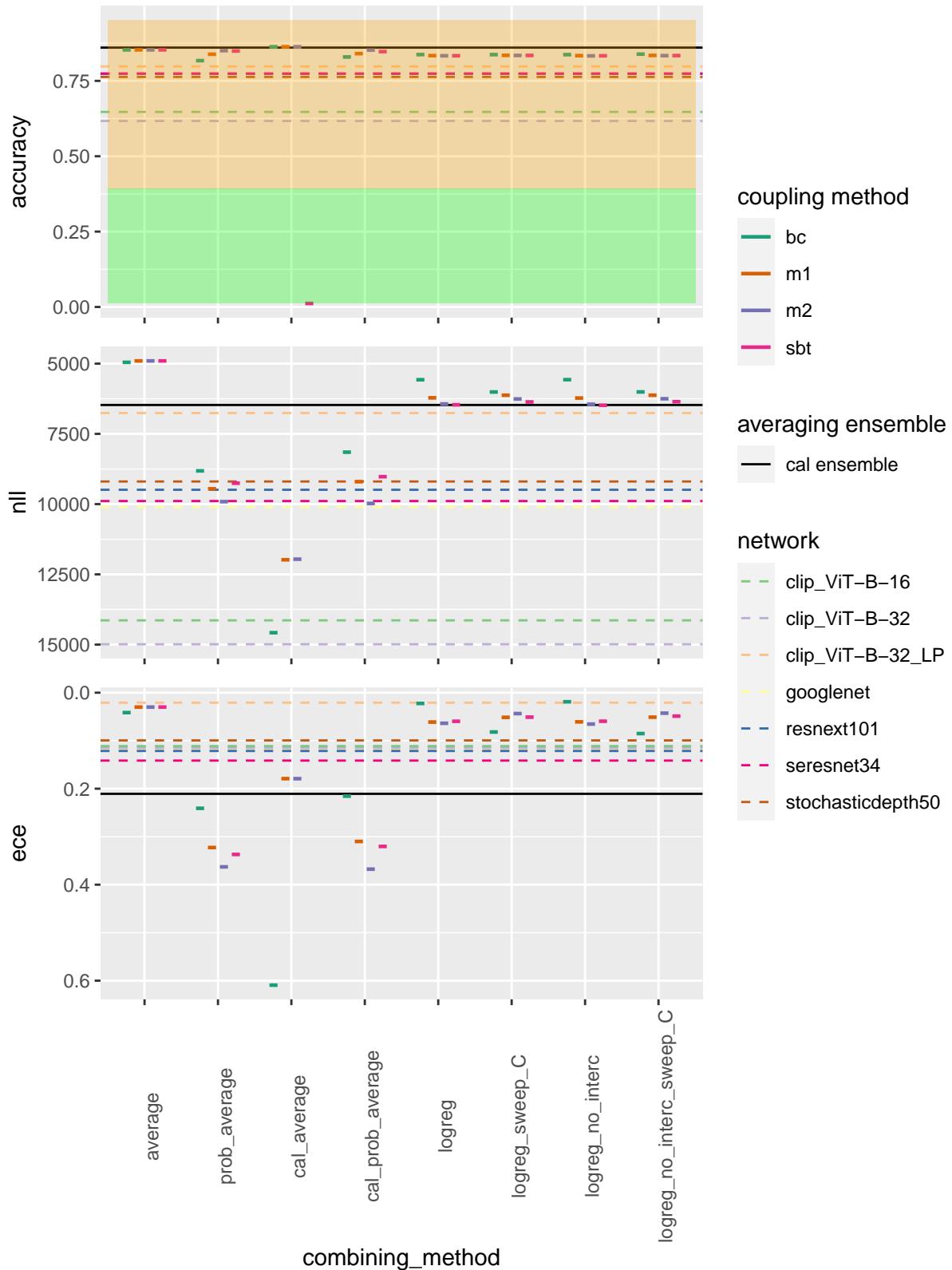
Ensemble metrics
Error inconsistency 0.518899977207184



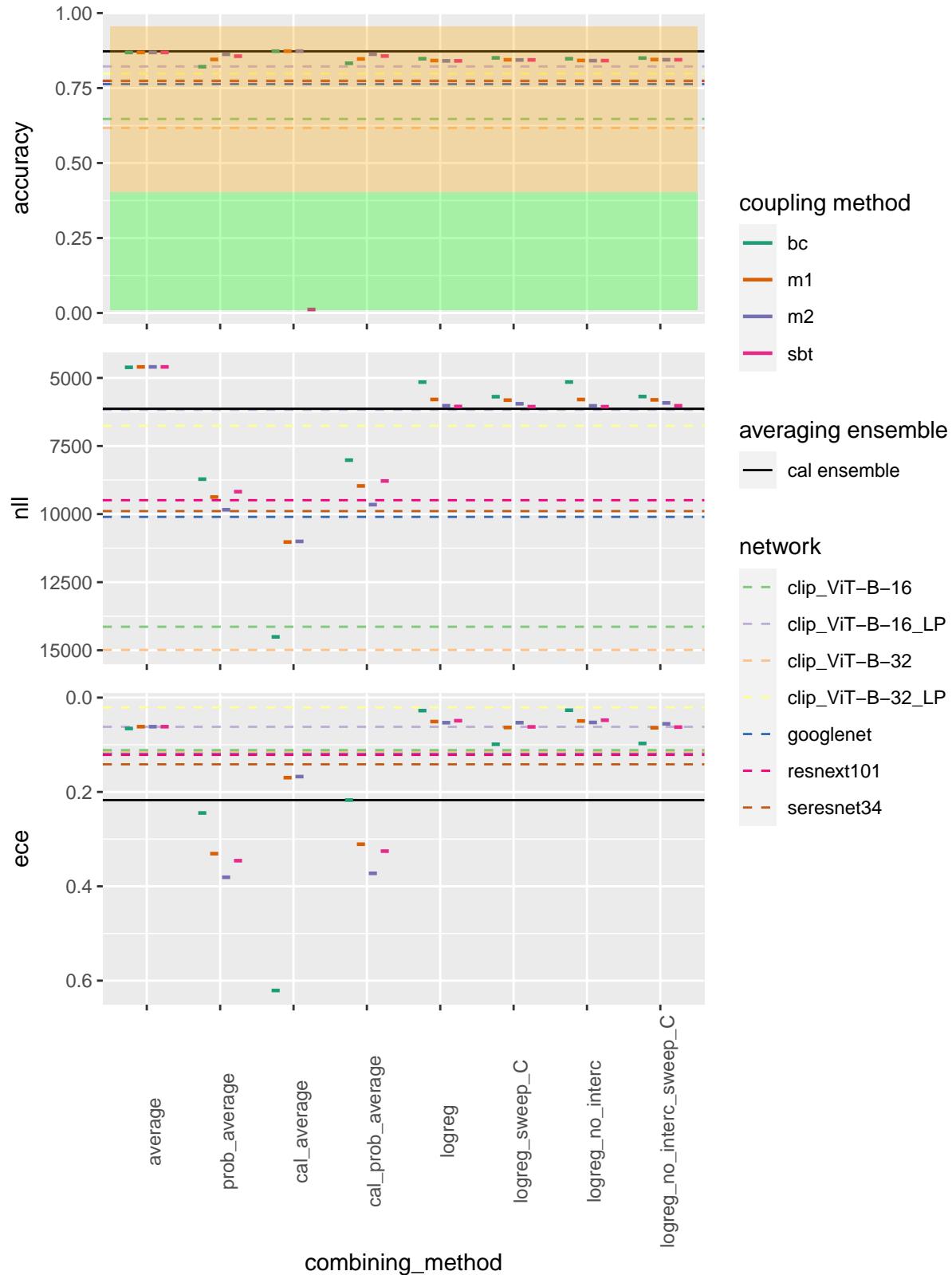
Ensemble metrics
Error inconsistency 0.555400013923645



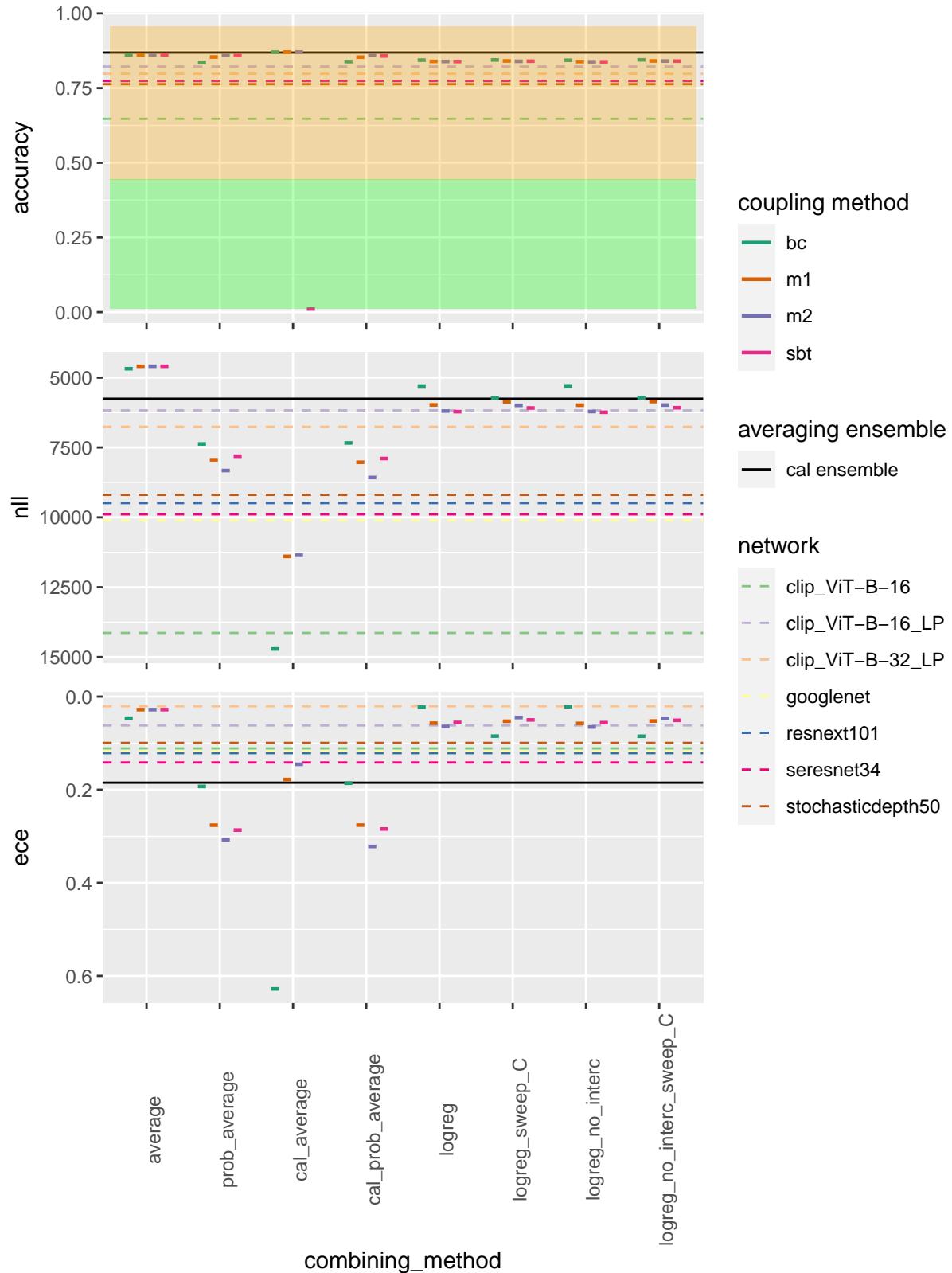
Ensemble metrics
Error inconsistency 0.559099972248077



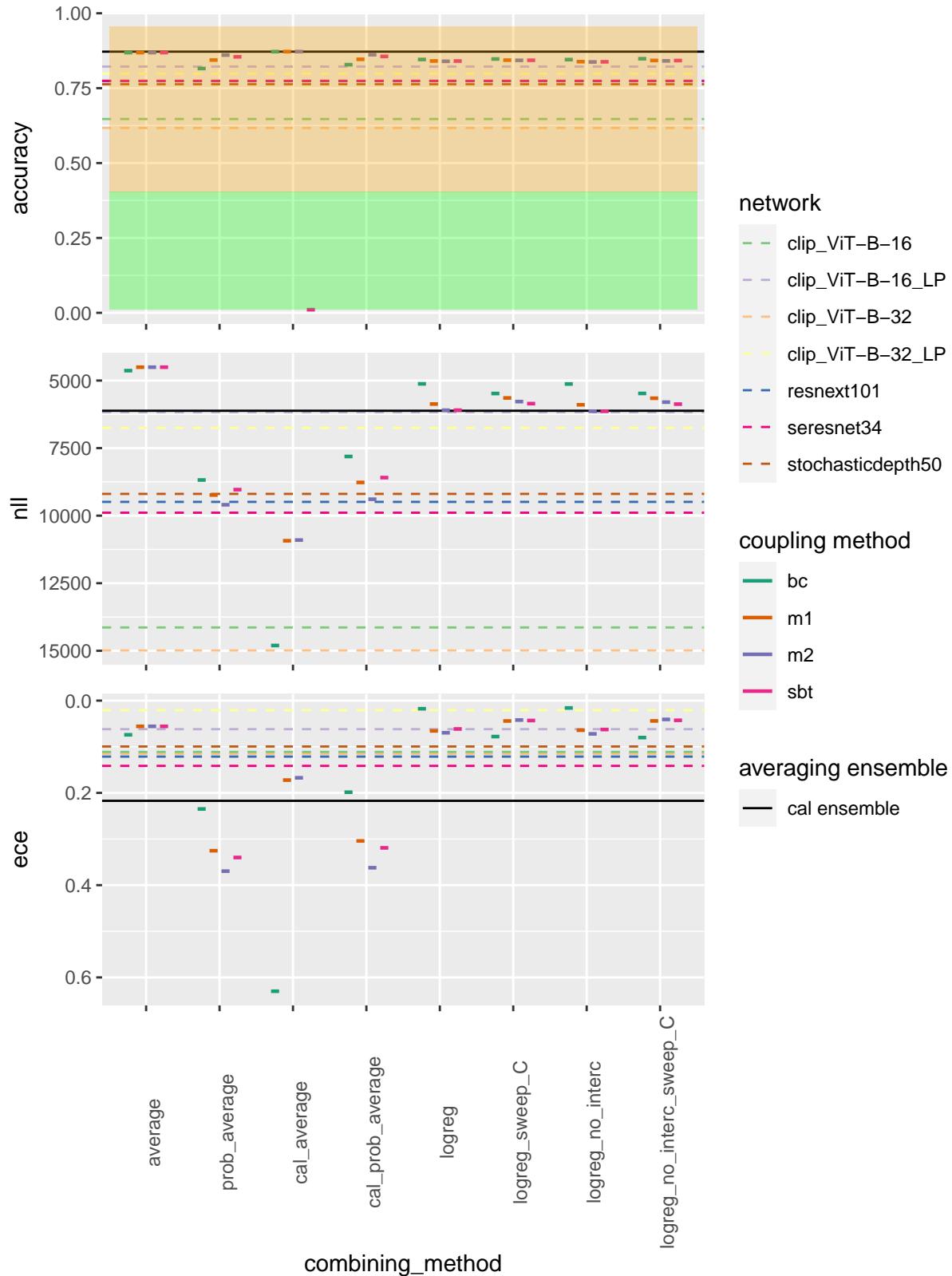
Ensemble metrics
Error inconsistency 0.552599966526031



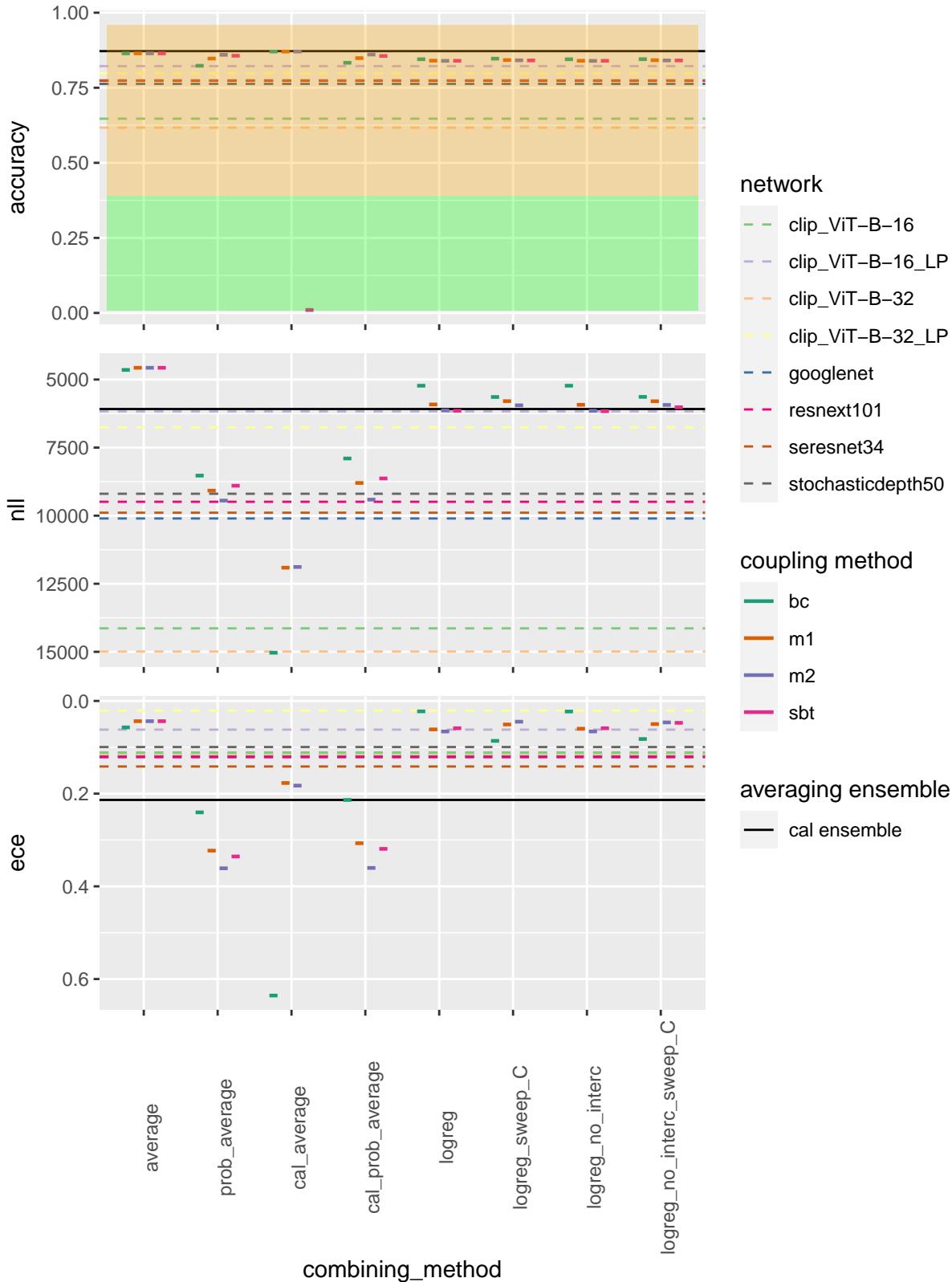
Ensemble metrics
Error inconsistency 0.513399958610535



Ensemble metrics
Error inconsistency 0.551899969577789



Ensemble metrics
Error inconsistency 0.568899989128113



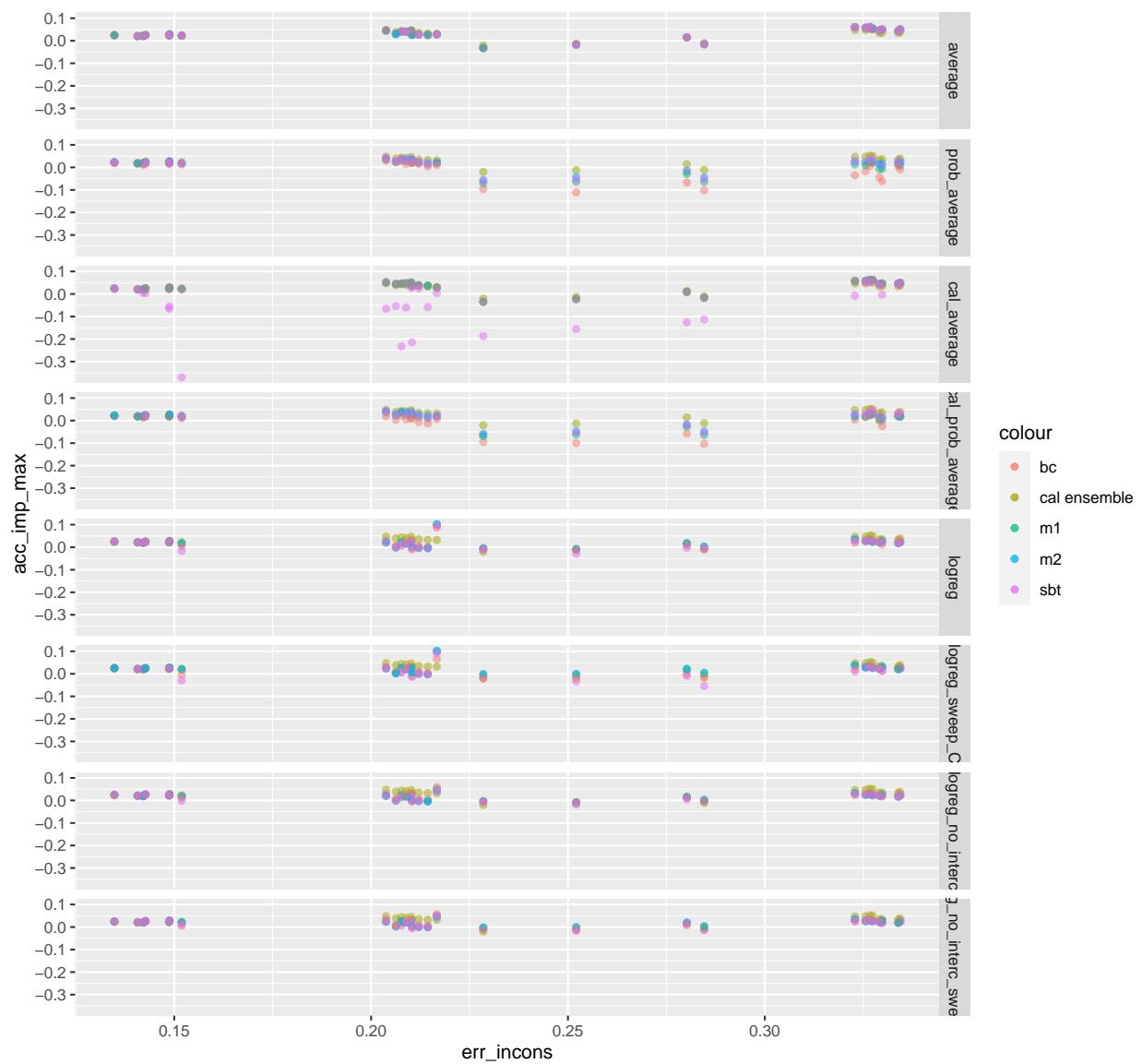
```

xax <- c("err_incons",
       "nll_var", "nll_min", "nll_max", "nll_avg",
       "acc_var", "acc_min", "acc_max", "acc_avg",
       "ece_var", "ece_min", "ece_max", "ece_avg")
yax <- c("acc_imp_max", "acc_imp_avg")
for (sss in unique(ens_cal_plt_df$combination_size))
{
  cur_ens_cal_plt_df <- ens_cal_plt_df %>% filter(combination_size == sss)
  cur_ens_pwc_plt_df <- ens_pwc_plt_df %>% filter(combination_size == sss)
  for (xa in xax)
  {
    for (ya in yax)
    {
      cur_plot <- ggplot() +
        geom_point(
          data=cur_ens_cal_plt_df,
          mapping=aes_string(x=xa, y=ya, color=shQuote("cal ensemble")),
          alpha=0.5) +
        geom_point(
          data=cur_ens_pwc_plt_df,
          mapping=aes_string(x=xa, y=ya, color="coupling_method"),
          alpha=0.5) +
        facet_grid(rows=vars(combining_method)) +
        ggtitle(sprintf("Accuracy improvement of ensemble over
the %s of networks vs %s.
Ensemble size %s",
                     if (ya == "acc_imp_max") "best" else "average", xa, sss))

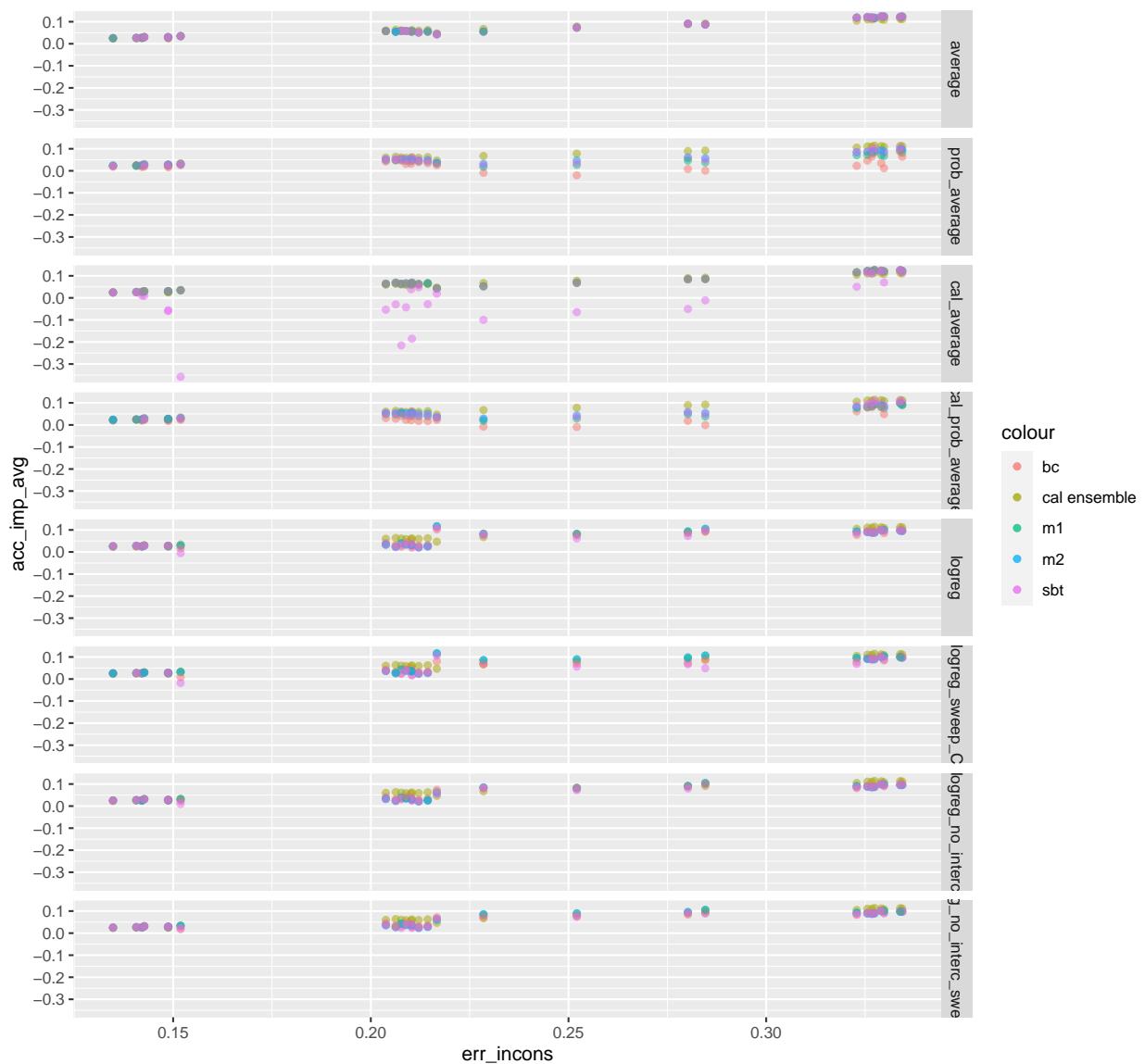
      print(cur_plot)
    }
  }
}

```

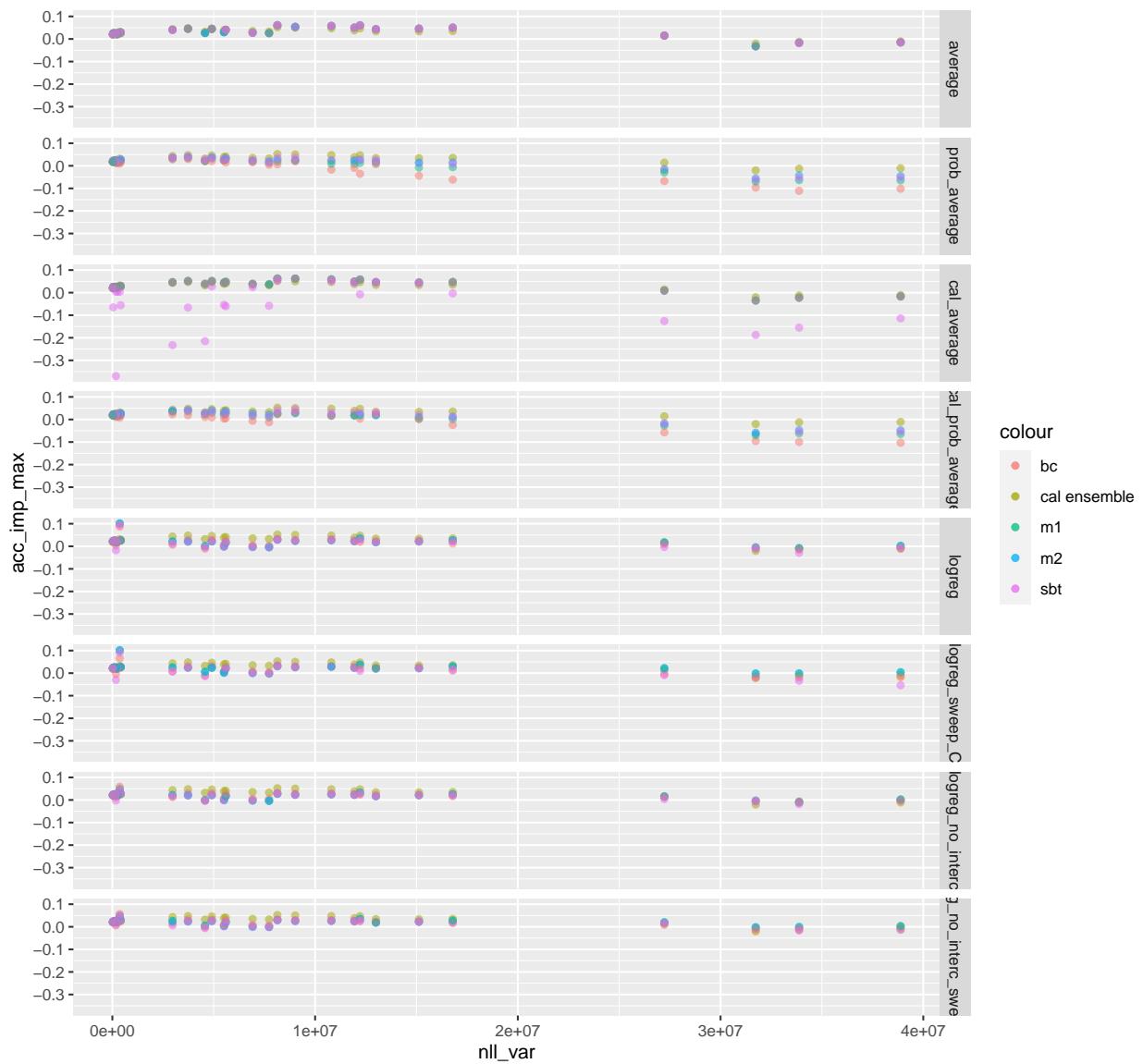
Accuracy improvement of ensemble over
the best of networks vs err_incons.
Ensemble size 2



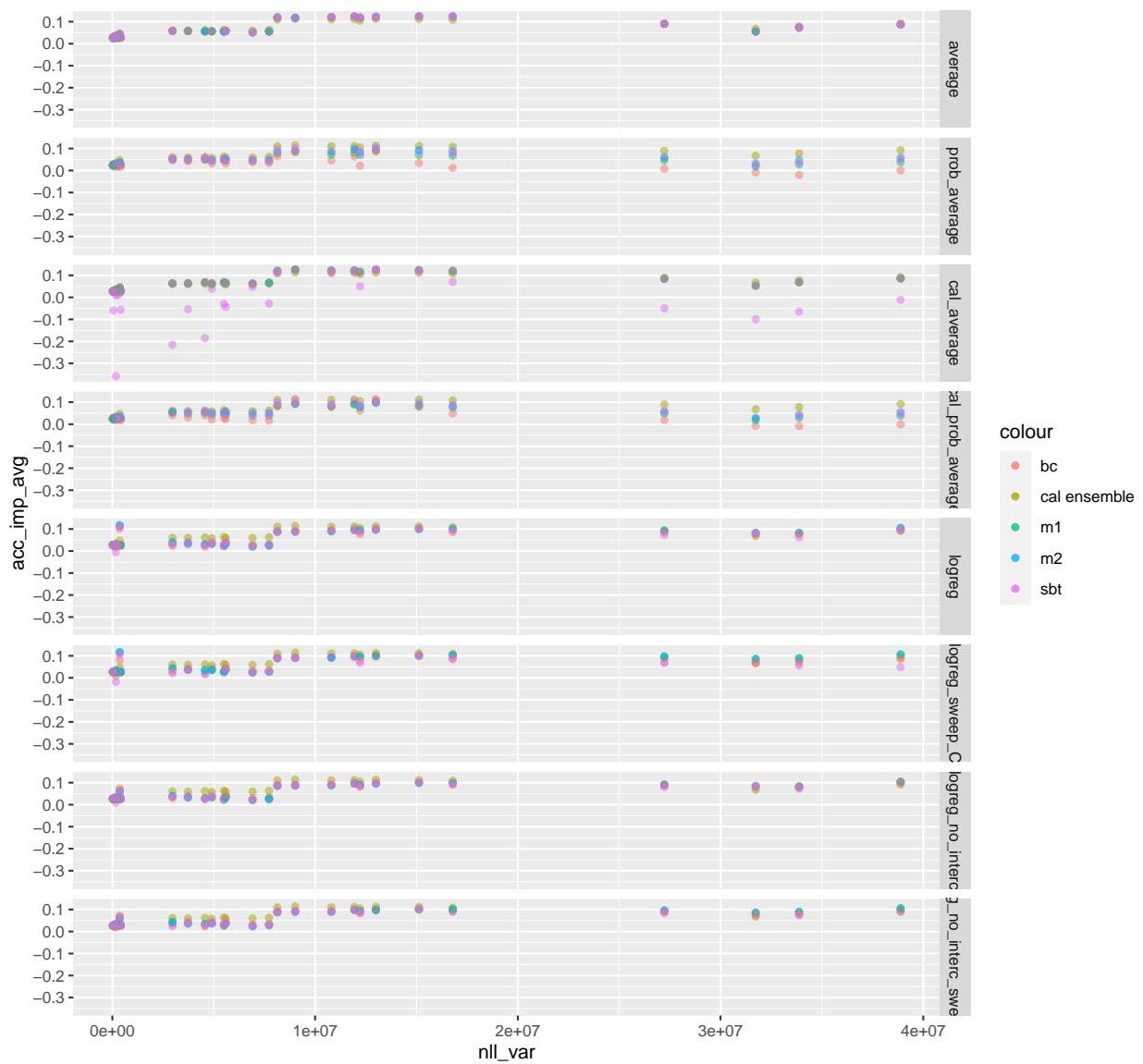
Accuracy improvement of ensemble over
the average of networks vs err_incons.
Ensemble size 2



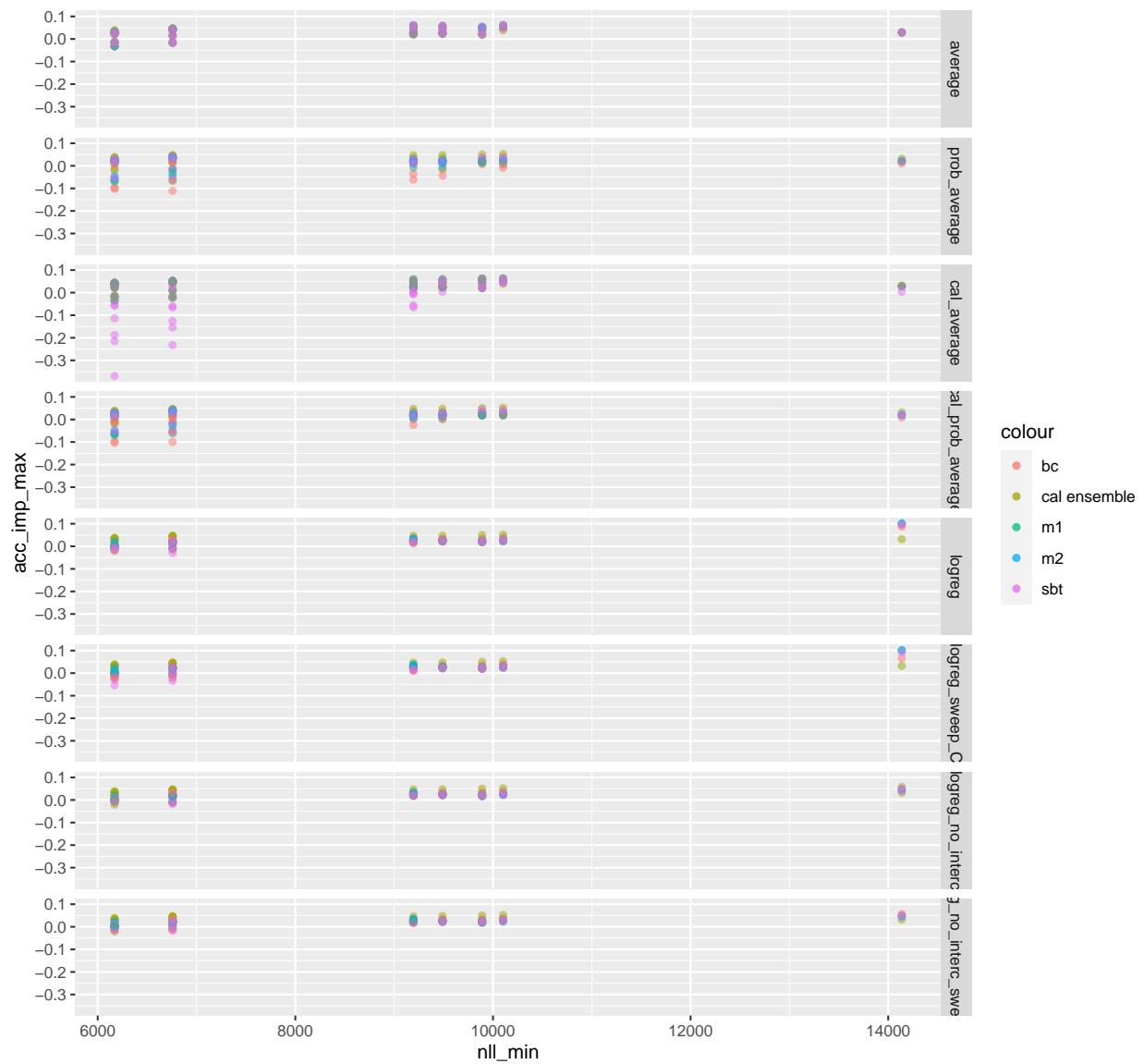
Accuracy improvement of ensemble over
the best of networks vs nll_var.
Ensemble size 2



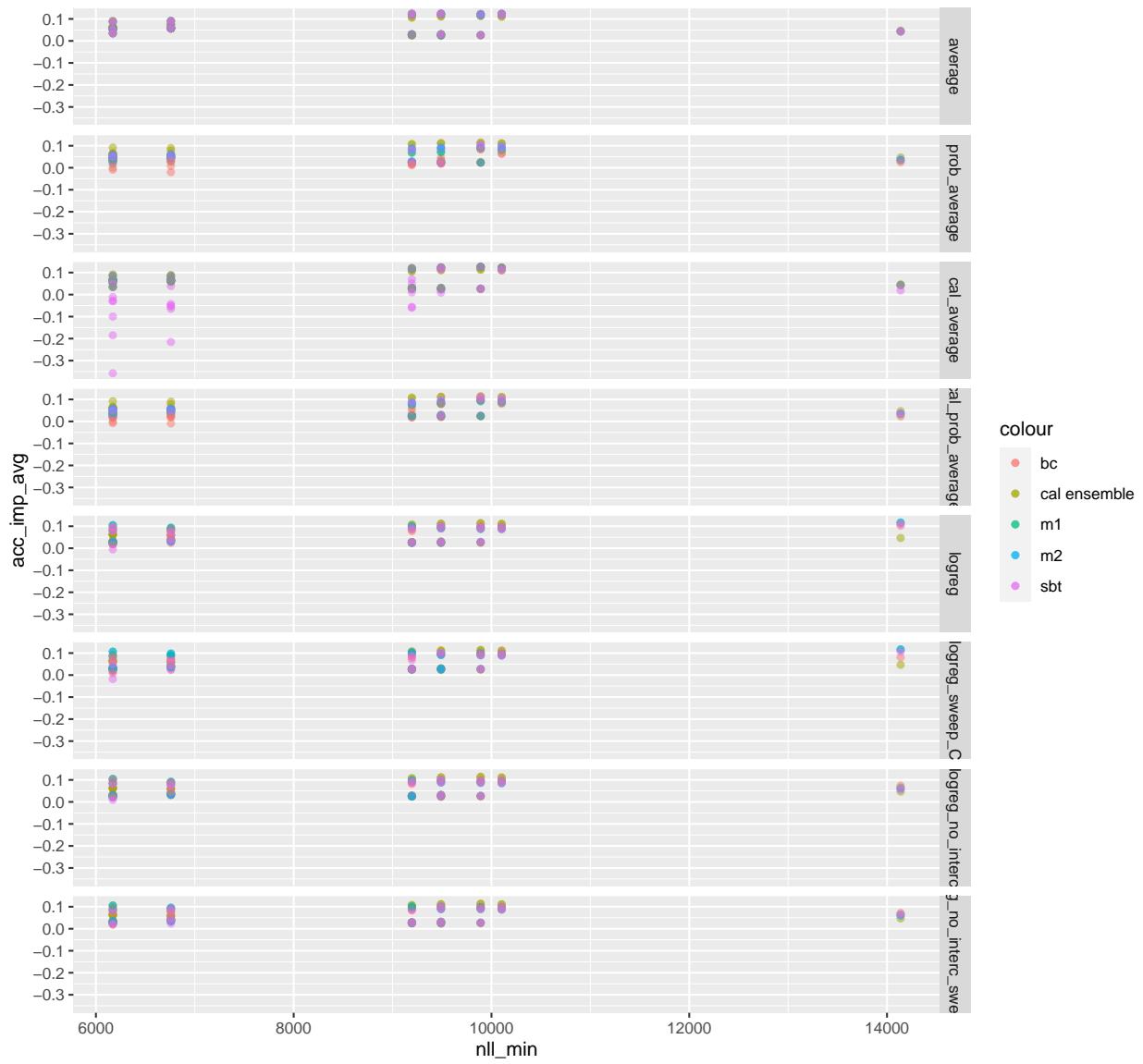
Accuracy improvement of ensemble over
the average of networks vs nll_var.
Ensemble size 2



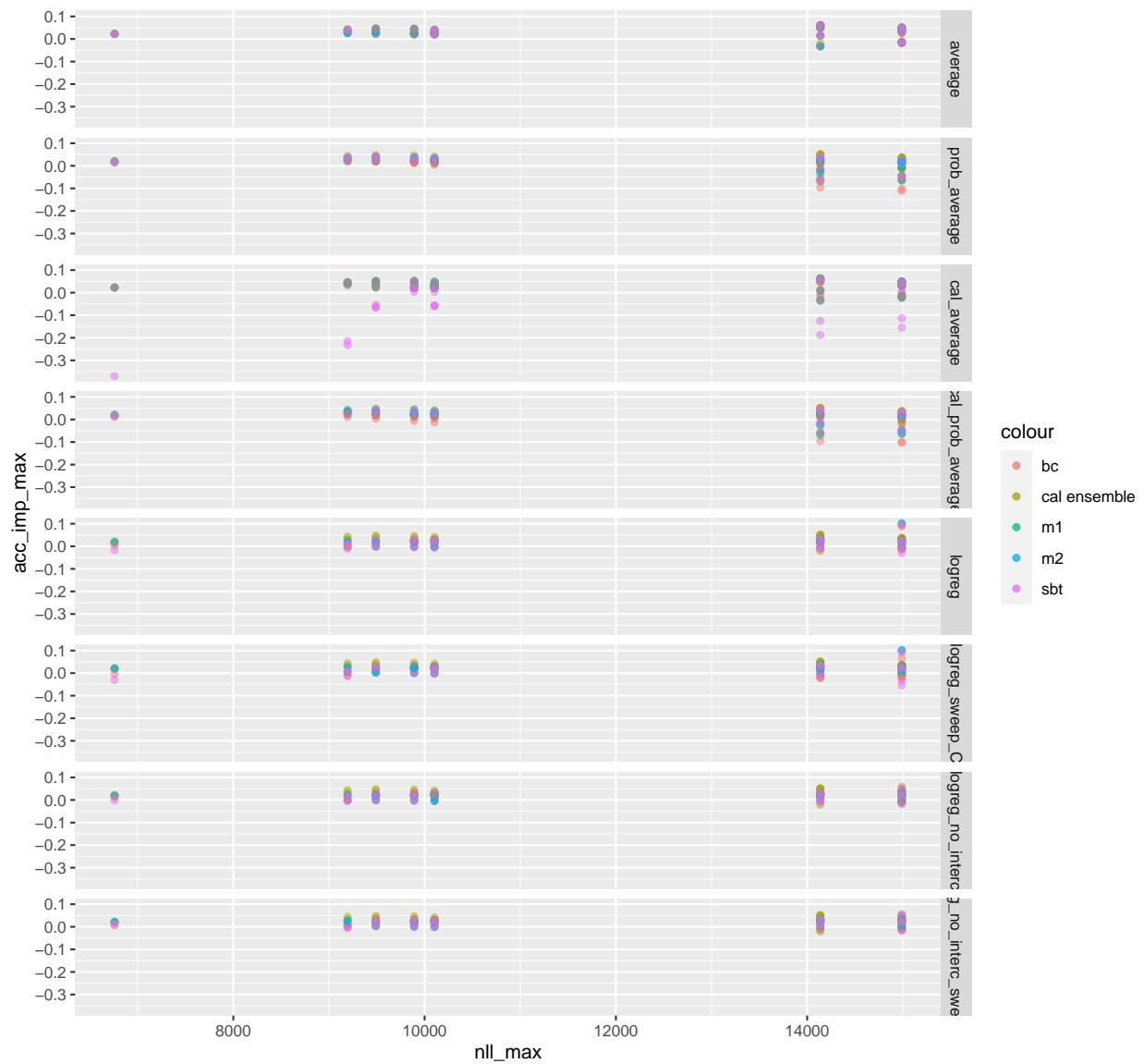
Accuracy improvement of ensemble over
the best of networks vs nll_min.
Ensemble size 2



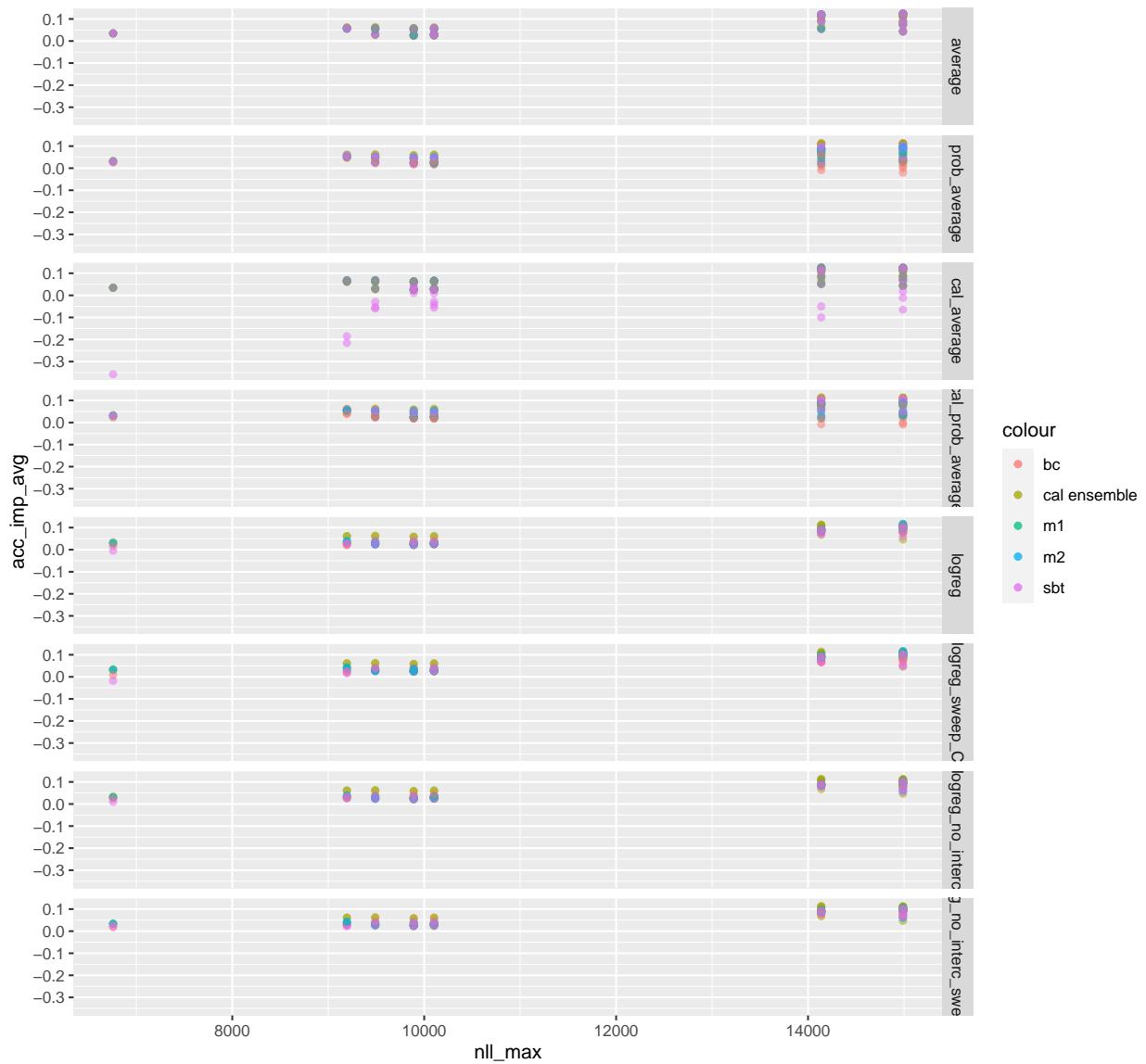
Accuracy improvement of ensemble over
the average of networks vs nll_min.
Ensemble size 2



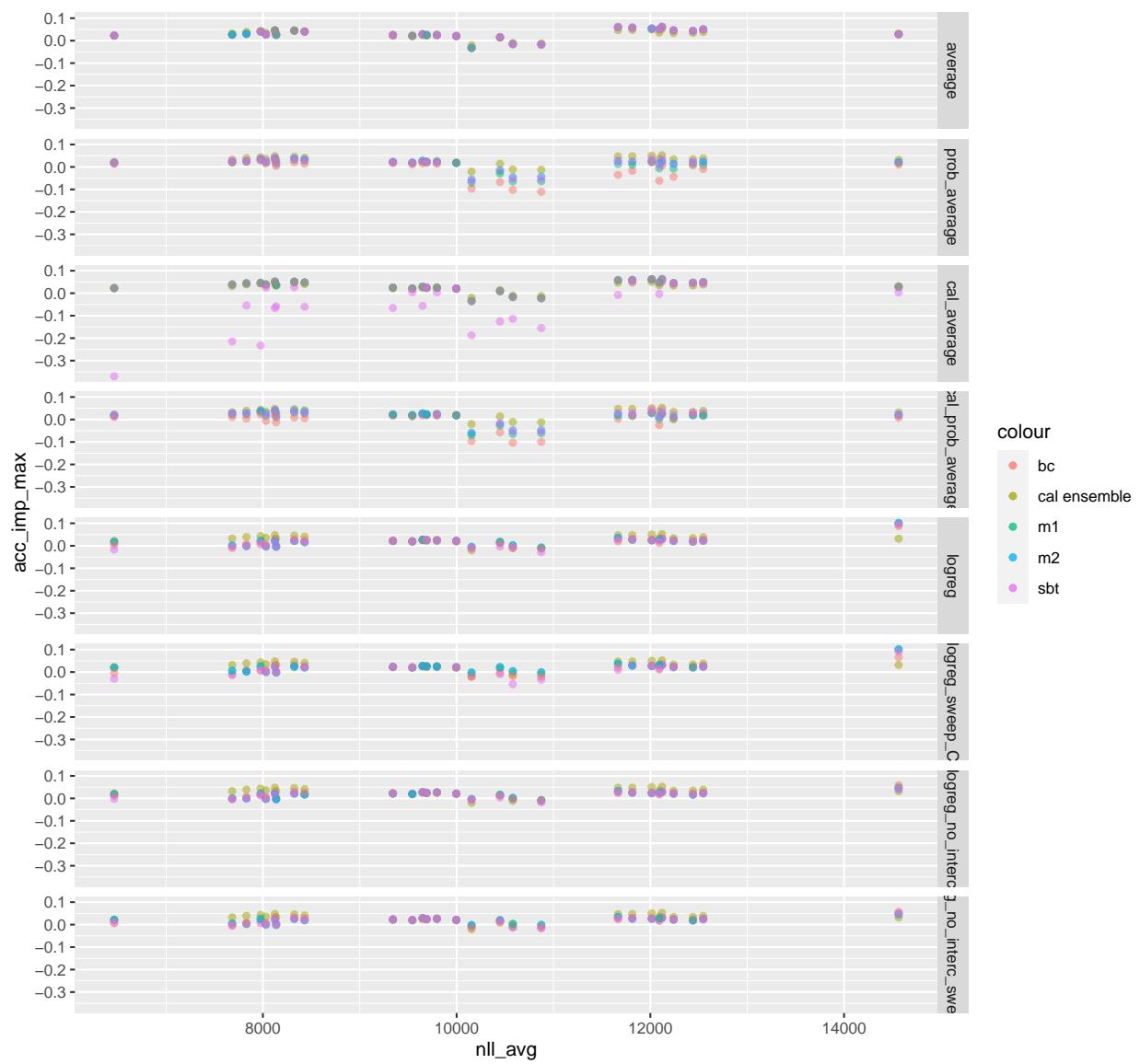
Accuracy improvement of ensemble over
the best of networks vs nll_max.
Ensemble size 2



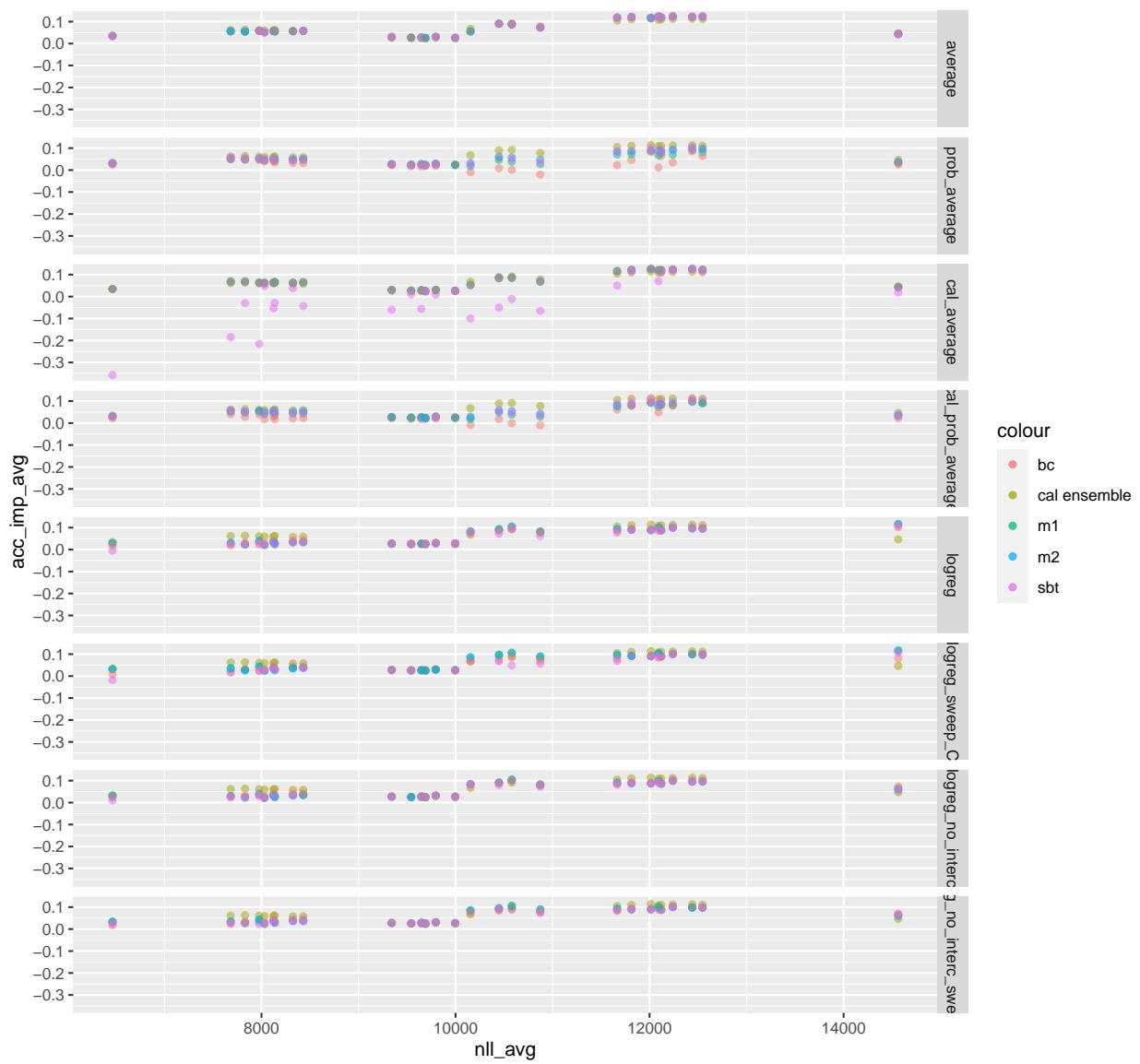
Accuracy improvement of ensemble over
the average of networks vs nll_max.
Ensemble size 2



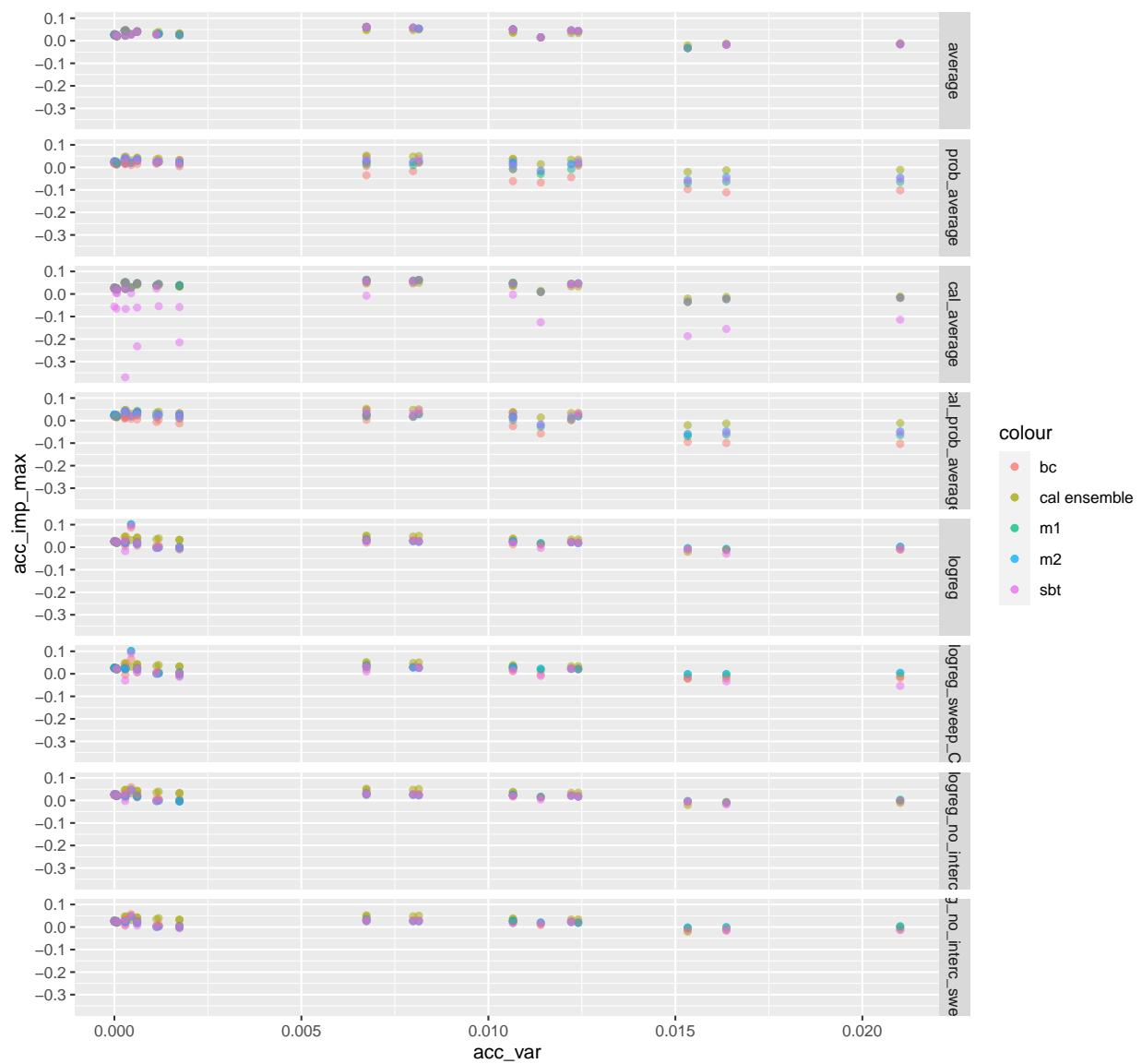
Accuracy improvement of ensemble over
the best of networks vs nll_avg.
Ensemble size 2



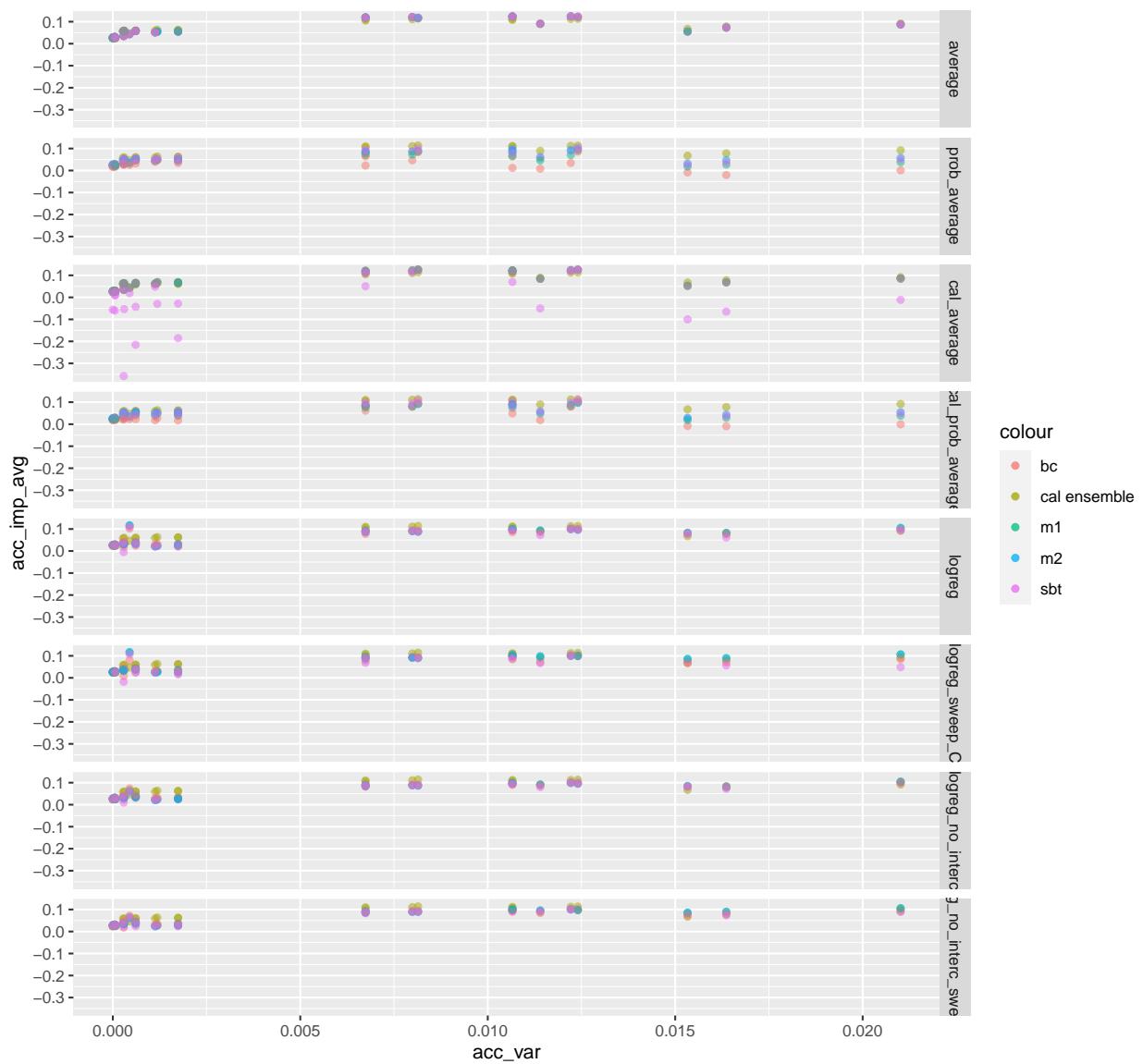
Accuracy improvement of ensemble over
the average of networks vs nll_avg.
Ensemble size 2



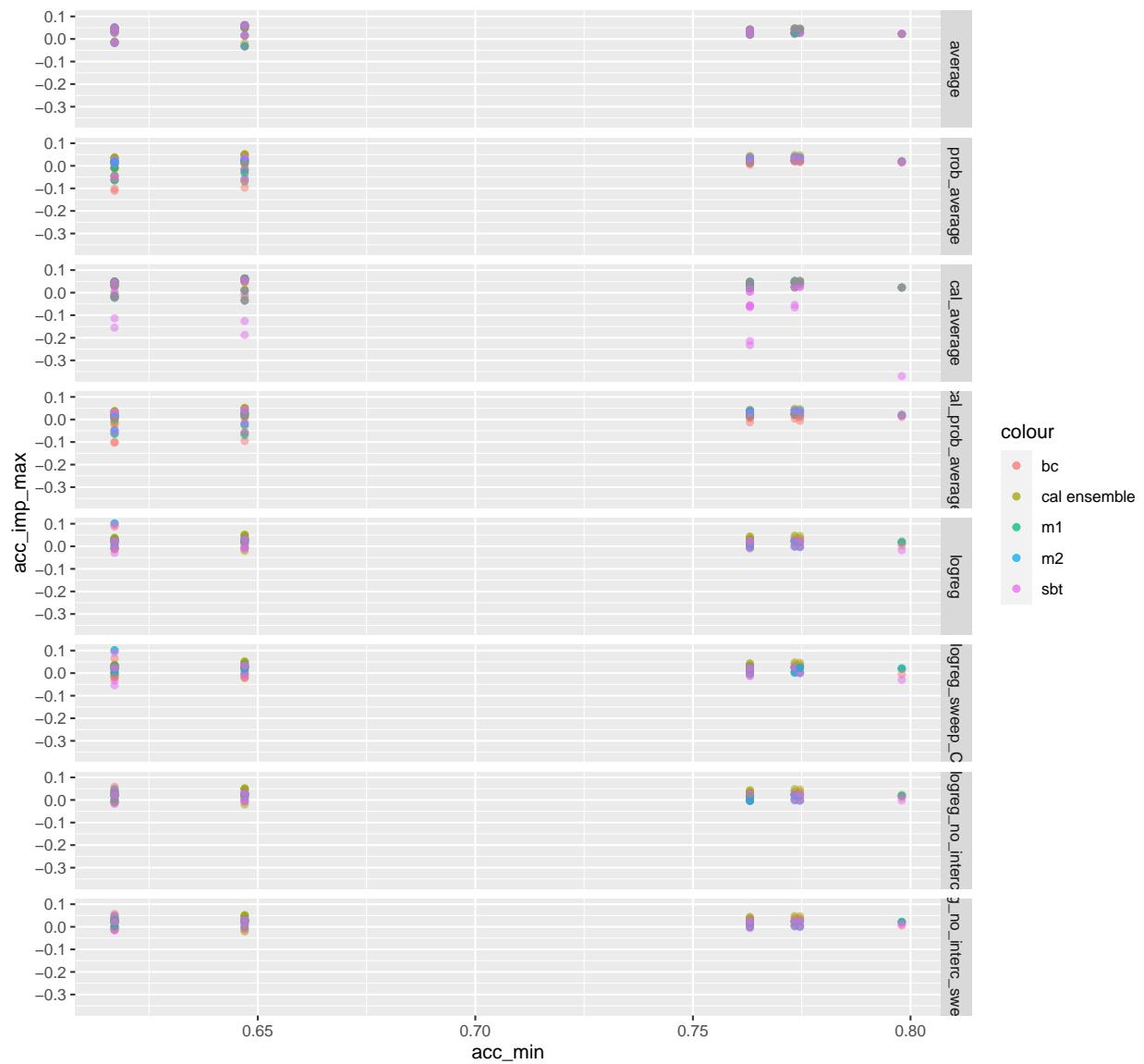
Accuracy improvement of ensemble over
the best of networks vs acc_var.
Ensemble size 2



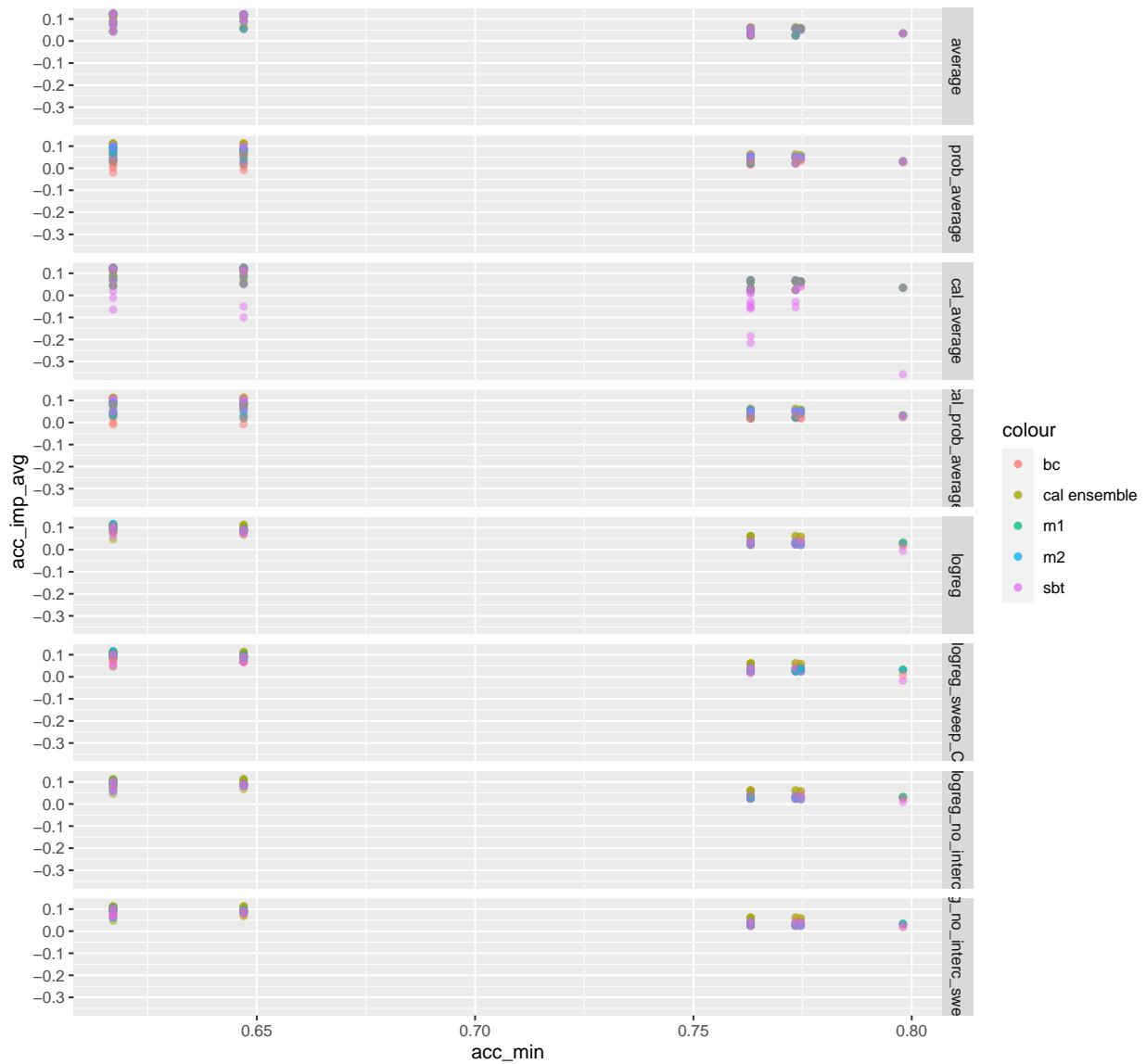
Accuracy improvement of ensemble over
the average of networks vs acc_var.
Ensemble size 2



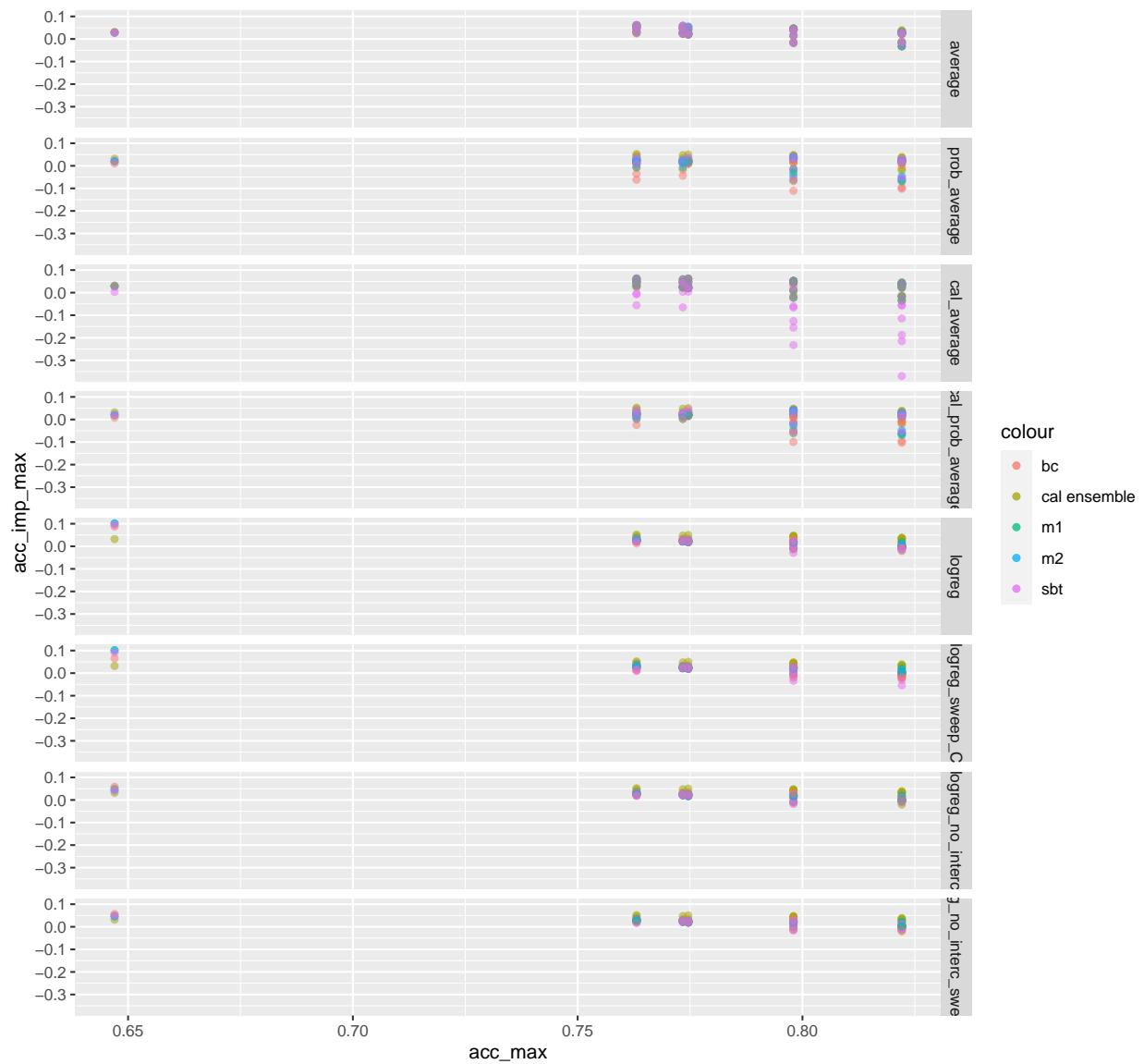
Accuracy improvement of ensemble over
the best of networks vs acc_min.
Ensemble size 2



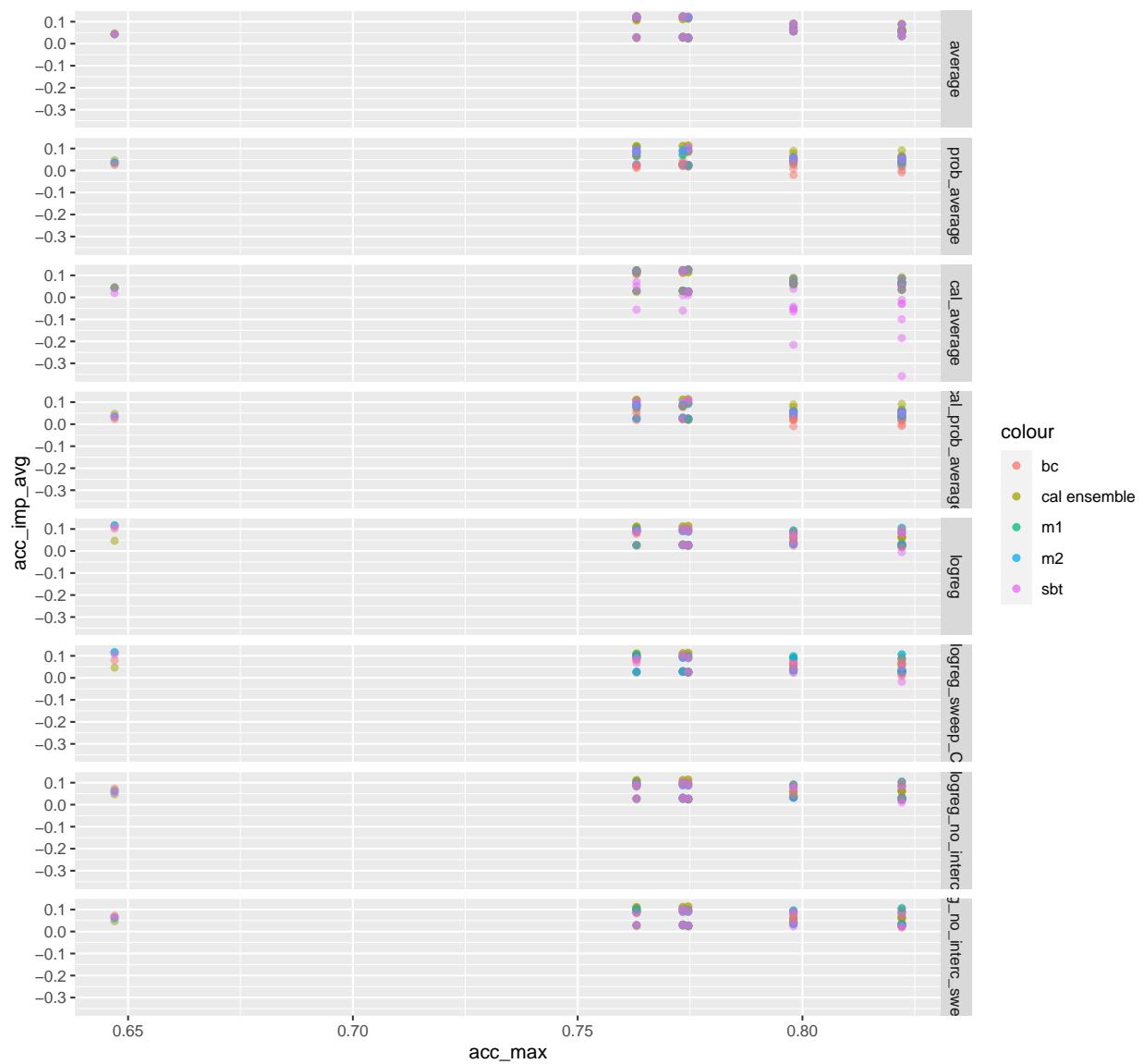
Accuracy improvement of ensemble over
the average of networks vs acc_min.
Ensemble size 2



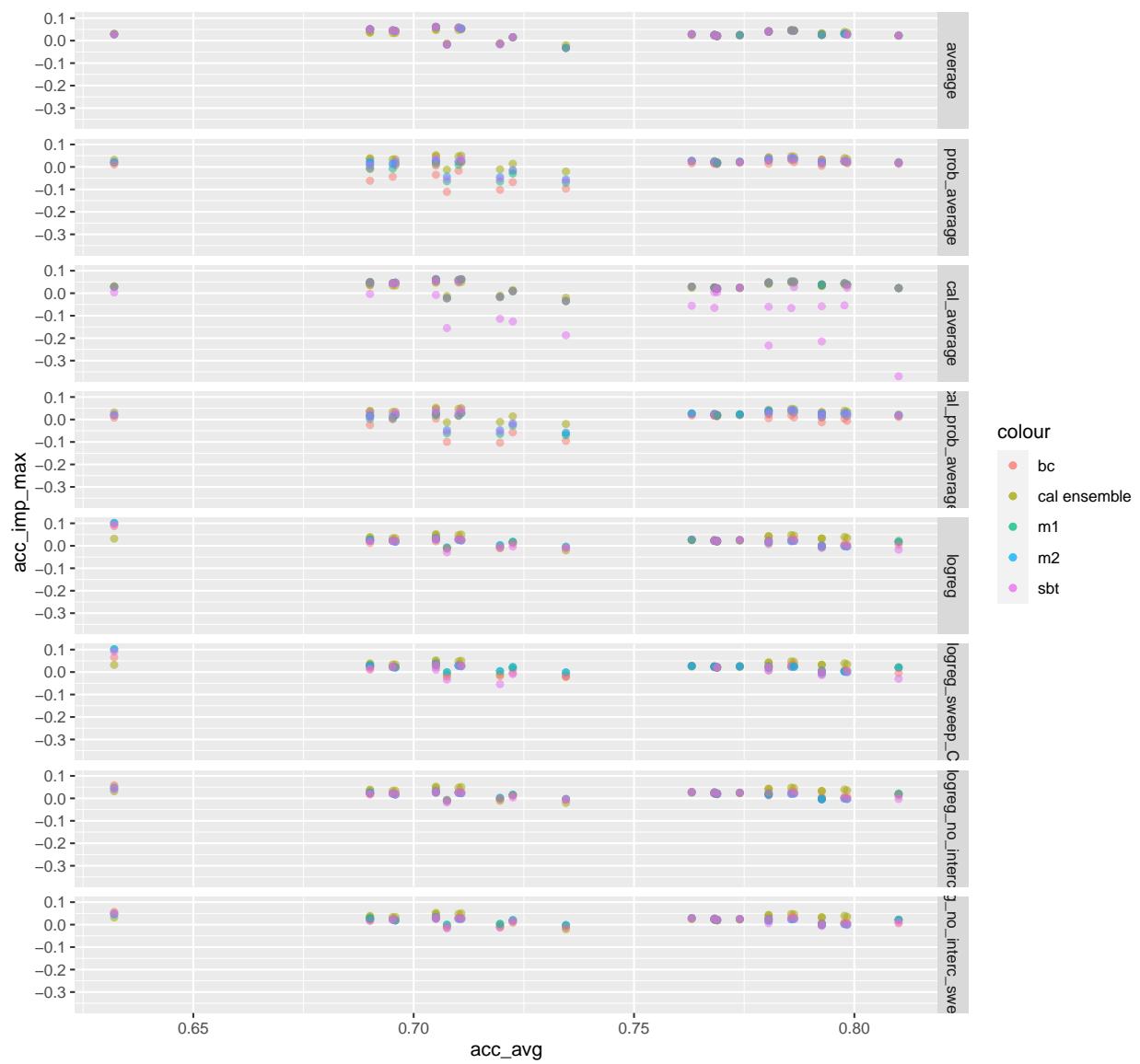
Accuracy improvement of ensemble over
the best of networks vs acc_max.
Ensemble size 2



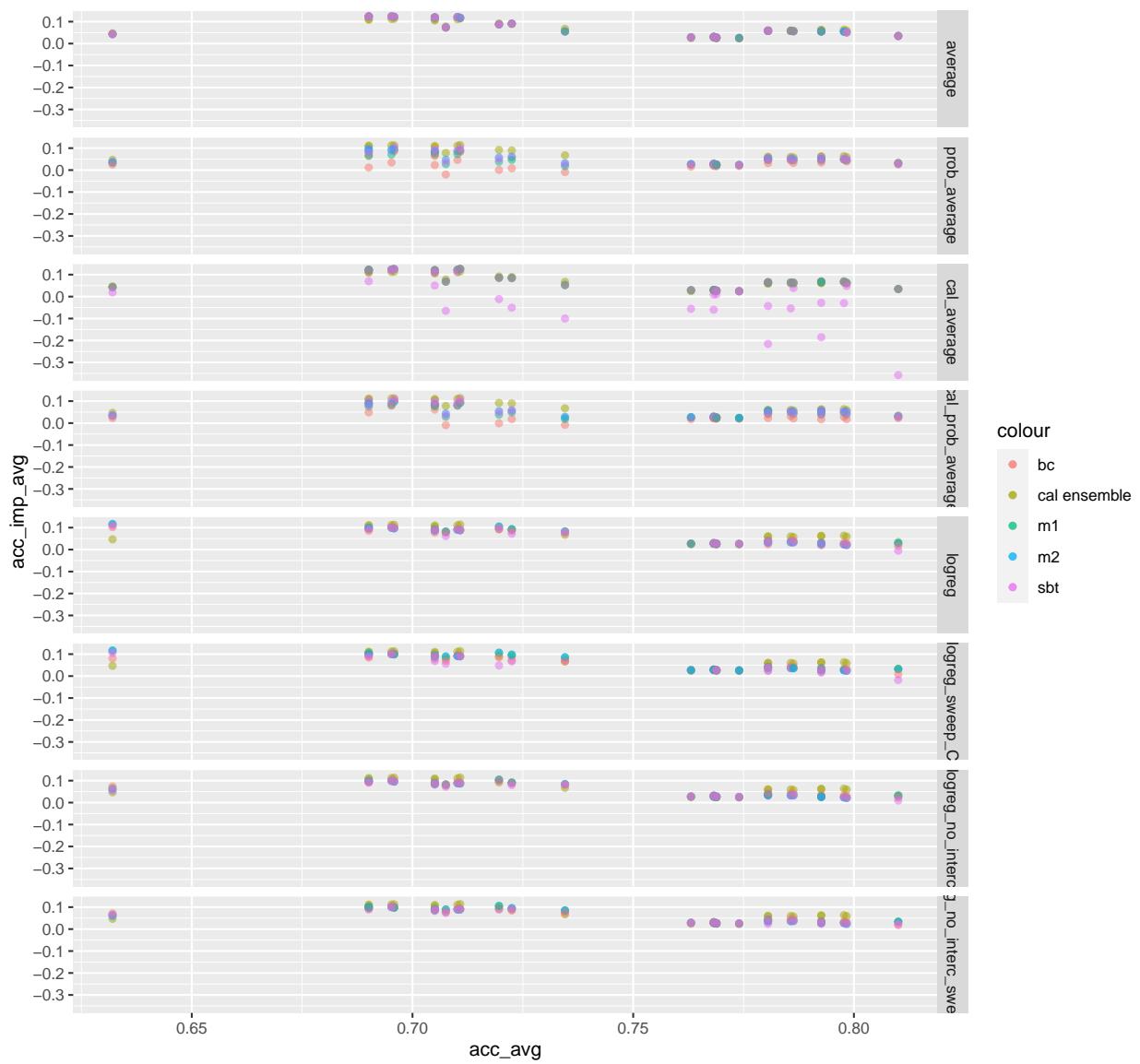
Accuracy improvement of ensemble over
the average of networks vs acc_max.
Ensemble size 2



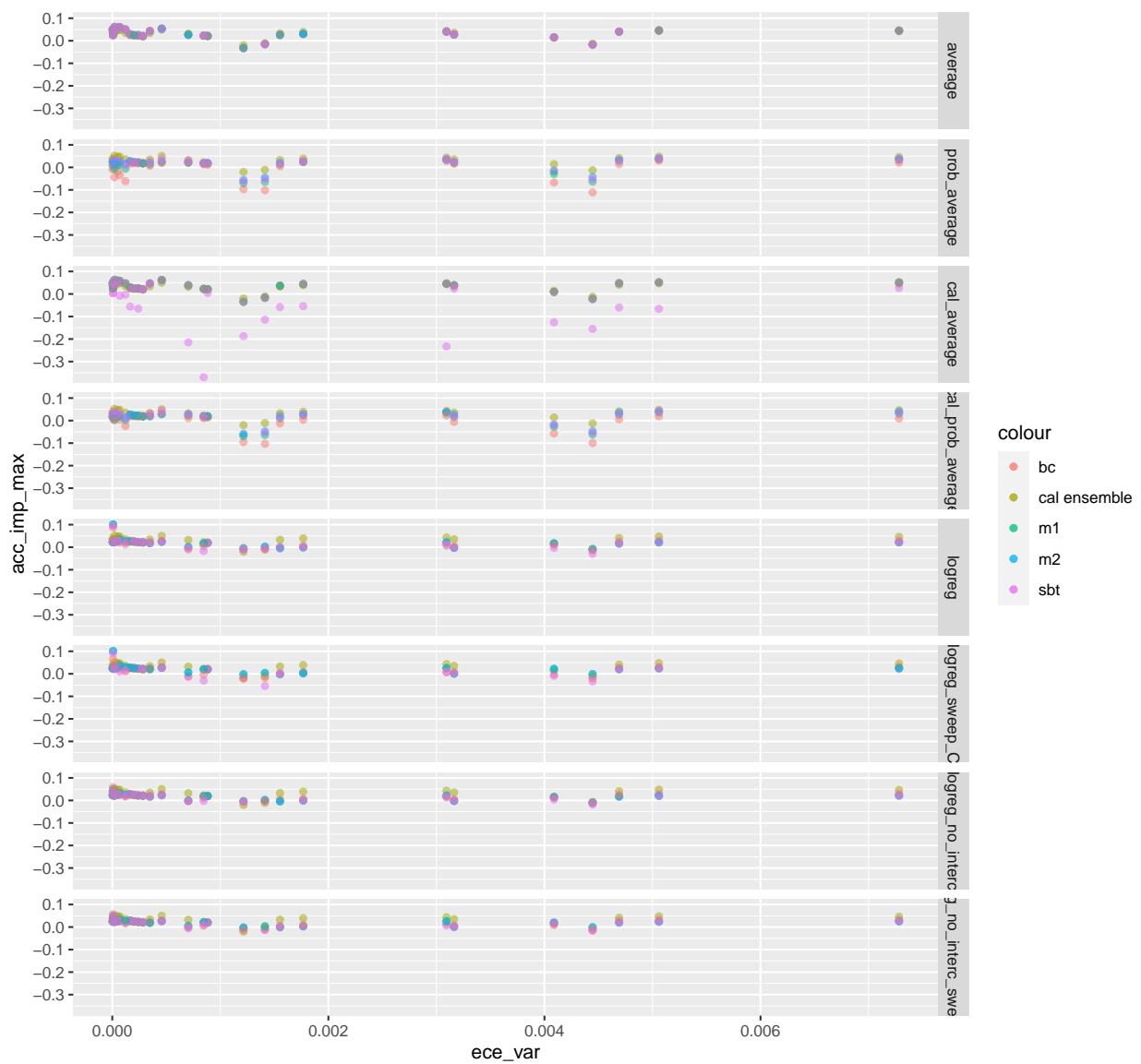
Accuracy improvement of ensemble over
the best of networks vs acc_avg.
Ensemble size 2



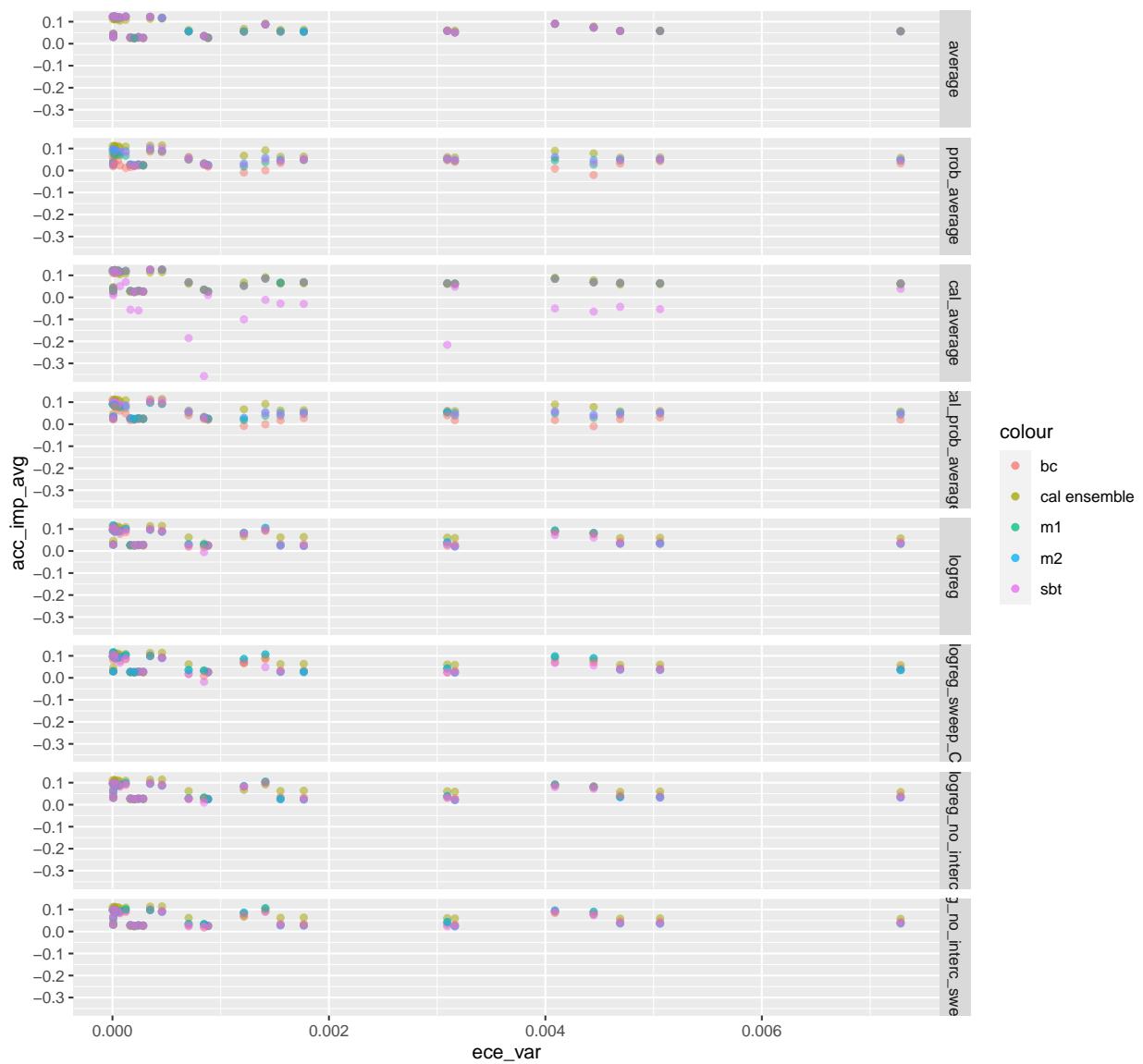
Accuracy improvement of ensemble over
the average of networks vs acc_avg.
Ensemble size 2



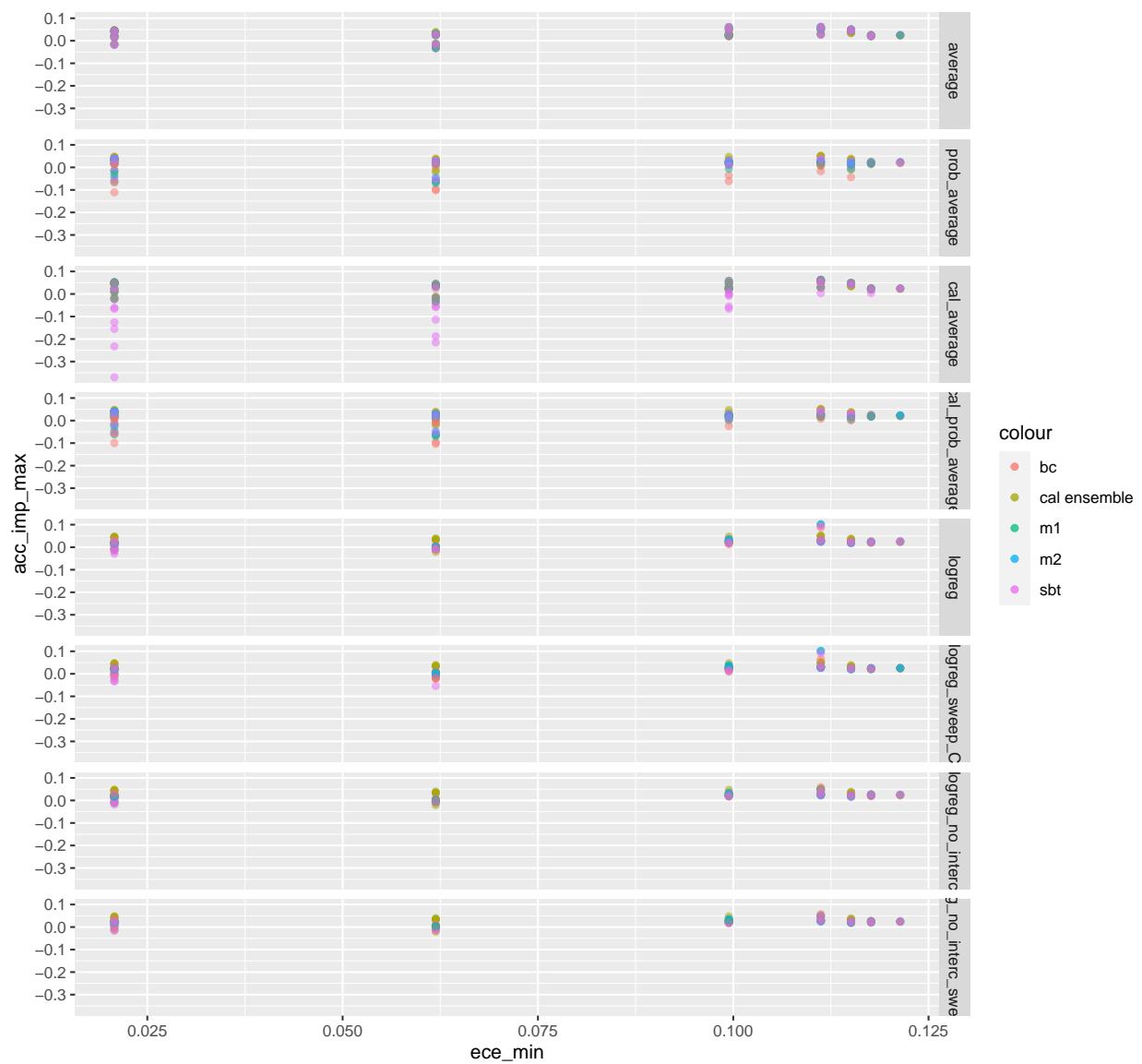
Accuracy improvement of ensemble over
the best of networks vs ece_var.
Ensemble size 2



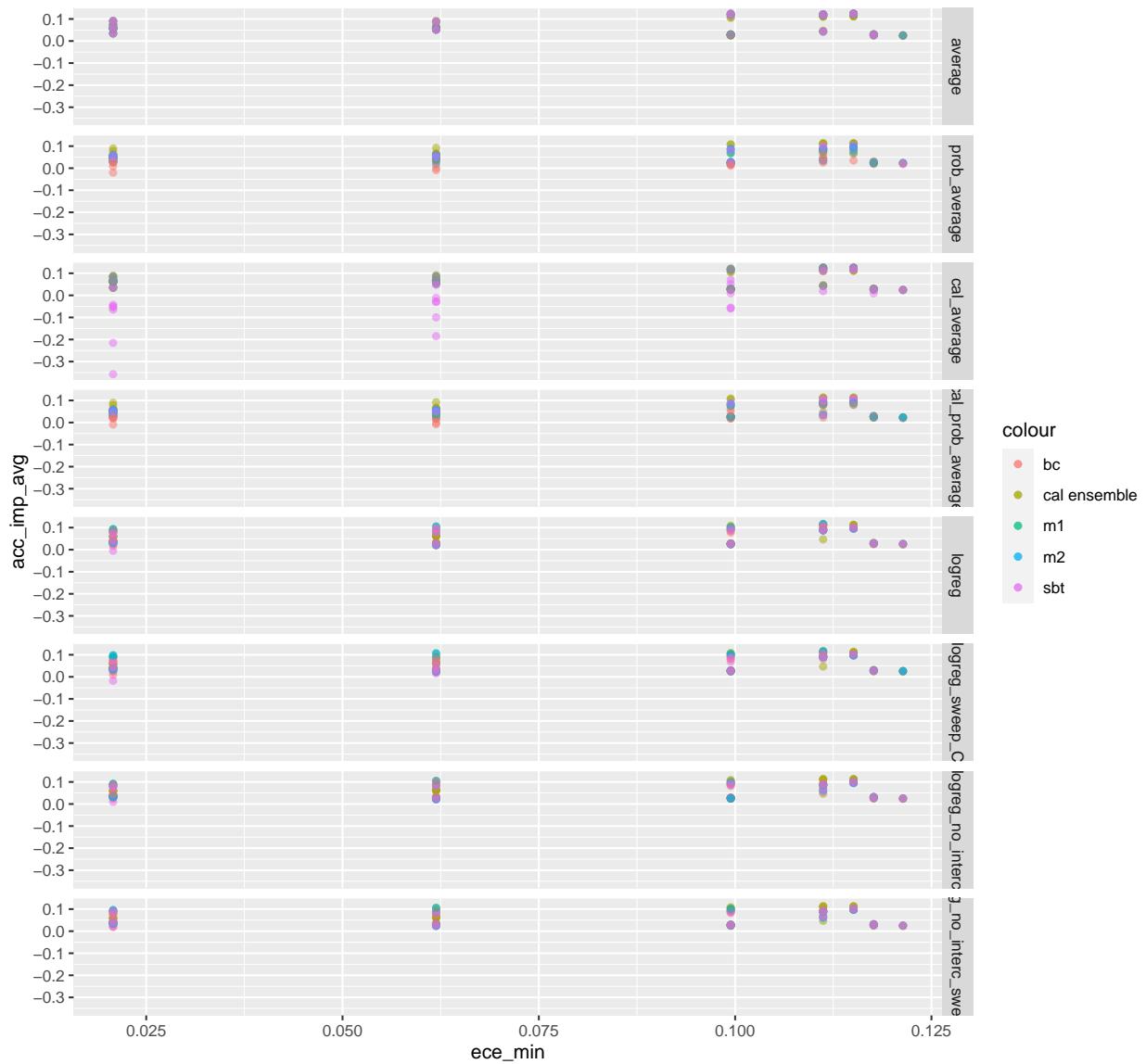
Accuracy improvement of ensemble over
the average of networks vs ece_var.
Ensemble size 2



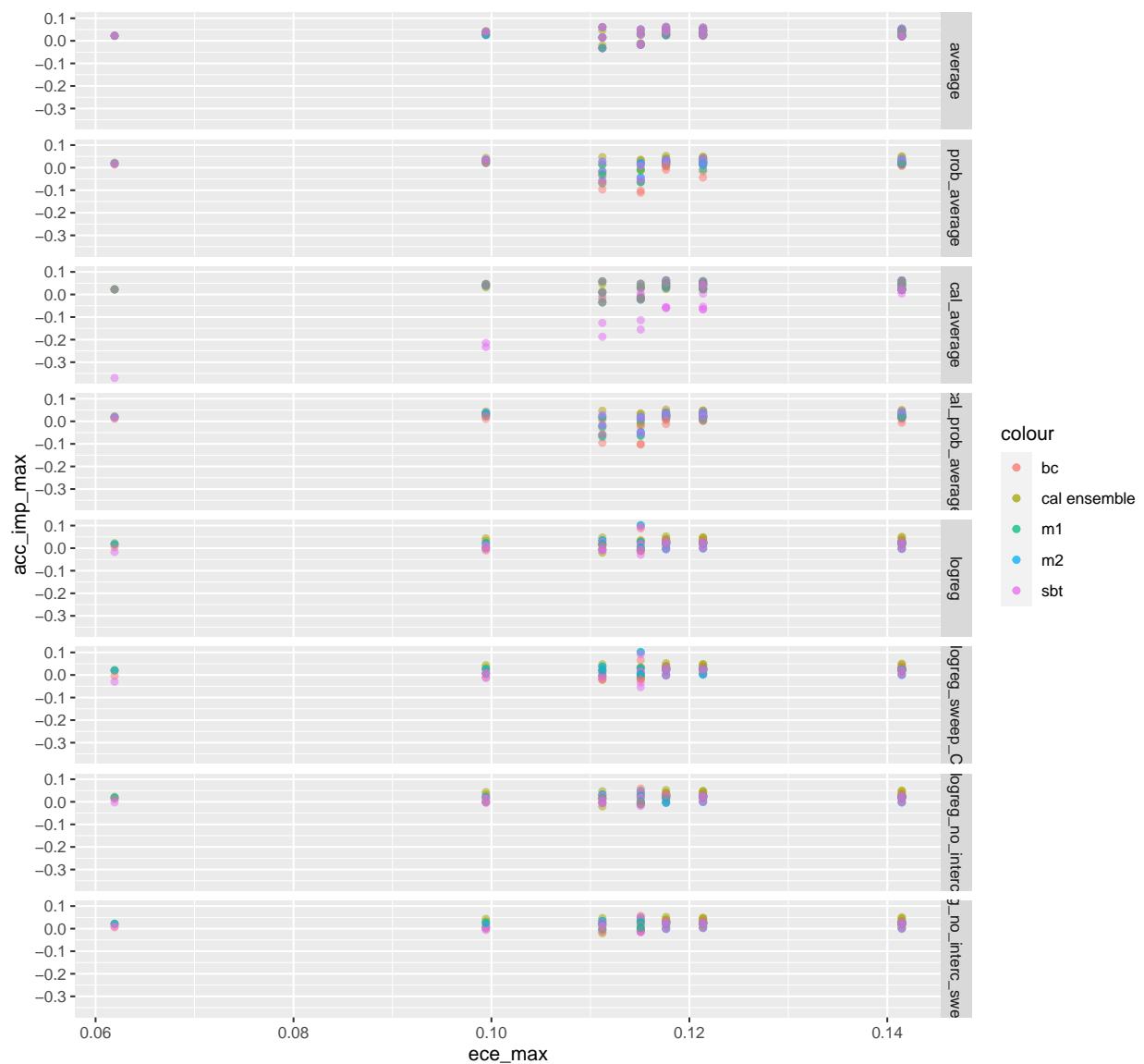
Accuracy improvement of ensemble over
the best of networks vs ece_min.
Ensemble size 2



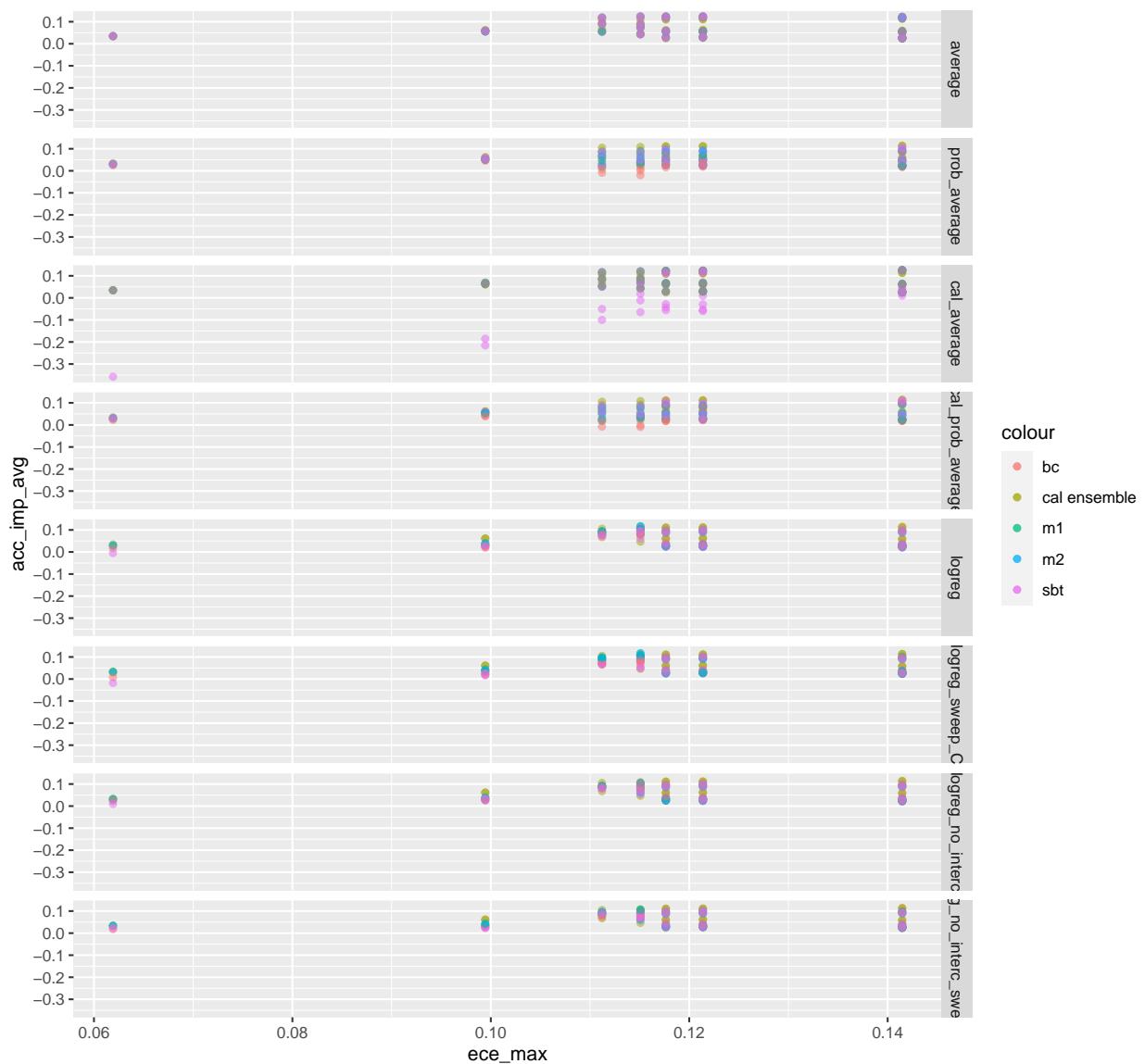
Accuracy improvement of ensemble over
the average of networks vs ece_min.
Ensemble size 2



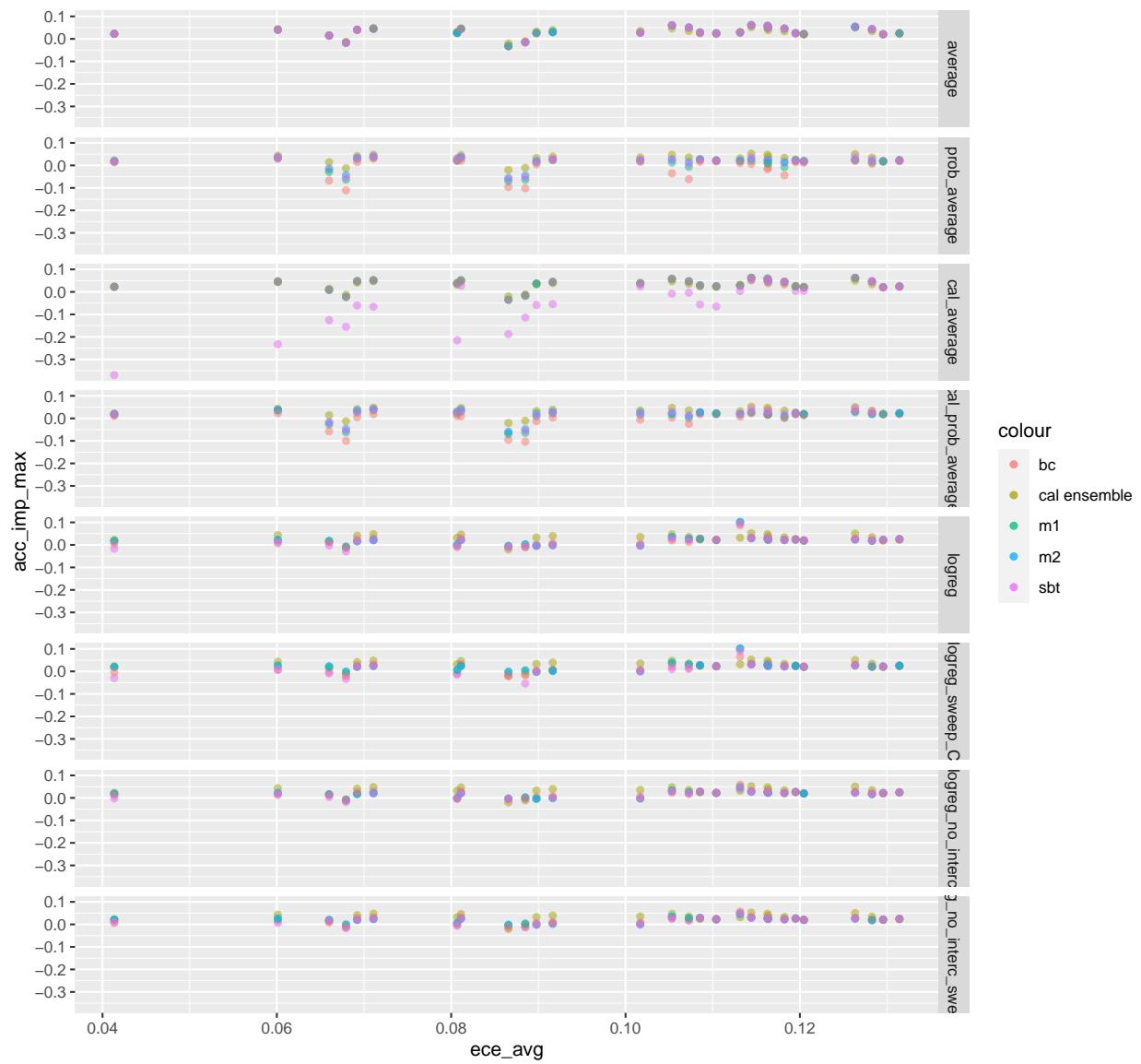
Accuracy improvement of ensemble over
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Ensemble size 2



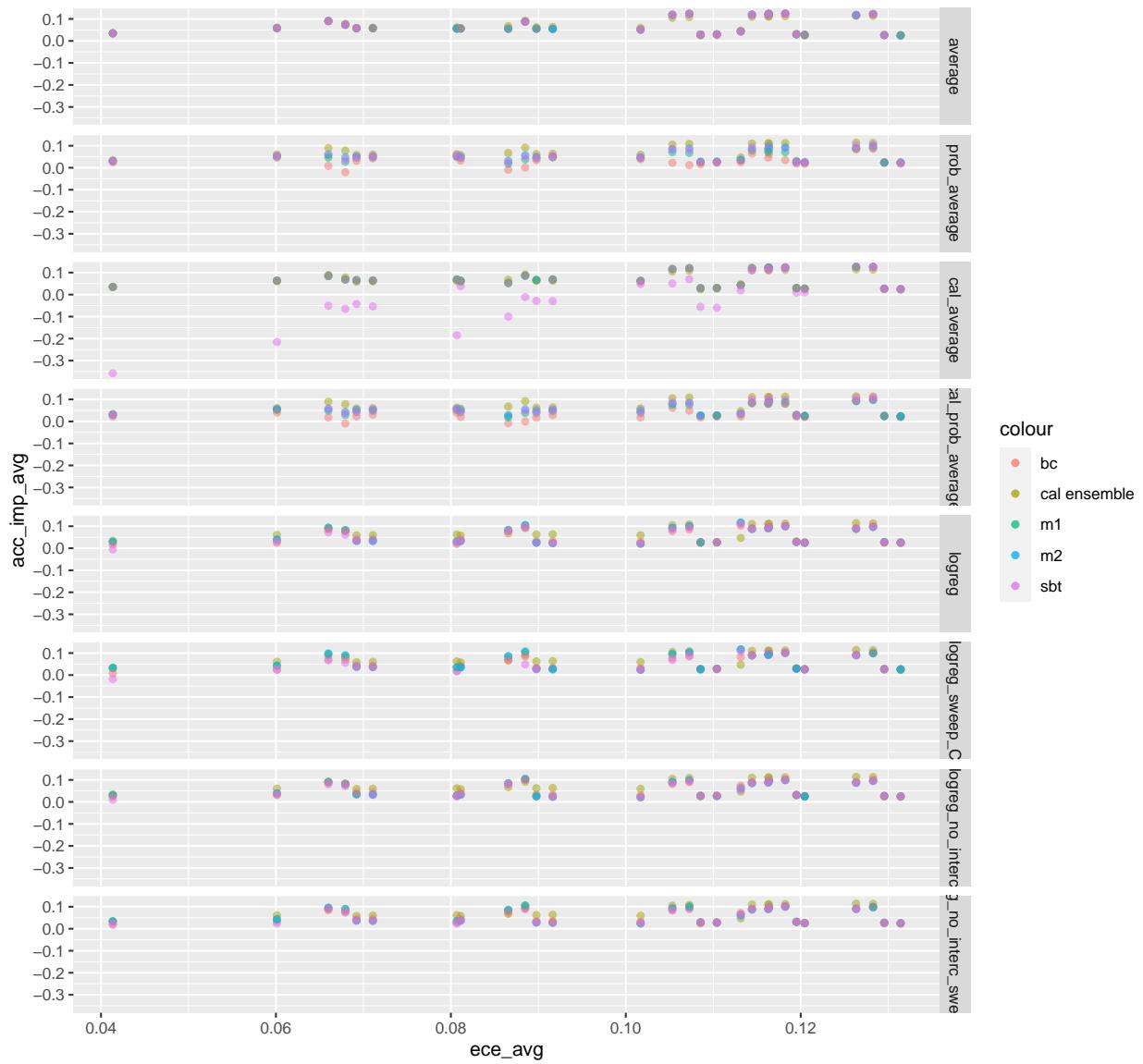
Accuracy improvement of ensemble over
the average of networks vs ece_max.
Ensemble size 2



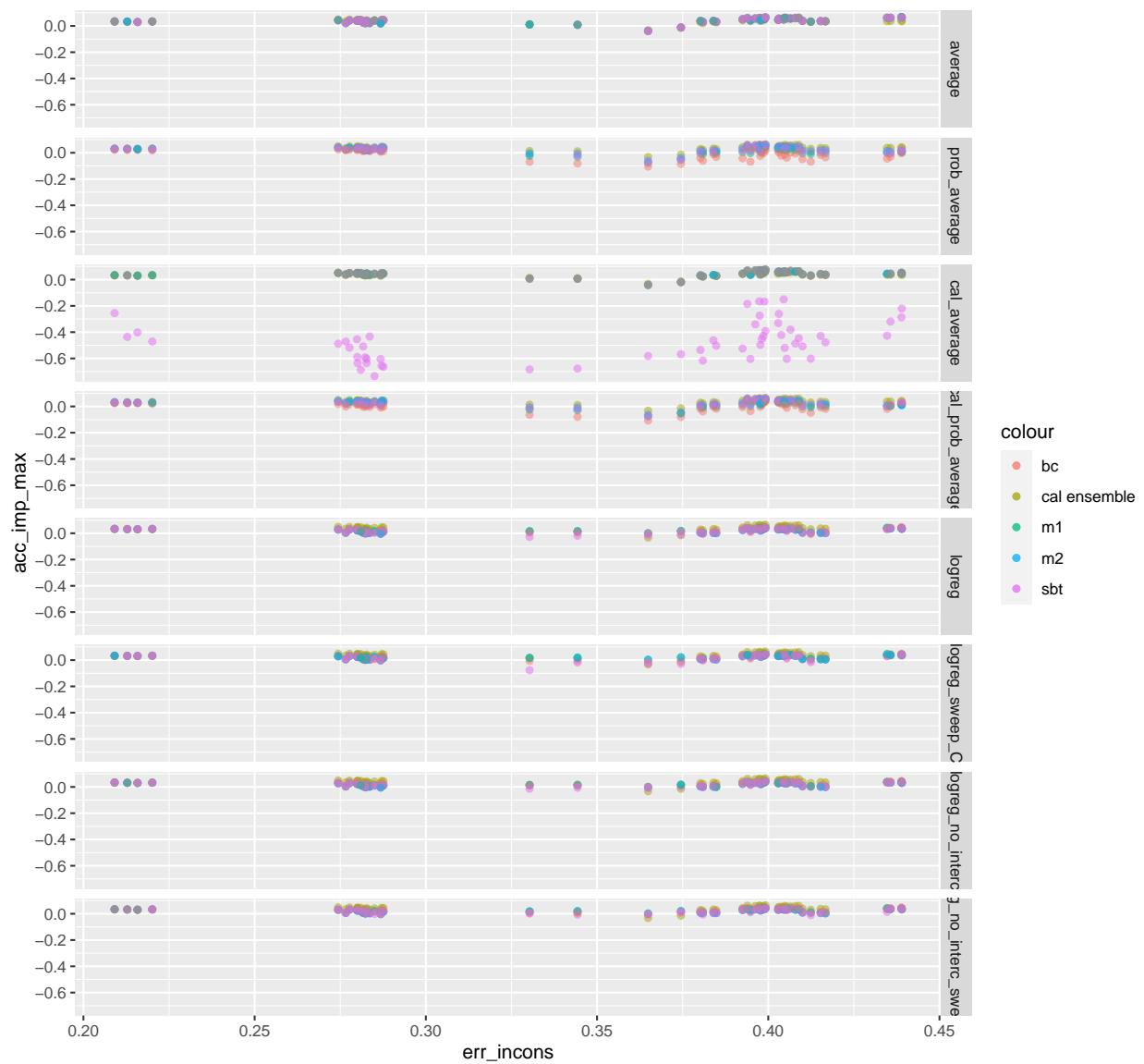
Accuracy improvement of ensemble over
the best of networks vs ece_avg.
Ensemble size 2



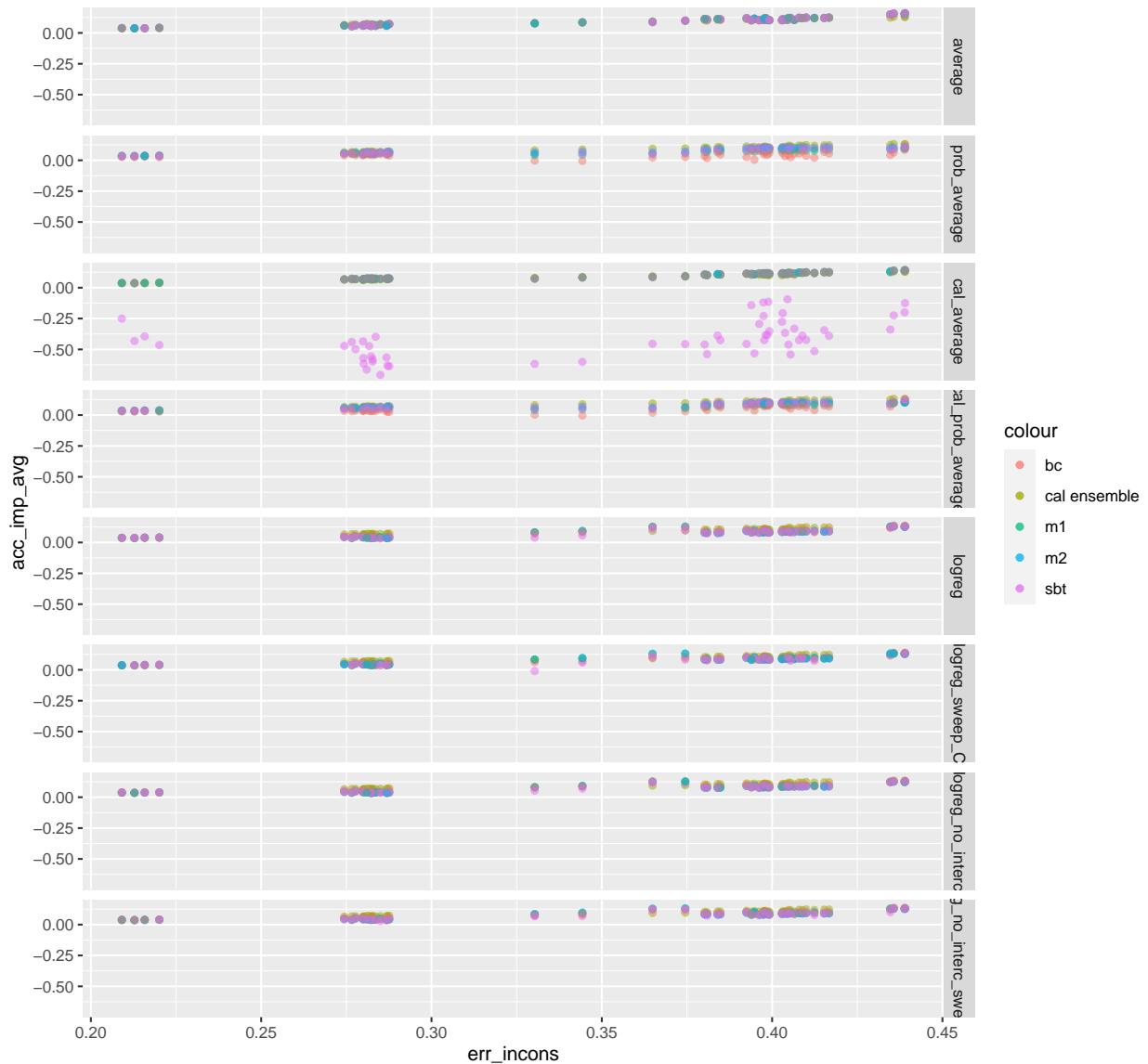
Accuracy improvement of ensemble over
the average of networks vs ece_avg.
Ensemble size 2



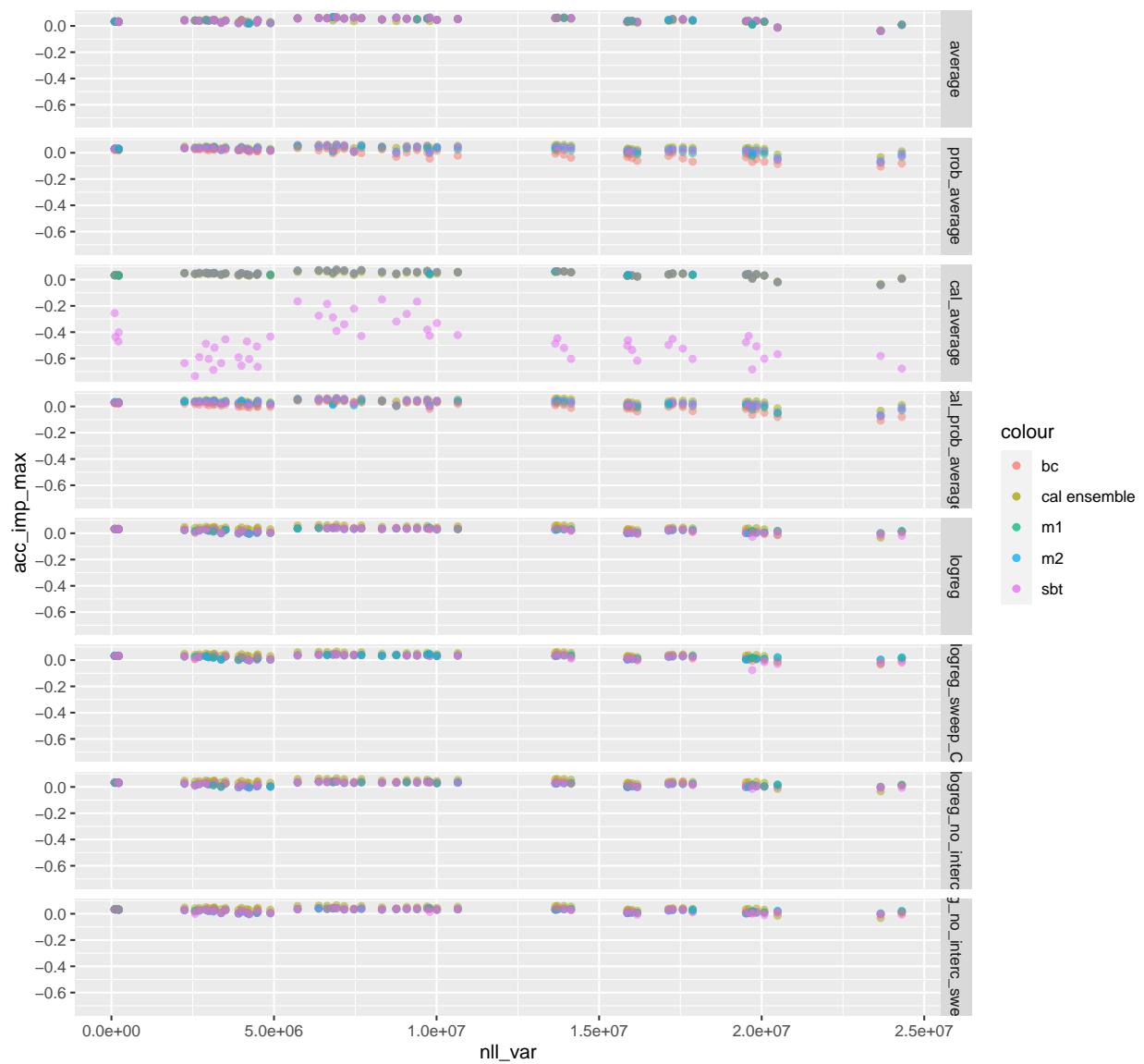
Accuracy improvement of ensemble over
the best of networks vs err_incons.
Ensemble size 3



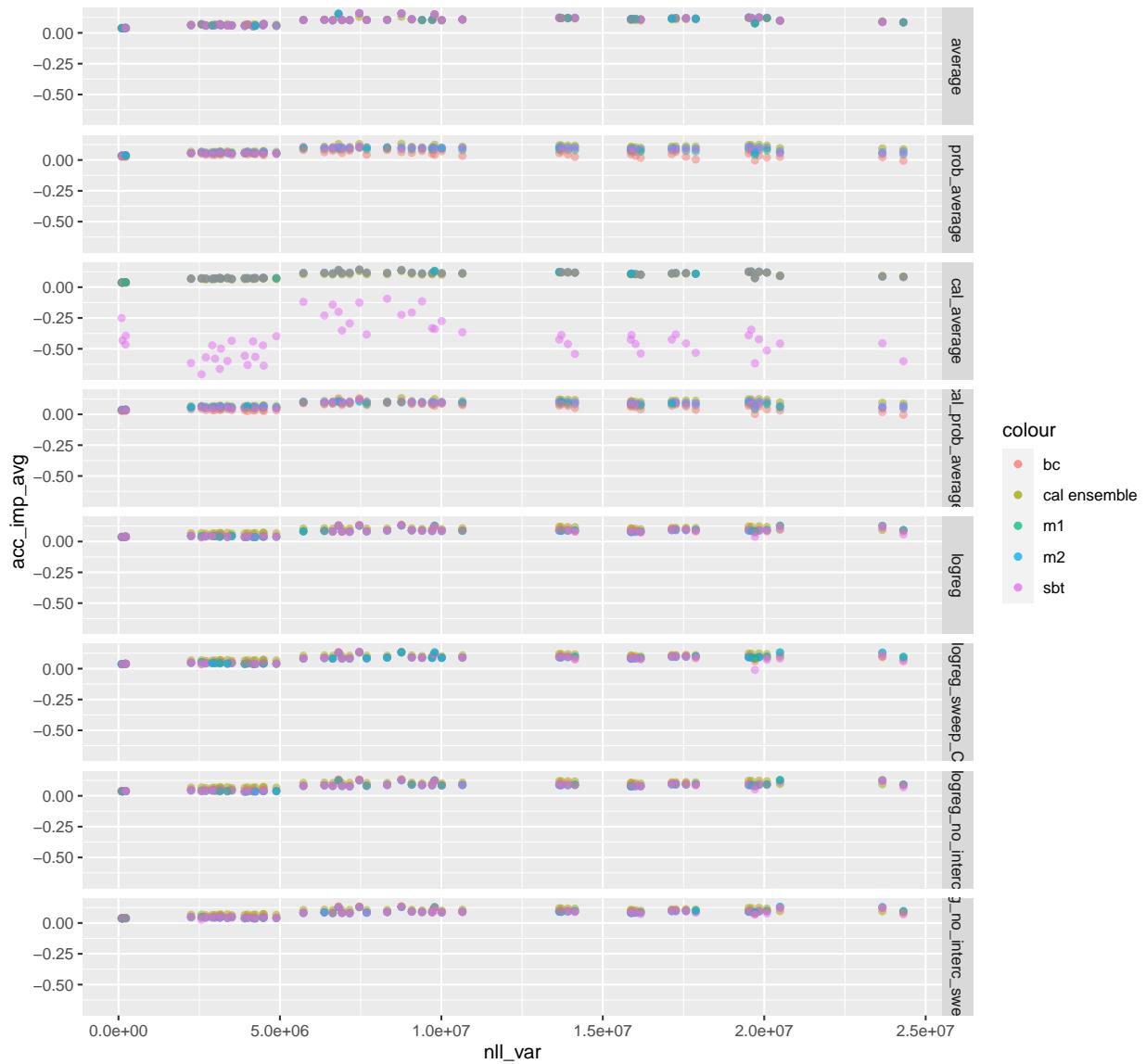
Accuracy improvement of ensemble over
the average of networks vs err_incons.
Ensemble size 3



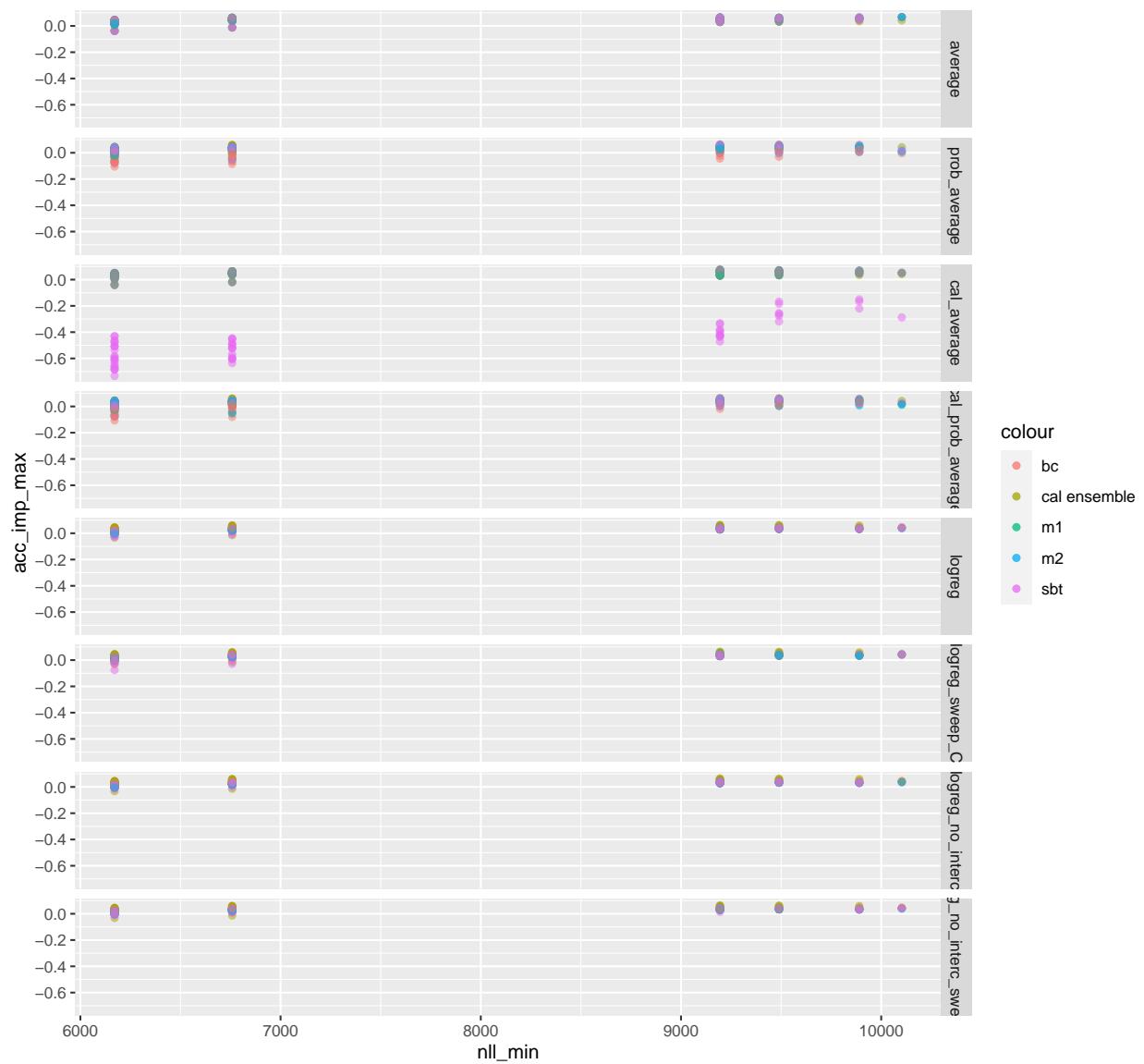
Accuracy improvement of ensemble over
the best of networks vs nll_var.
Ensemble size 3



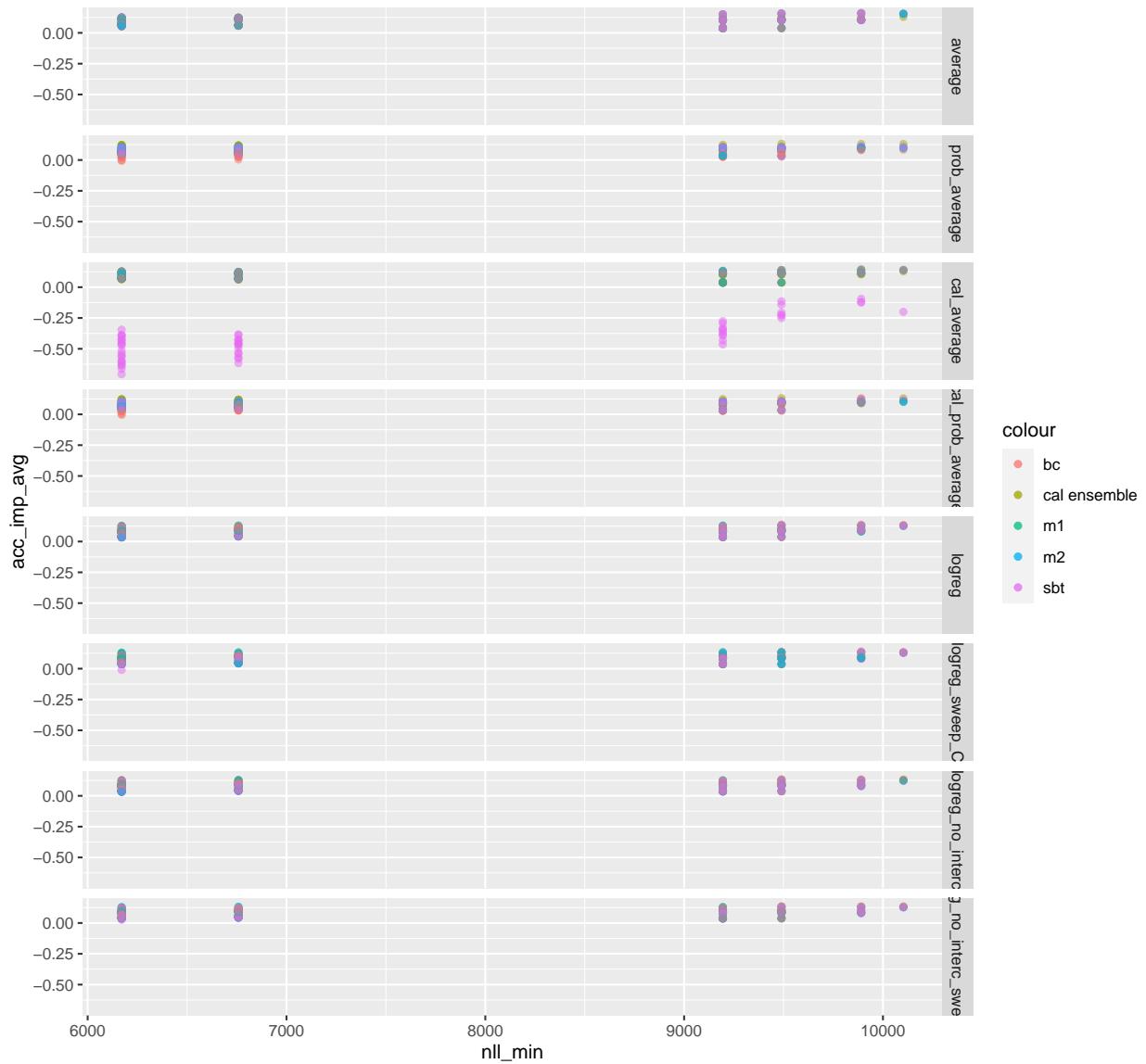
Accuracy improvement of ensemble over
the average of networks vs nll_var.
Ensemble size 3



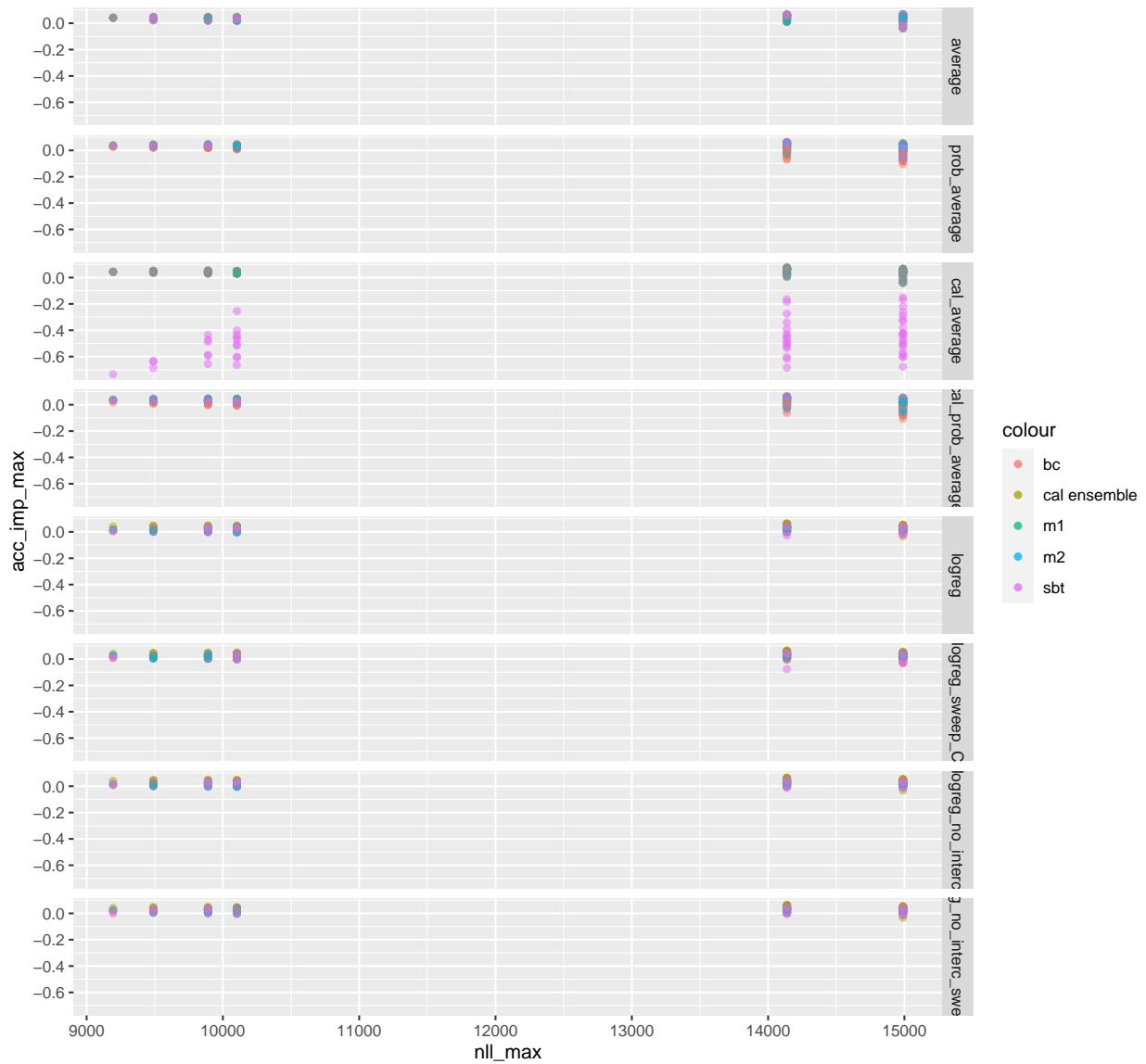
Accuracy improvement of ensemble over
the best of networks vs nll_min.
Ensemble size 3



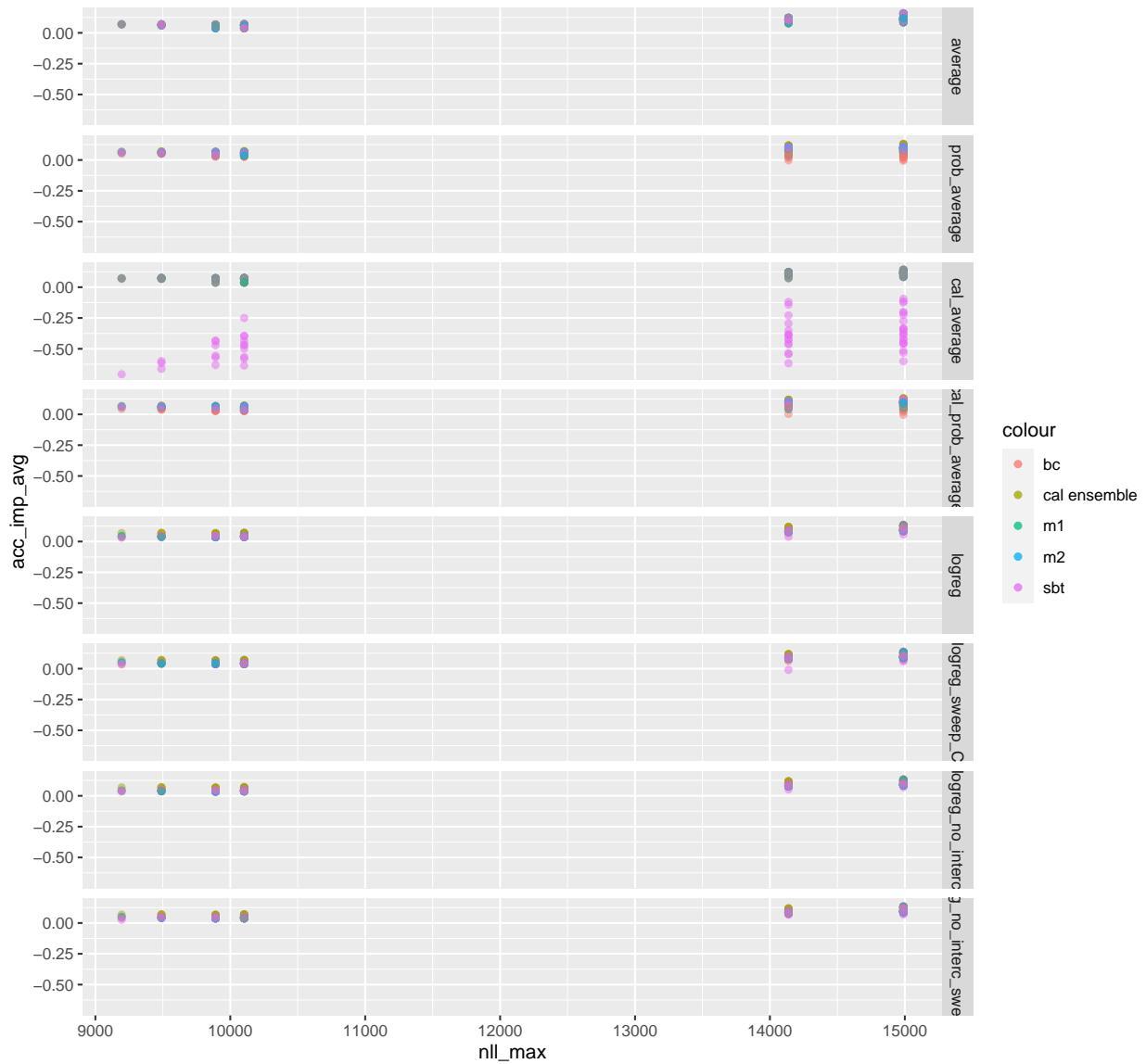
Accuracy improvement of ensemble over
the average of networks vs nll_min.
Ensemble size 3



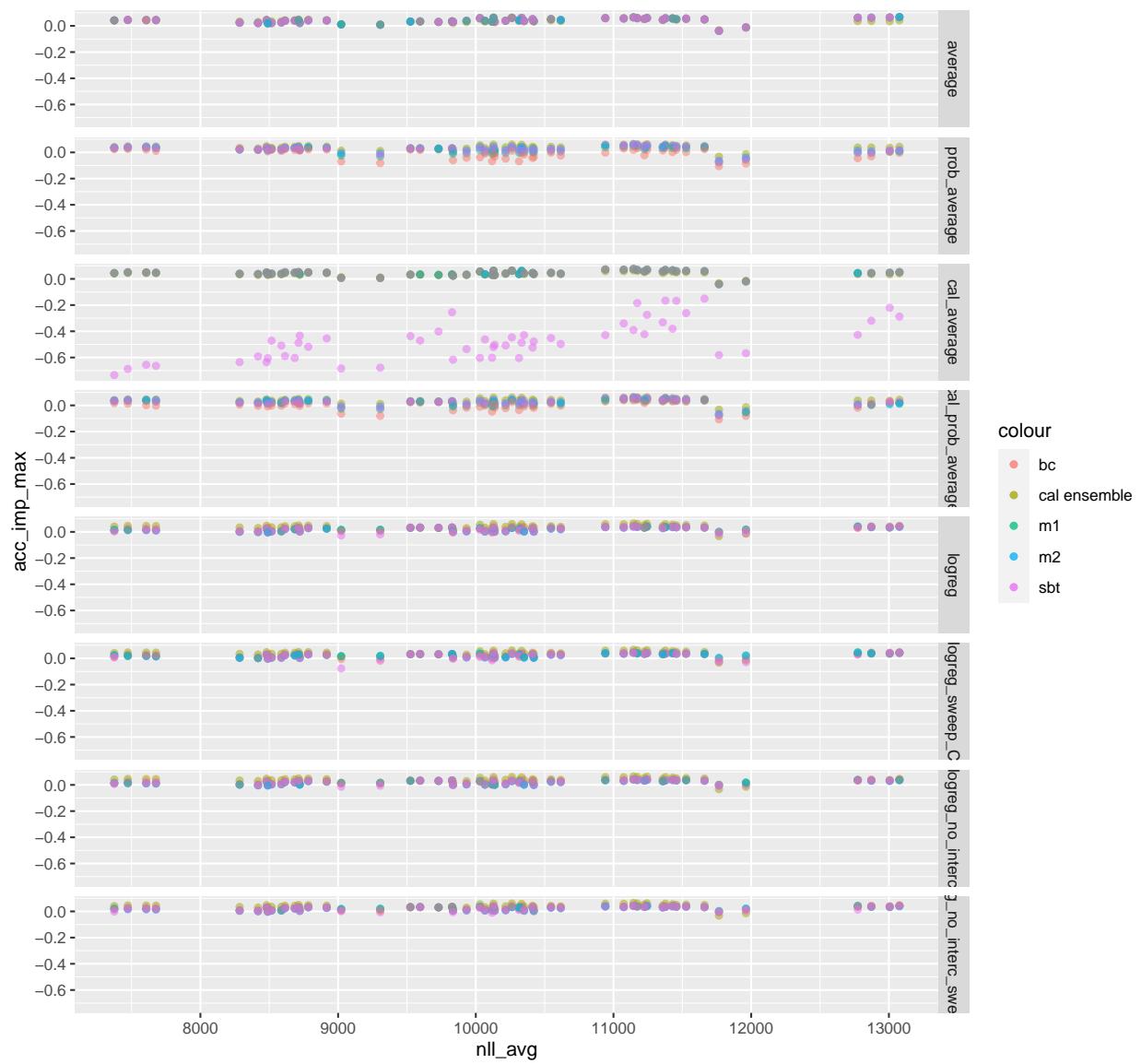
Accuracy improvement of ensemble over
the best of networks vs nll_max.
Ensemble size 3



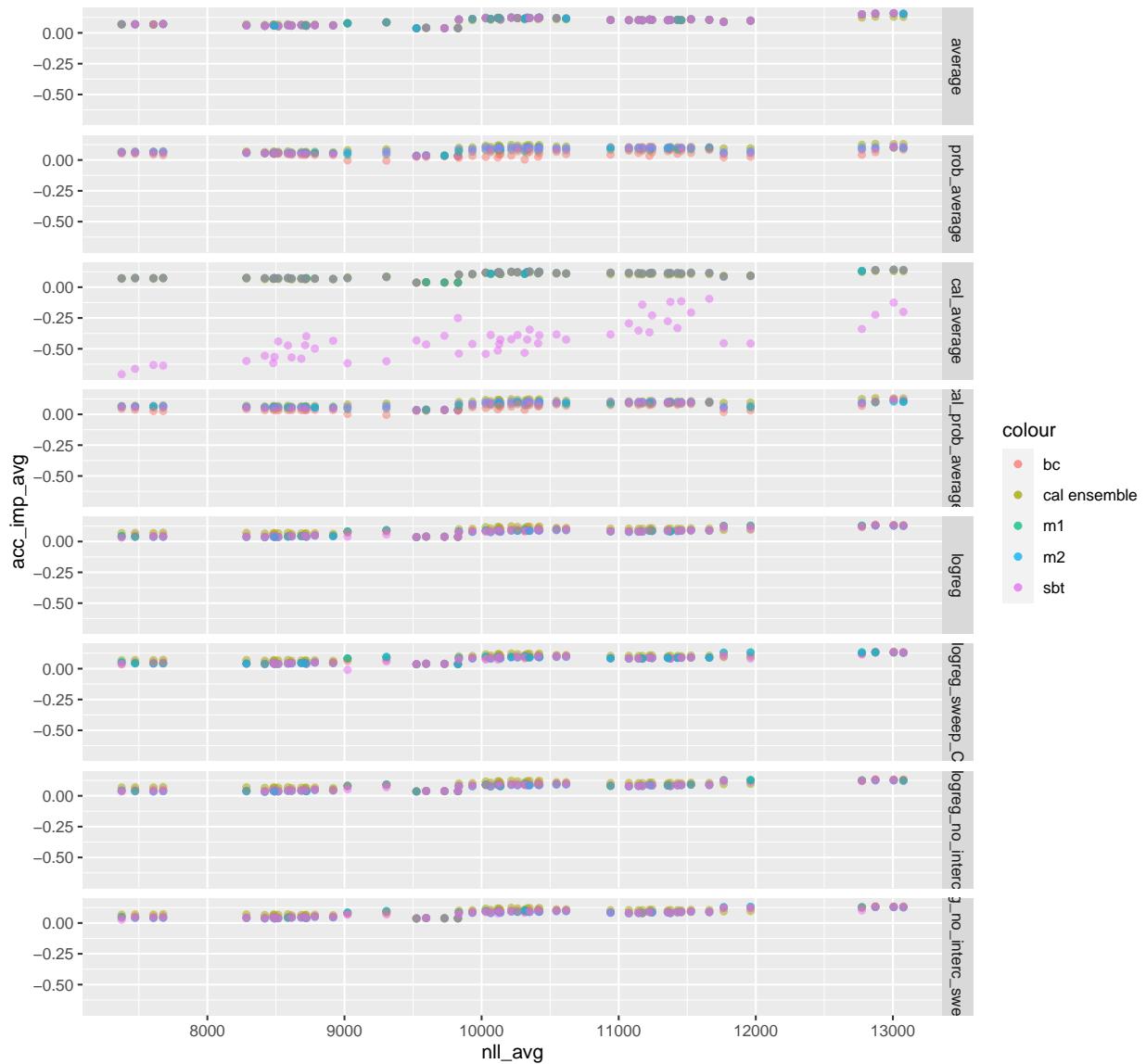
Accuracy improvement of ensemble over
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Ensemble size 3



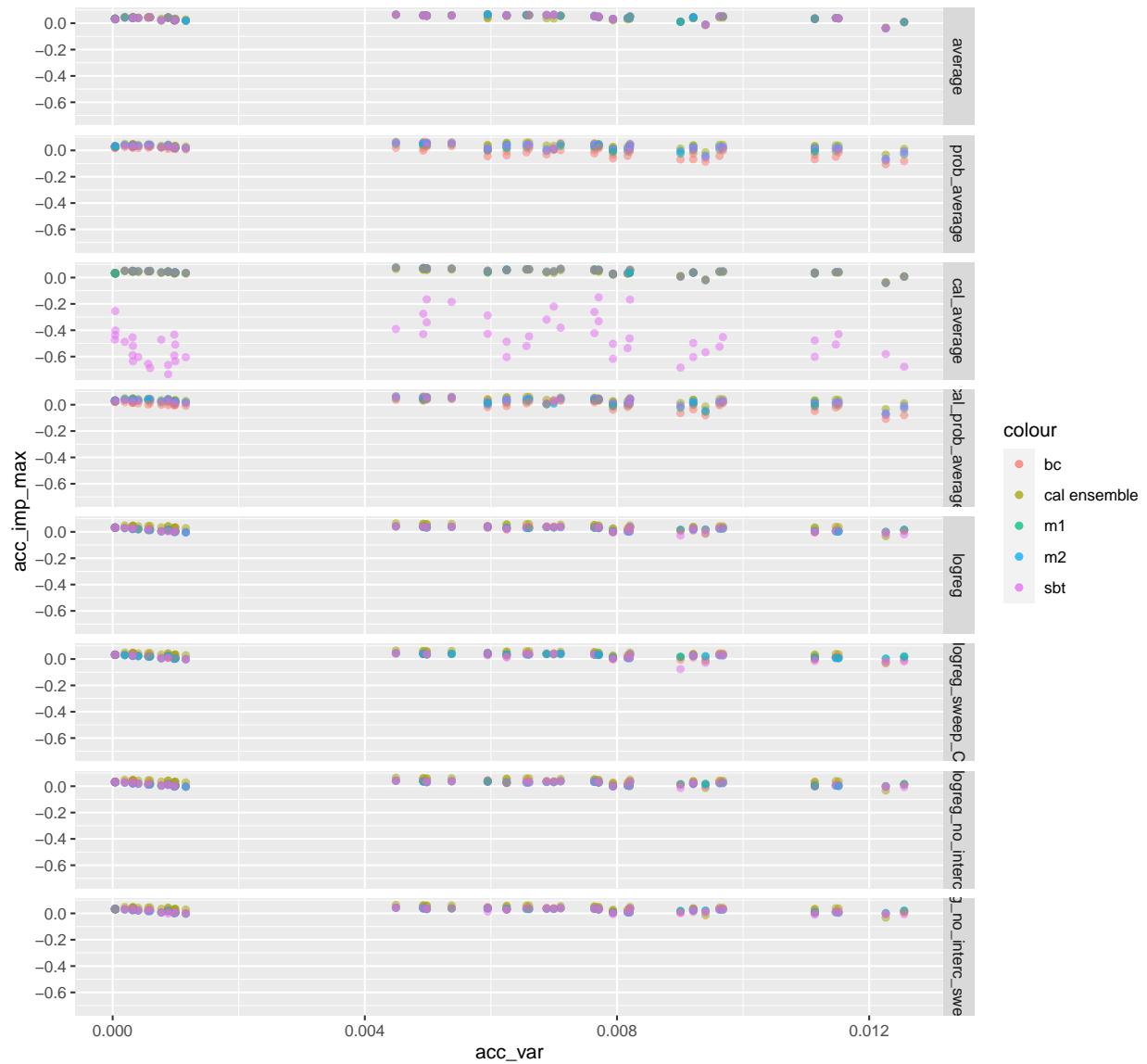
Accuracy improvement of ensemble over
the best of networks vs nll_avg.
Ensemble size 3



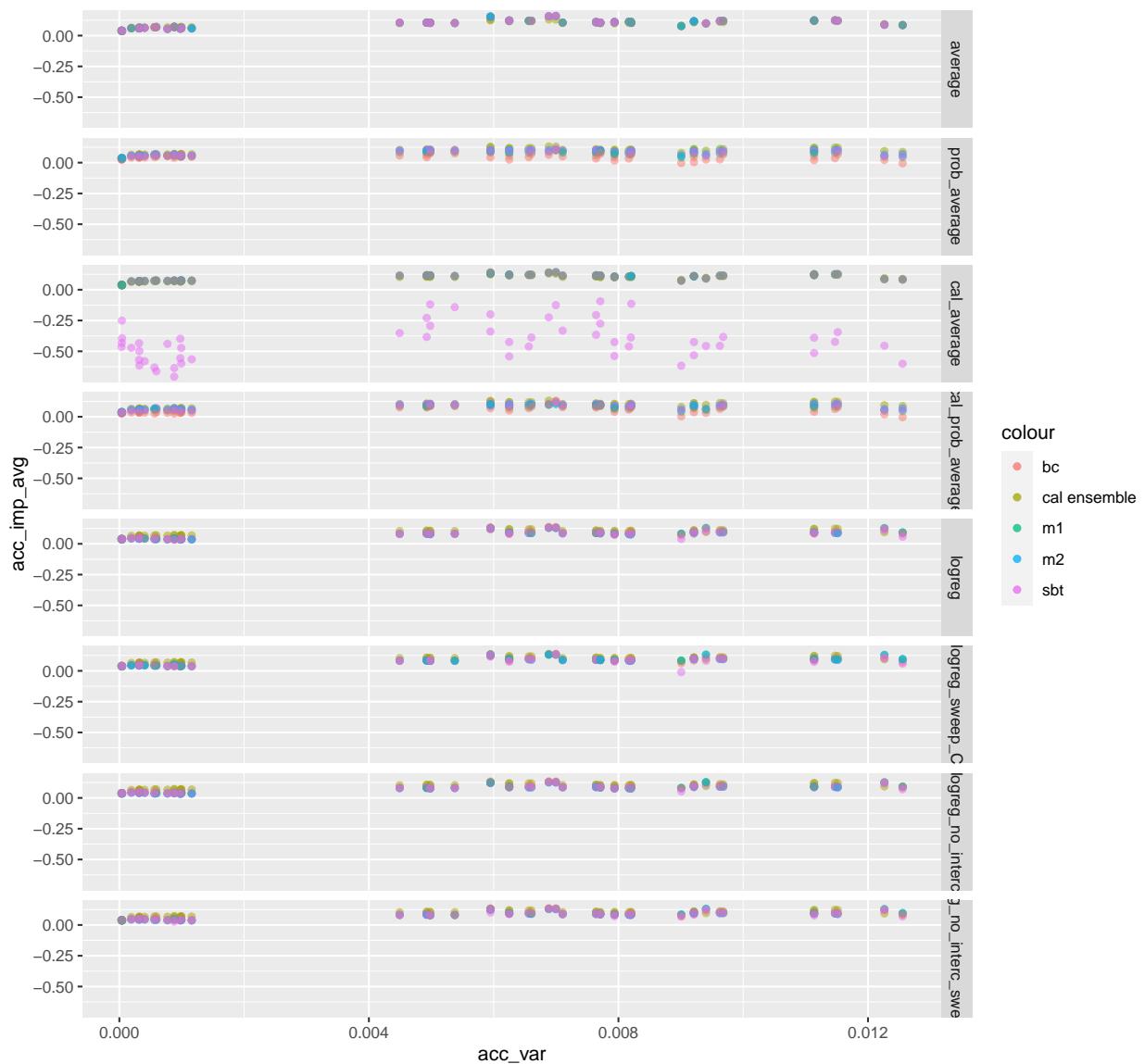
Accuracy improvement of ensemble over
the average of networks vs nll_avg.
Ensemble size 3



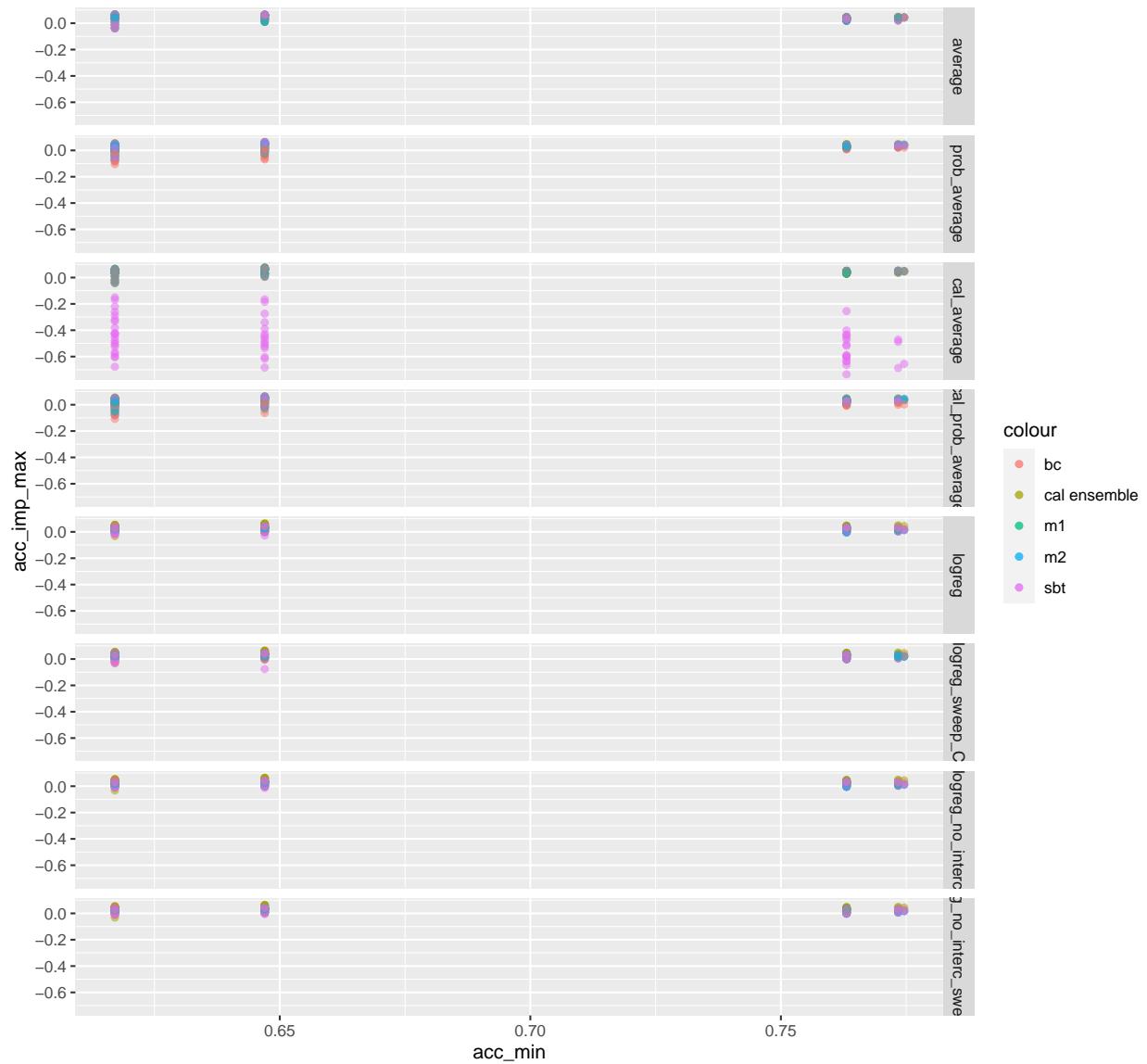
Accuracy improvement of ensemble over
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Ensemble size 3



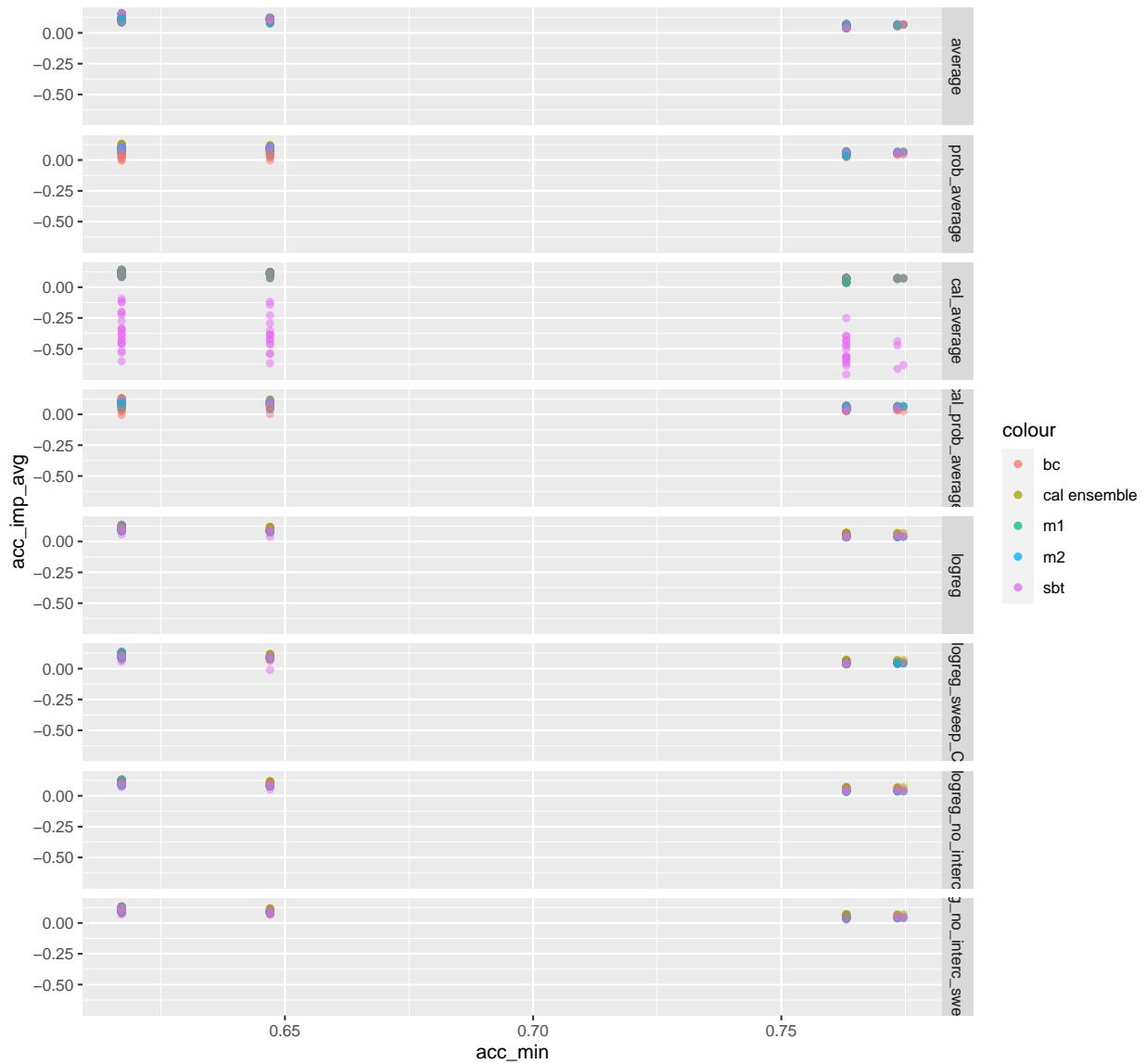
Accuracy improvement of ensemble over
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Ensemble size 3



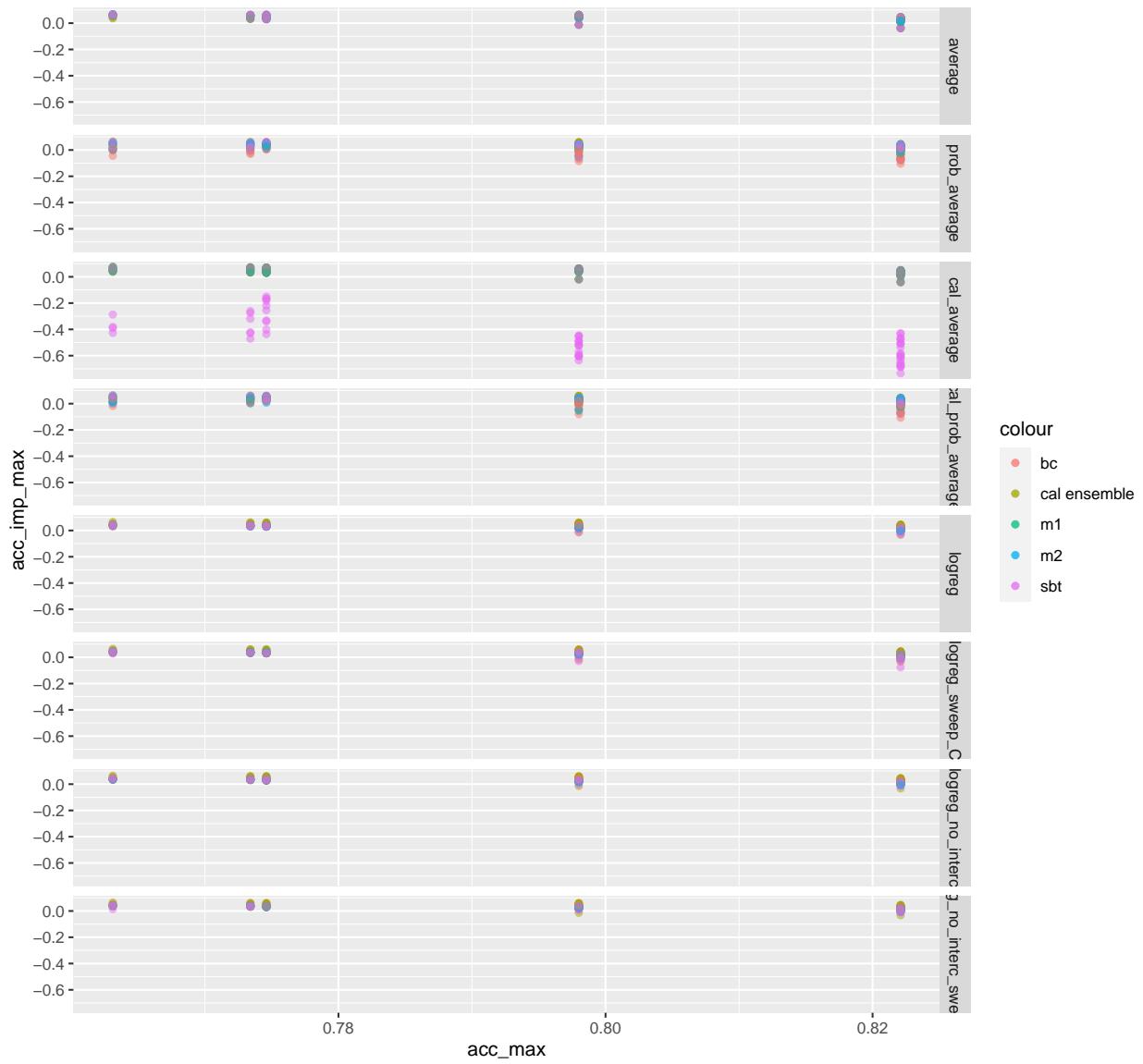
Accuracy improvement of ensemble over
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Ensemble size 3



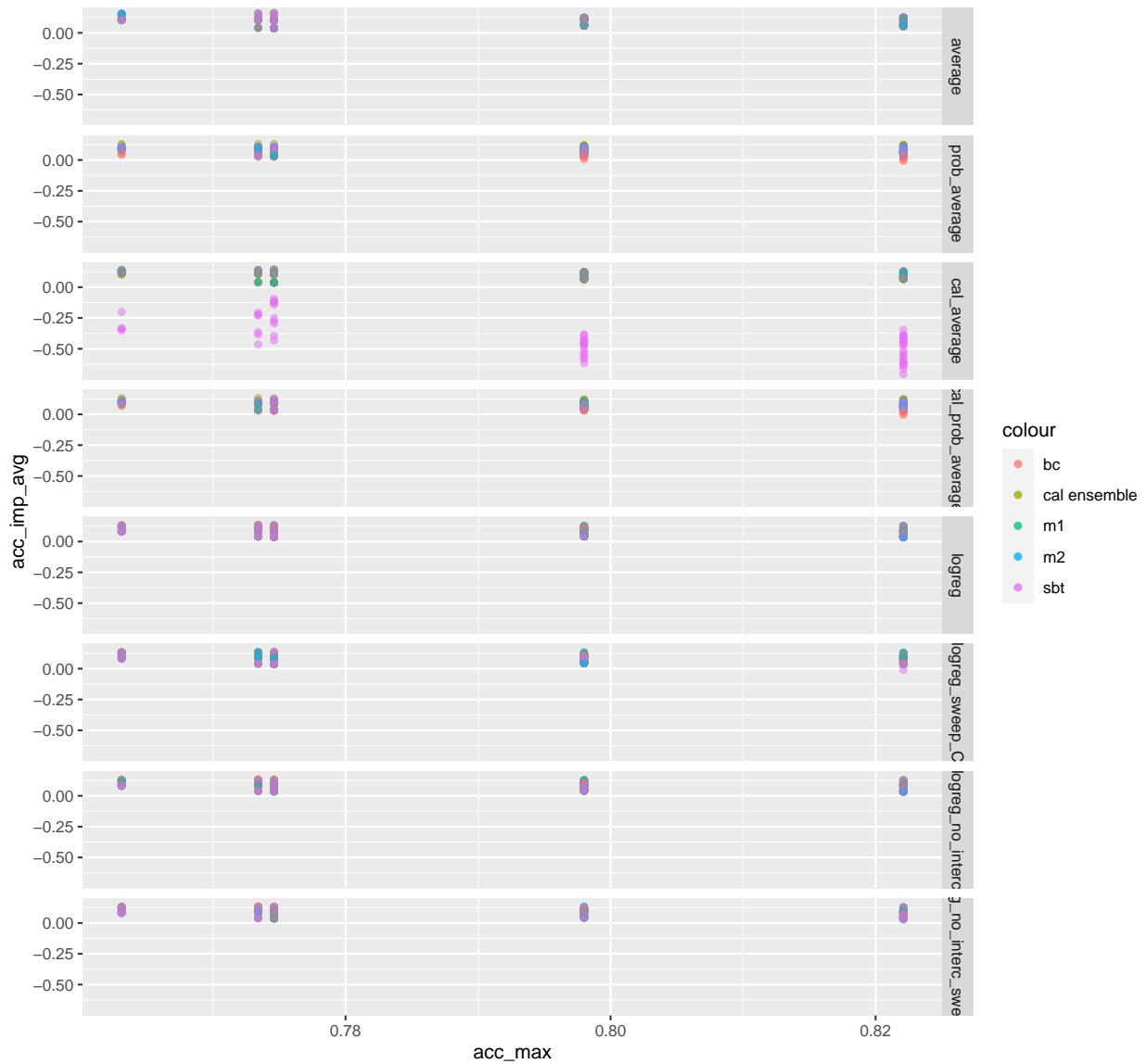
Accuracy improvement of ensemble over
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Ensemble size 3



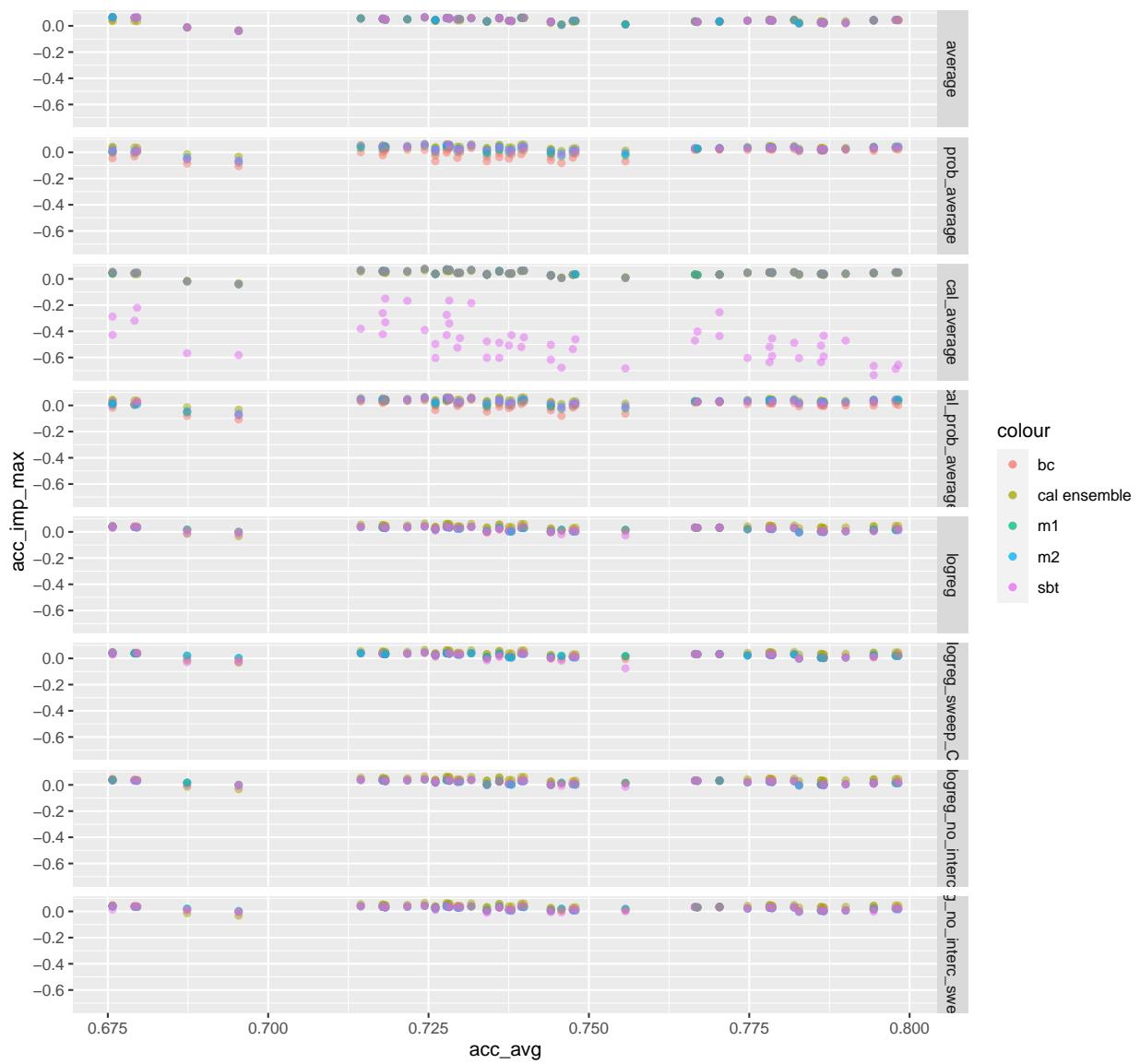
Accuracy improvement of ensemble over
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Ensemble size 3



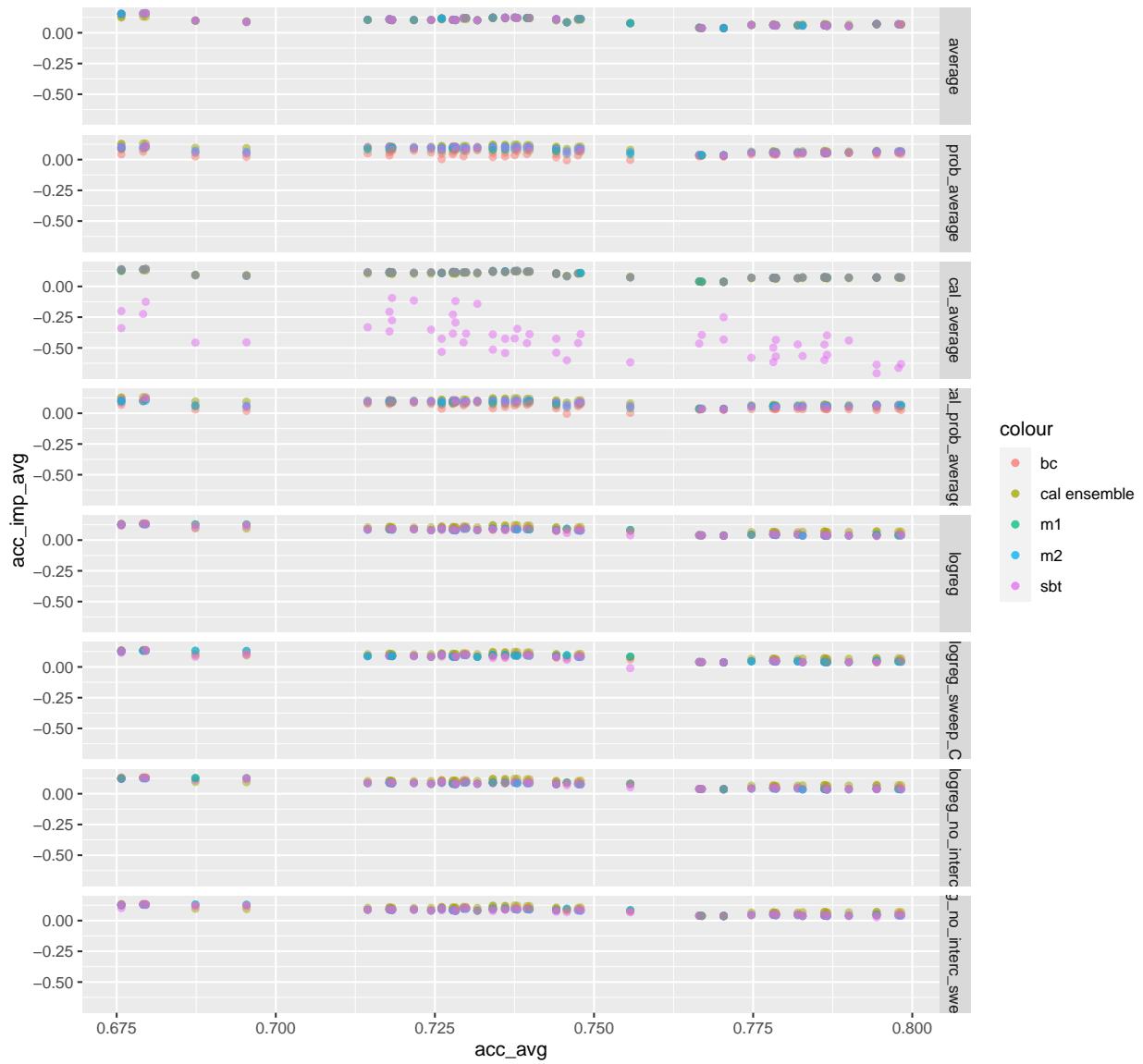
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Ensemble size 3



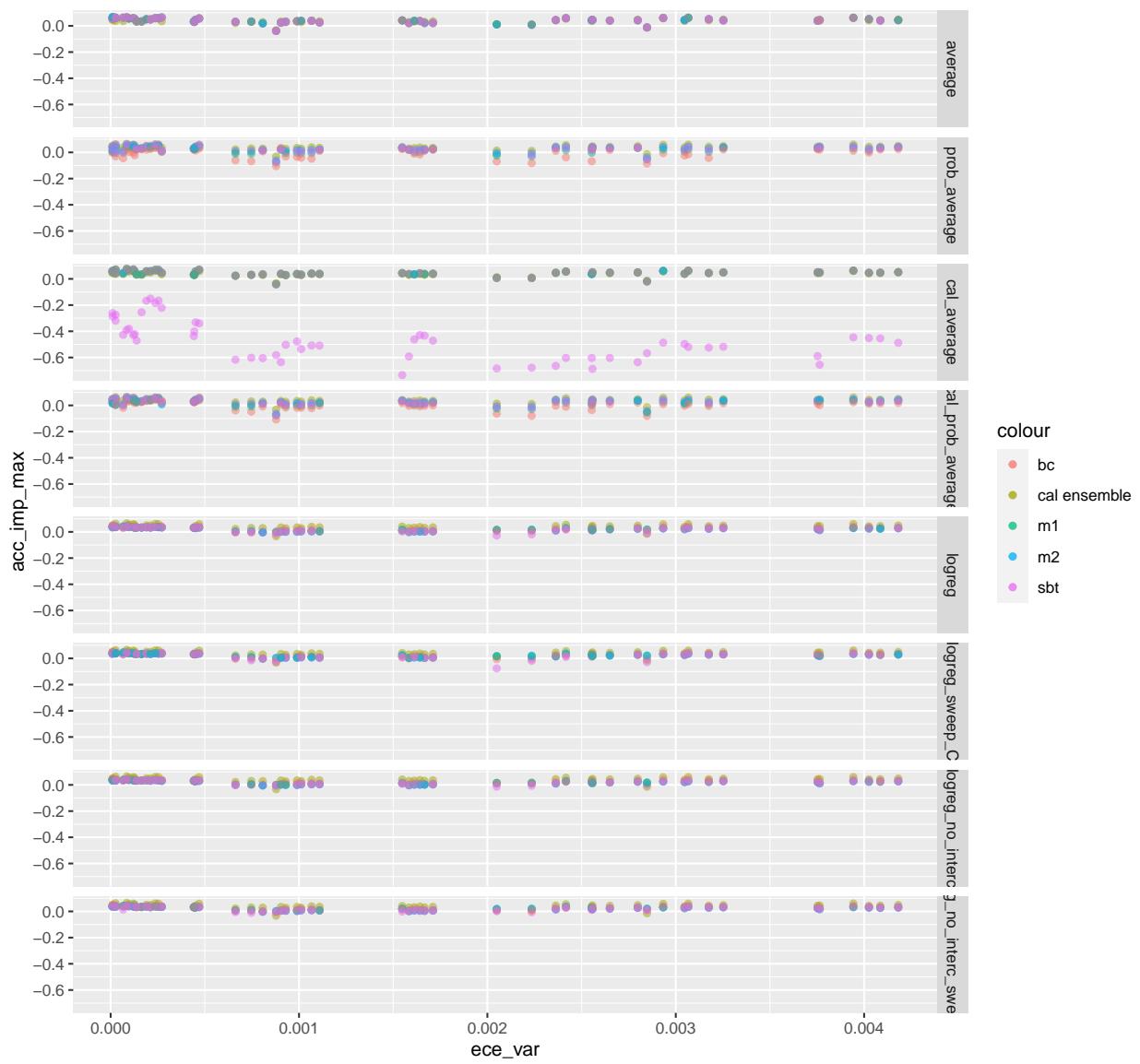
Accuracy improvement of ensemble over
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Ensemble size 3



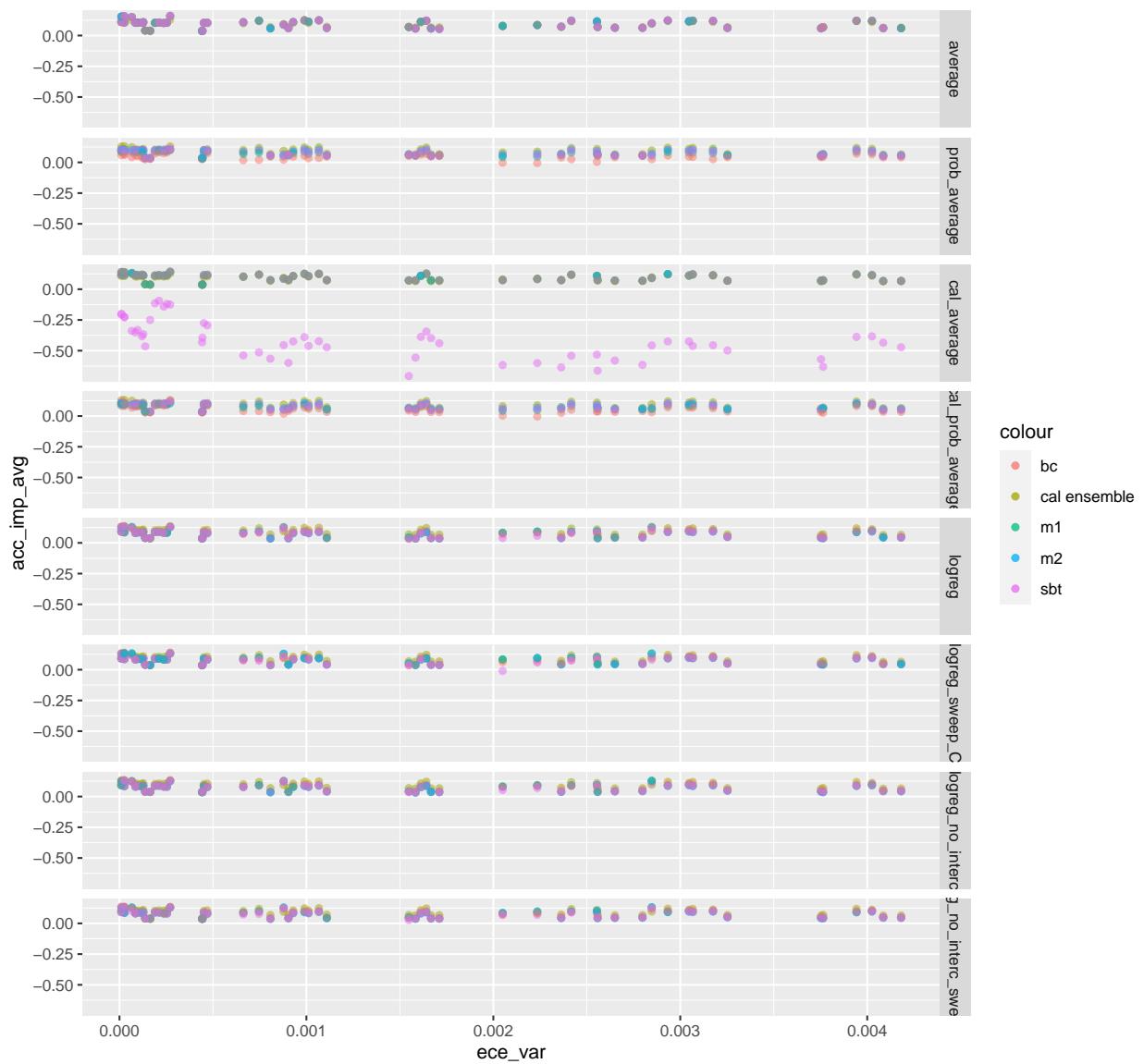
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Ensemble size 3



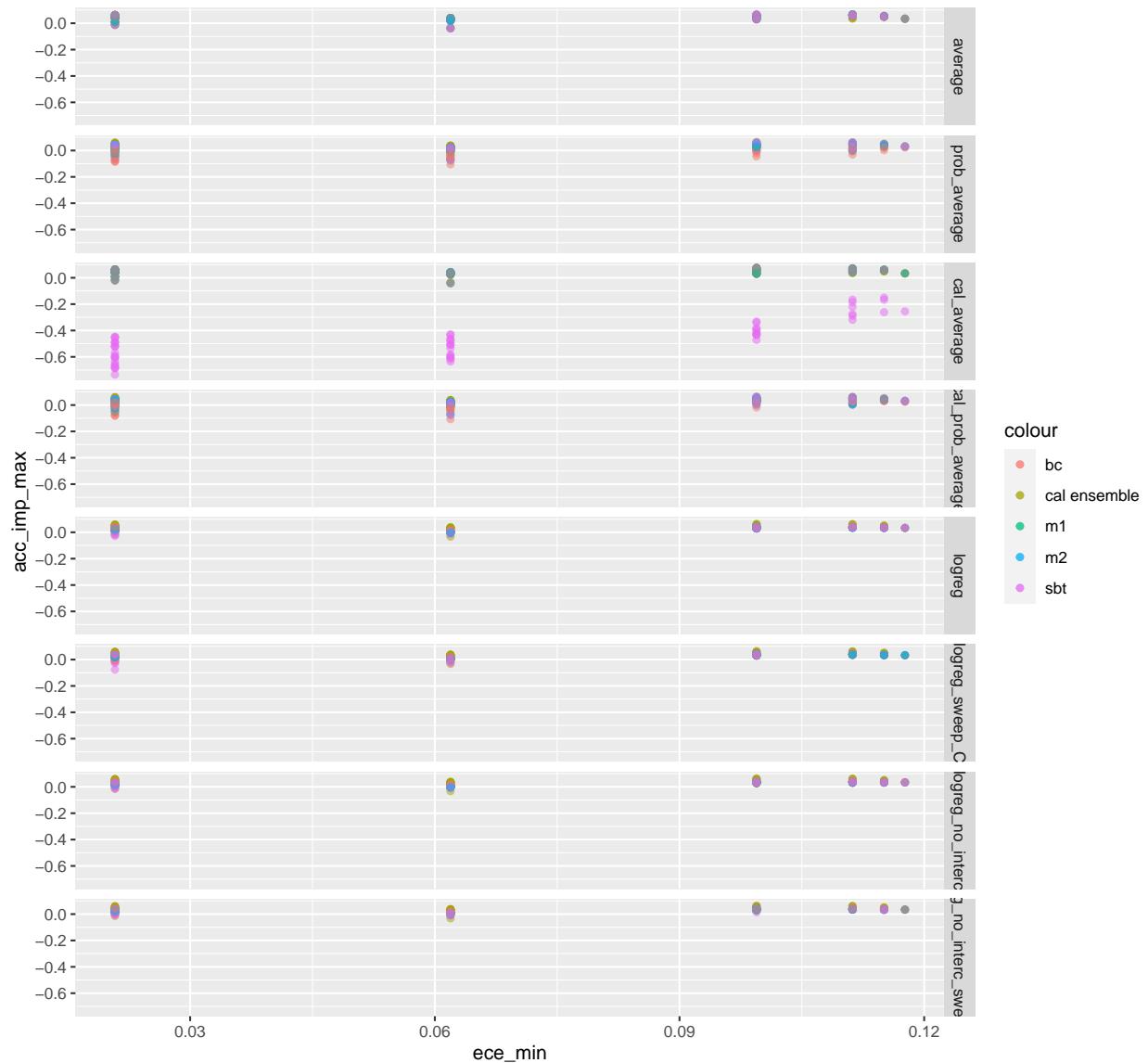
Accuracy improvement of ensemble over
the best of networks vs ece_var.
Ensemble size 3



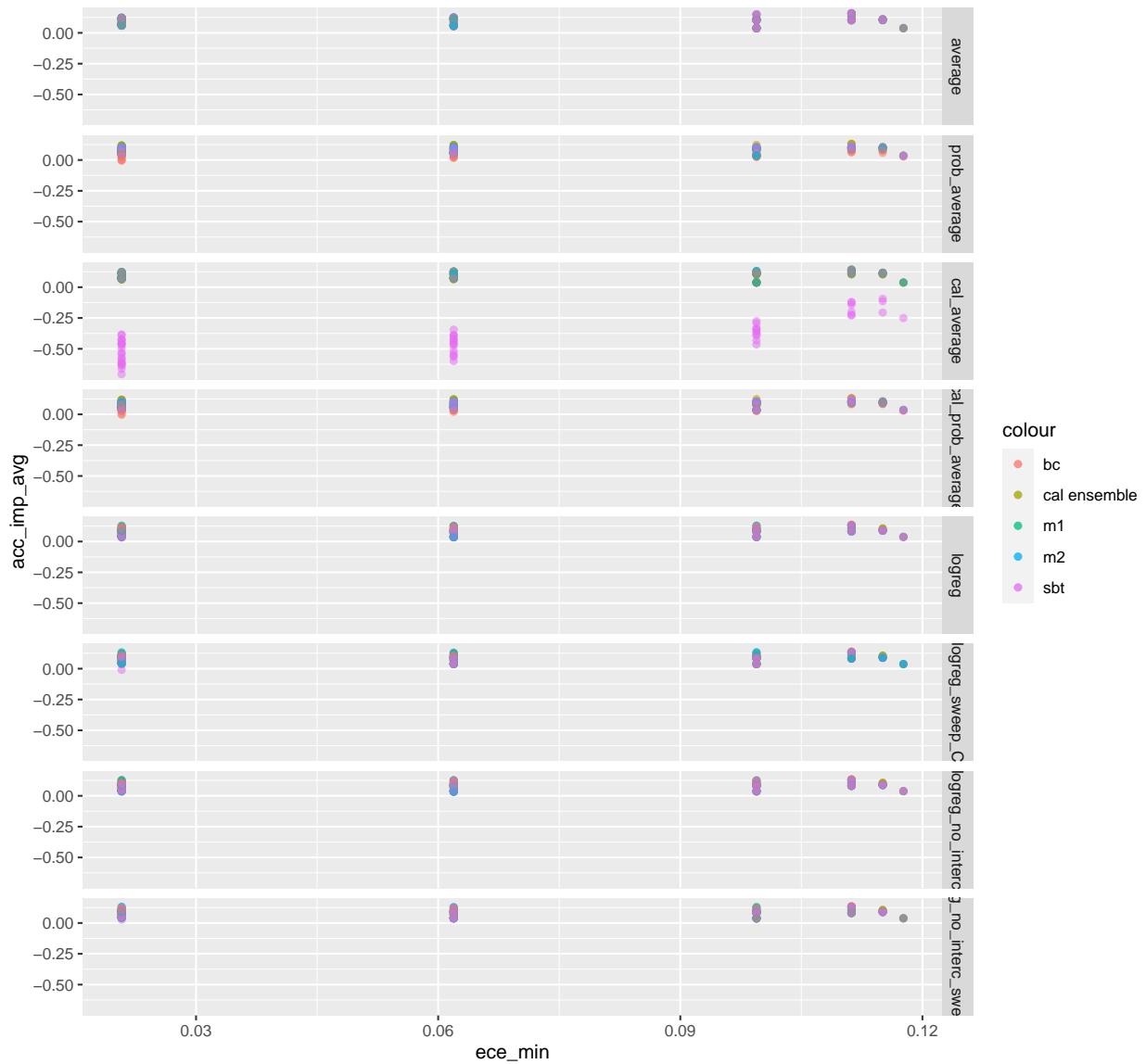
Accuracy improvement of ensemble over
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Ensemble size 3



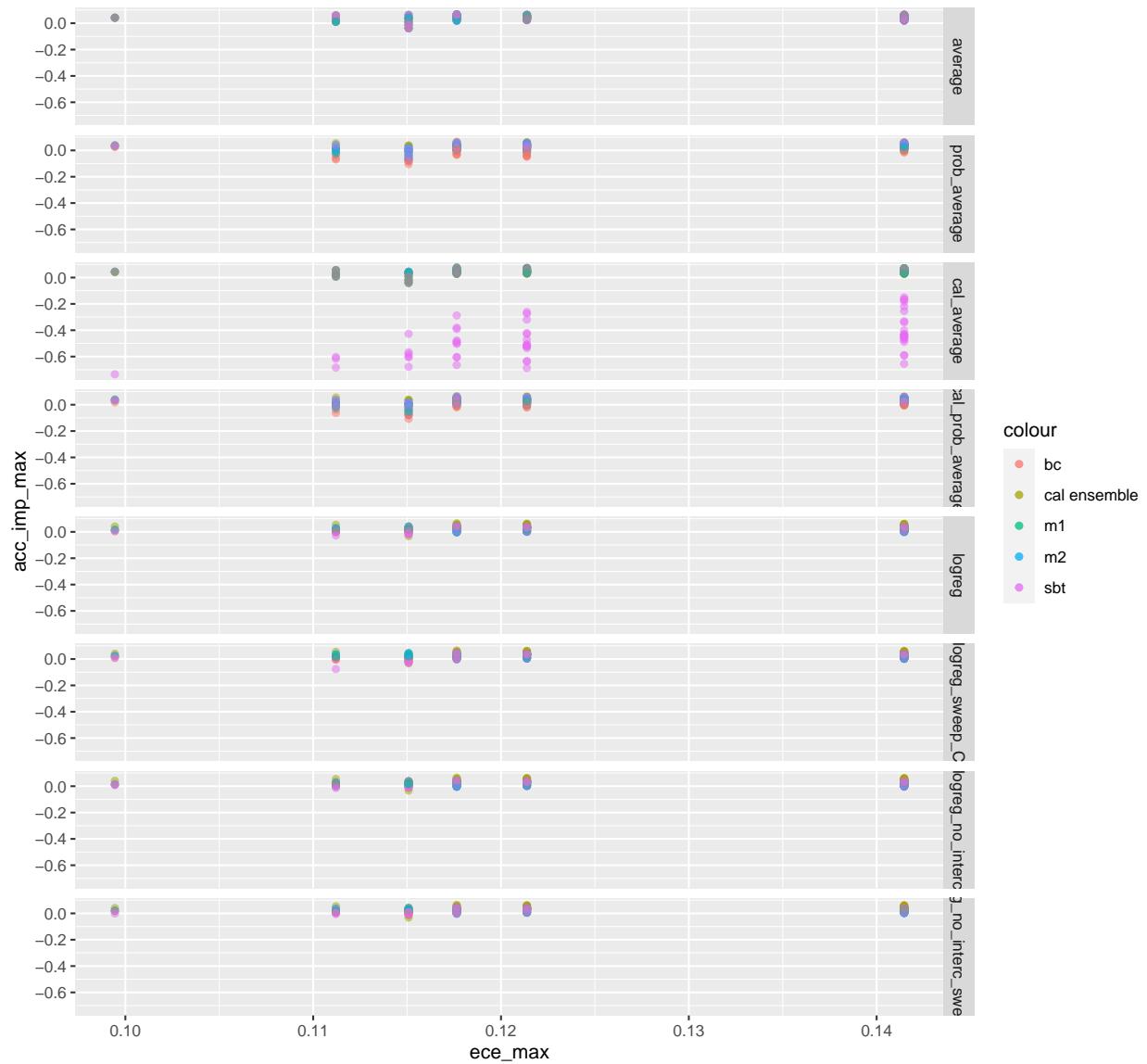
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Ensemble size 3



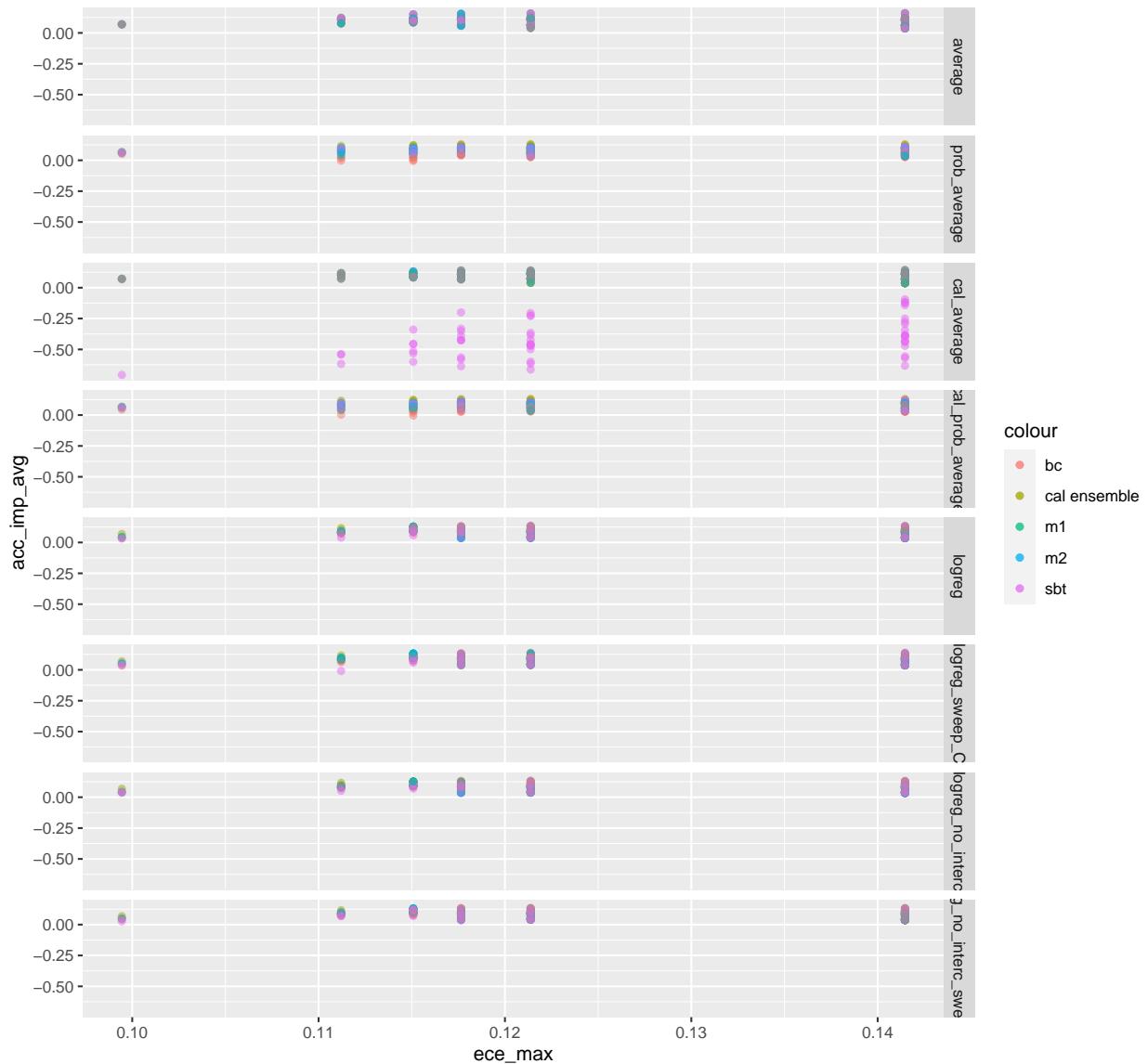
Accuracy improvement of ensemble over
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Ensemble size 3



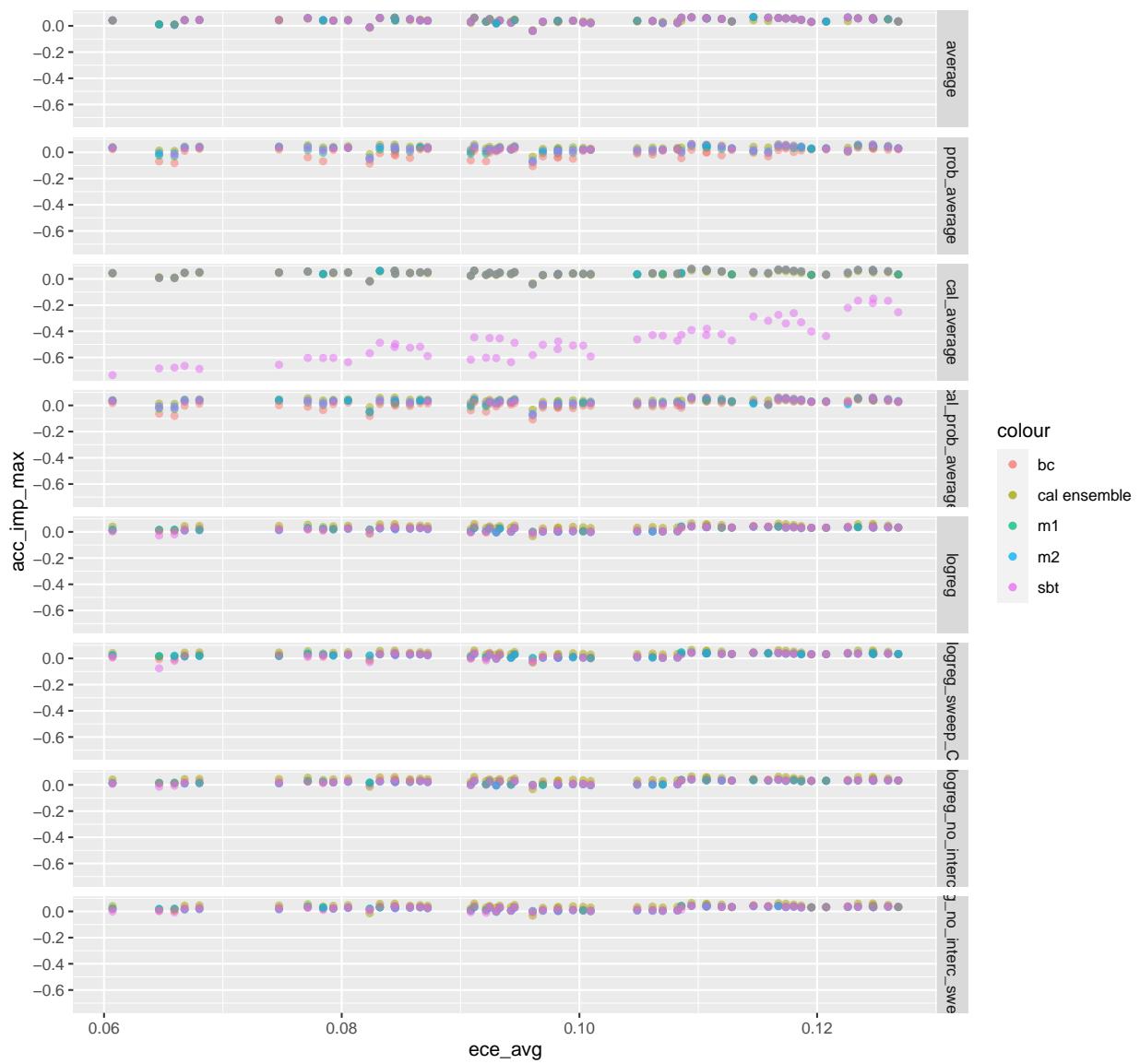
Accuracy improvement of ensemble over
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Ensemble size 3



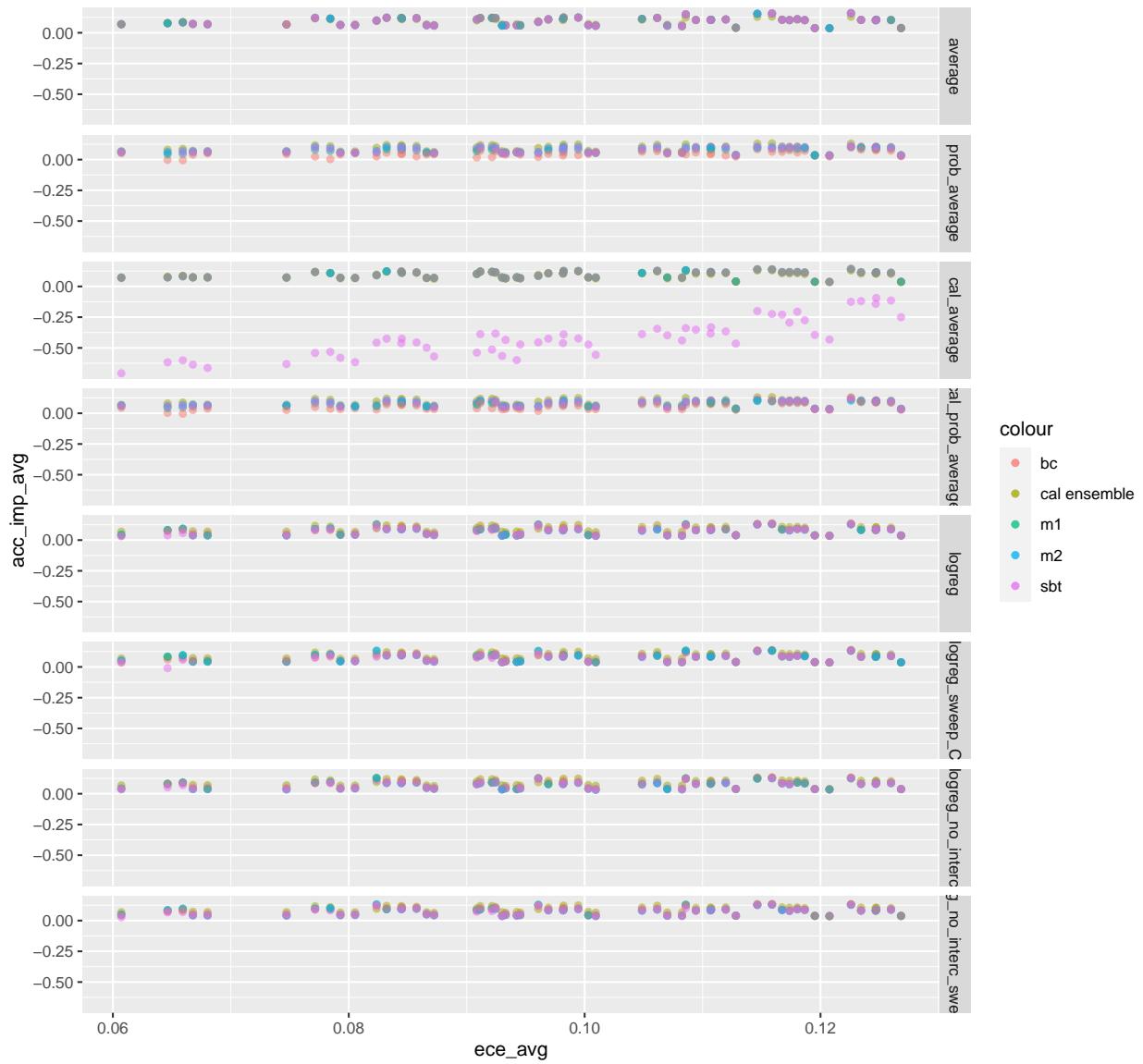
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Ensemble size 3



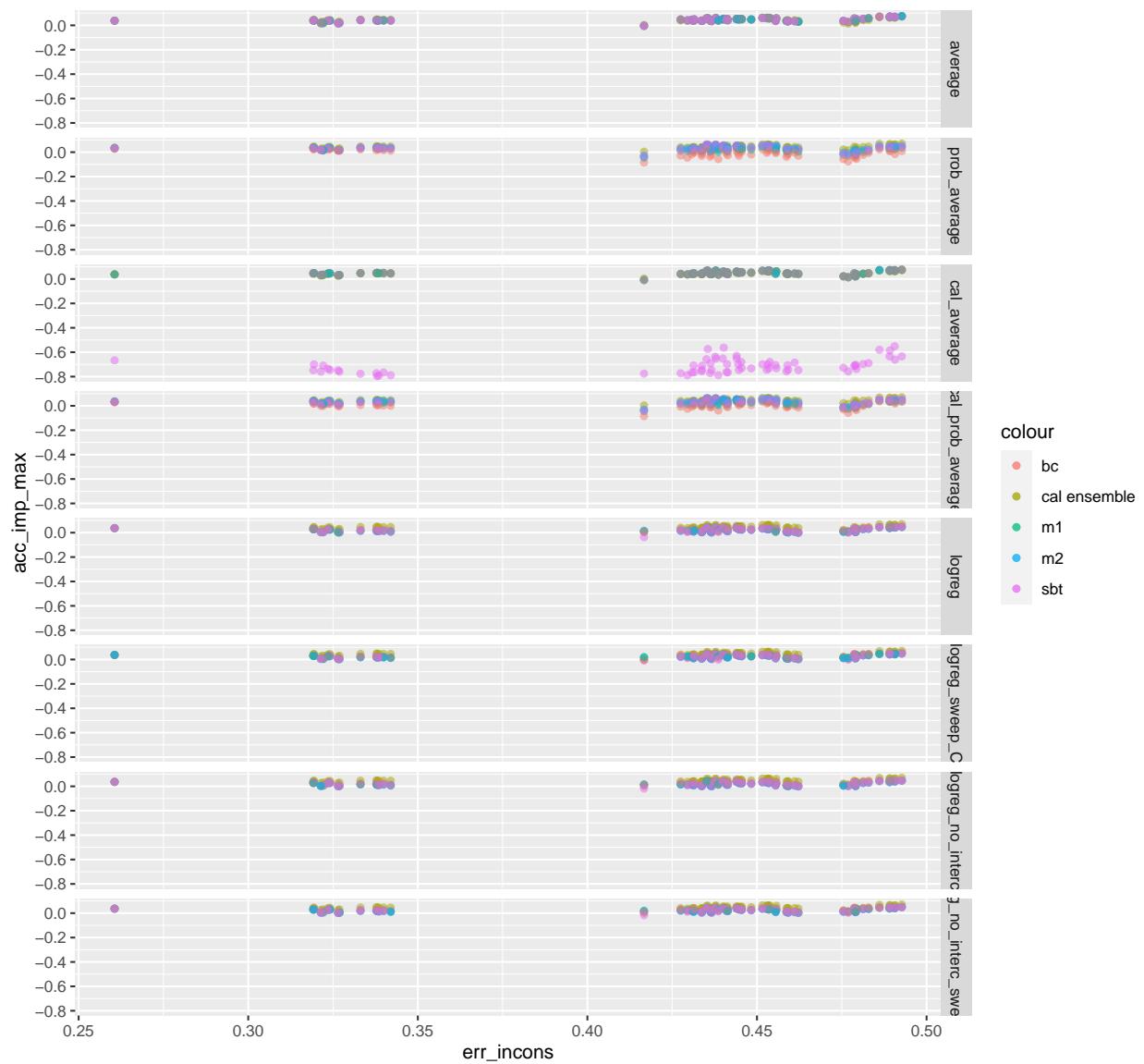
Accuracy improvement of ensemble over
the best of networks vs ece_avg.
Ensemble size 3



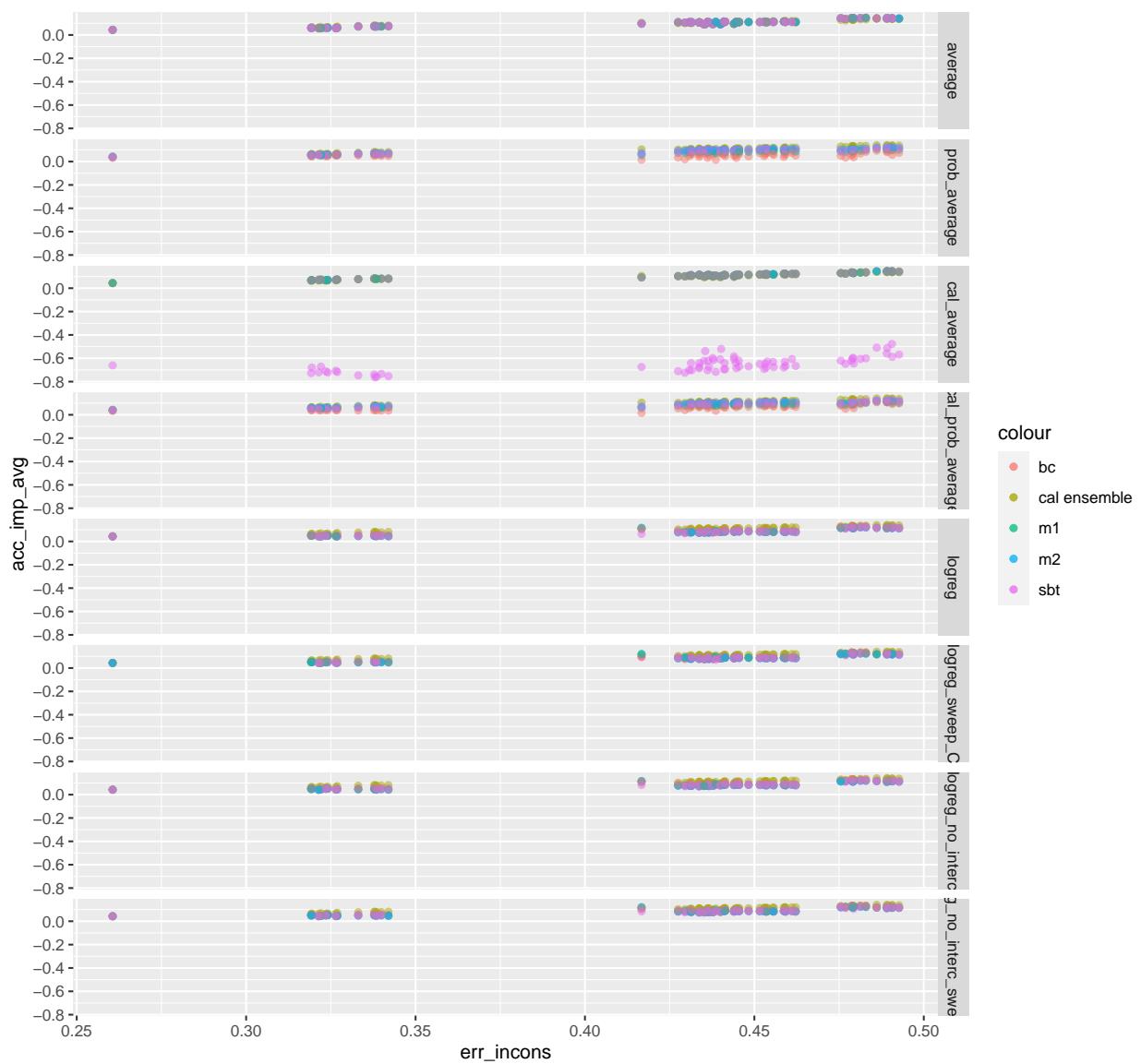
Accuracy improvement of ensemble over
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Ensemble size 3



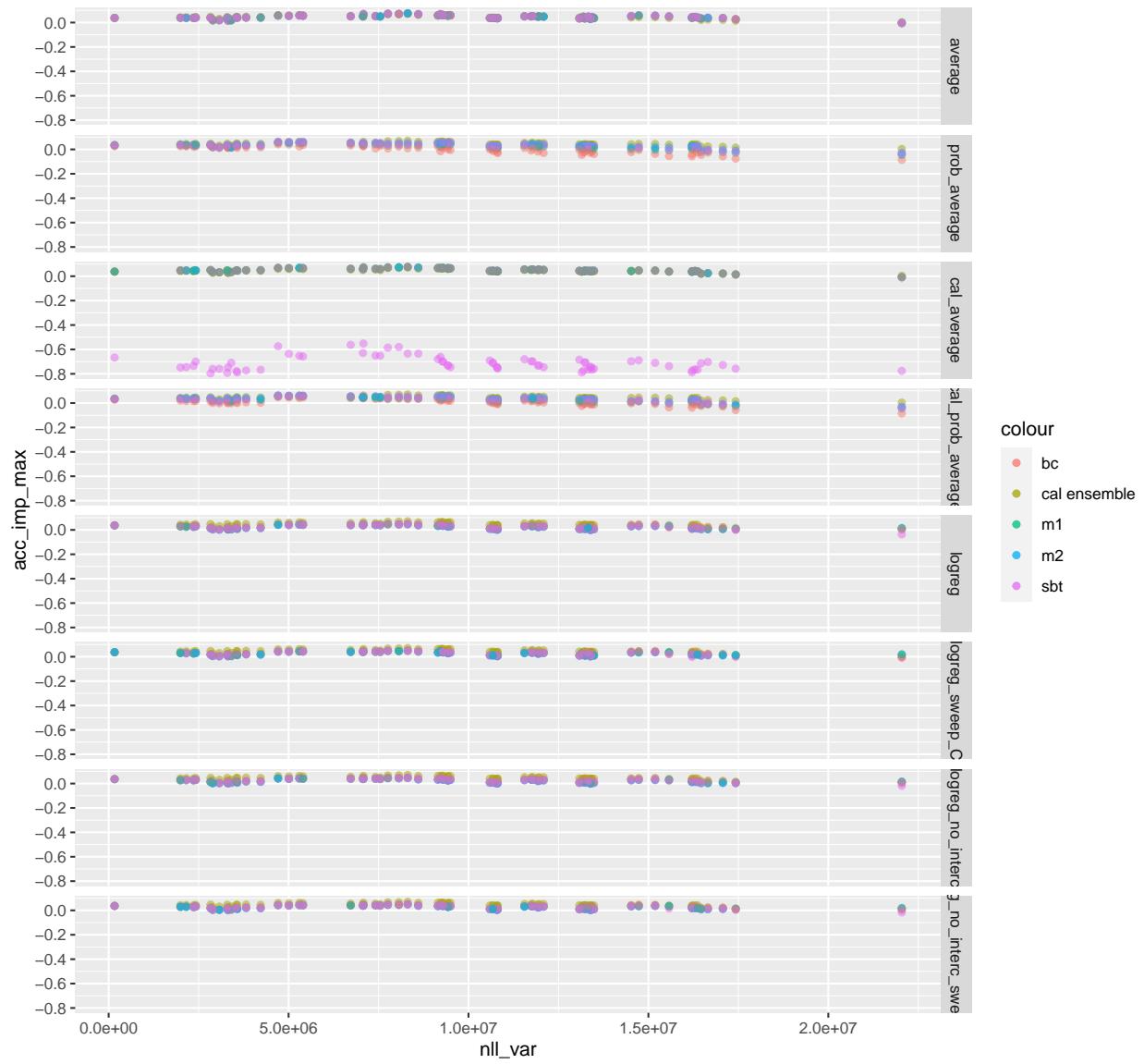
Accuracy improvement of ensemble over
the best of networks vs err_incons.
Ensemble size 4



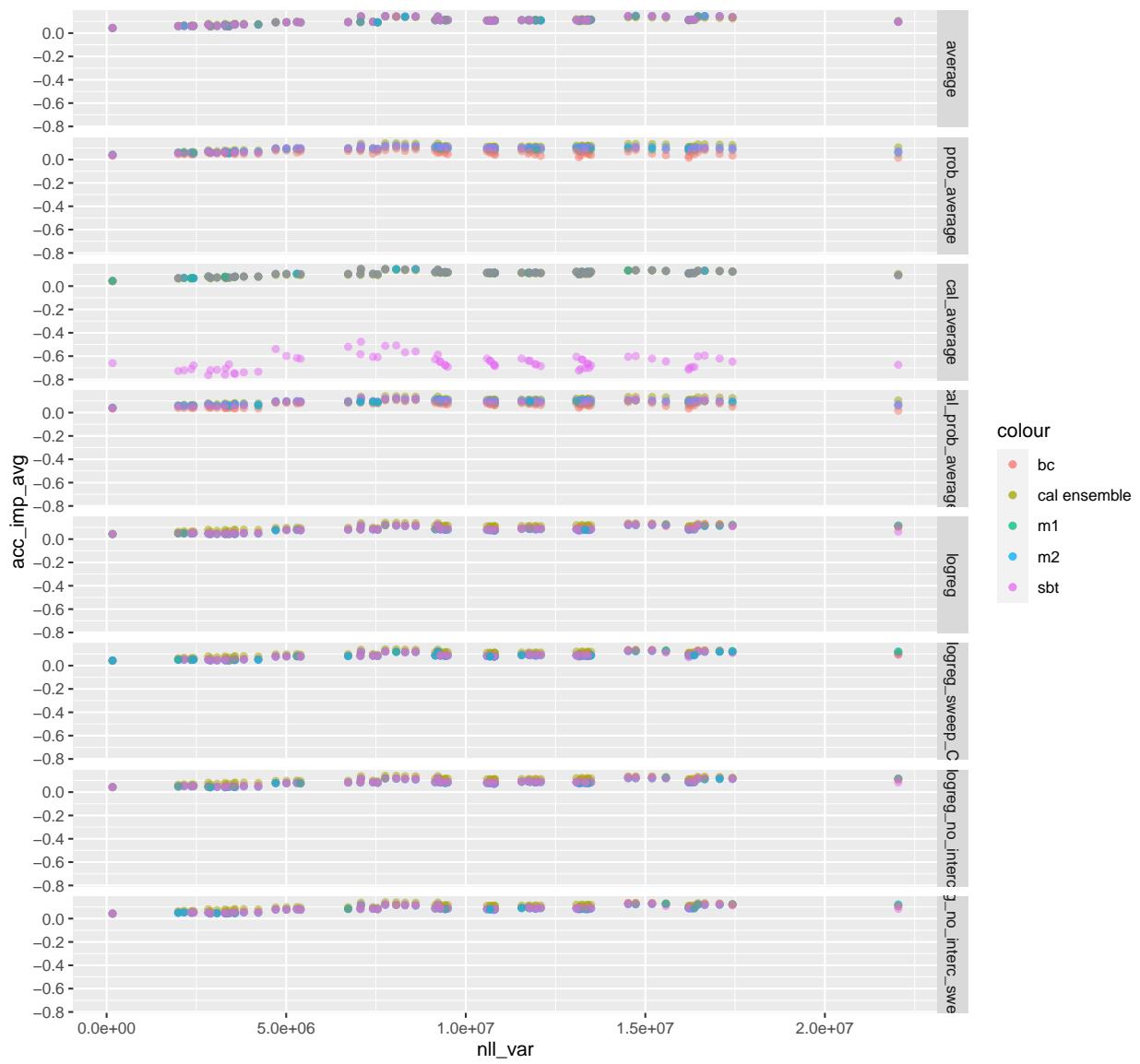
Accuracy improvement of ensemble over
the average of networks vs err_incons.
Ensemble size 4



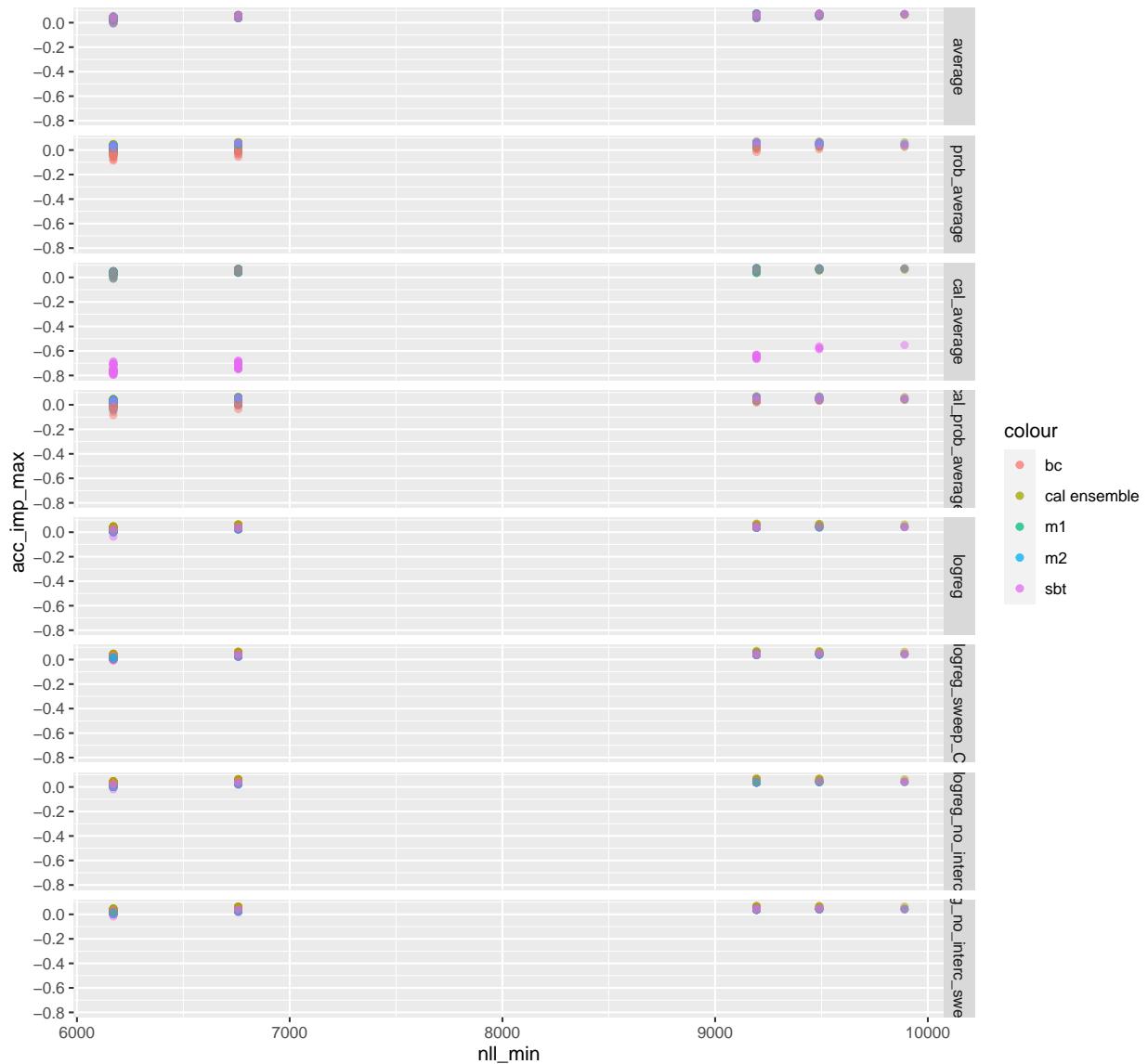
Accuracy improvement of ensemble over
the best of networks vs nll_var.
Ensemble size 4



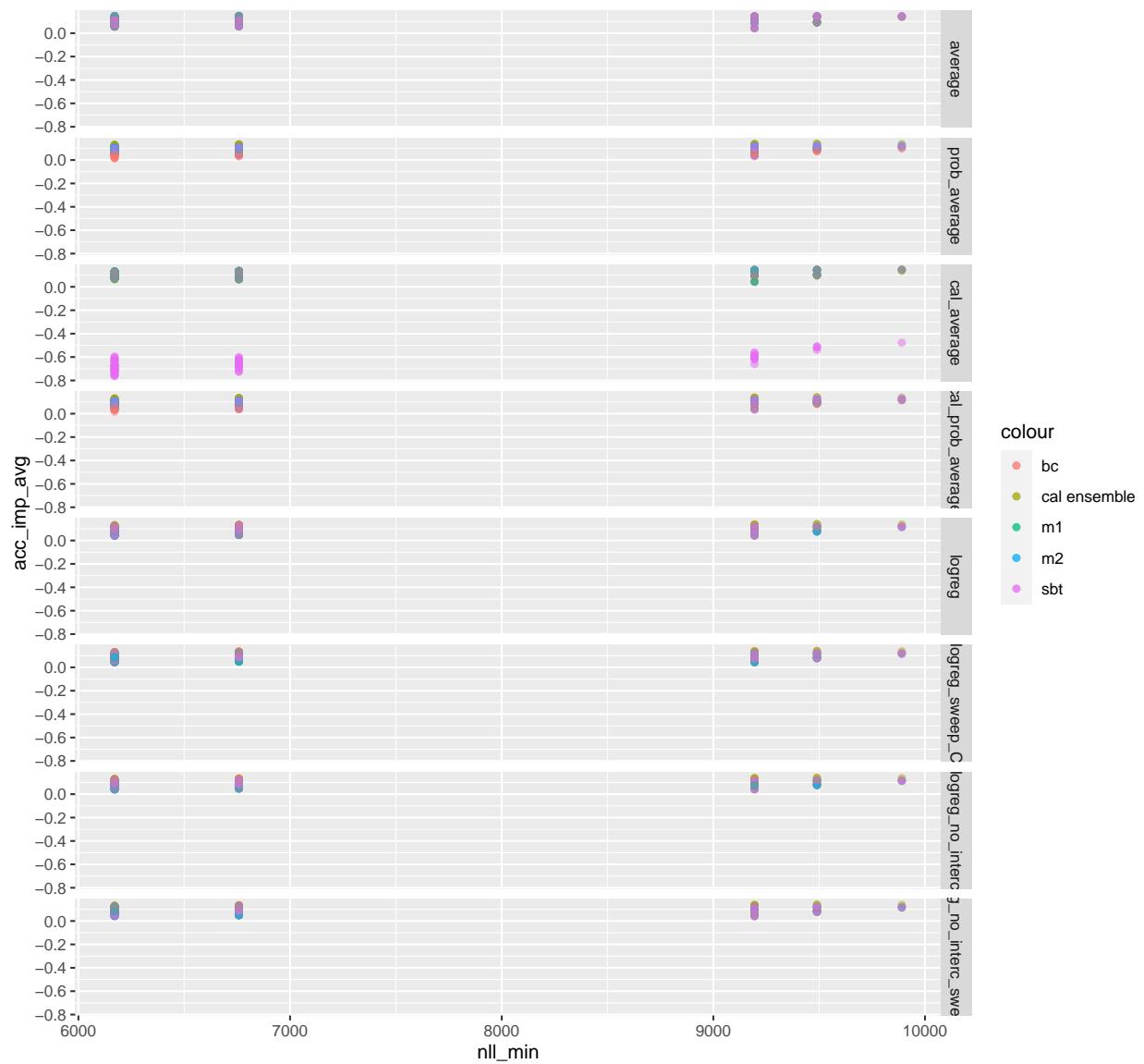
Accuracy improvement of ensemble over
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Ensemble size 4



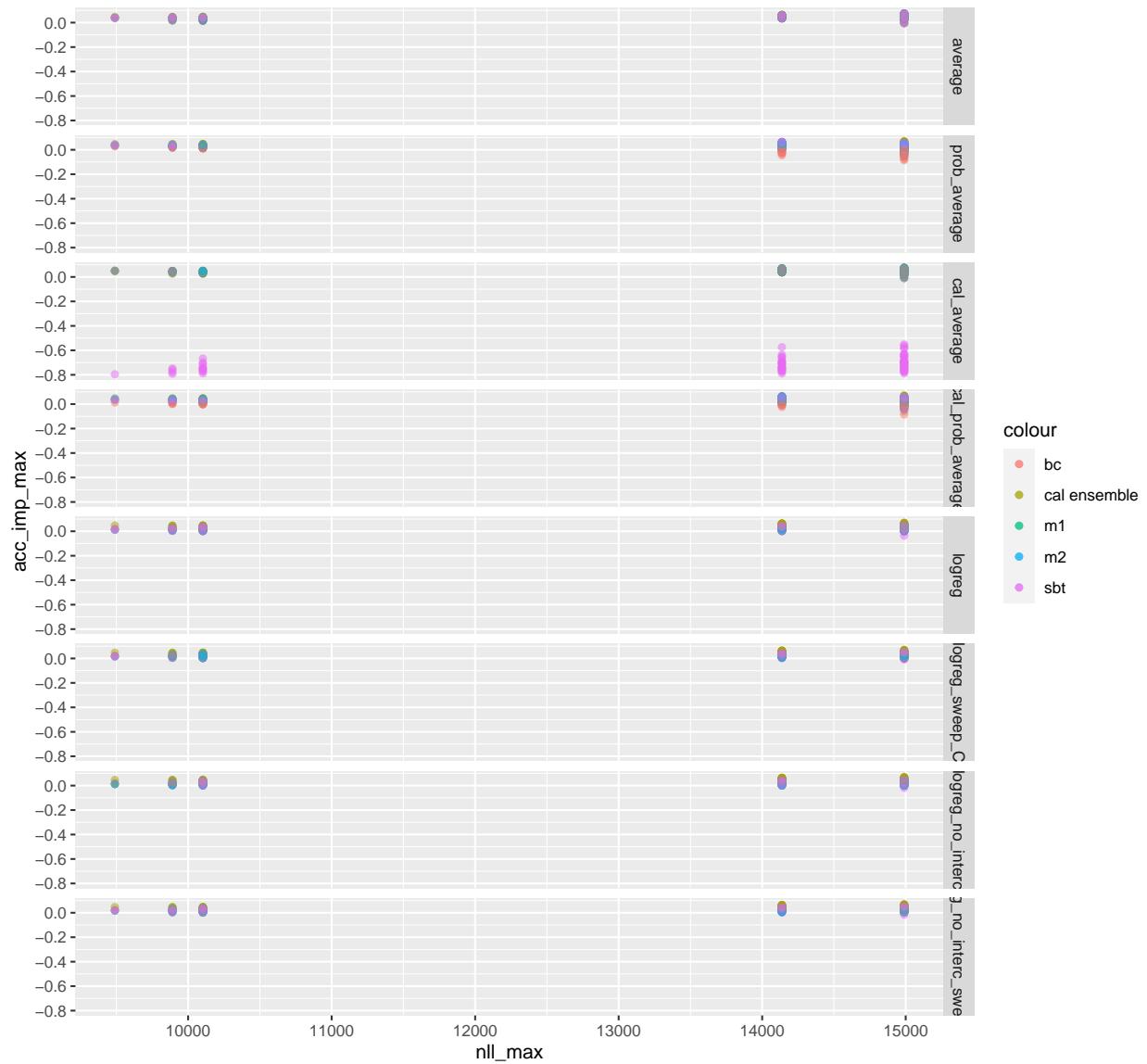
Accuracy improvement of ensemble over
the best of networks vs nll_min.
Ensemble size 4



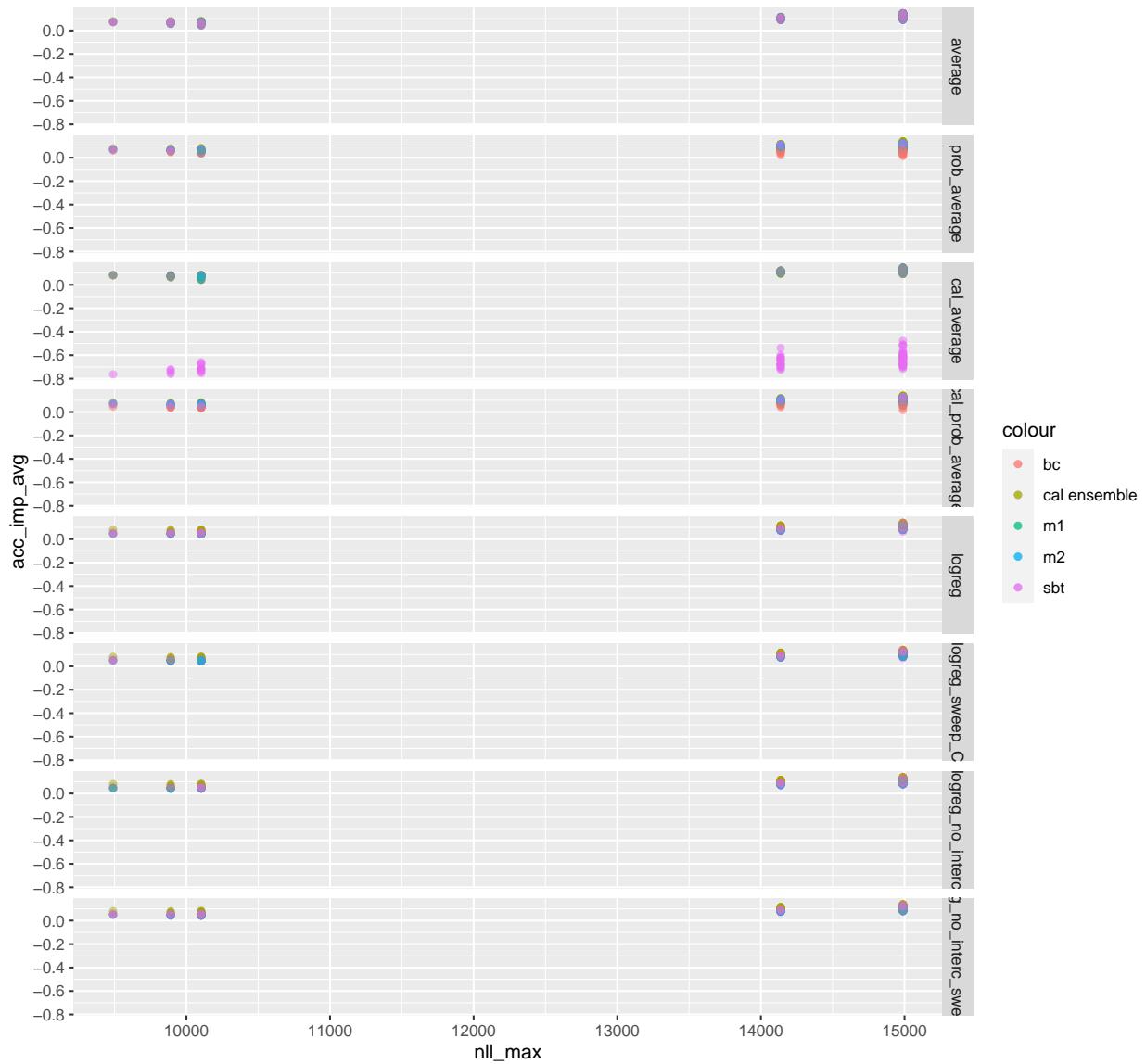
Accuracy improvement of ensemble over
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Ensemble size 4



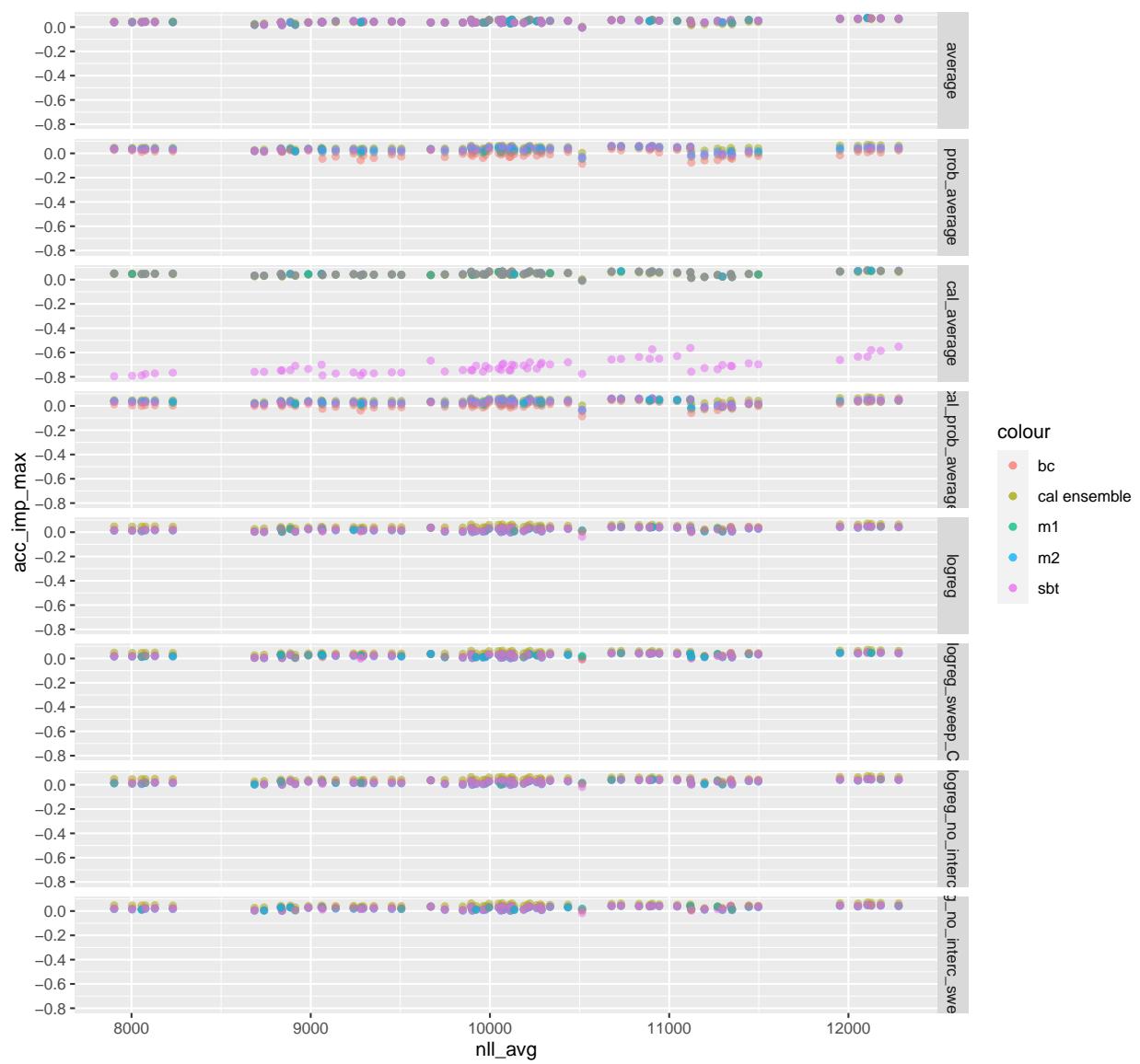
Accuracy improvement of ensemble over
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Ensemble size 4



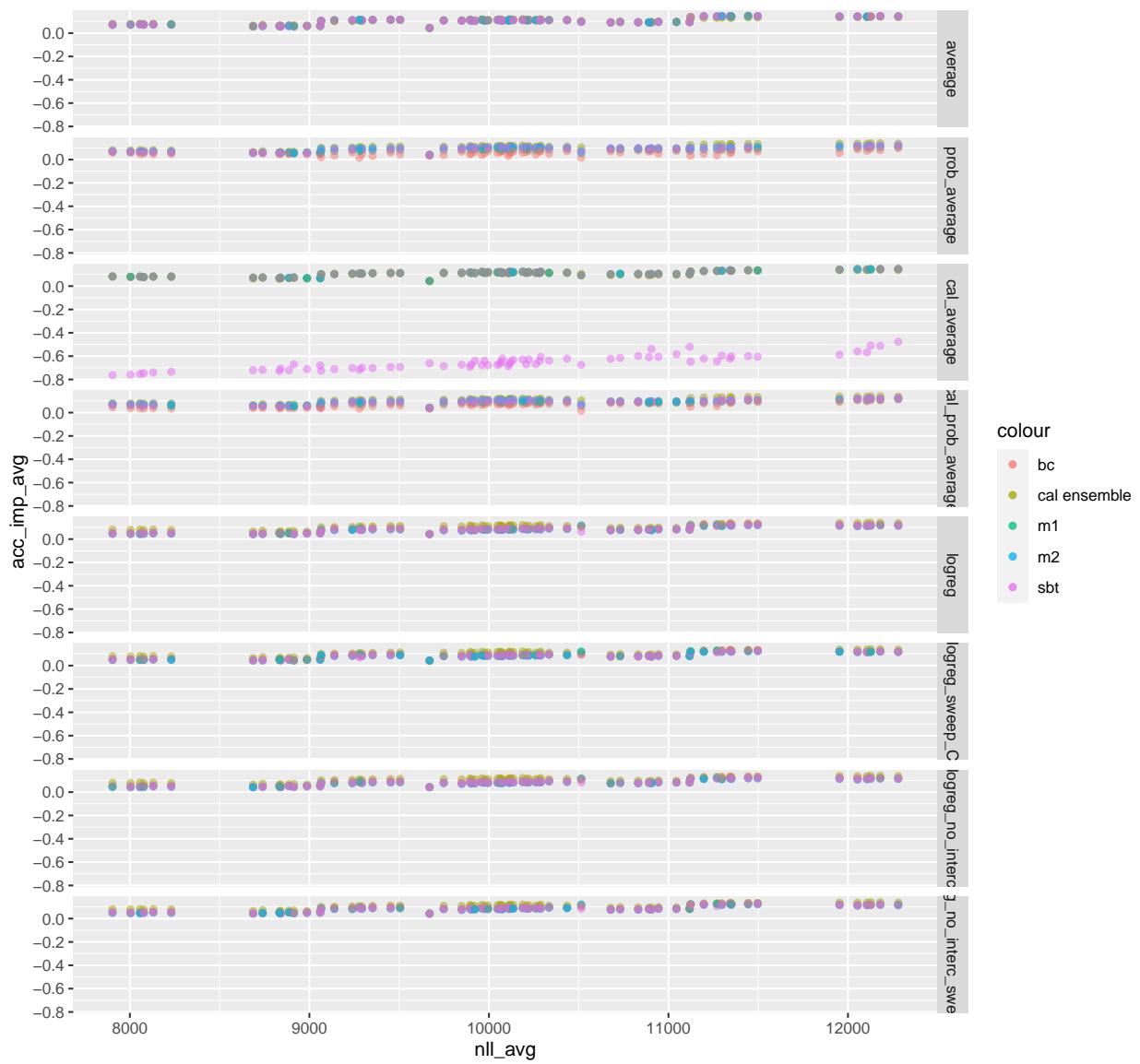
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Ensemble size 4



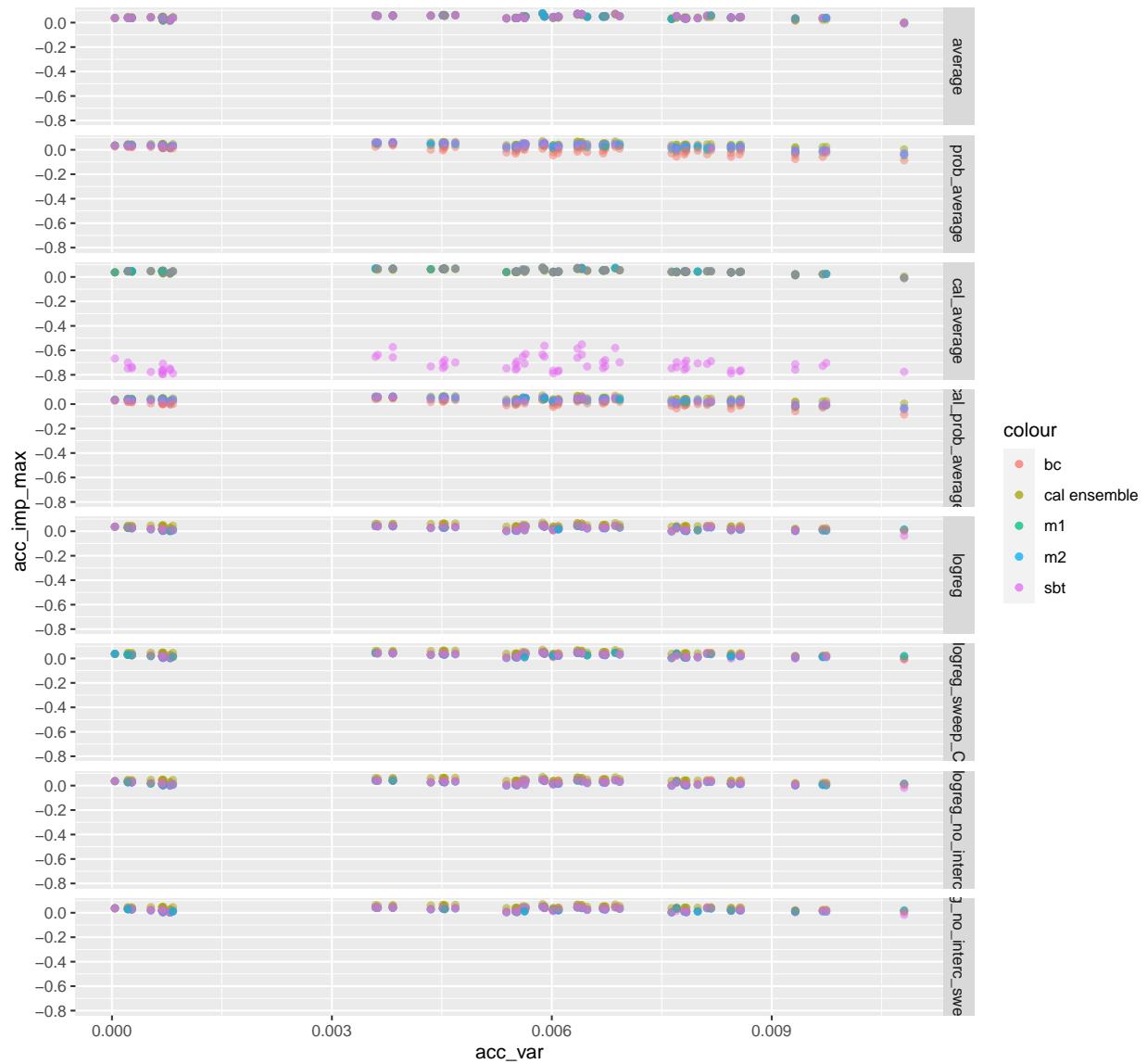
Accuracy improvement of ensemble over
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Ensemble size 4



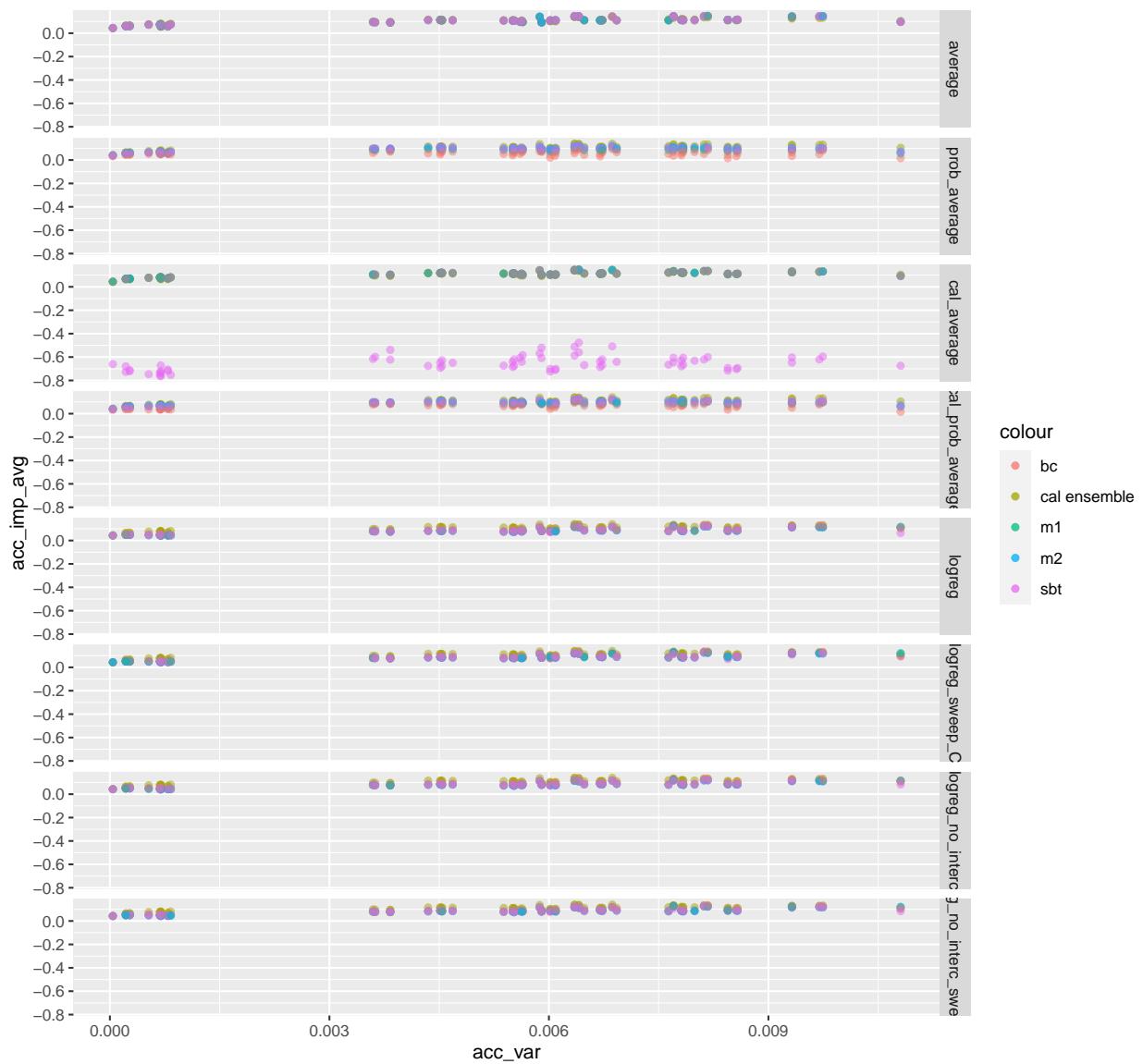
Accuracy improvement of ensemble over
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Ensemble size 4



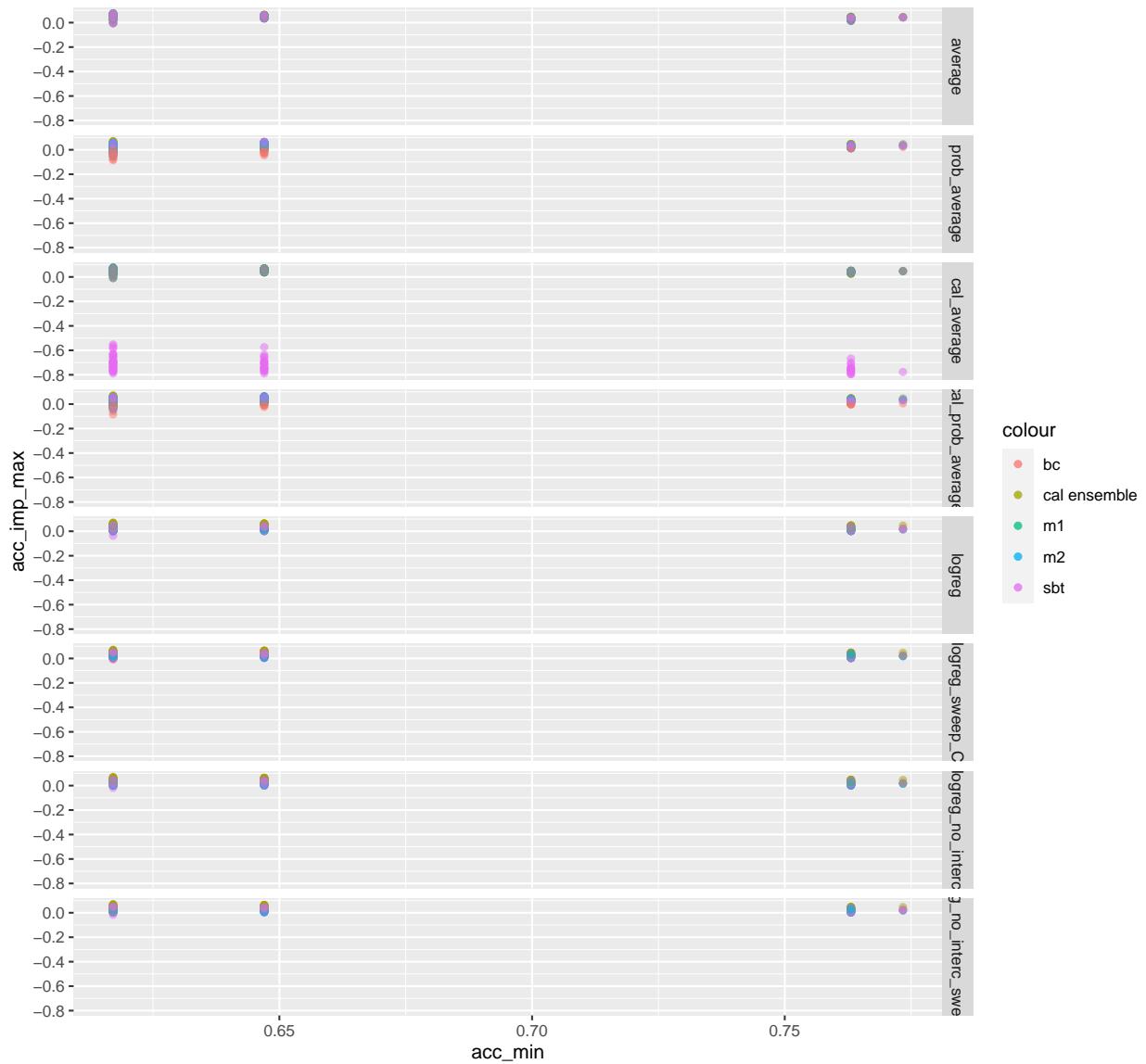
Accuracy improvement of ensemble over
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Ensemble size 4



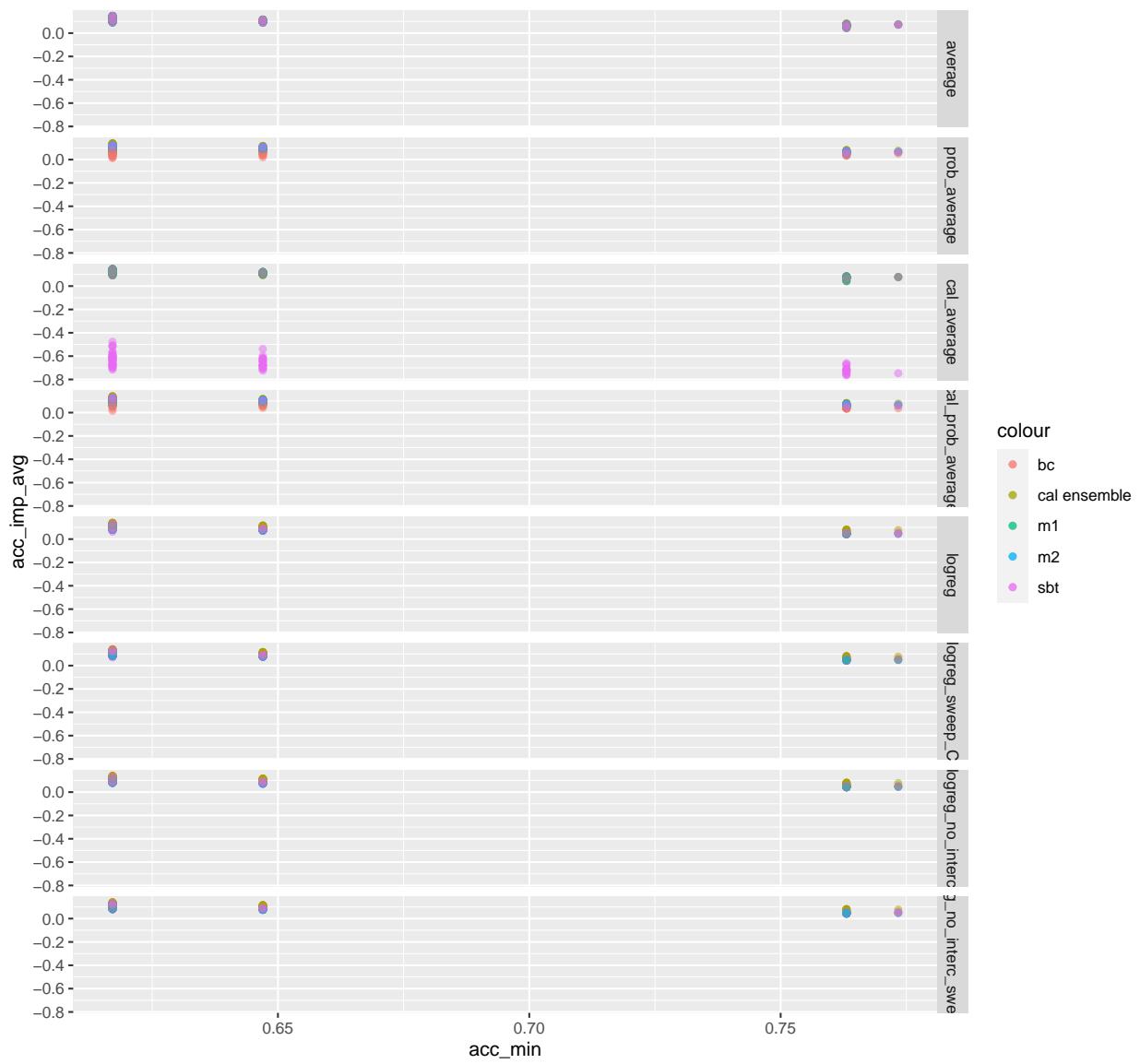
Accuracy improvement of ensemble over
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Ensemble size 4



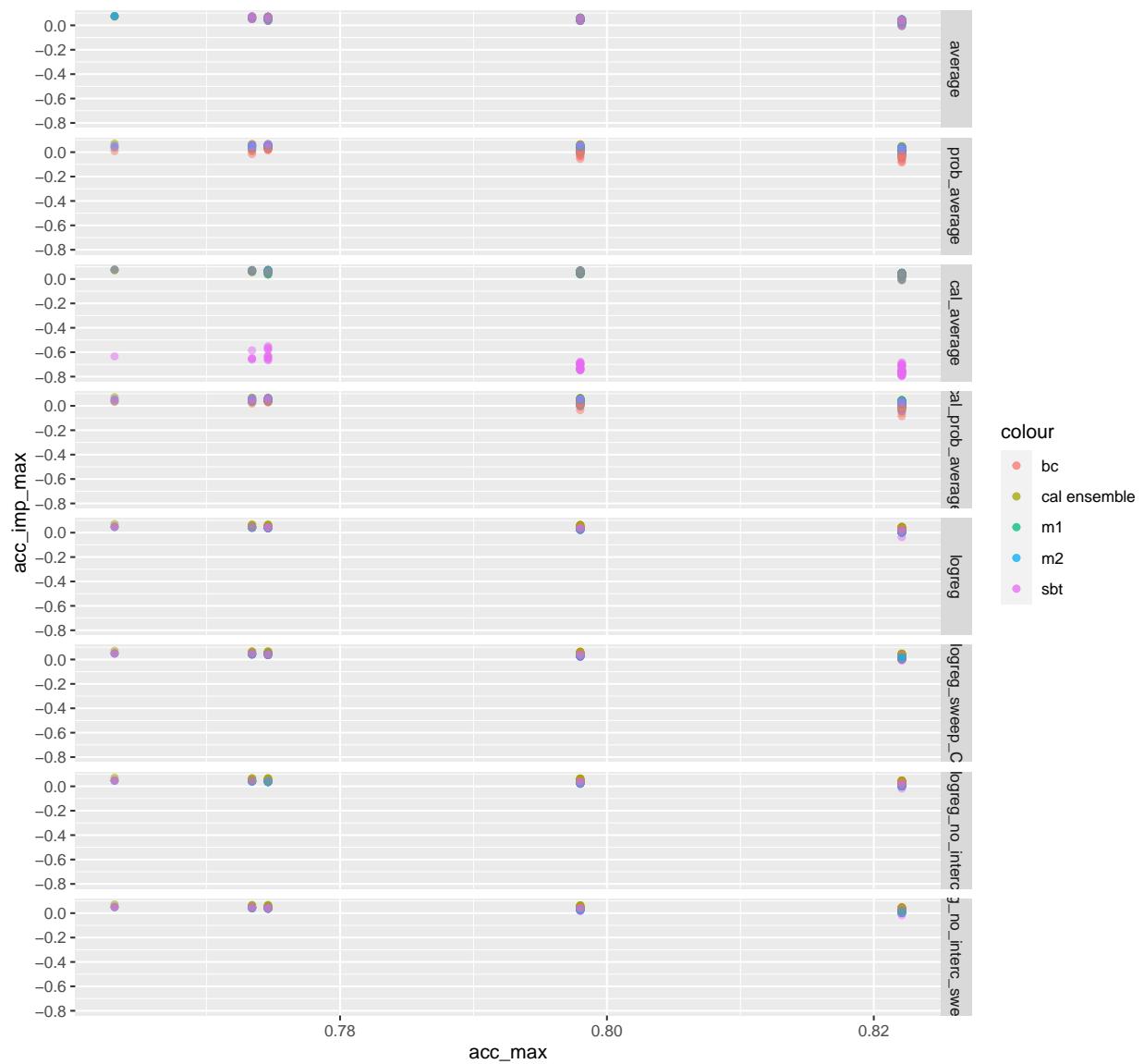
Accuracy improvement of ensemble over
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Ensemble size 4



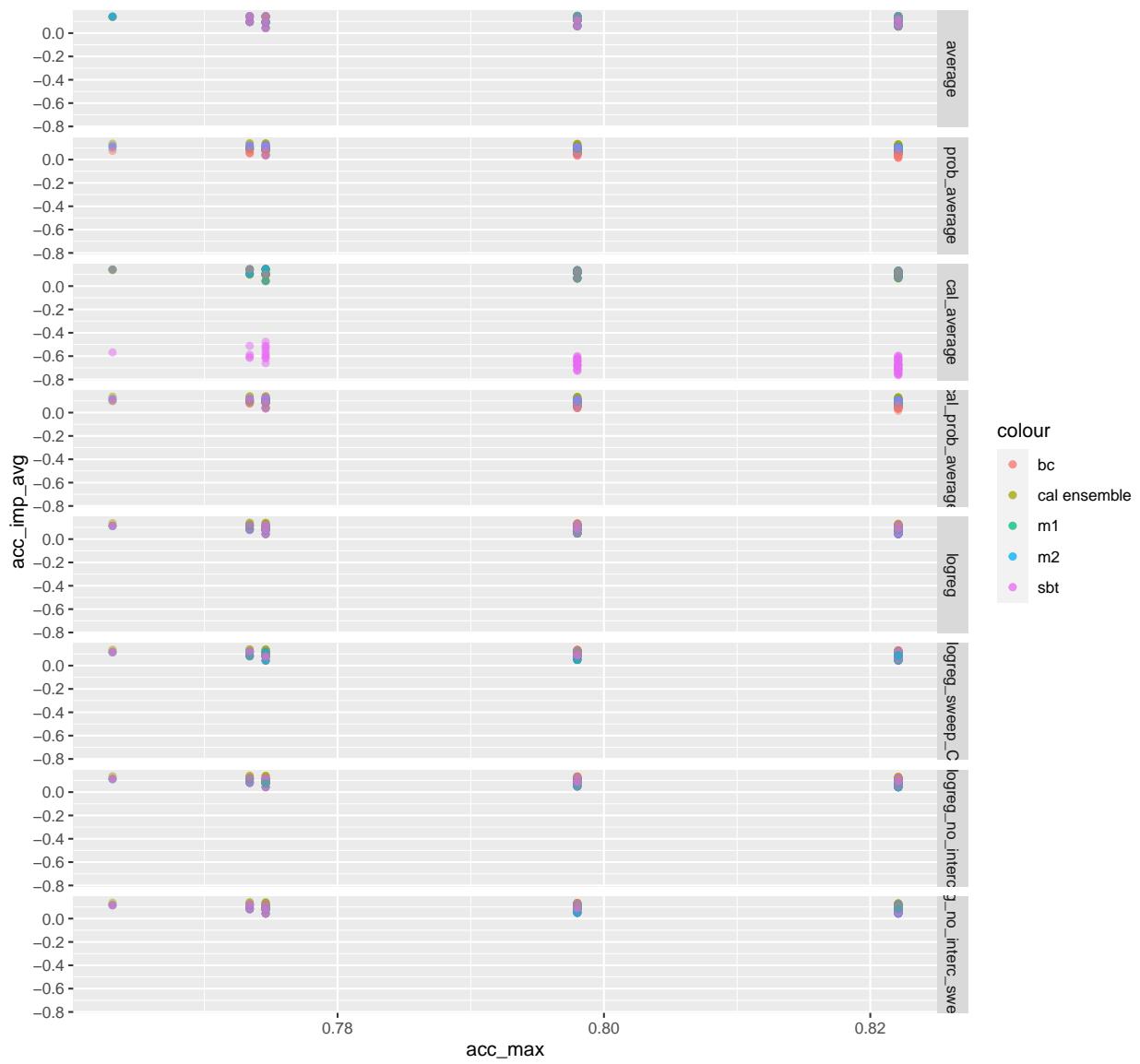
Accuracy improvement of ensemble over
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Ensemble size 4



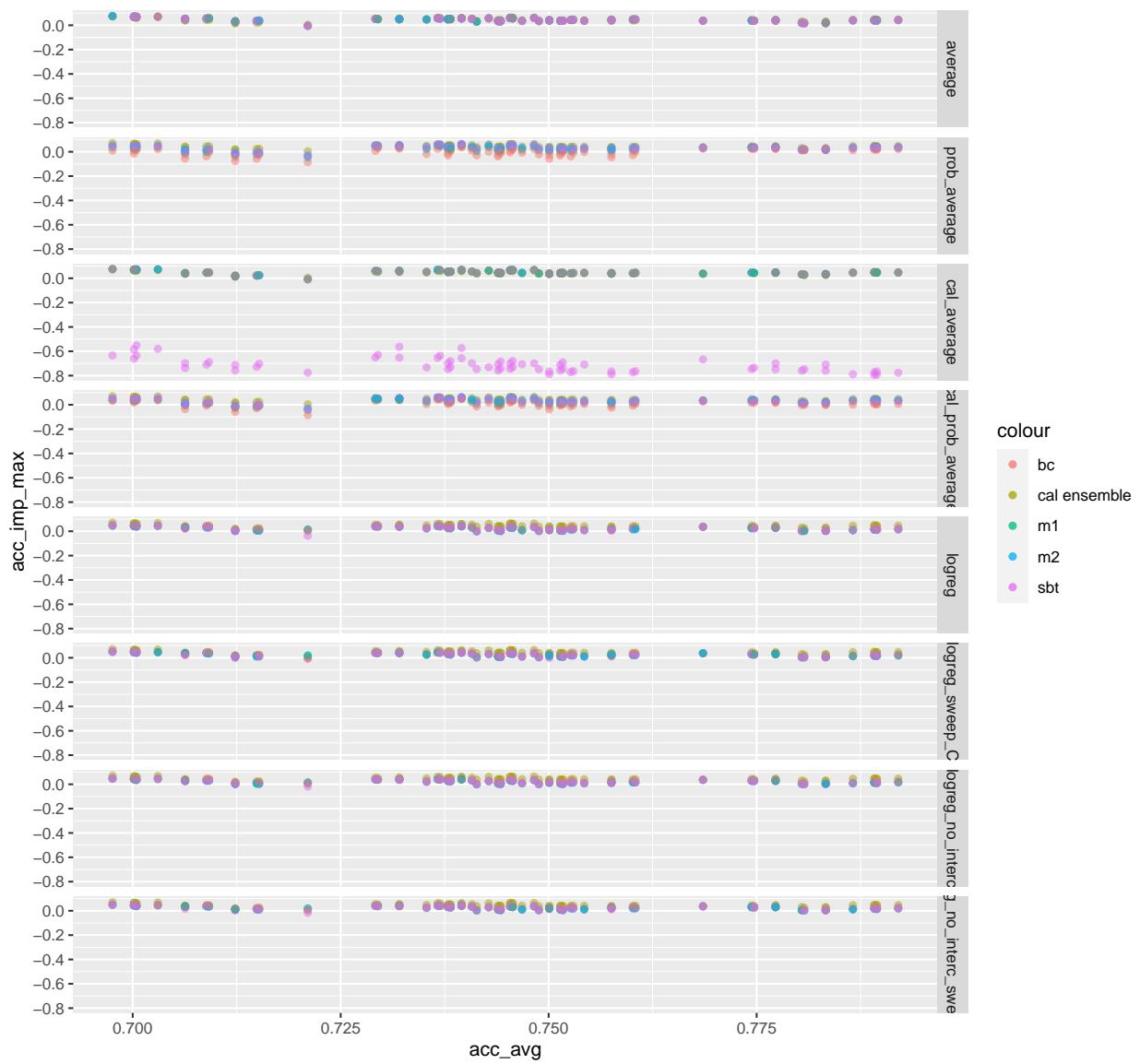
Accuracy improvement of ensemble over
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Ensemble size 4



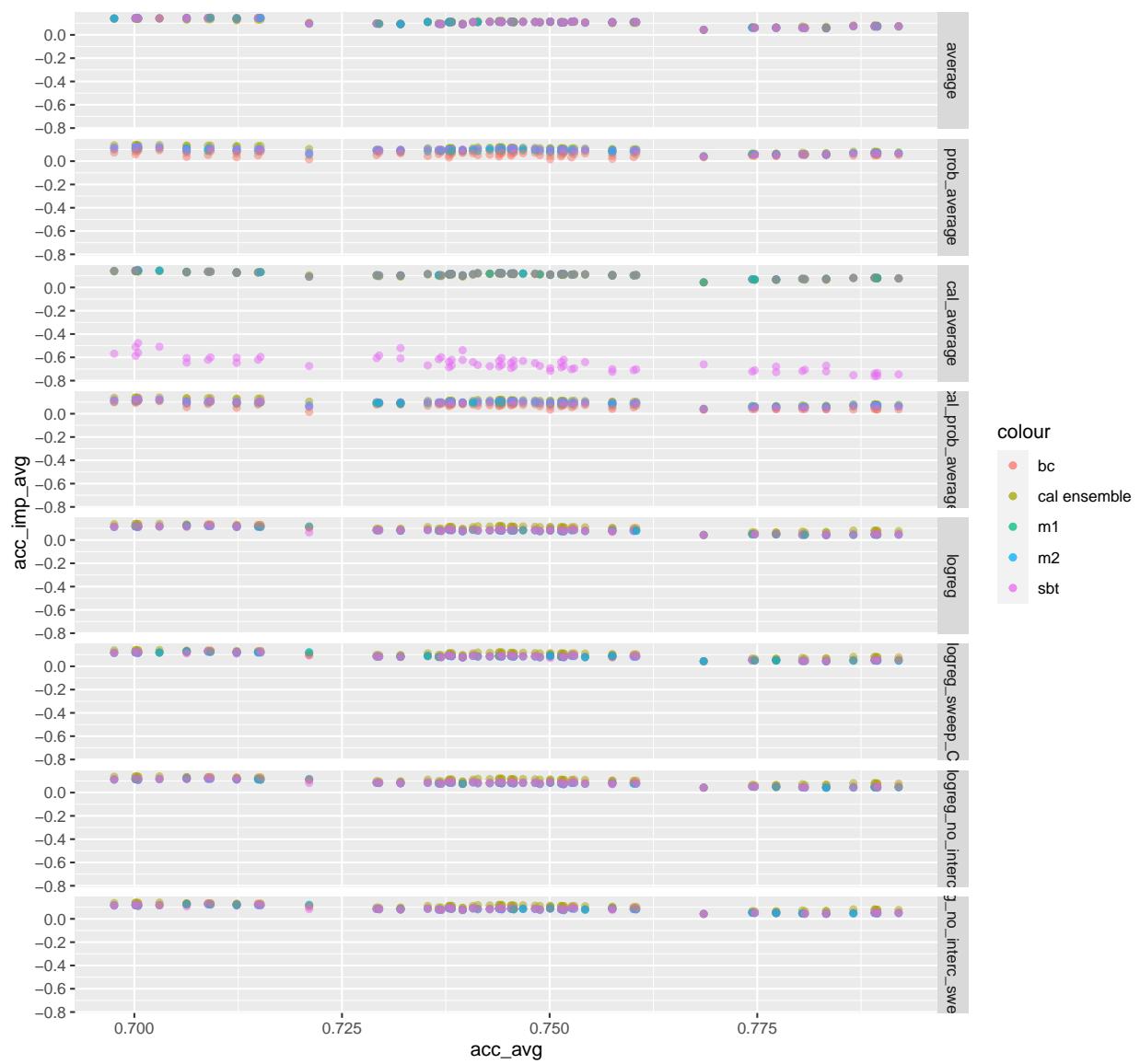
Accuracy improvement of ensemble over
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Ensemble size 4



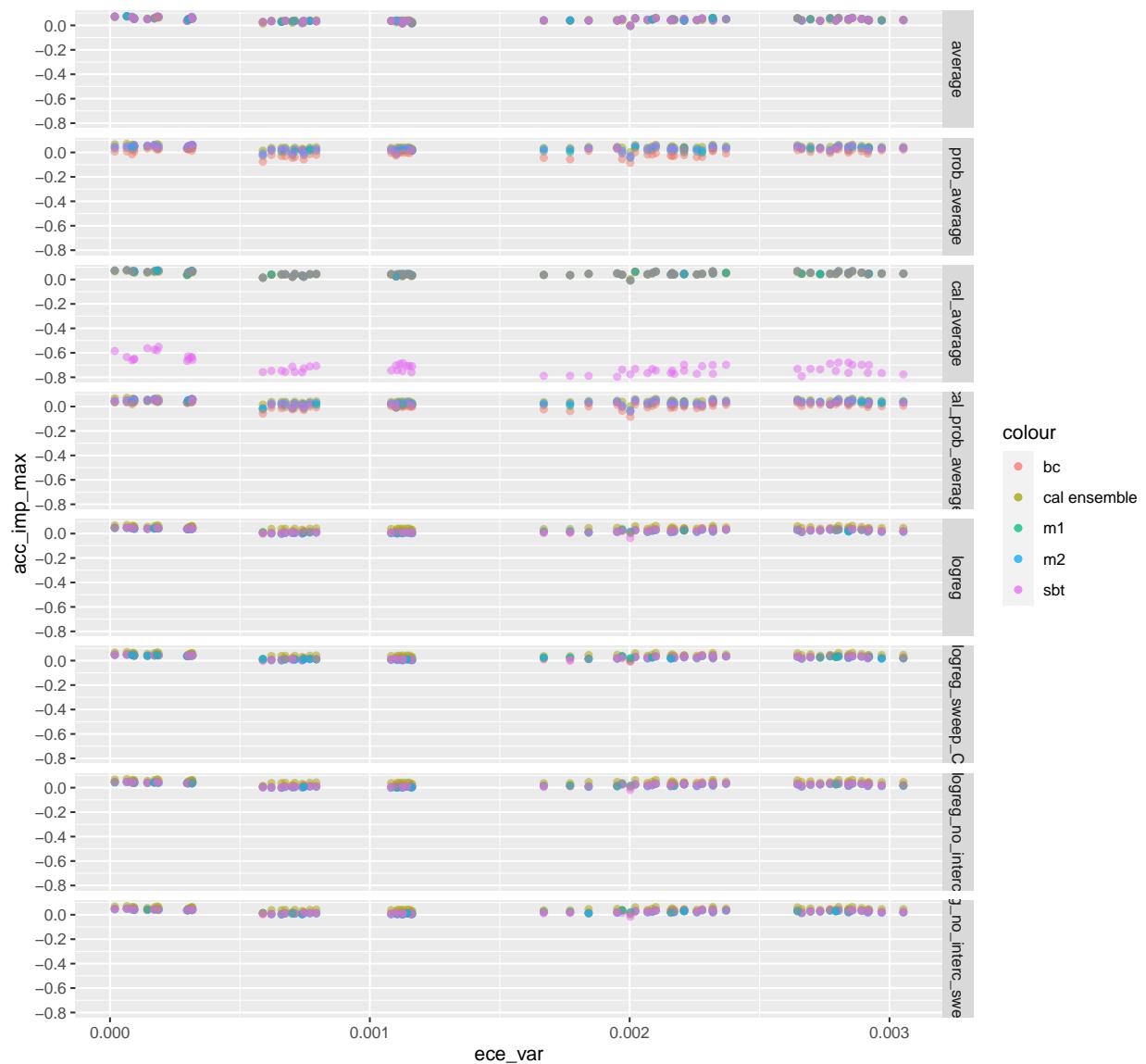
Accuracy improvement of ensemble over
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Ensemble size 4



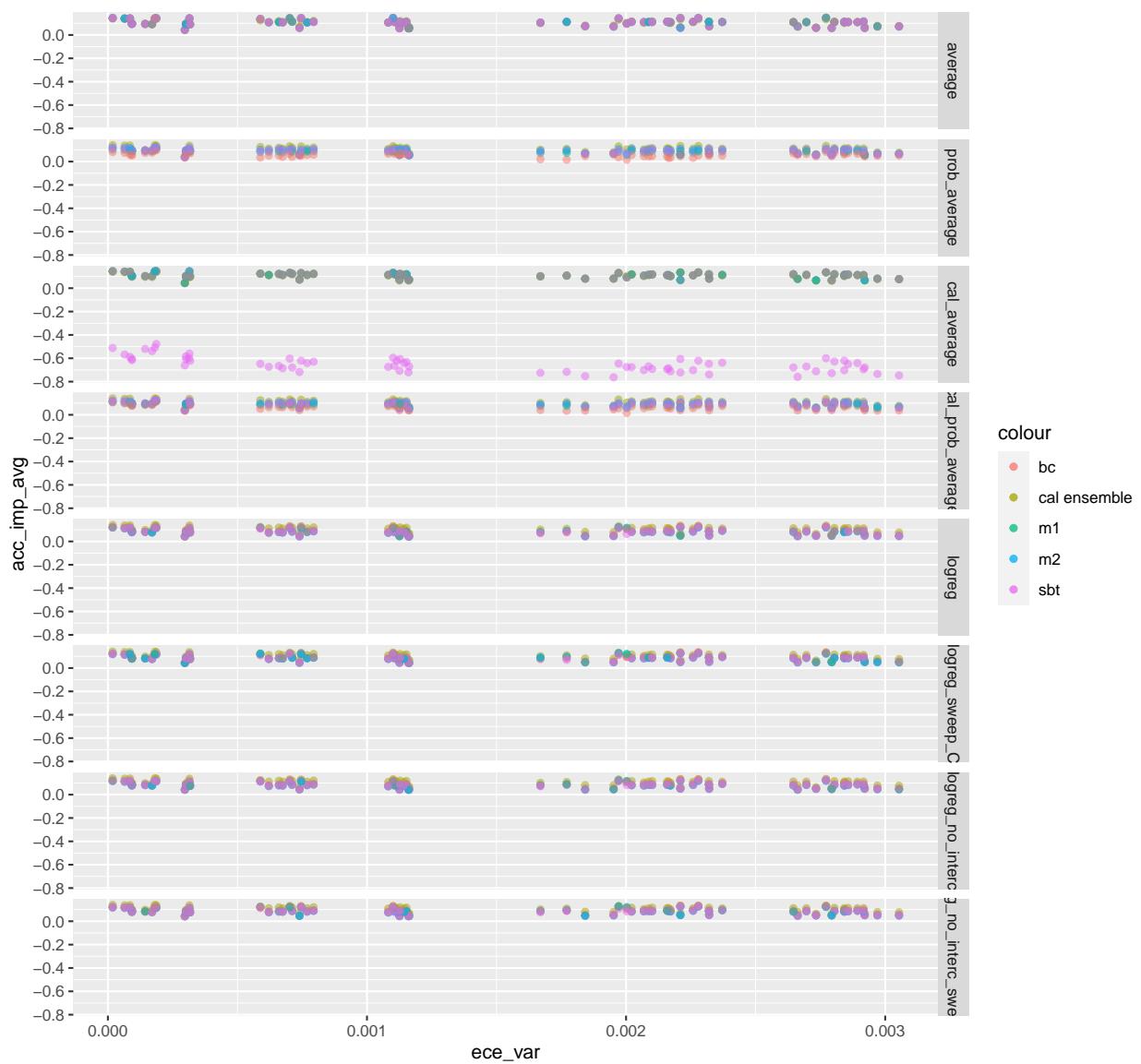
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Ensemble size 4



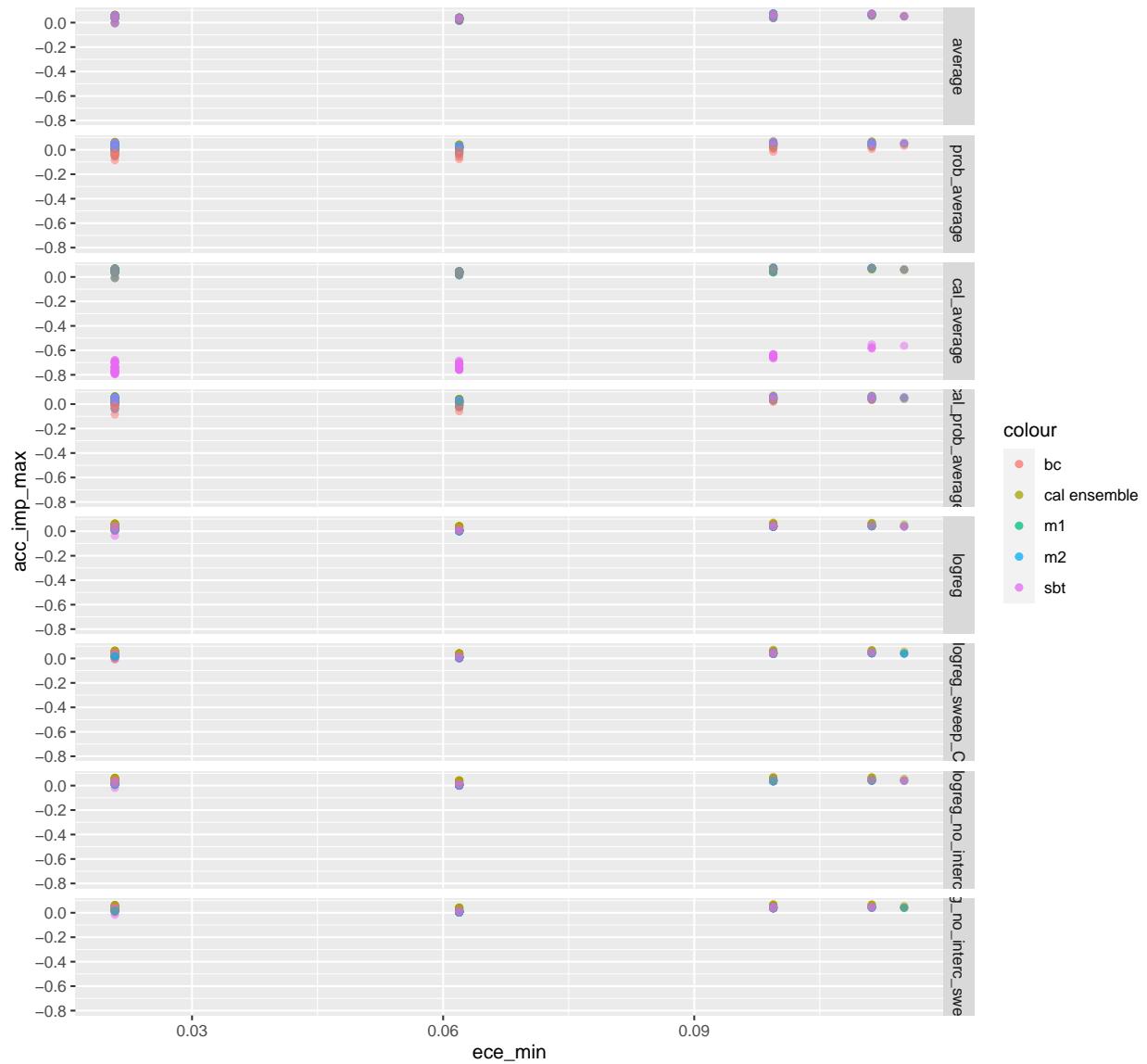
Accuracy improvement of ensemble over
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Ensemble size 4



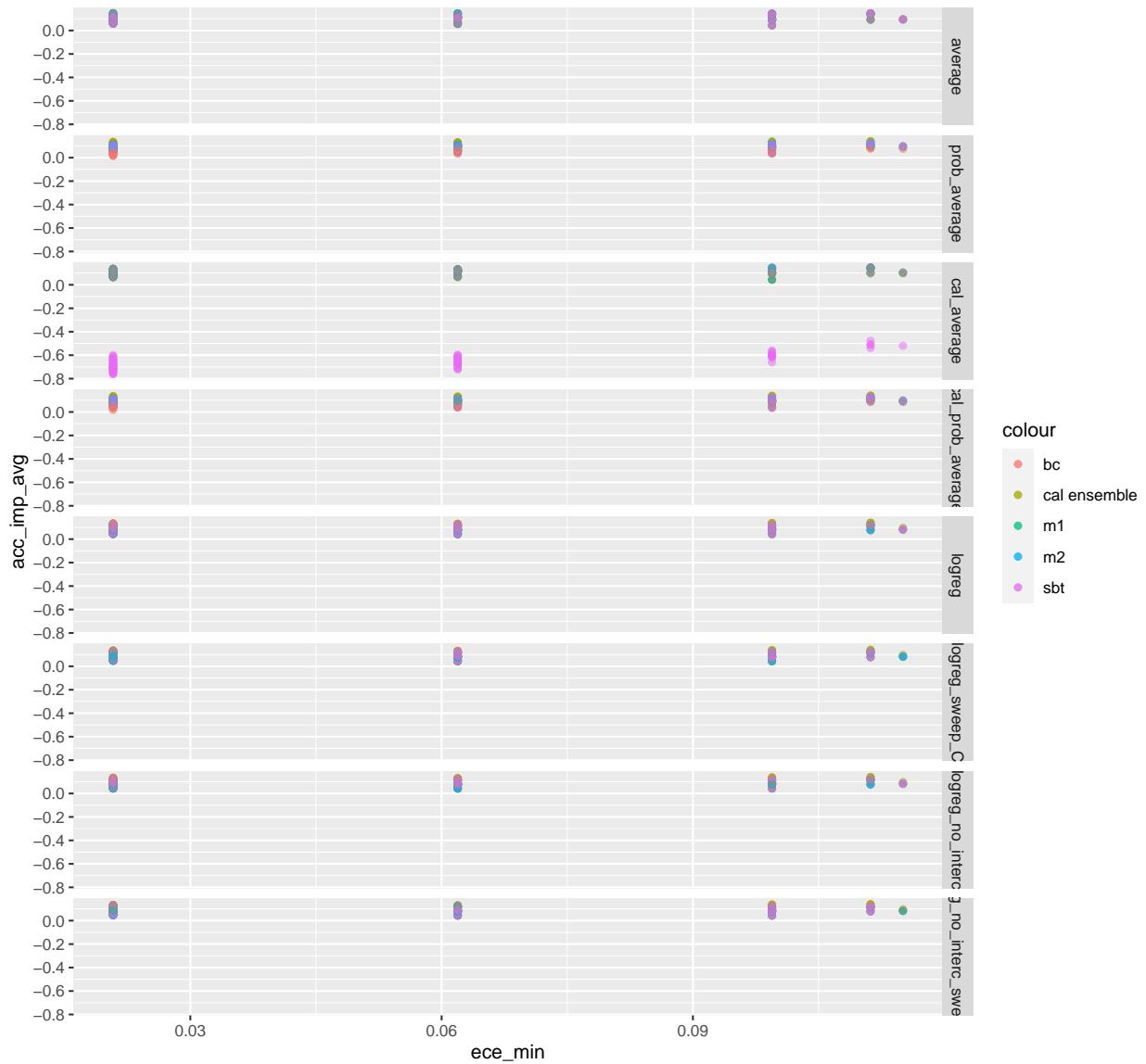
Accuracy improvement of ensemble over
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Ensemble size 4



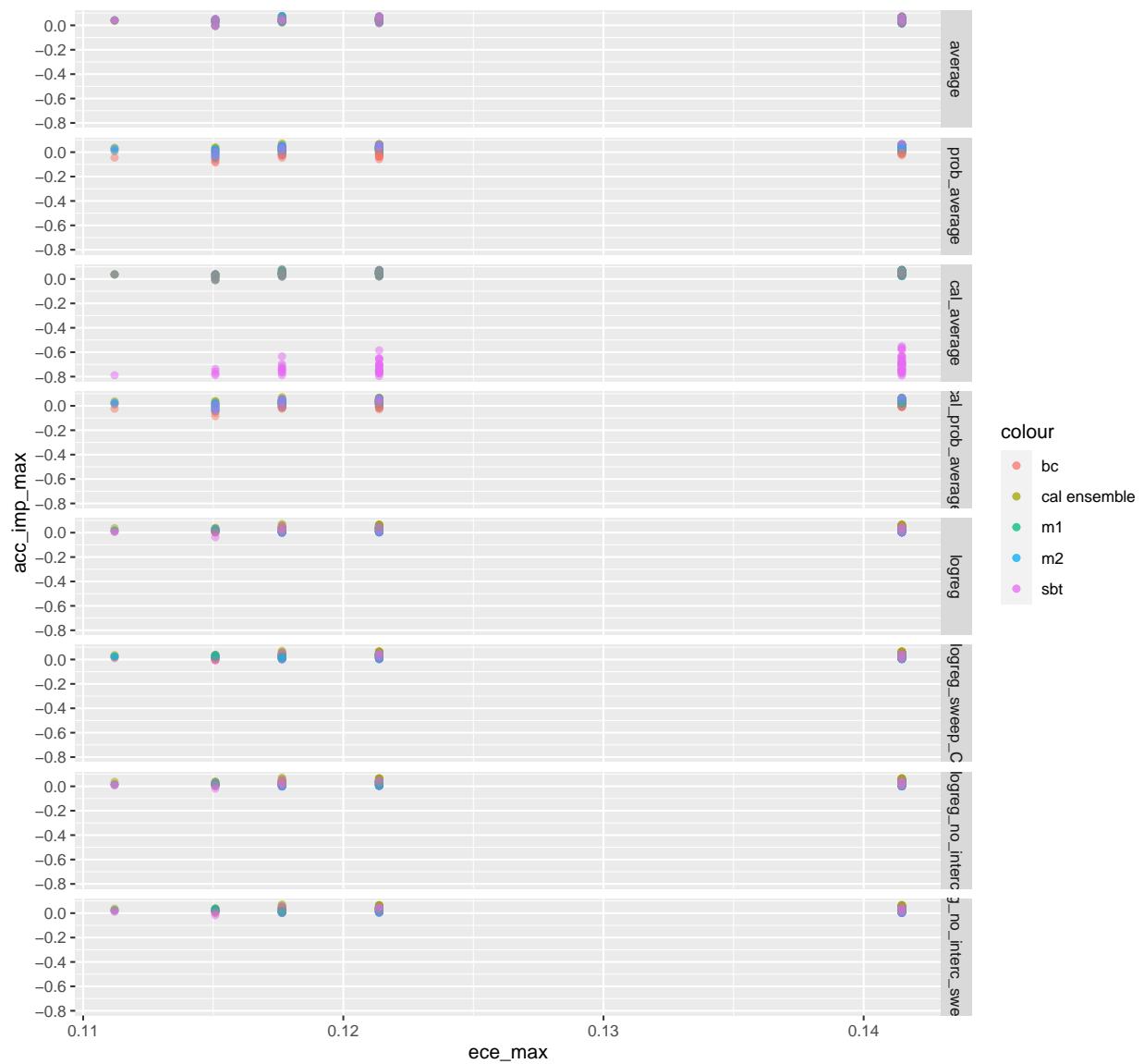
Accuracy improvement of ensemble over
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Ensemble size 4



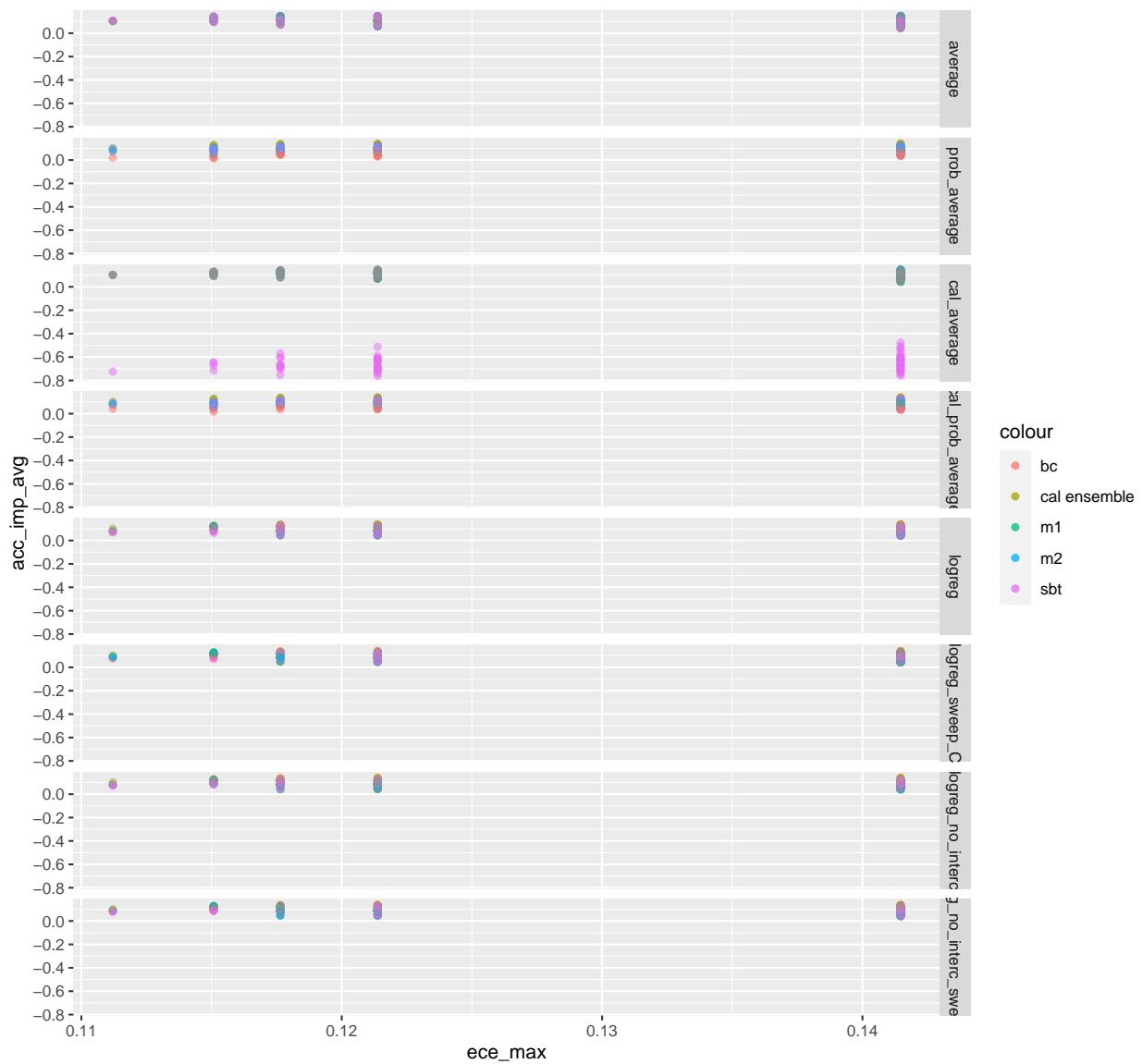
Accuracy improvement of ensemble over
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Ensemble size 4



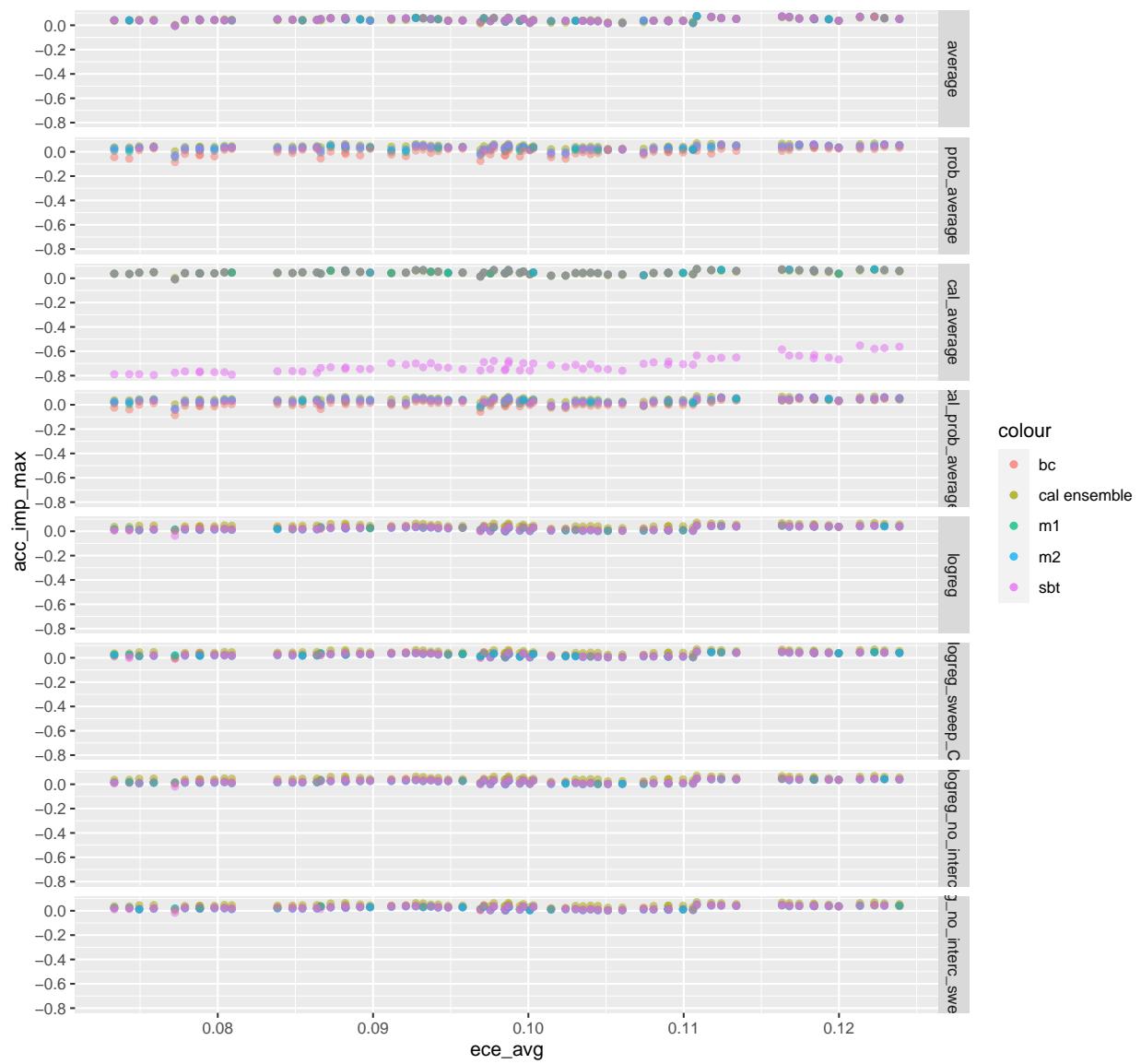
Accuracy improvement of ensemble over
the best of networks vs ece_max.
Ensemble size 4



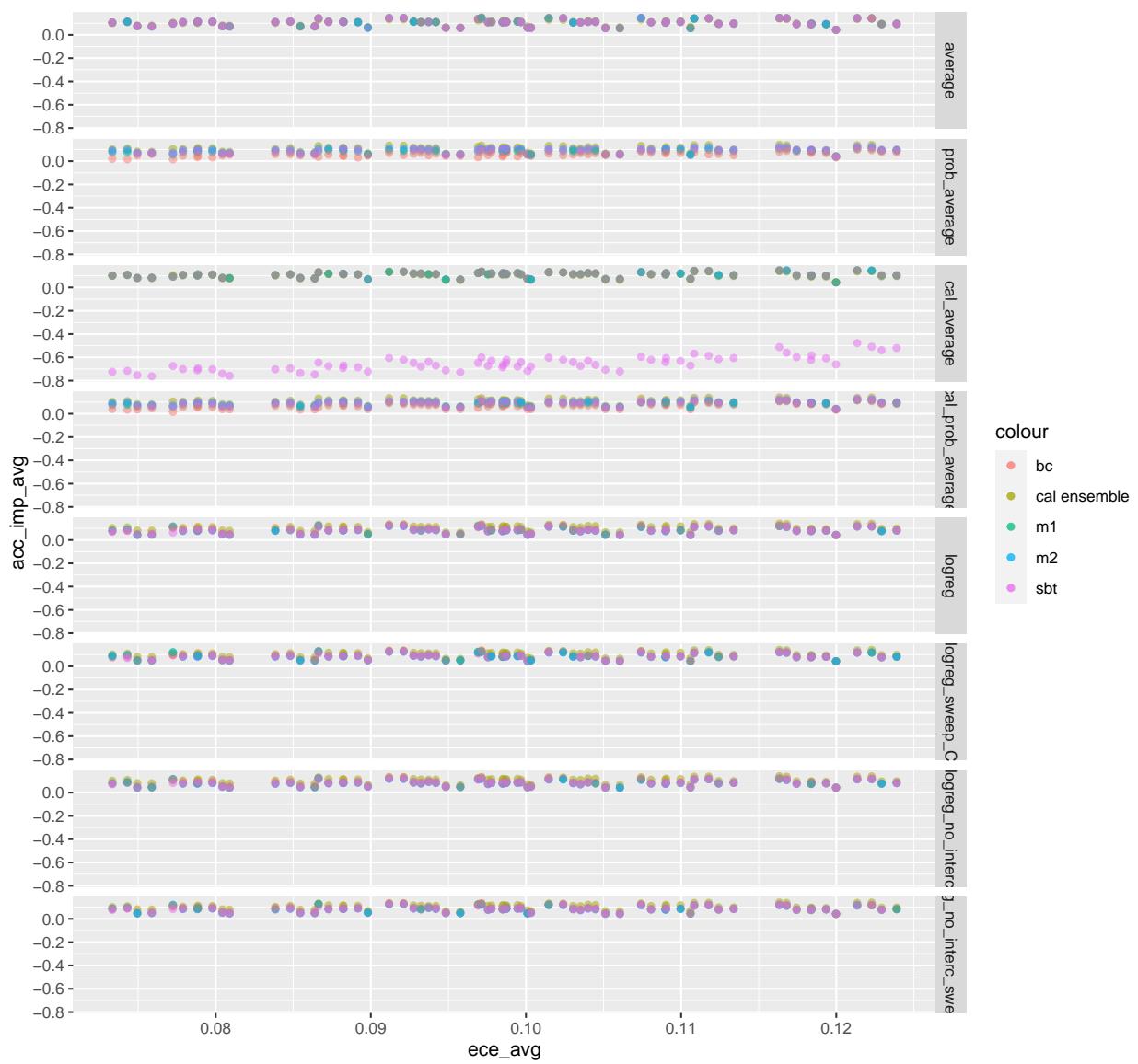
Accuracy improvement of ensemble over
the average of networks vs ece_max.
Ensemble size 4



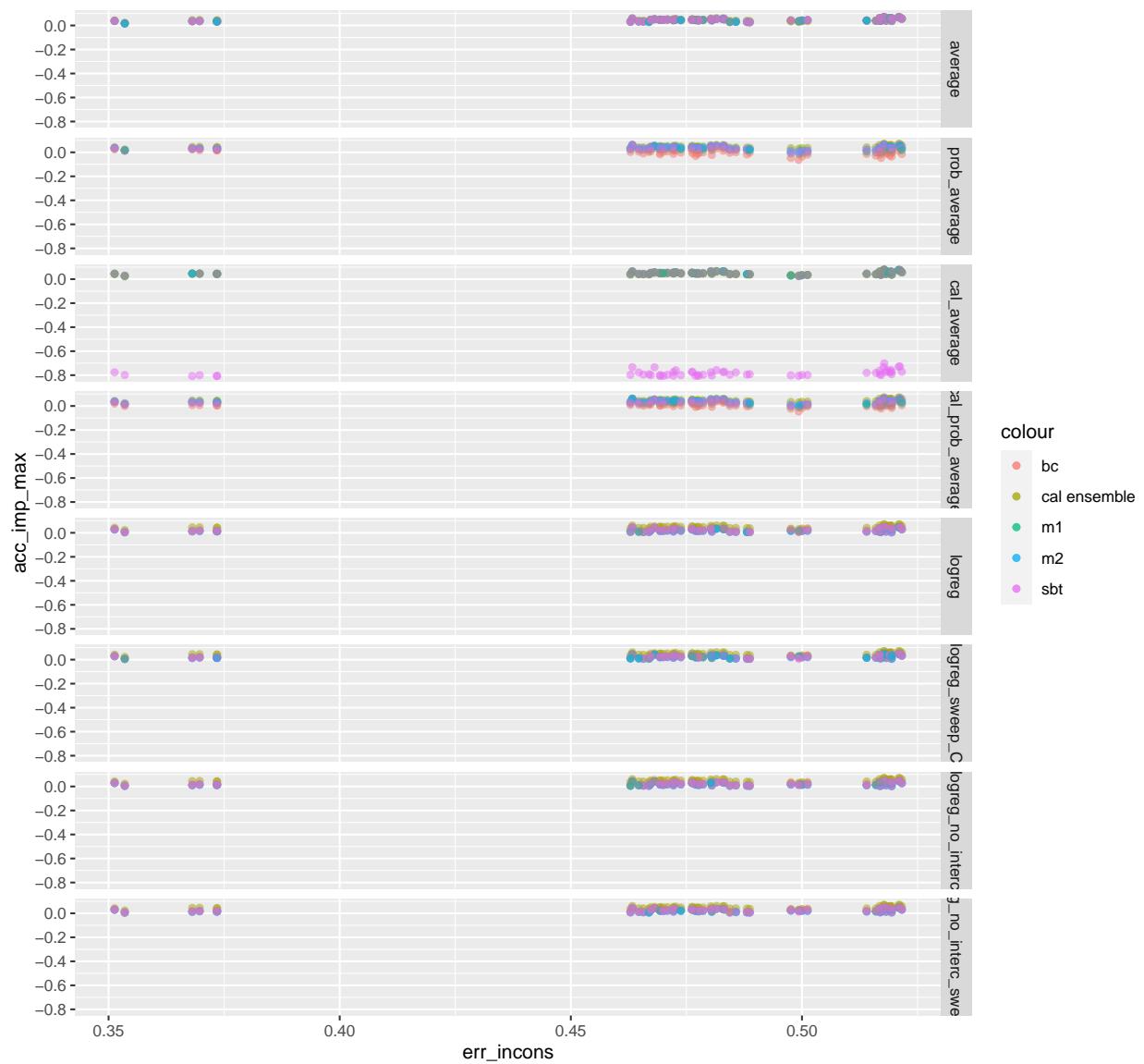
Accuracy improvement of ensemble over
the best of networks vs ece_avg.
Ensemble size 4



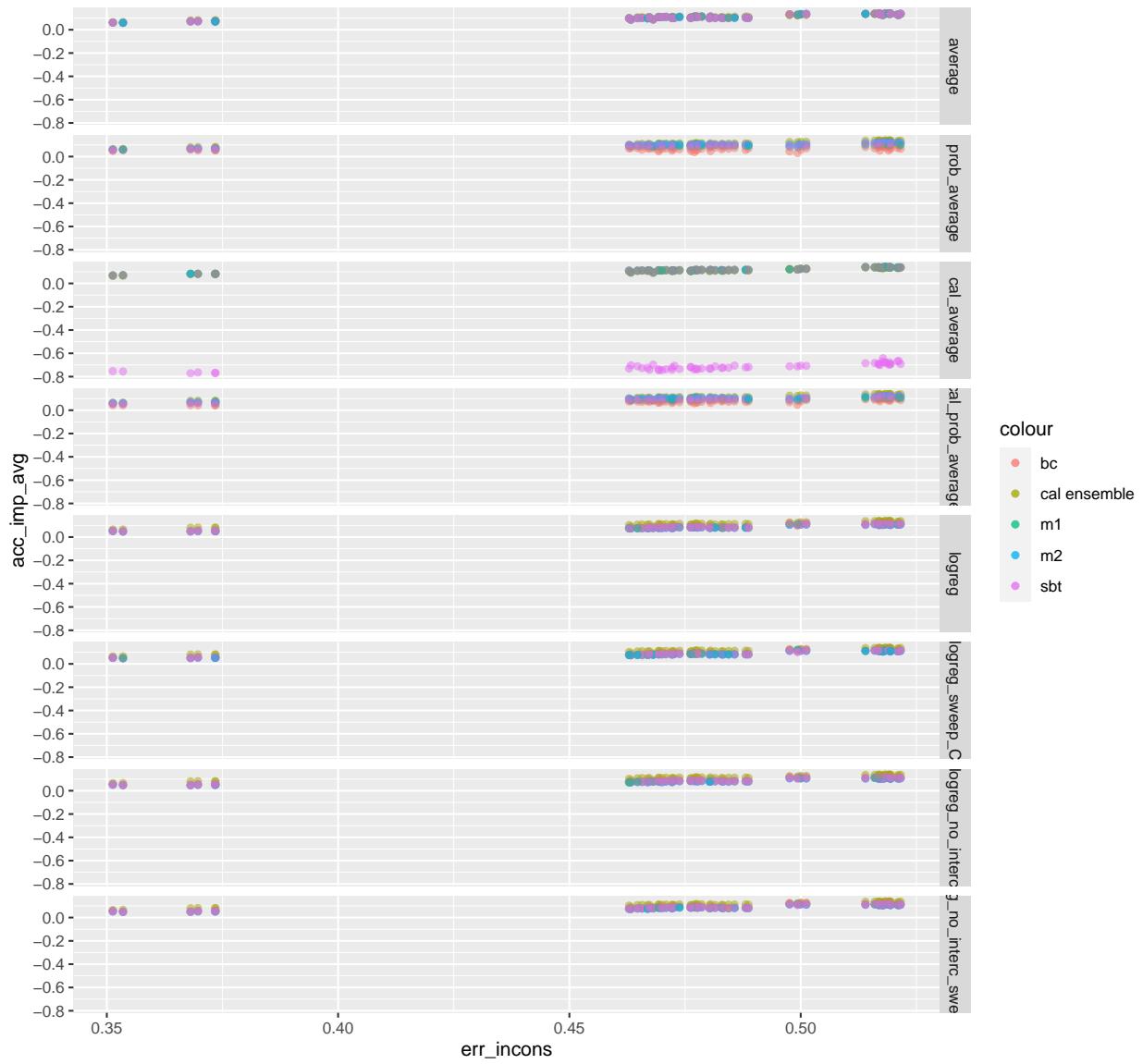
Accuracy improvement of ensemble over
the average of networks vs ece_avg.
Ensemble size 4



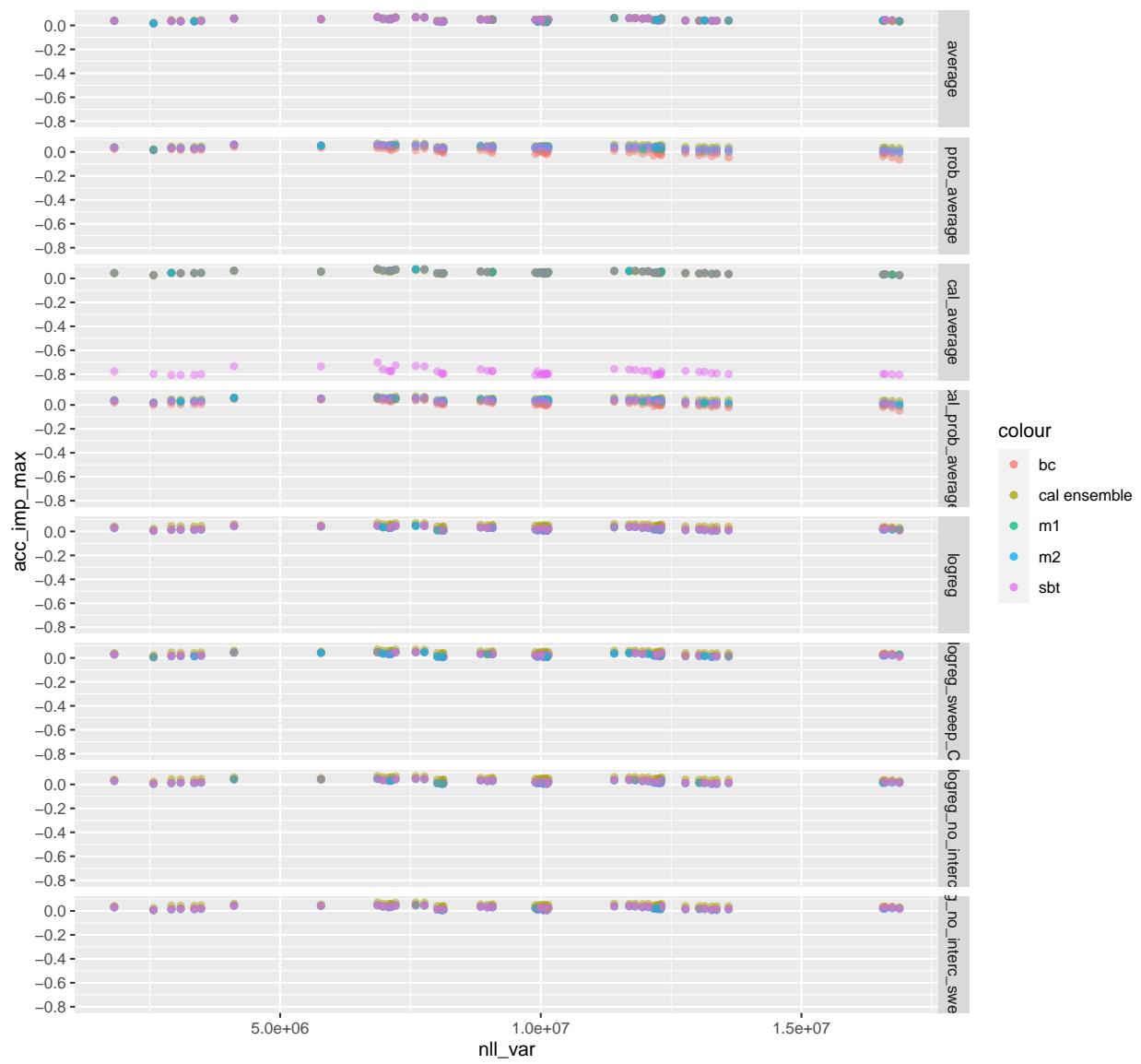
Accuracy improvement of ensemble over
the best of networks vs err_incons.
Ensemble size 5



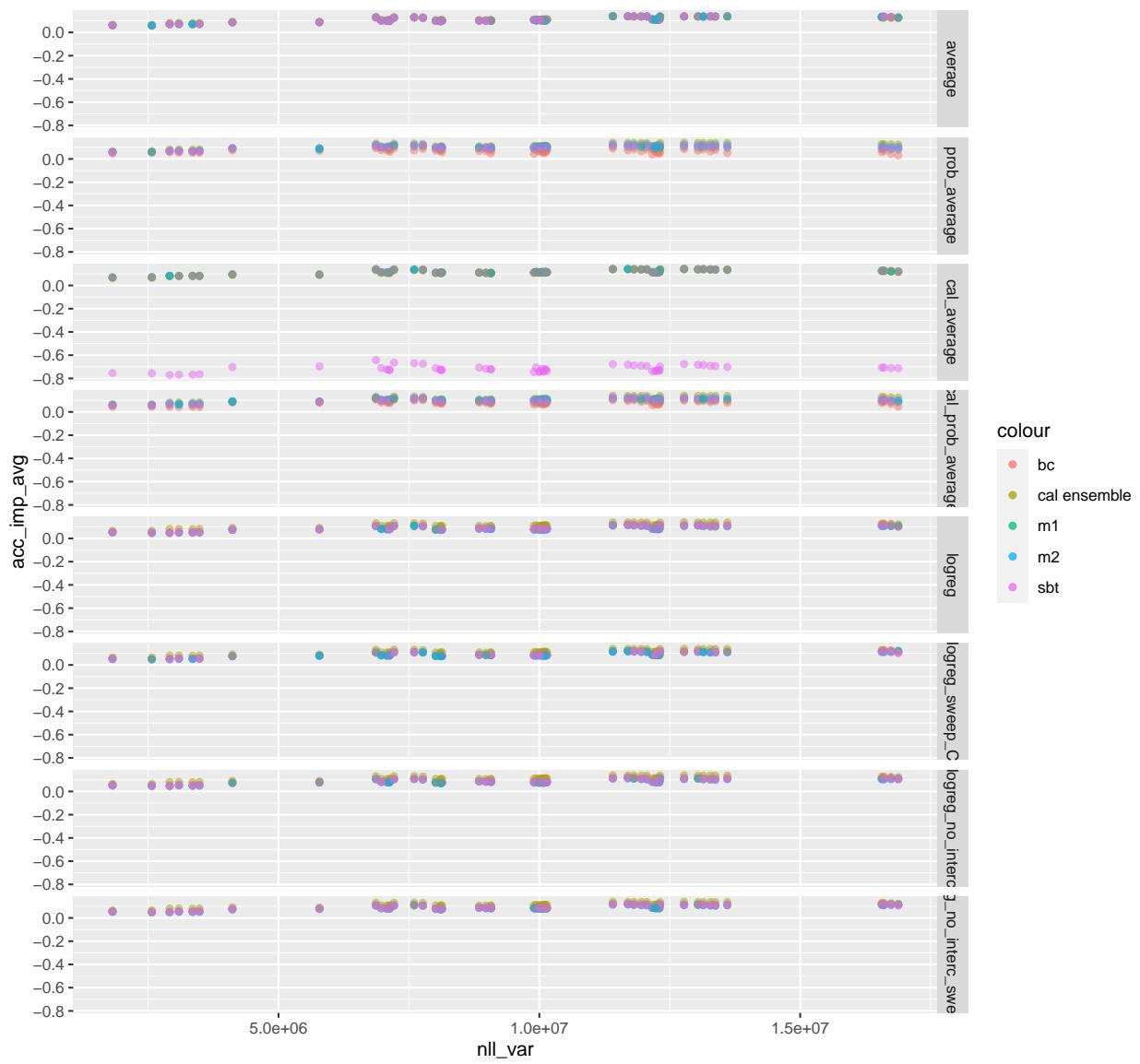
Accuracy improvement of ensemble over
the average of networks vs err_incons.
Ensemble size 5



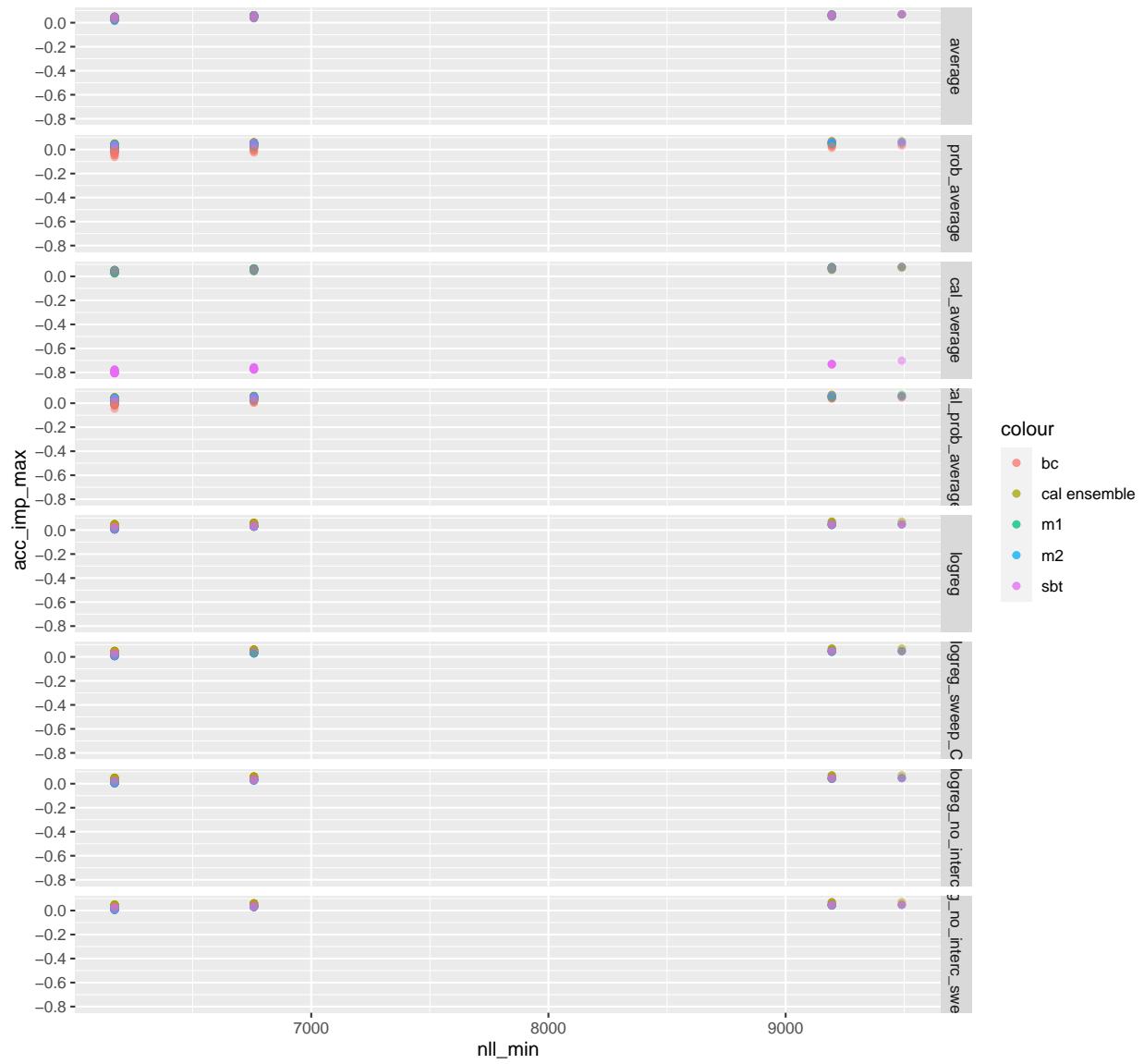
Accuracy improvement of ensemble over
the best of networks vs nll_var.
Ensemble size 5



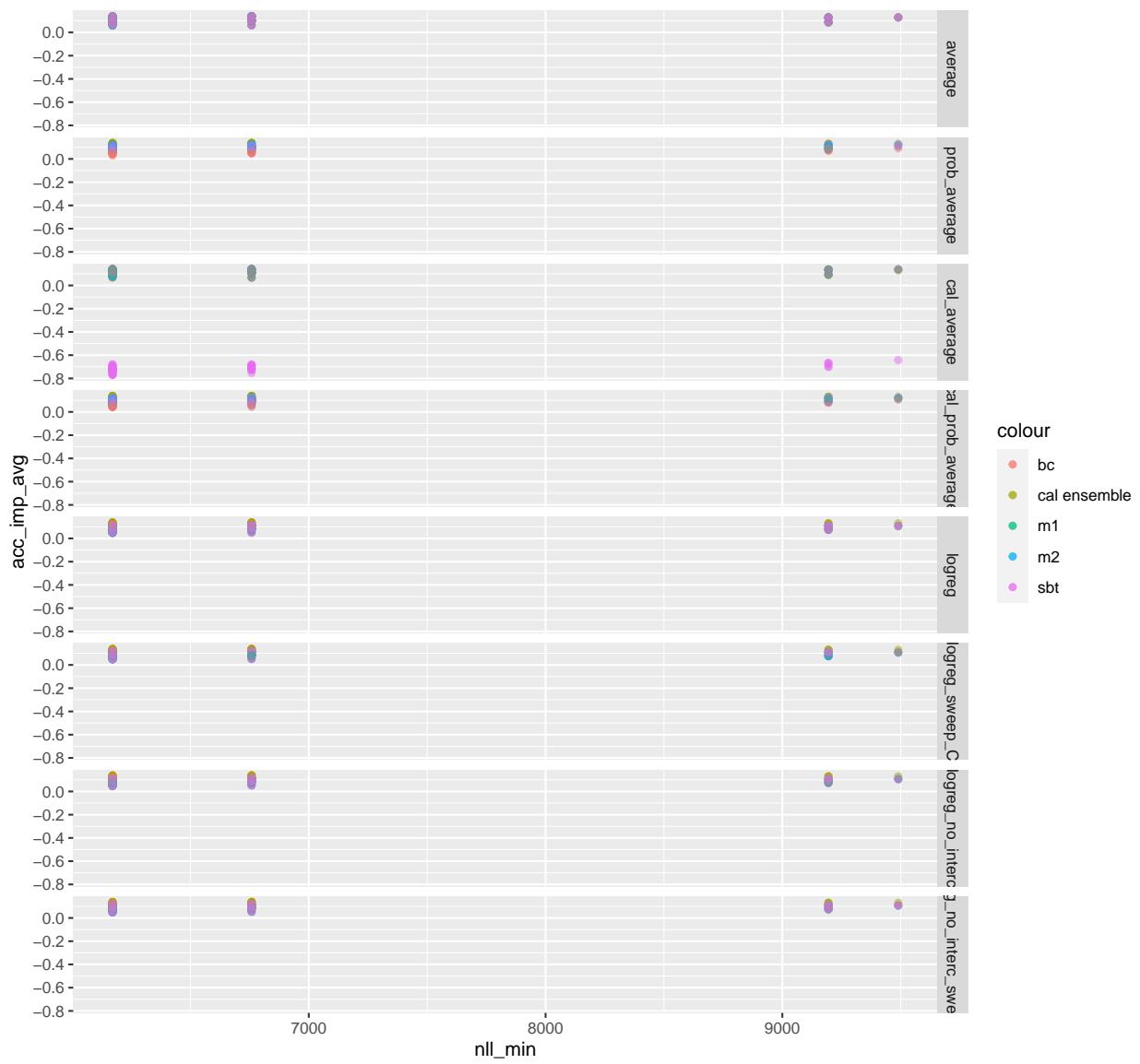
Accuracy improvement of ensemble over
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Ensemble size 5



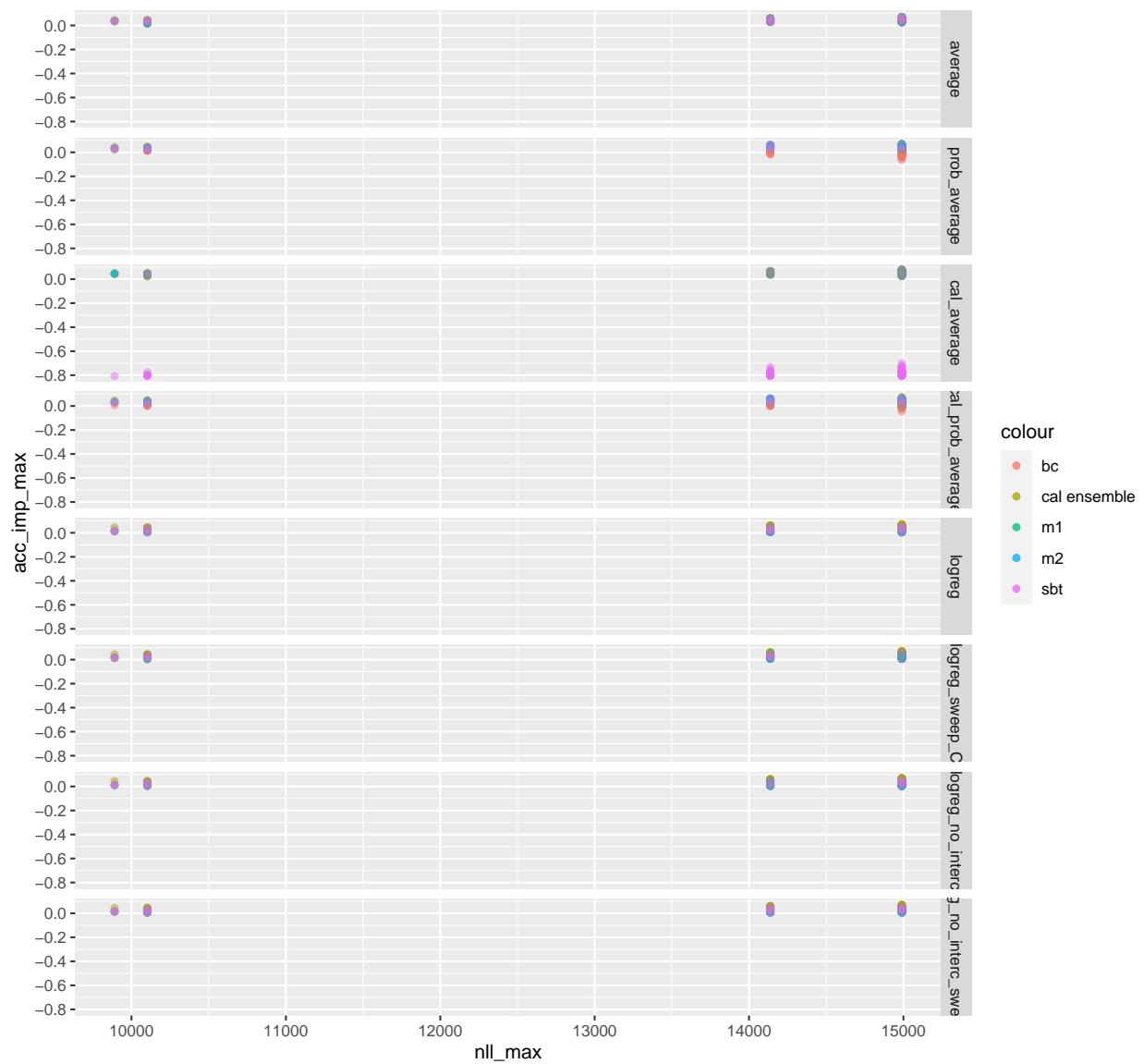
Accuracy improvement of ensemble over
the best of networks vs nll_min.
Ensemble size 5



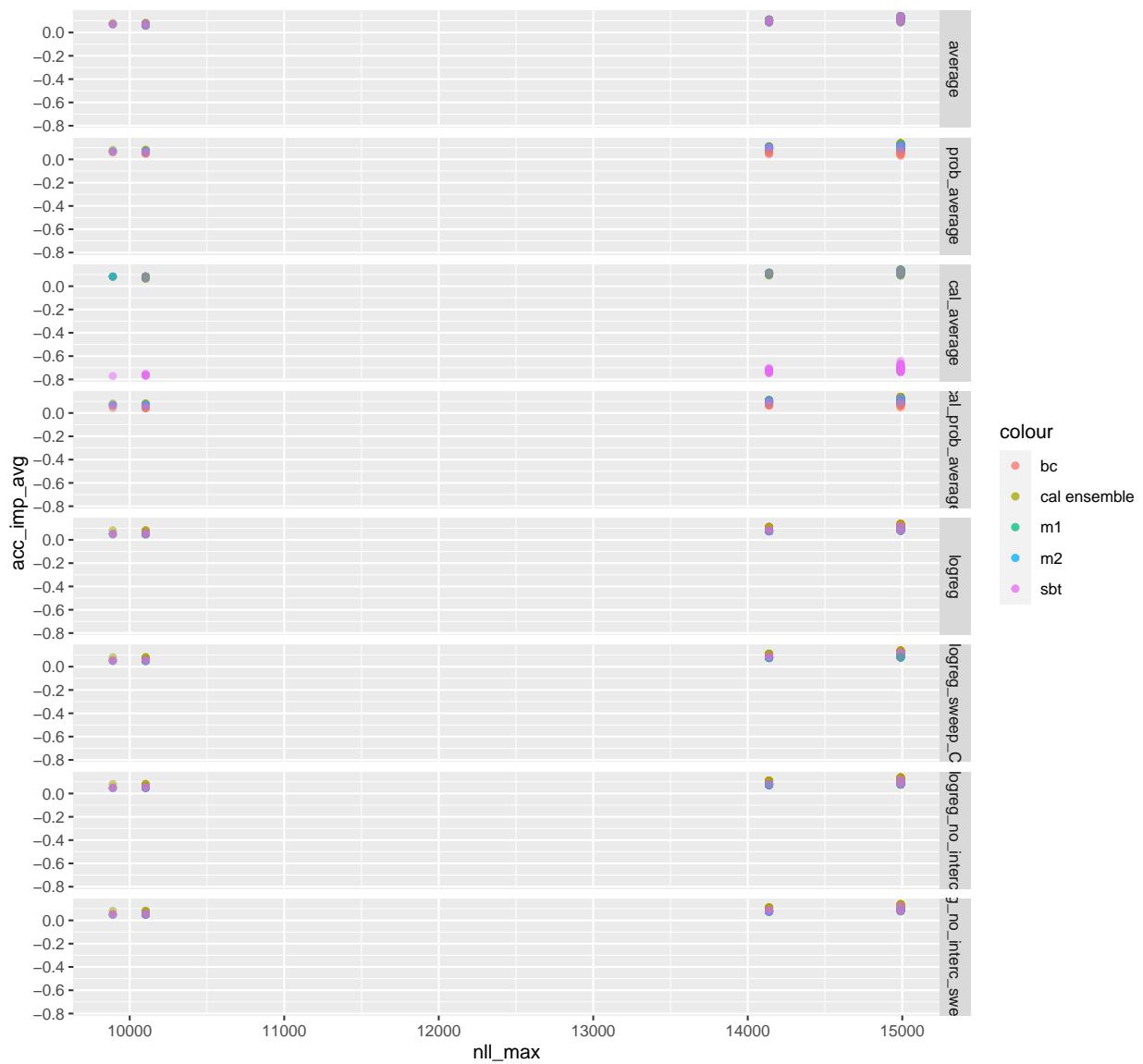
Accuracy improvement of ensemble over
the average of networks vs nll_min.
Ensemble size 5



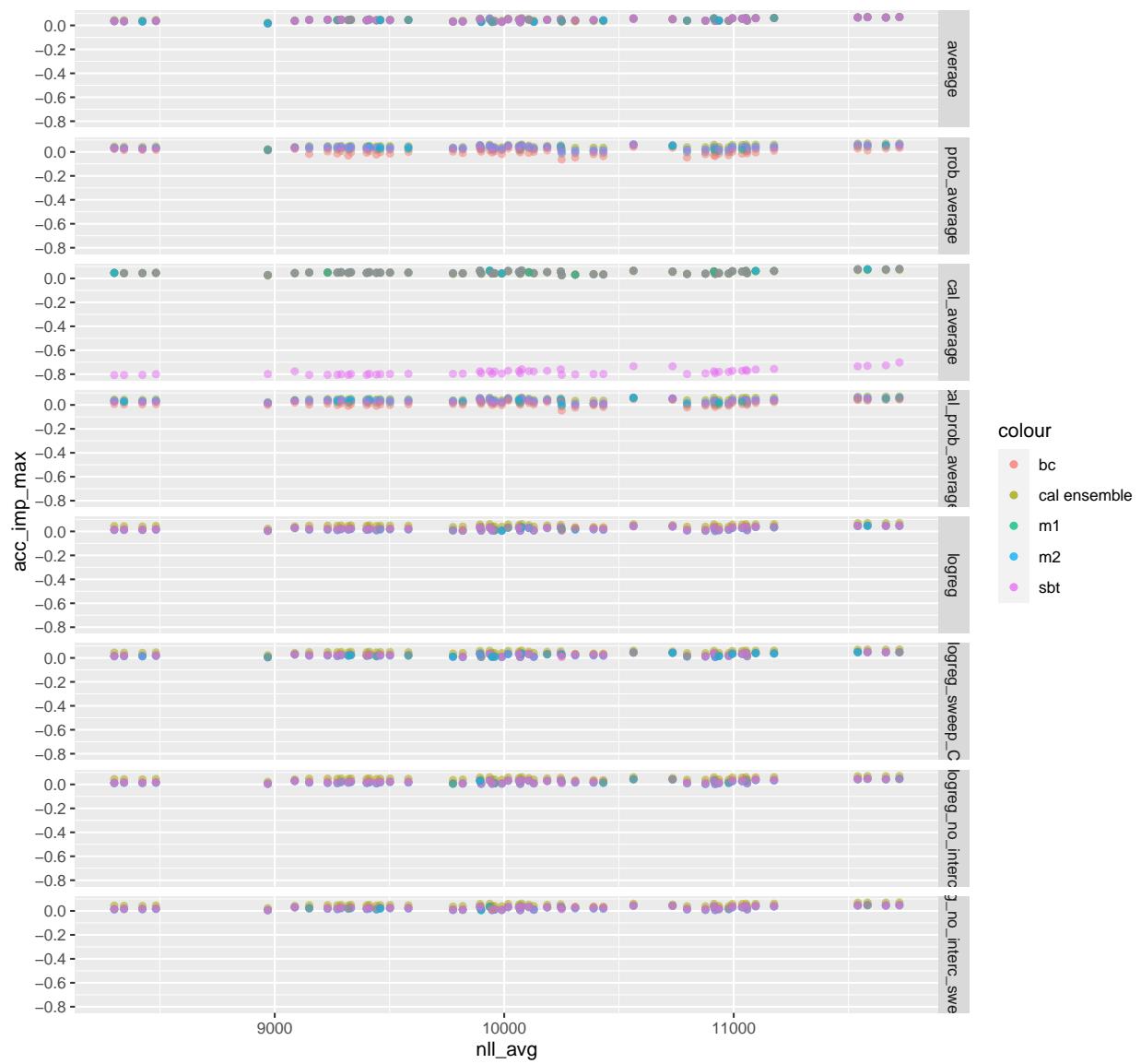
Accuracy improvement of ensemble over
the best of networks vs nll_max.
Ensemble size 5



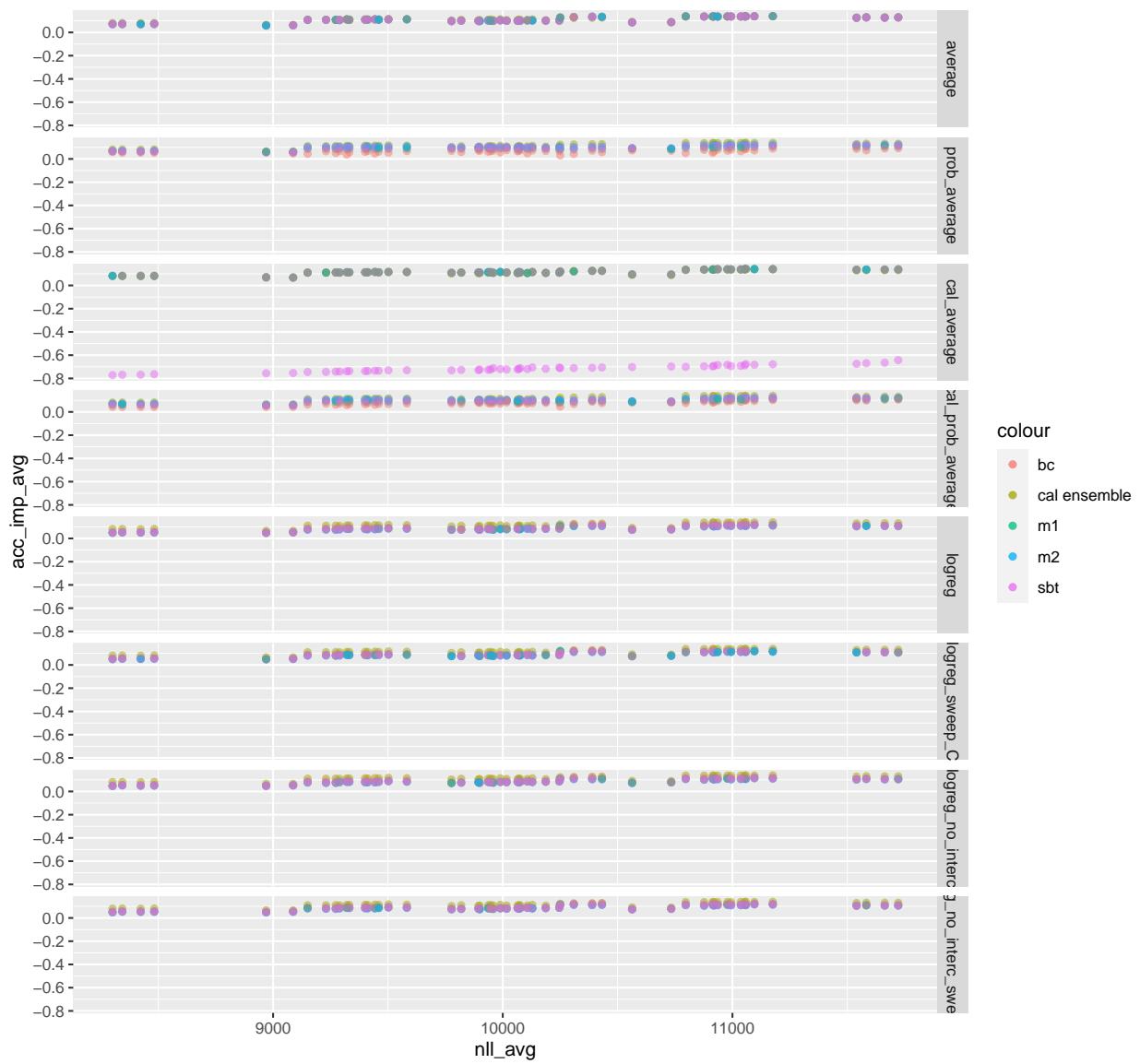
Accuracy improvement of ensemble over
the average of networks vs nll_max.
Ensemble size 5



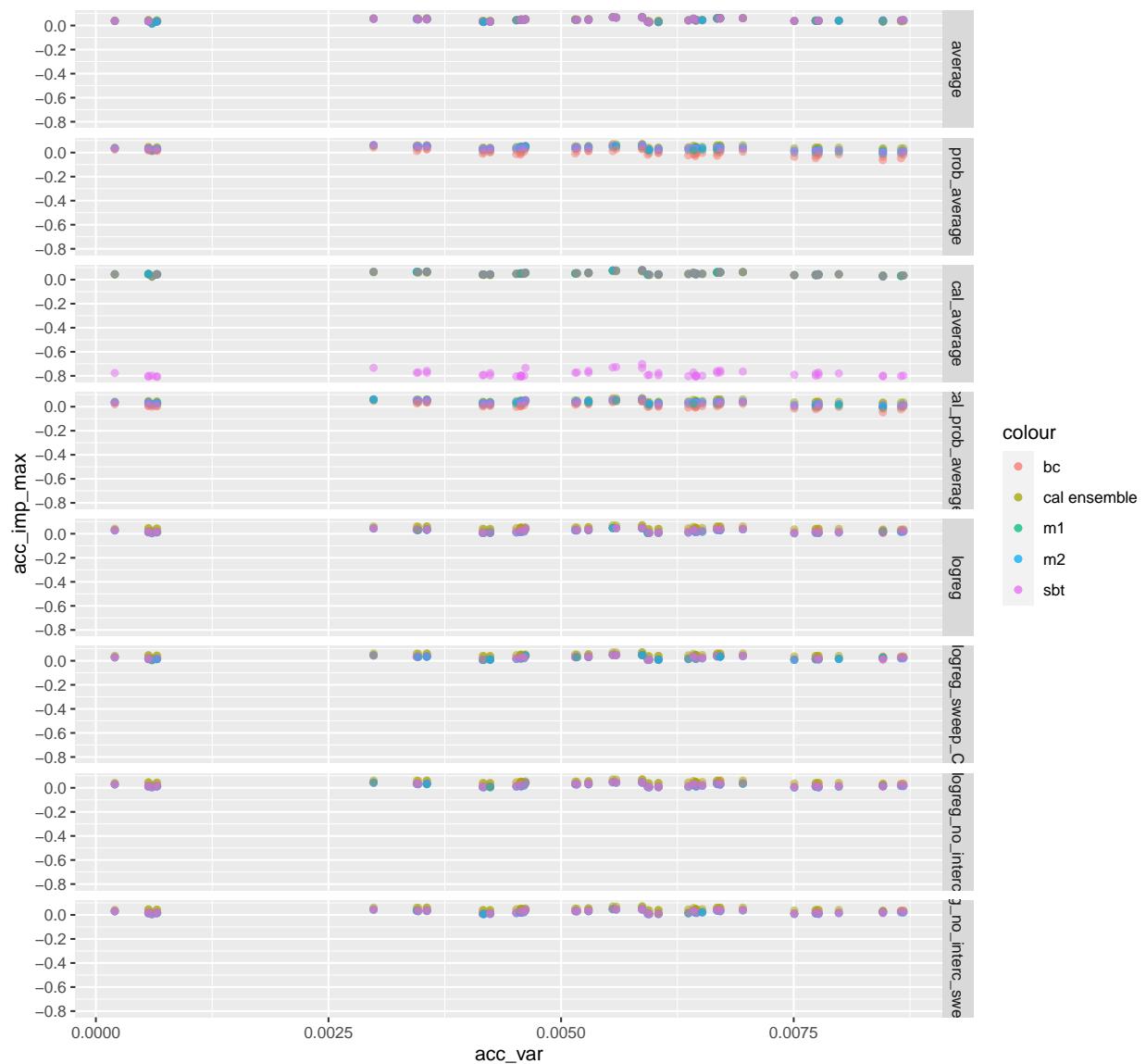
Accuracy improvement of ensemble over
the best of networks vs nll_avg.
Ensemble size 5



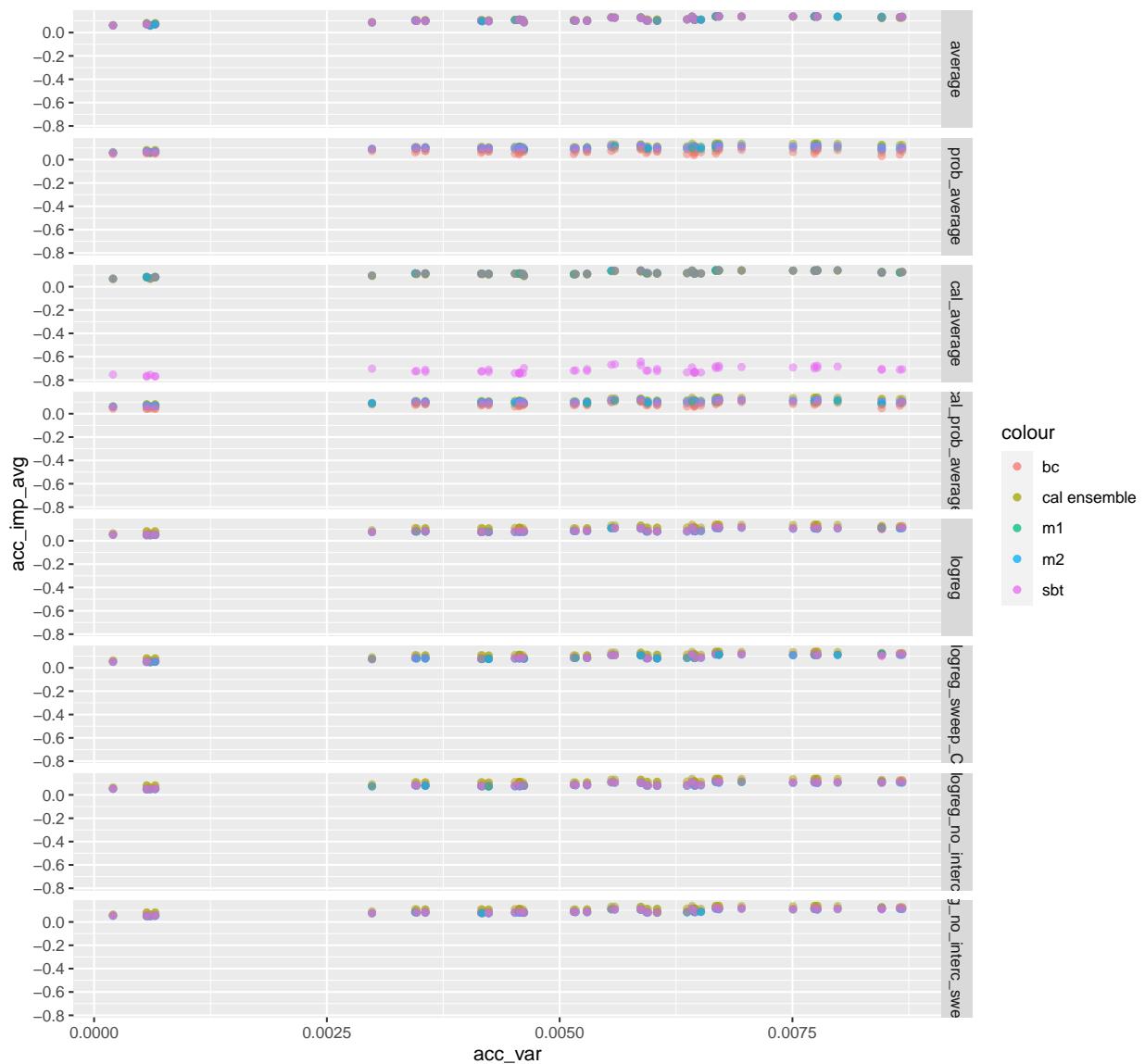
Accuracy improvement of ensemble over
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Ensemble size 5



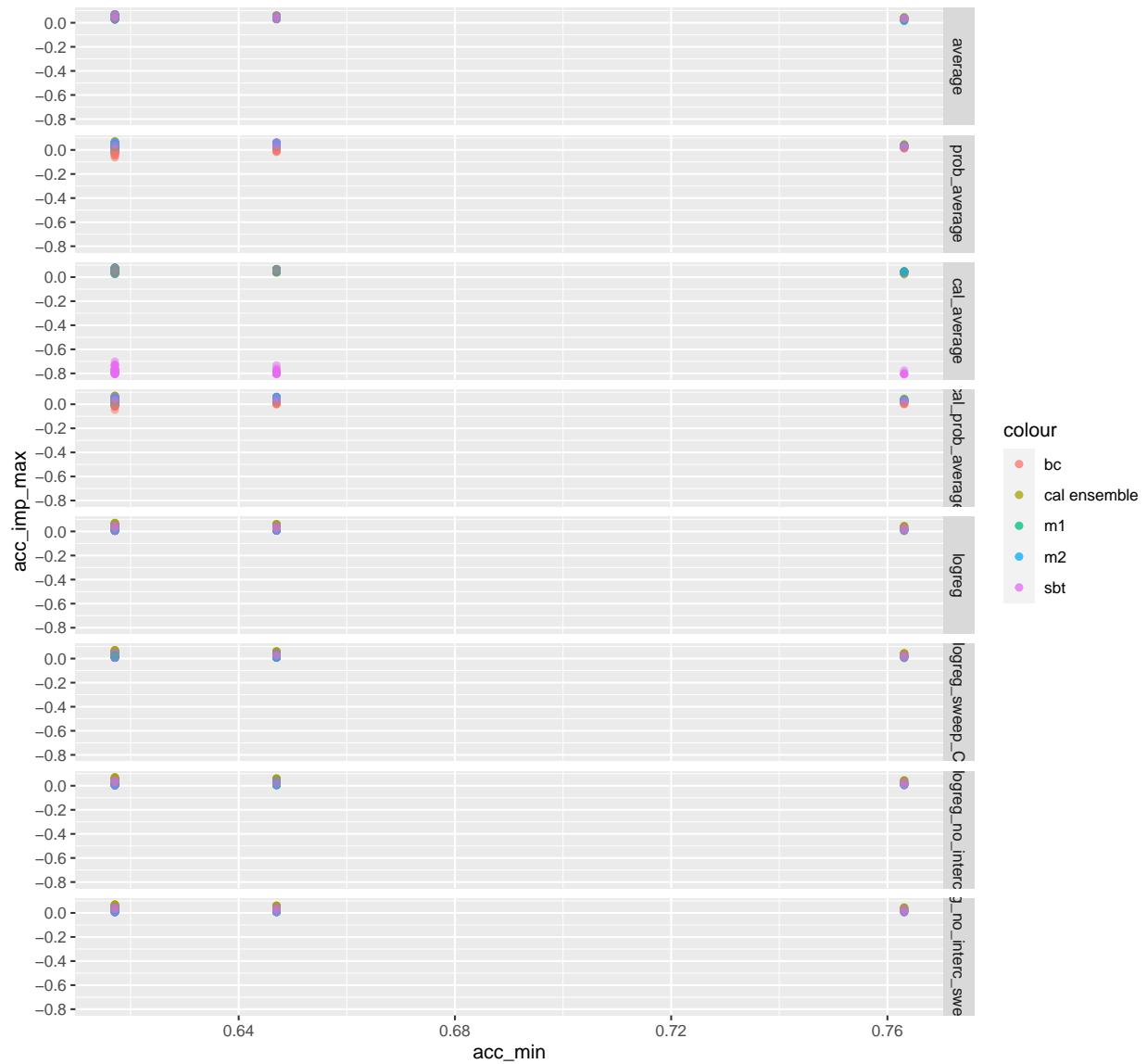
Accuracy improvement of ensemble over
the best of networks vs acc_var.
Ensemble size 5



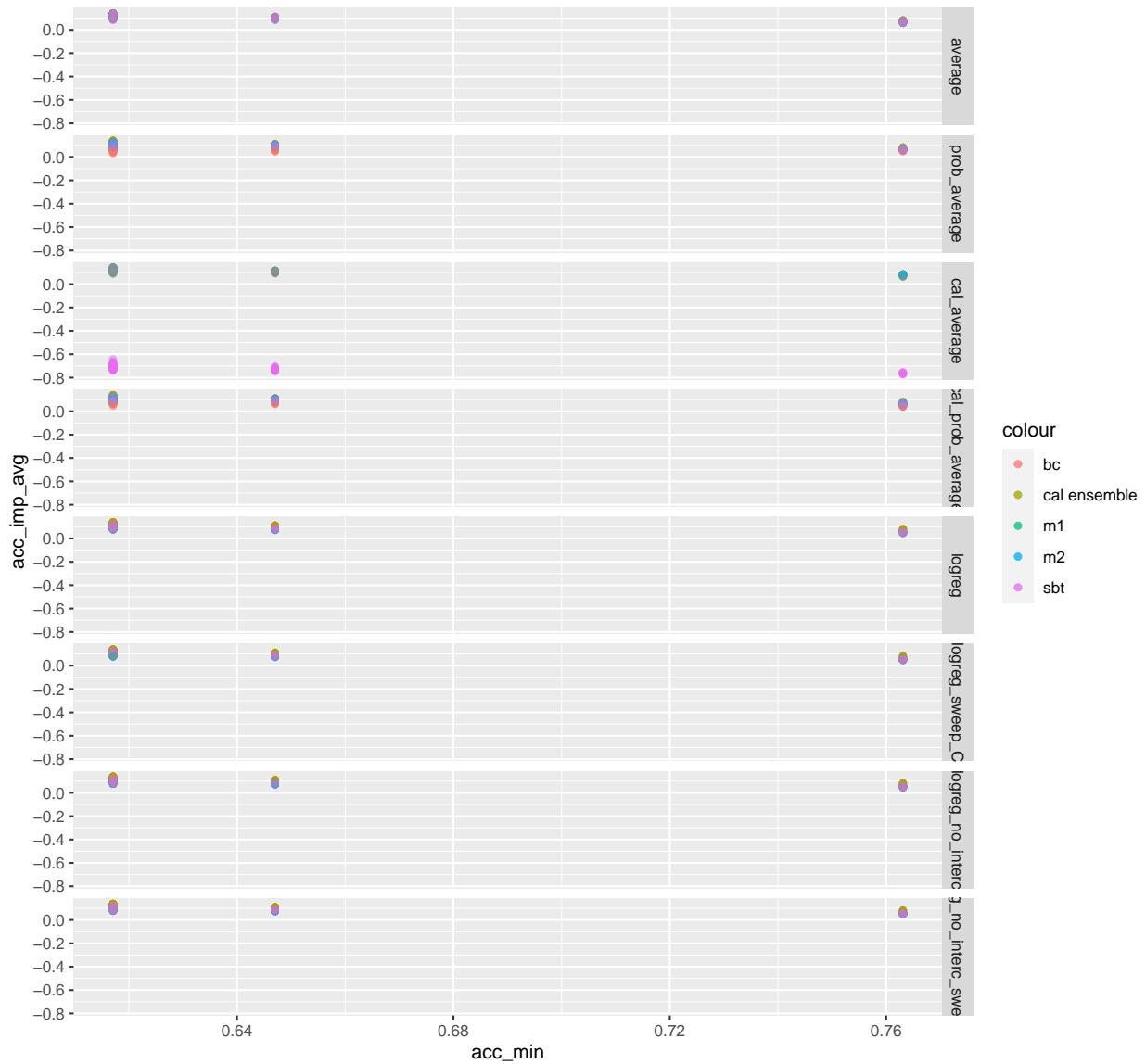
Accuracy improvement of ensemble over
the average of networks vs acc_var.
Ensemble size 5



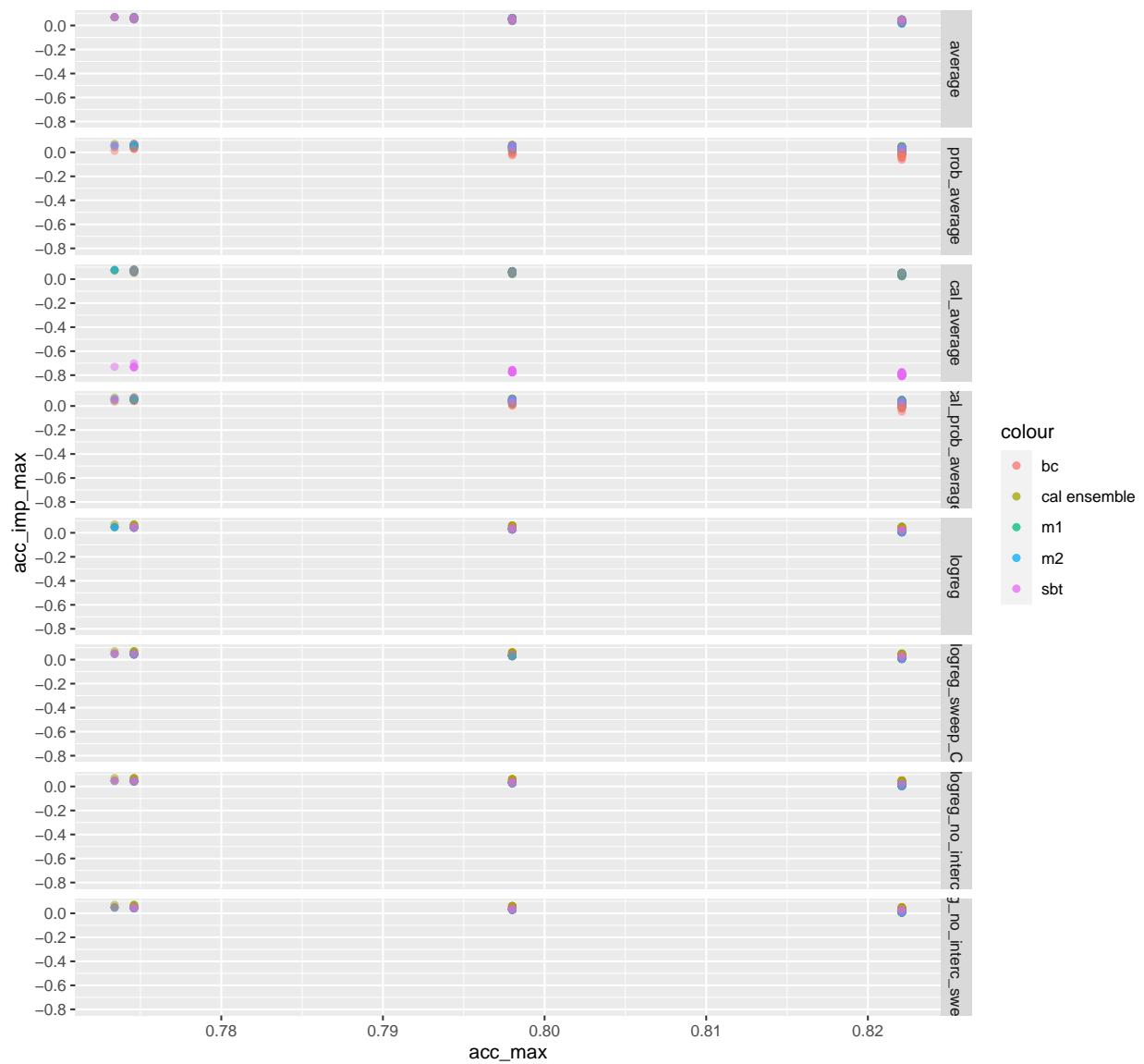
Accuracy improvement of ensemble over
the best of networks vs acc_min.
Ensemble size 5



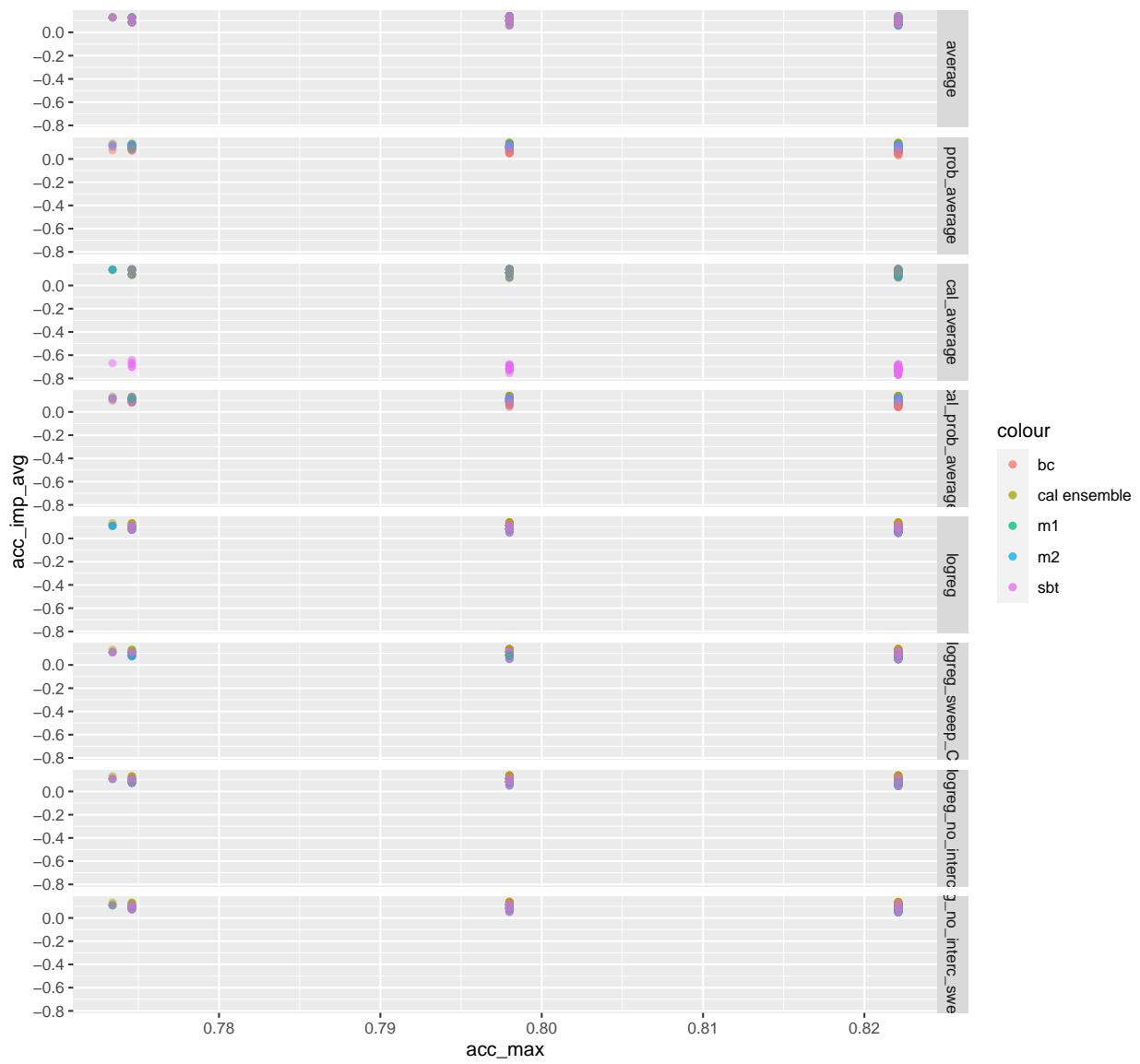
Accuracy improvement of ensemble over
the average of networks vs acc_min.
Ensemble size 5



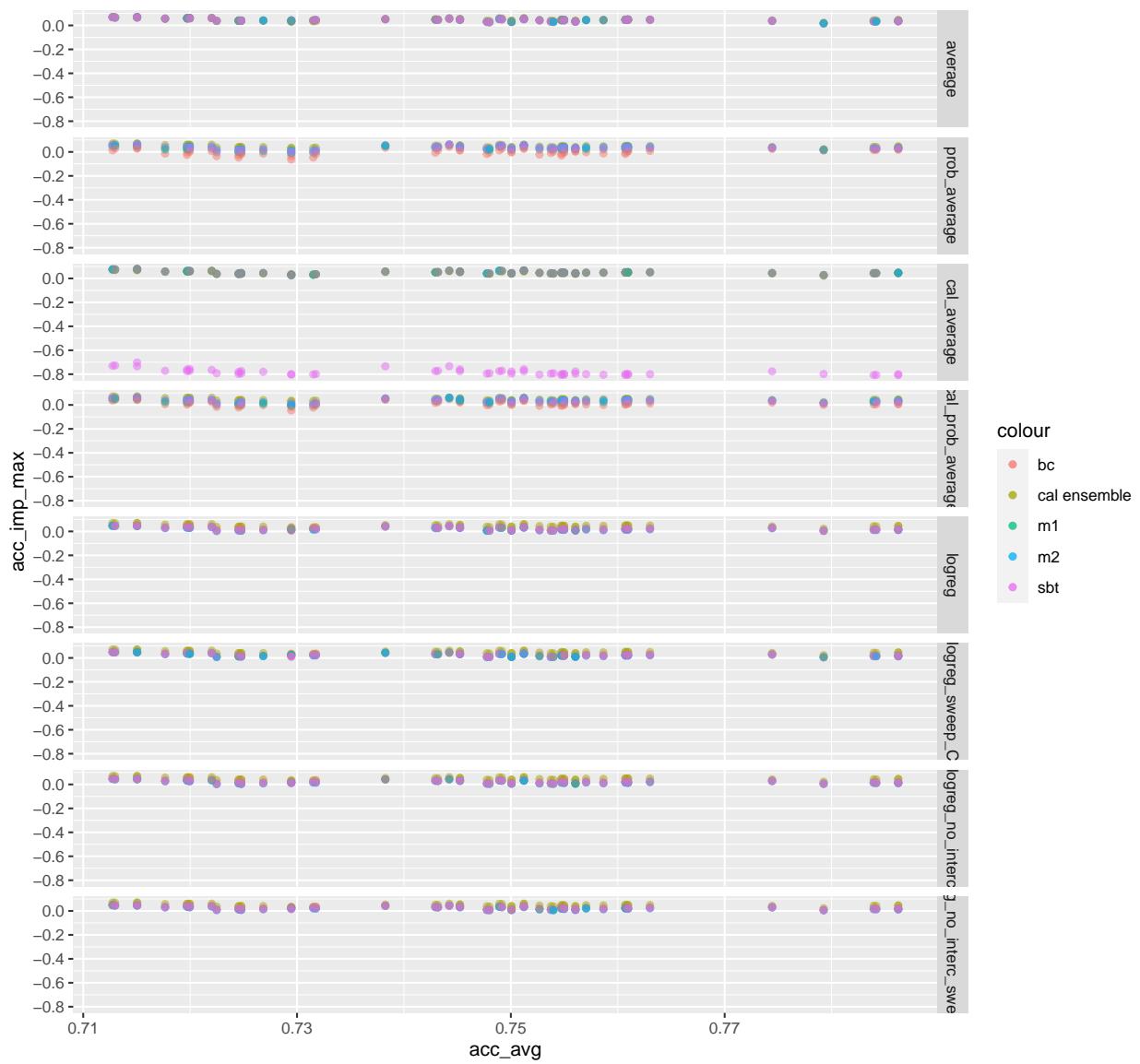
Accuracy improvement of ensemble over
the best of networks vs acc_max.
Ensemble size 5



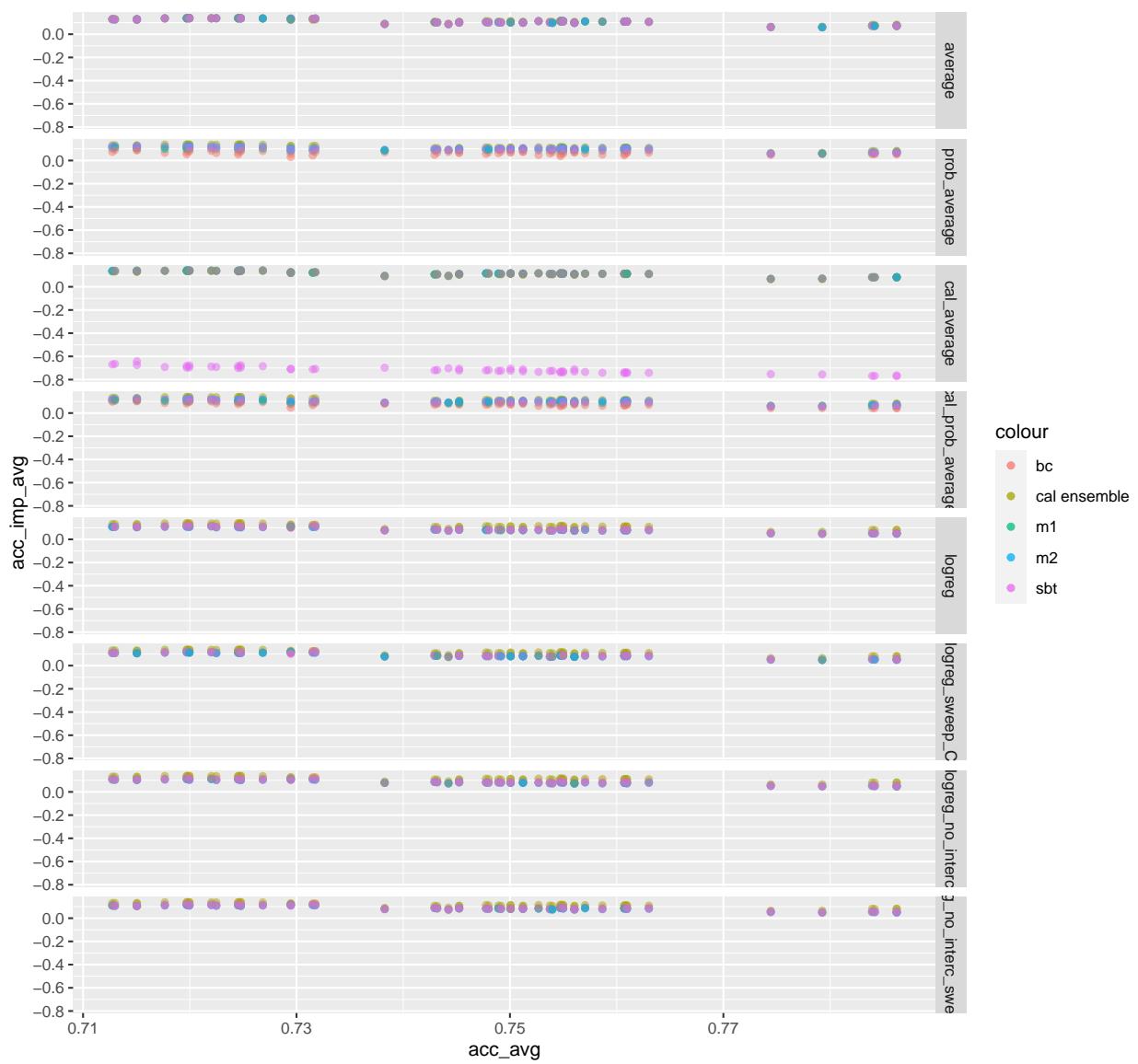
Accuracy improvement of ensemble over
the average of networks vs acc_max.
Ensemble size 5



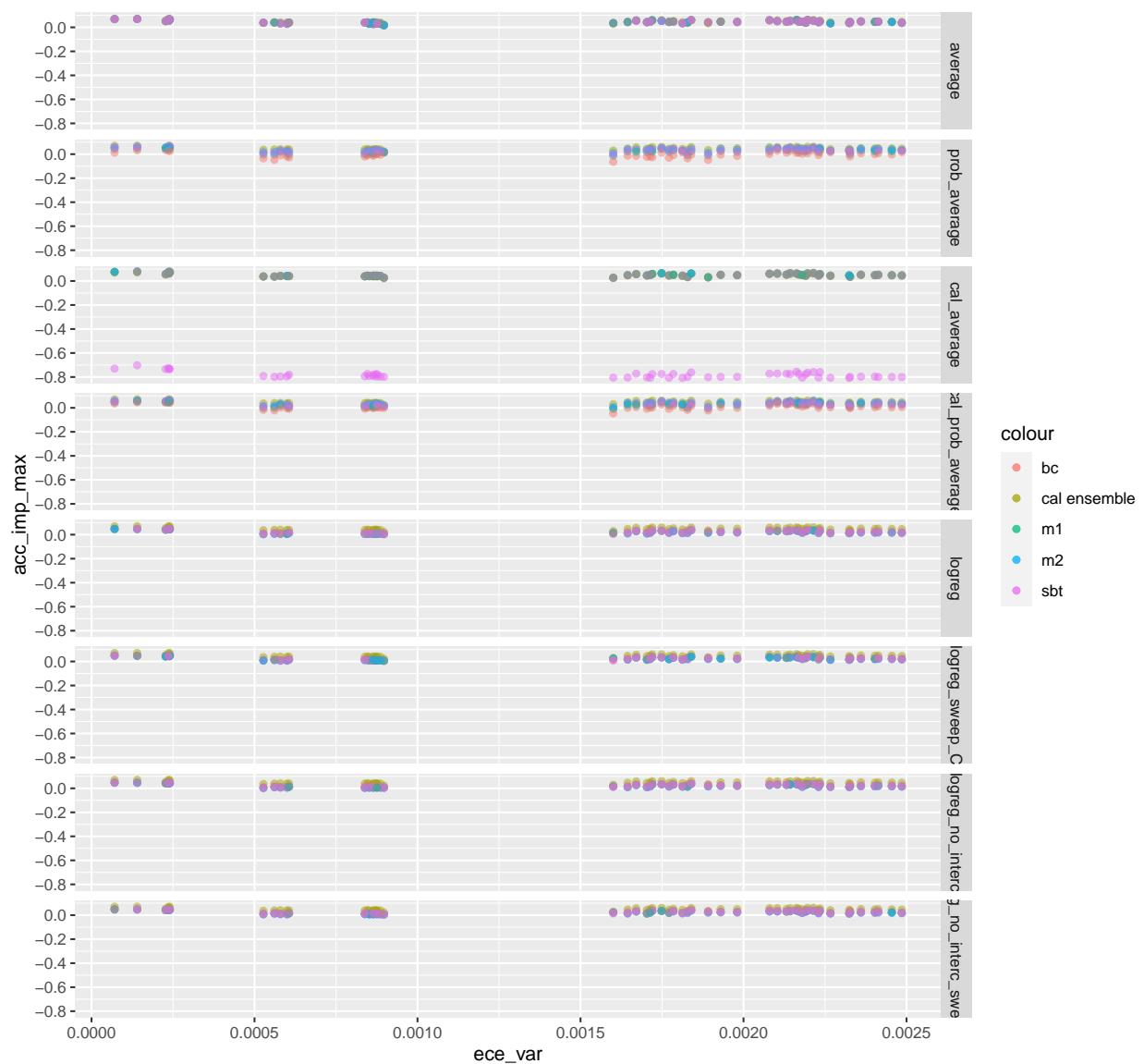
Accuracy improvement of ensemble over
the best of networks vs acc_avg.
Ensemble size 5



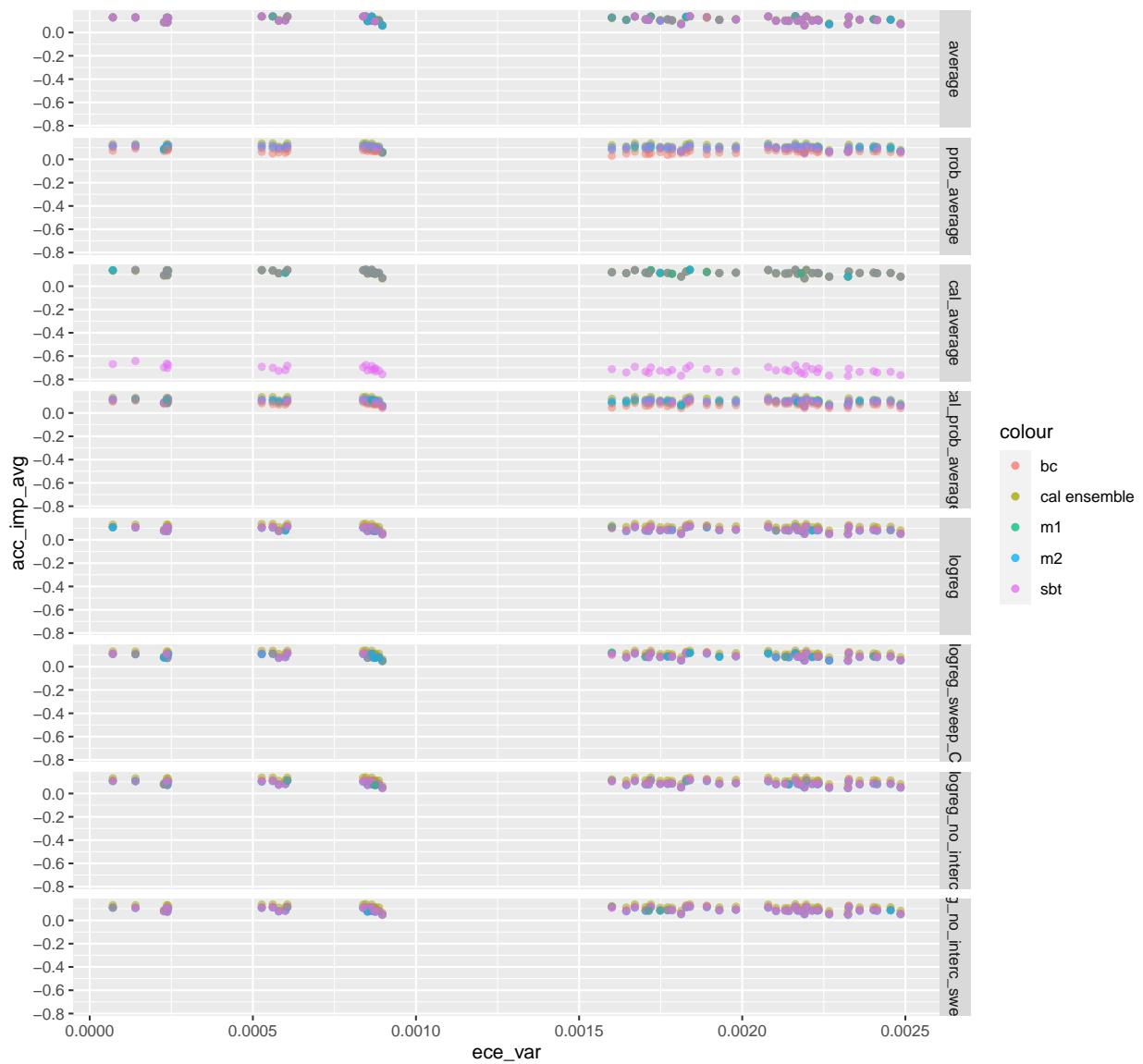
Accuracy improvement of ensemble over
the average of networks vs acc_avg.
Ensemble size 5



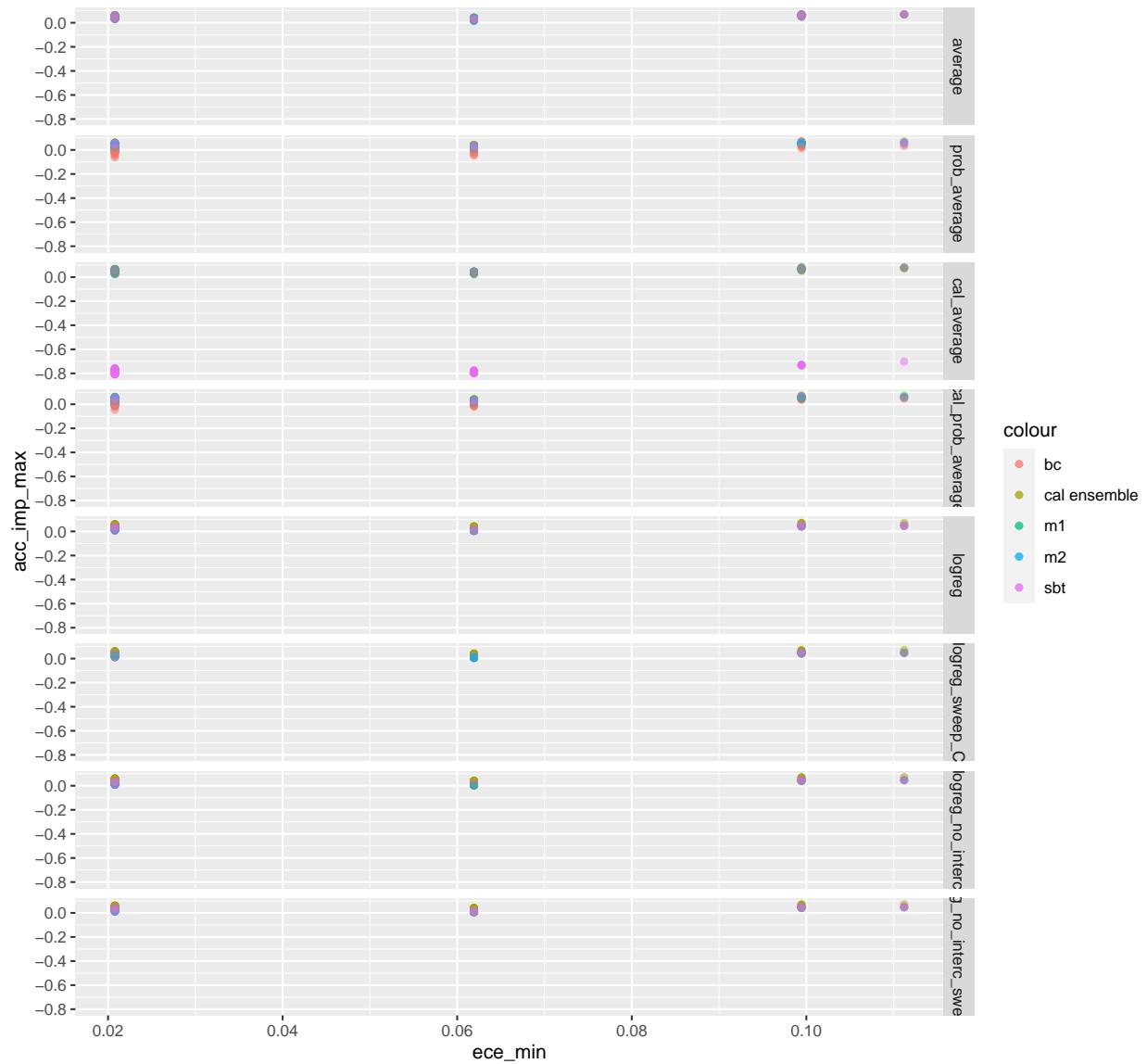
Accuracy improvement of ensemble over
the best of networks vs ece_var.
Ensemble size 5



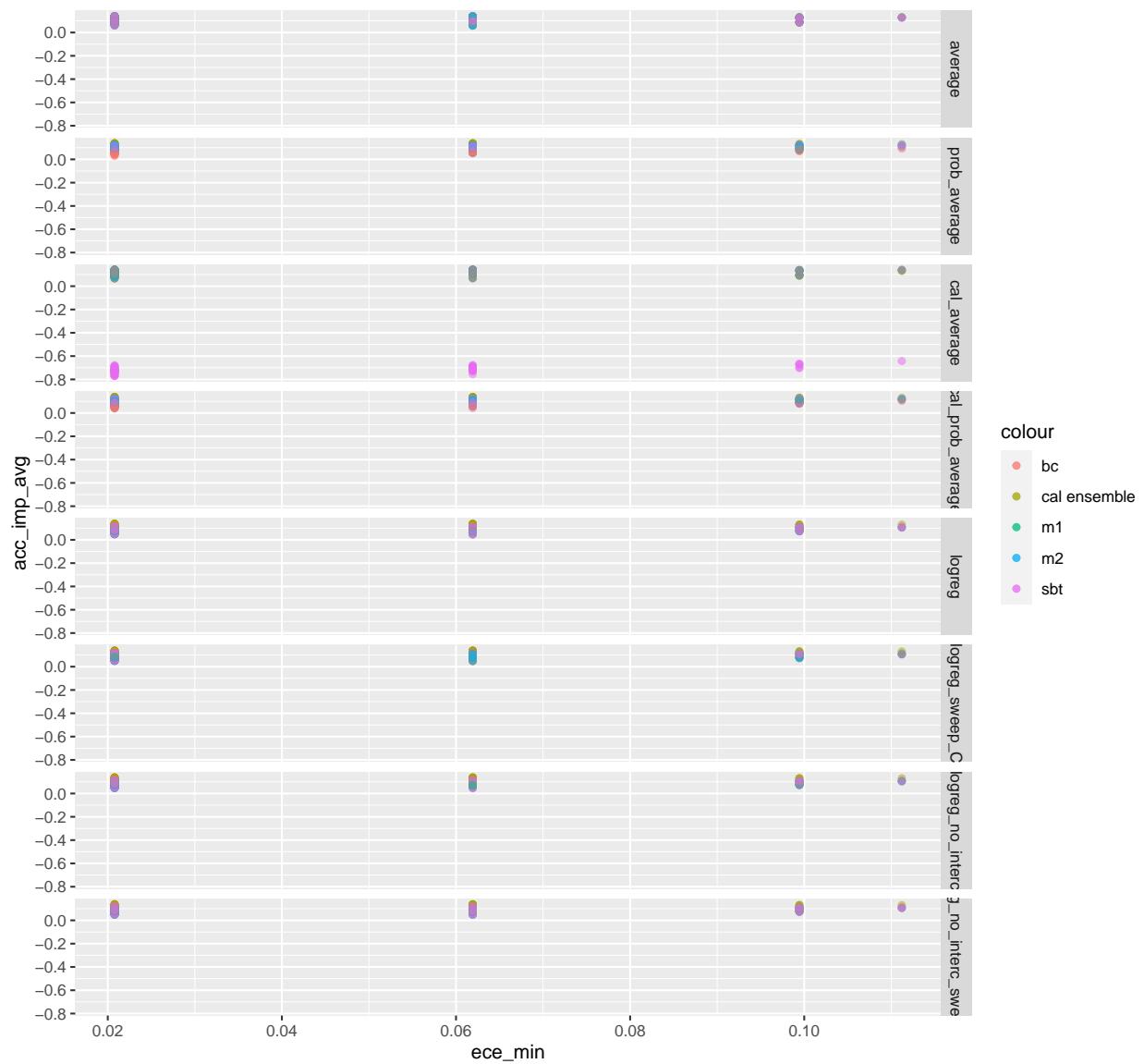
Accuracy improvement of ensemble over
the average of networks vs ece_var.
Ensemble size 5



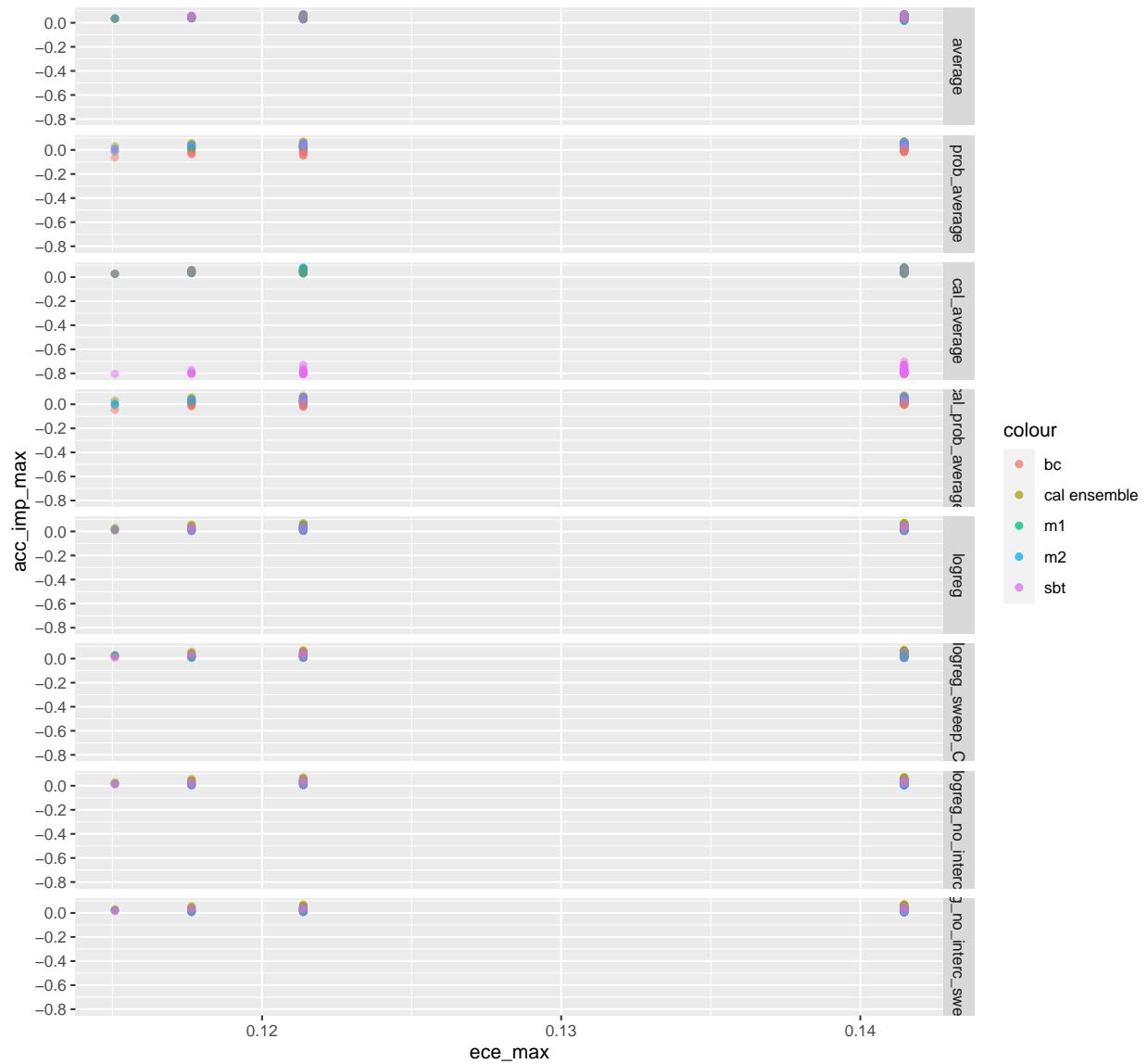
Accuracy improvement of ensemble over
the best of networks vs ece_min.
Ensemble size 5



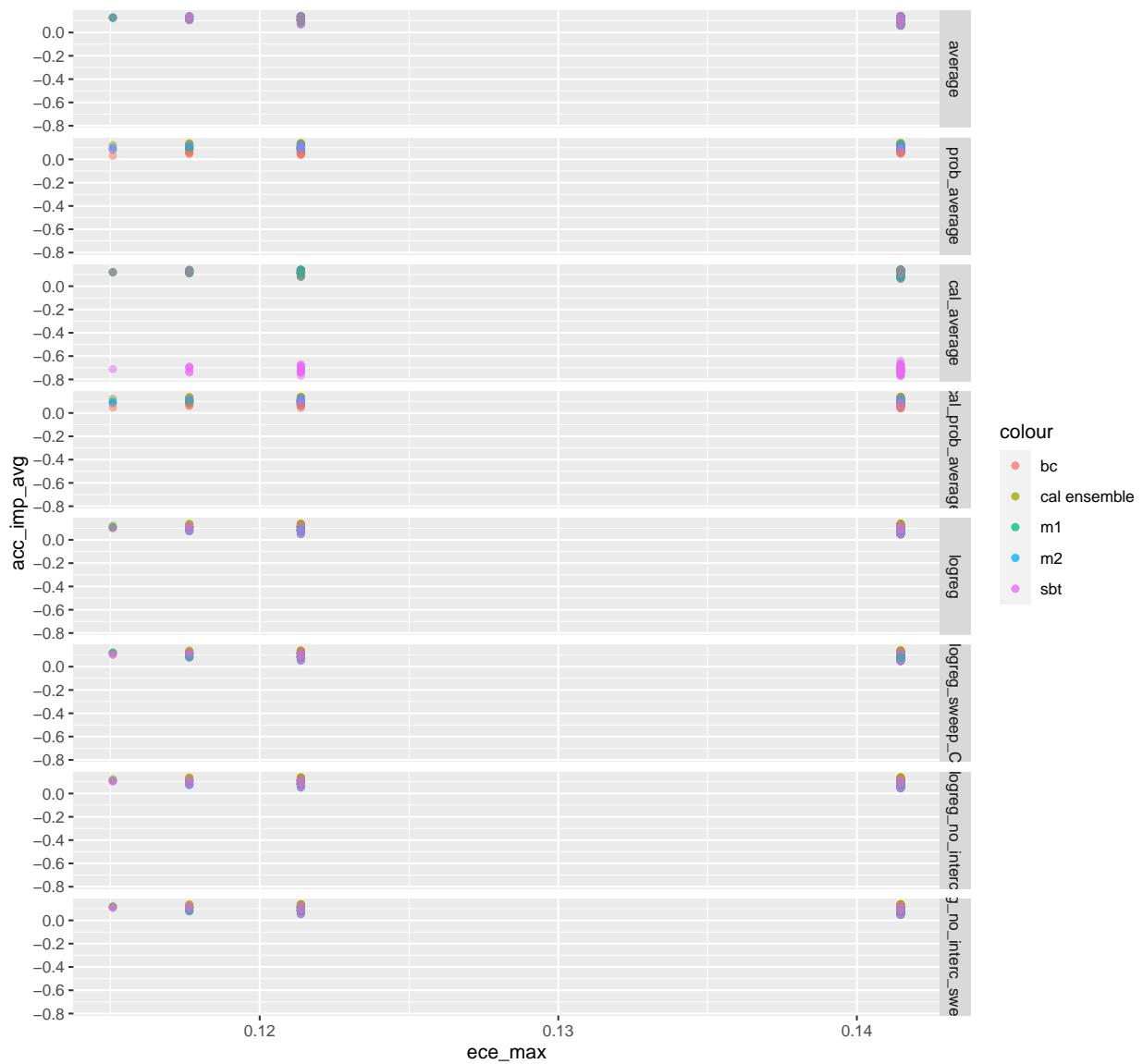
Accuracy improvement of ensemble over
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Ensemble size 5



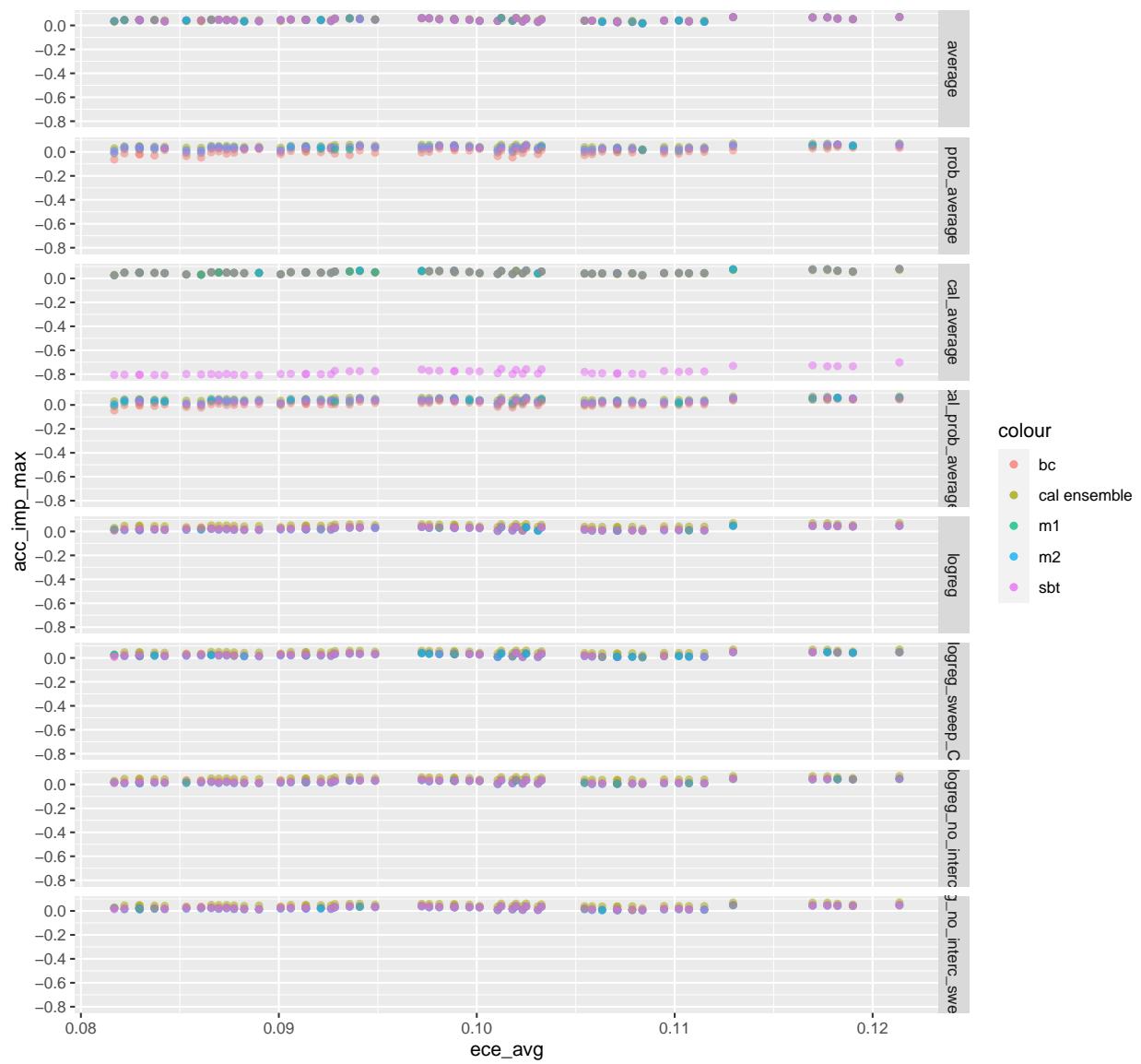
Accuracy improvement of ensemble over
the best of networks vs ece_max.
Ensemble size 5



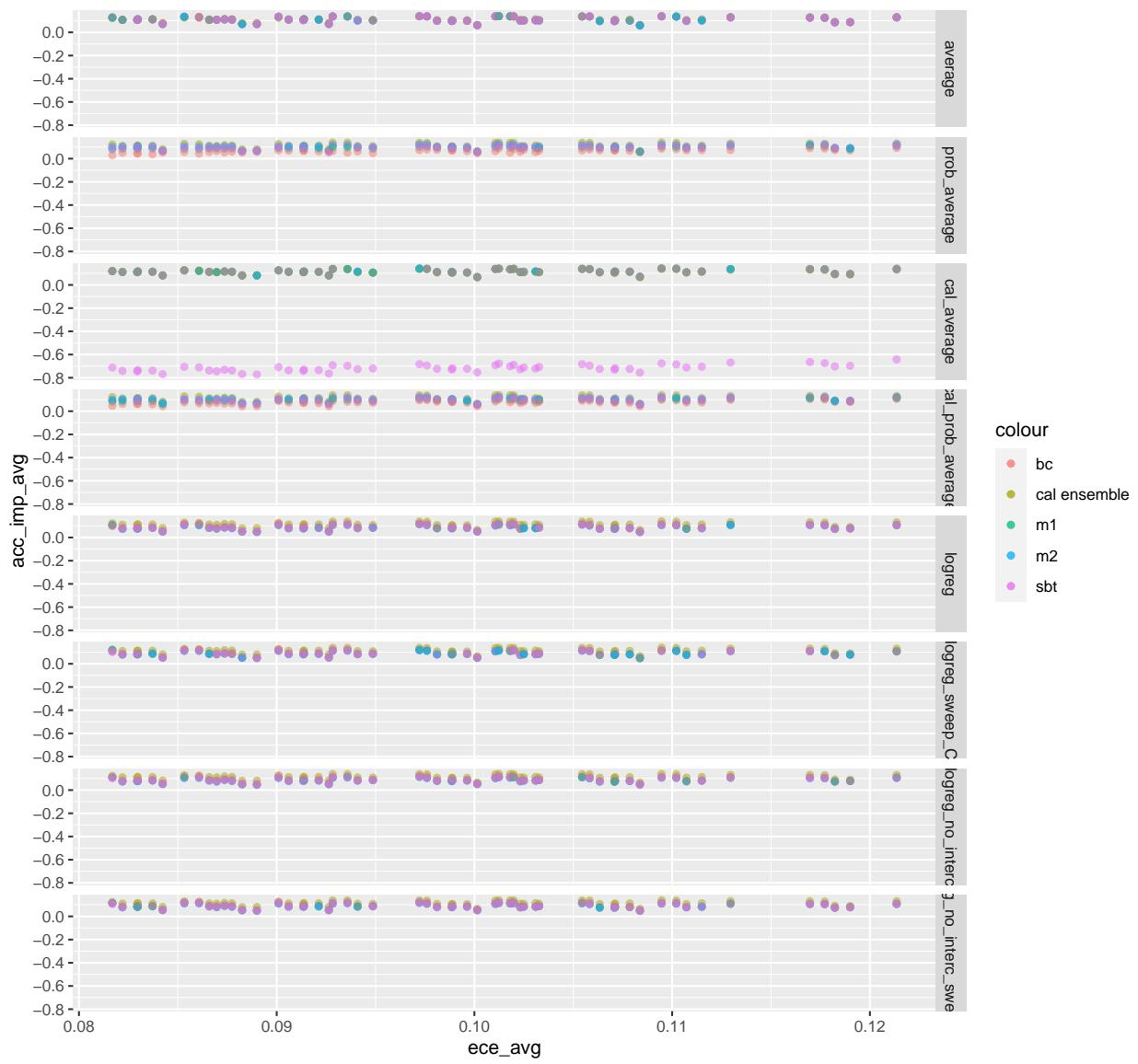
Accuracy improvement of ensemble over
the average of networks vs ece_max.
Ensemble size 5



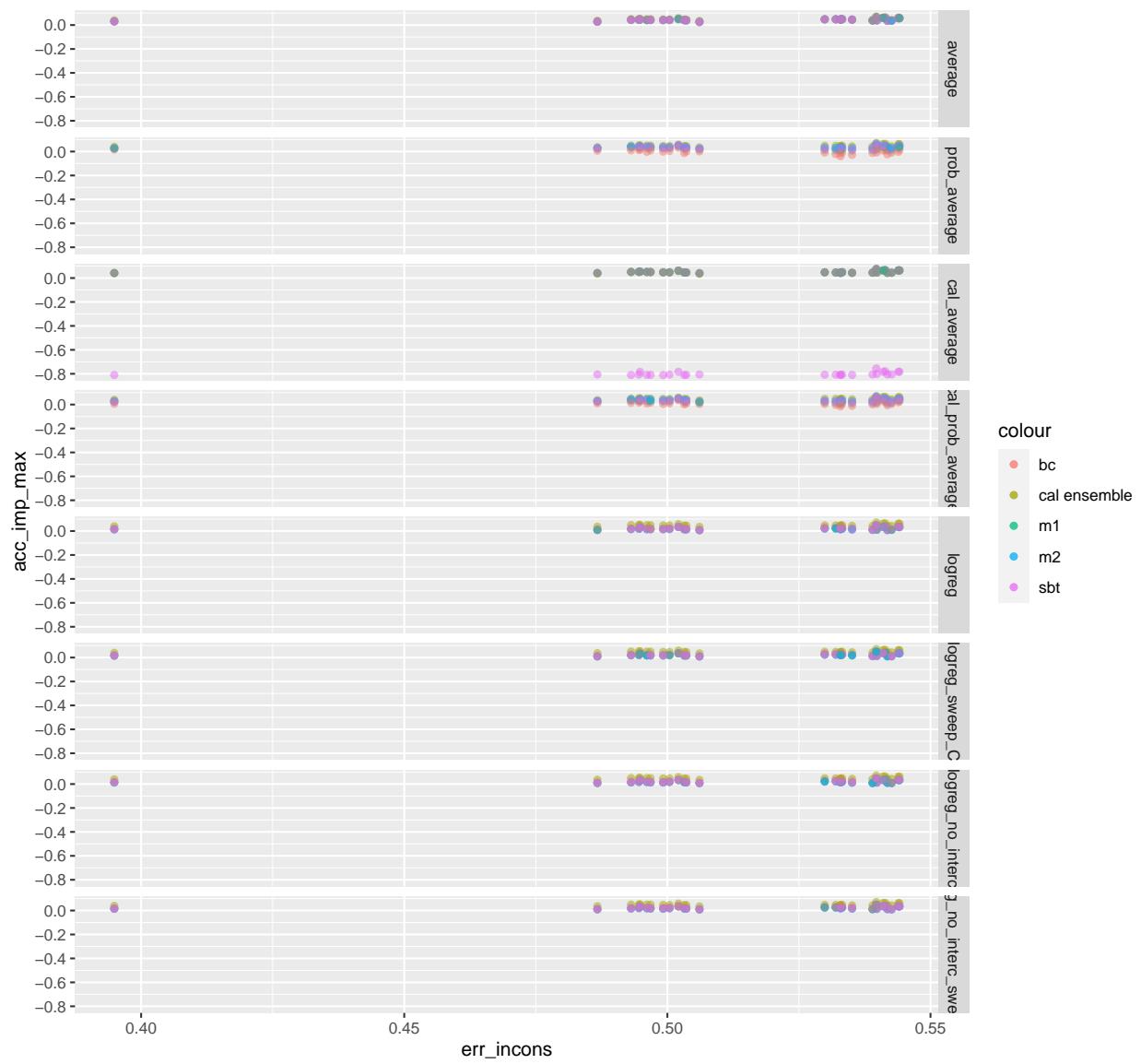
Accuracy improvement of ensemble over
the best of networks vs ece_avg.
Ensemble size 5



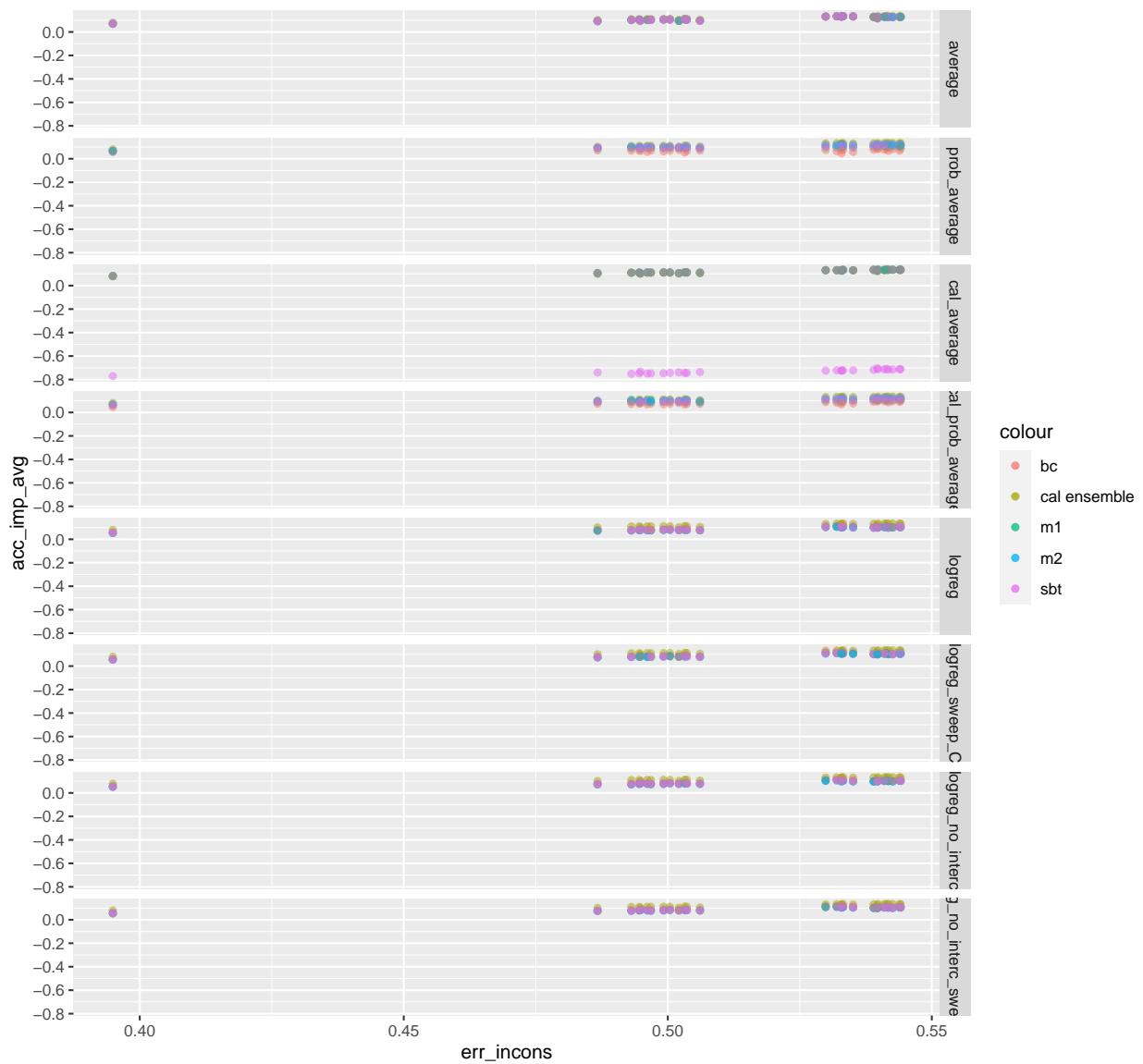
Accuracy improvement of ensemble over
the average of networks vs ece_avg.
Ensemble size 5



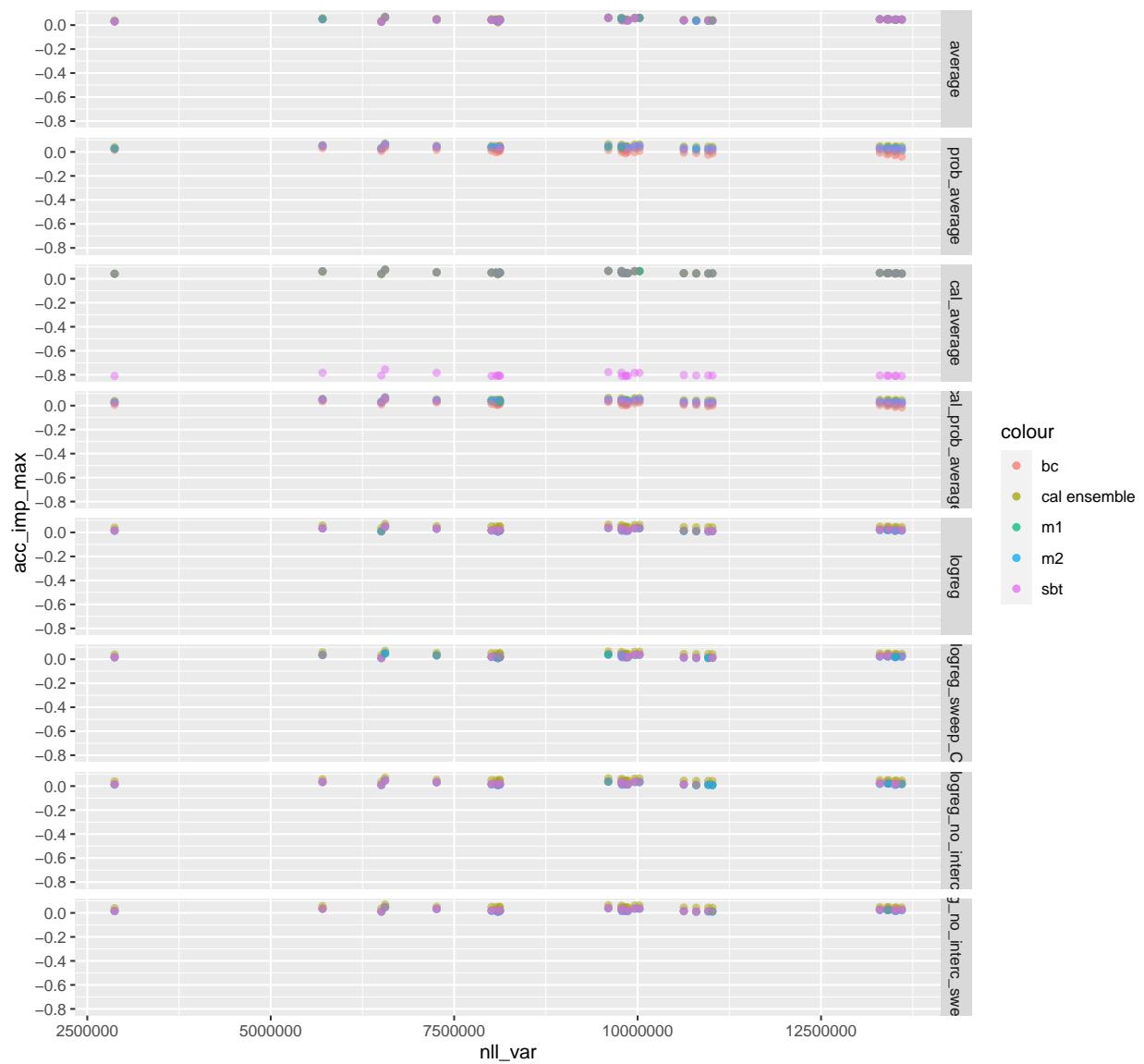
Accuracy improvement of ensemble over
the best of networks vs err_incons.
Ensemble size 6



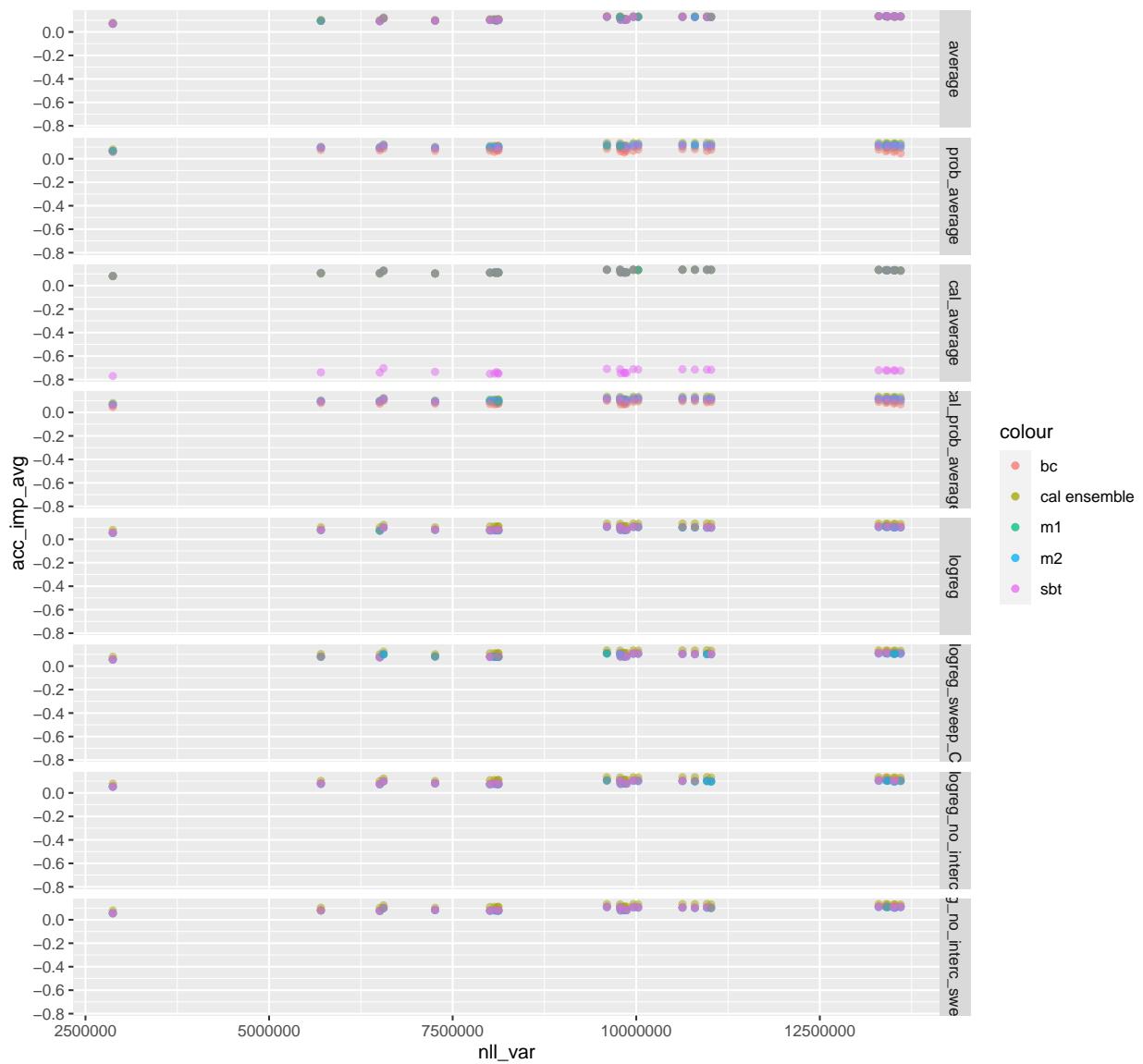
Accuracy improvement of ensemble over
the average of networks vs err_incons.
Ensemble size 6



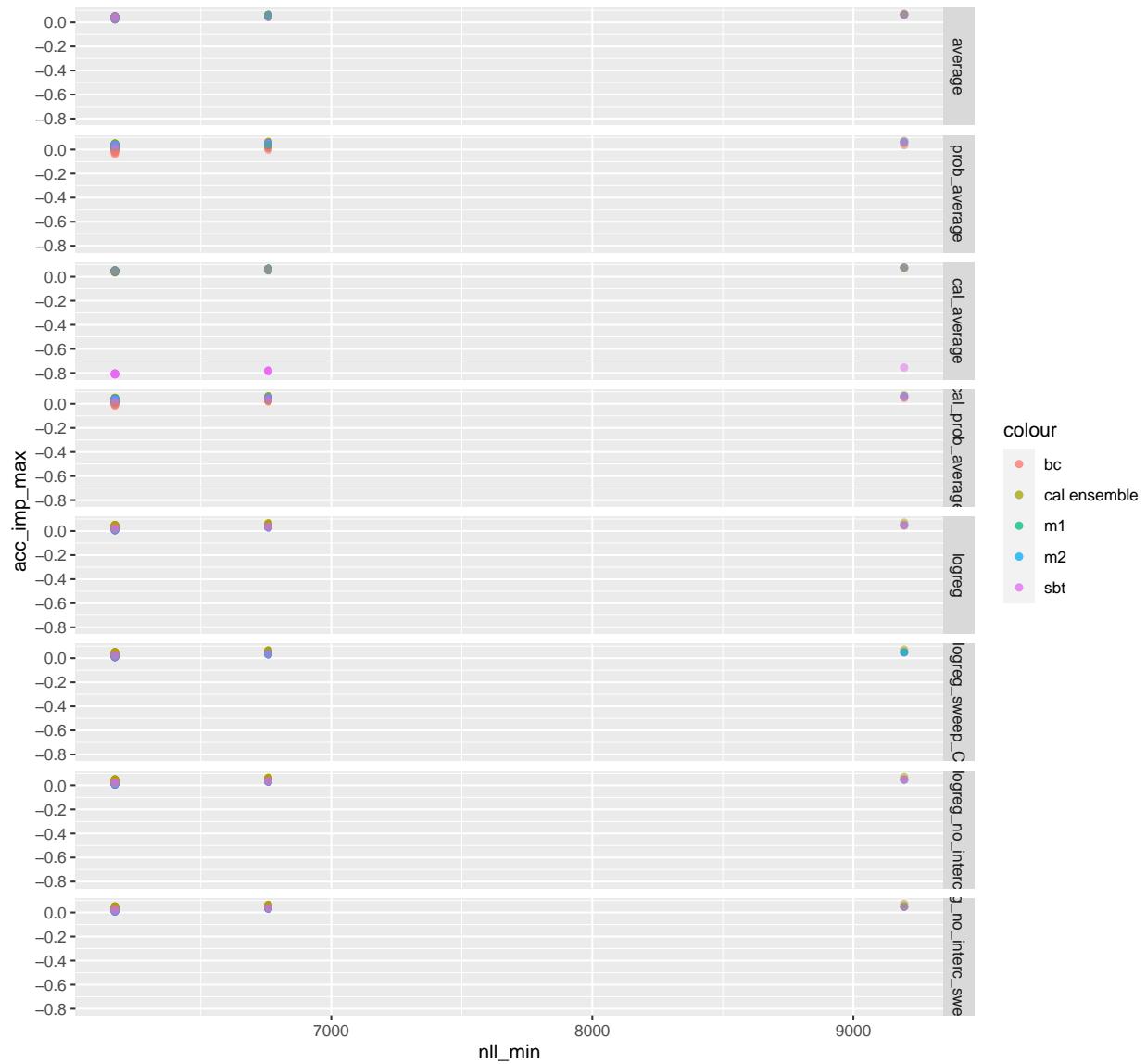
Accuracy improvement of ensemble over
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Ensemble size 6



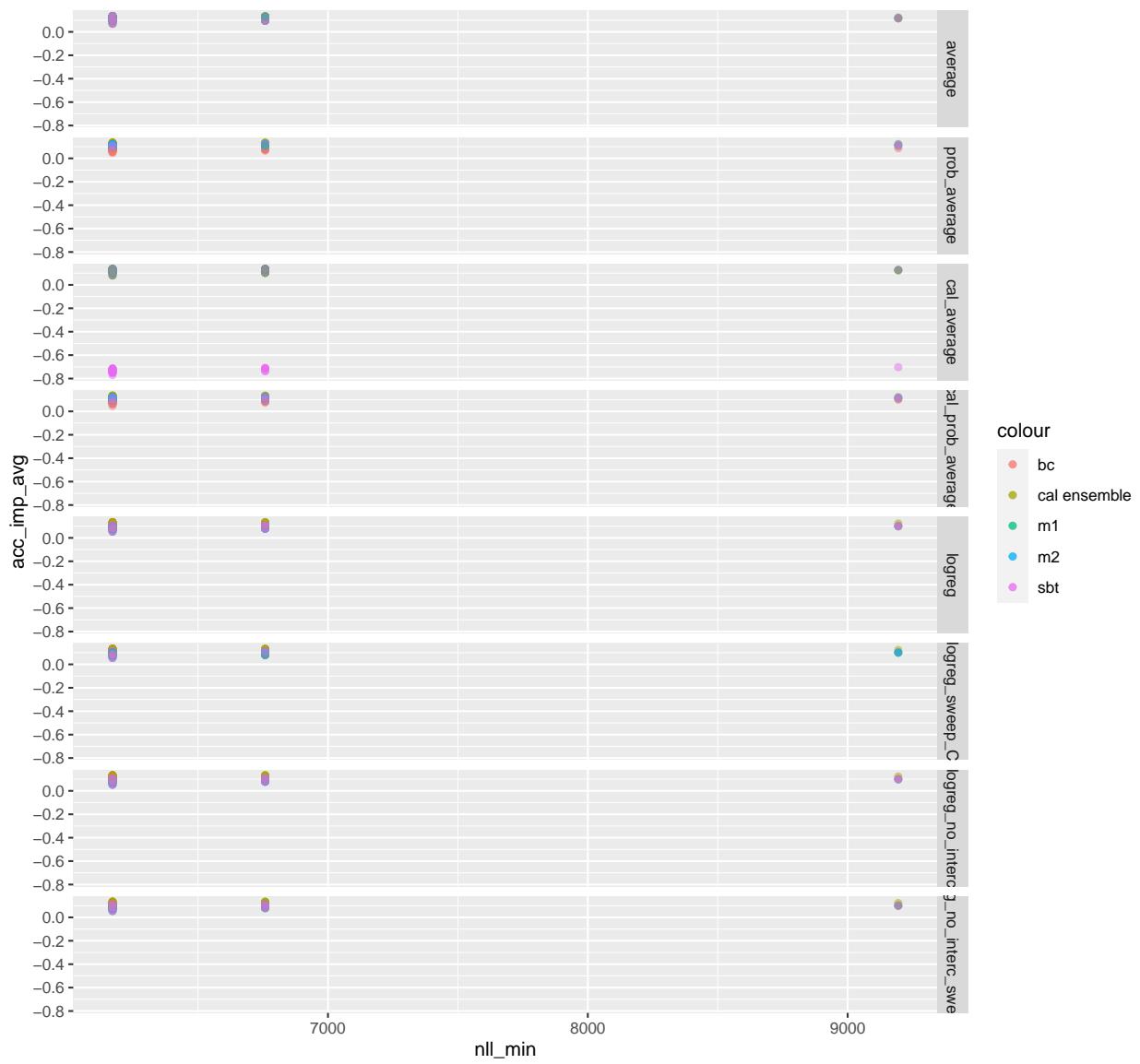
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Ensemble size 6



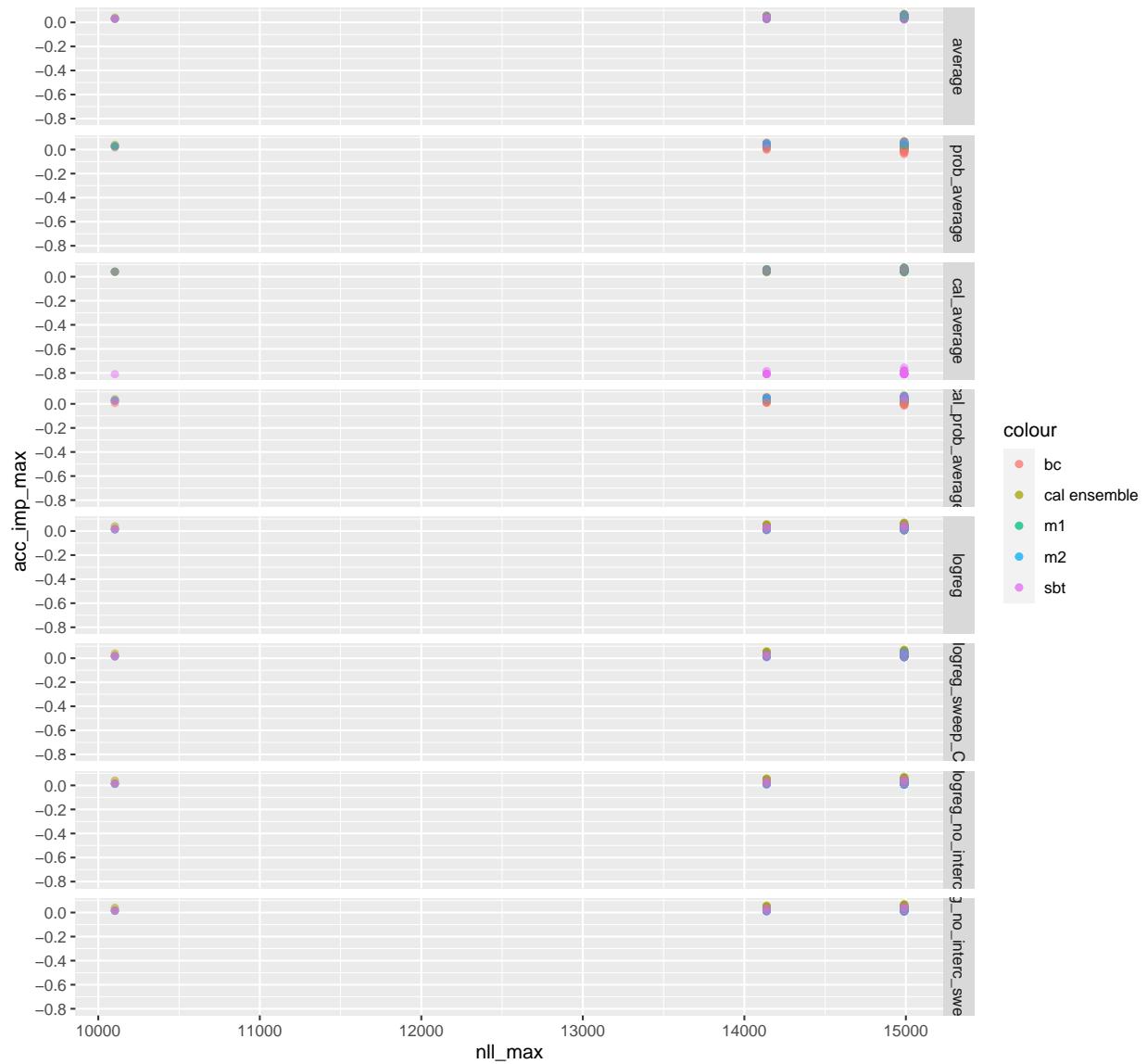
Accuracy improvement of ensemble over
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Ensemble size 6



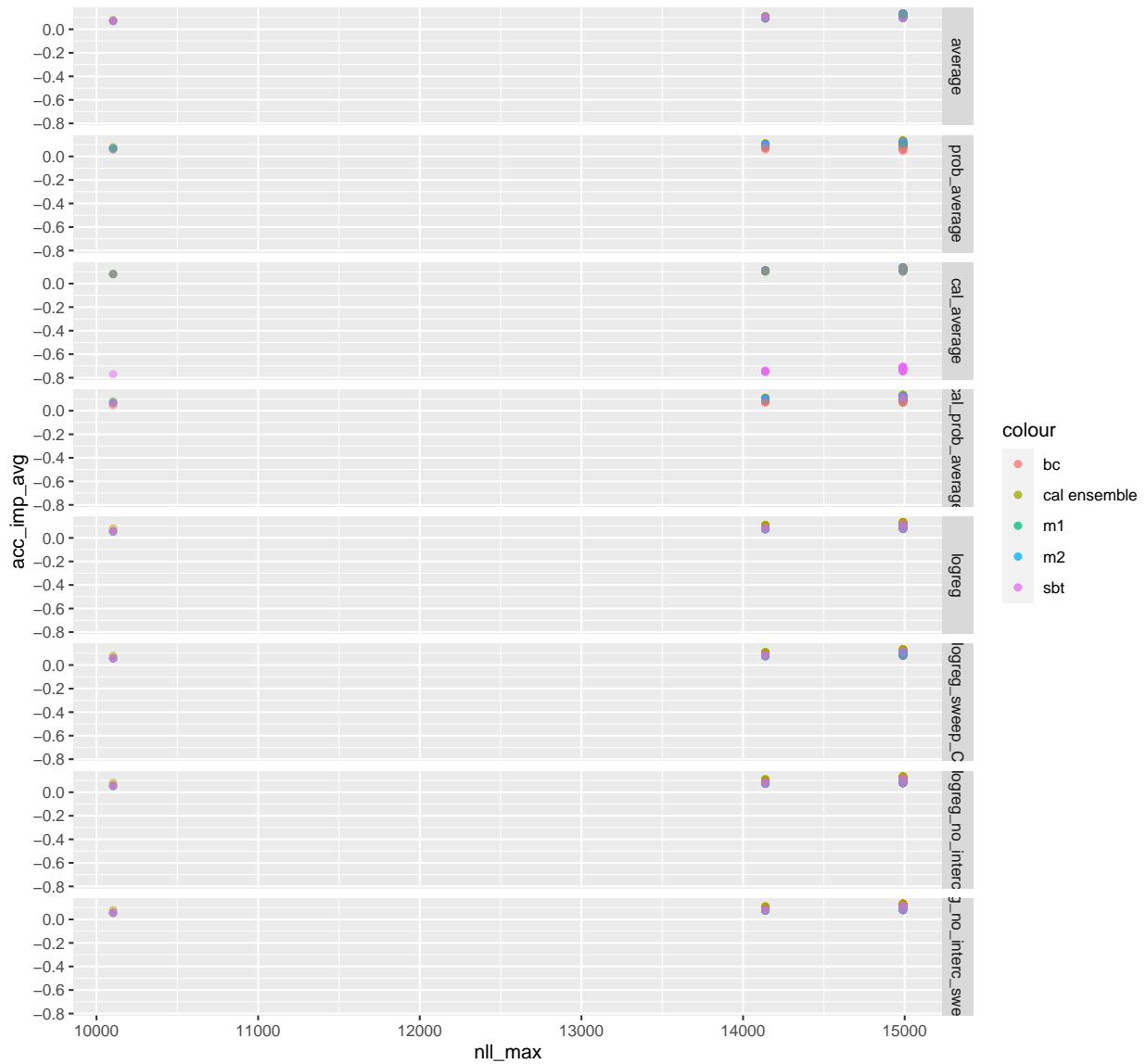
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Ensemble size 6



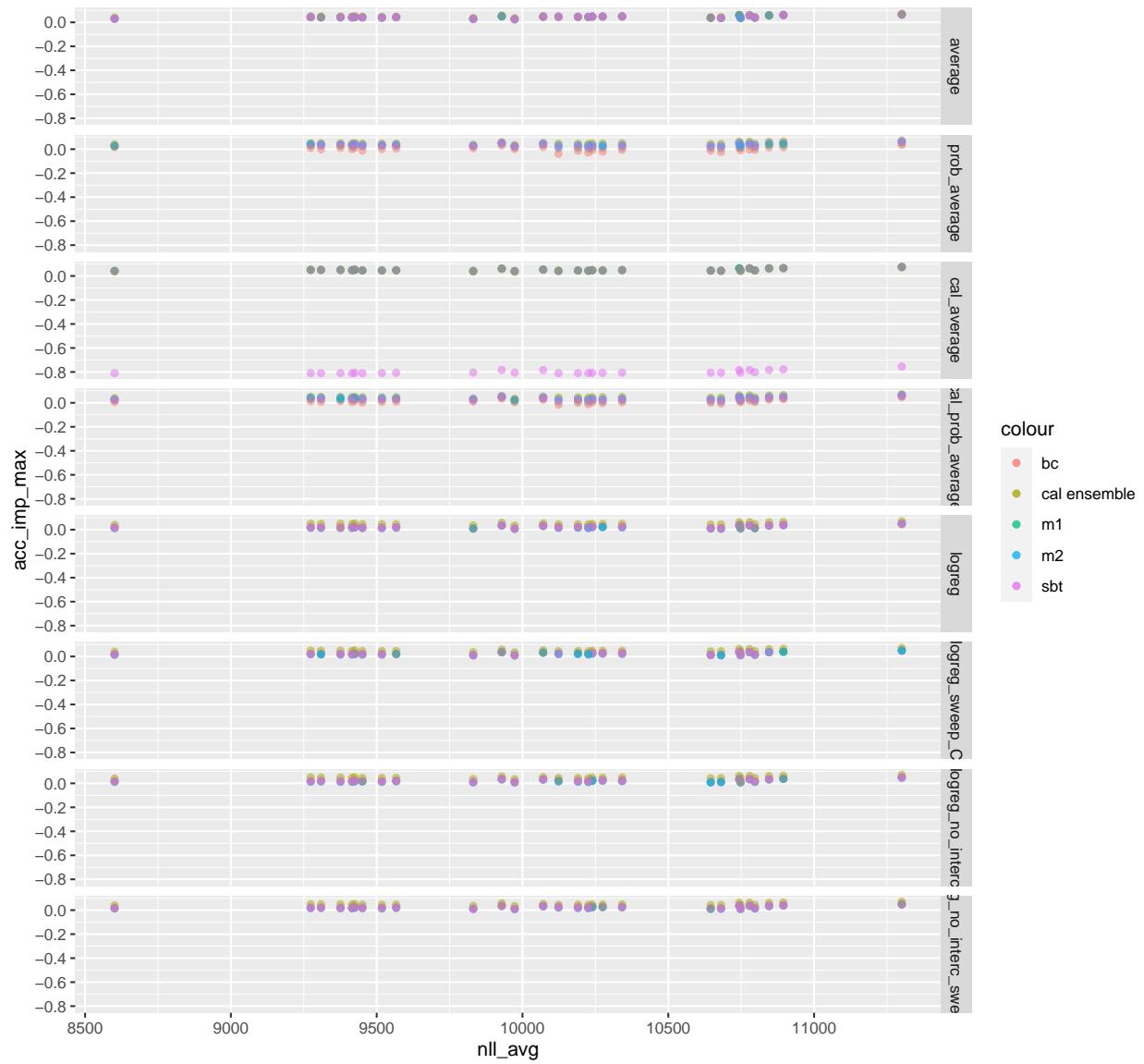
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Ensemble size 6



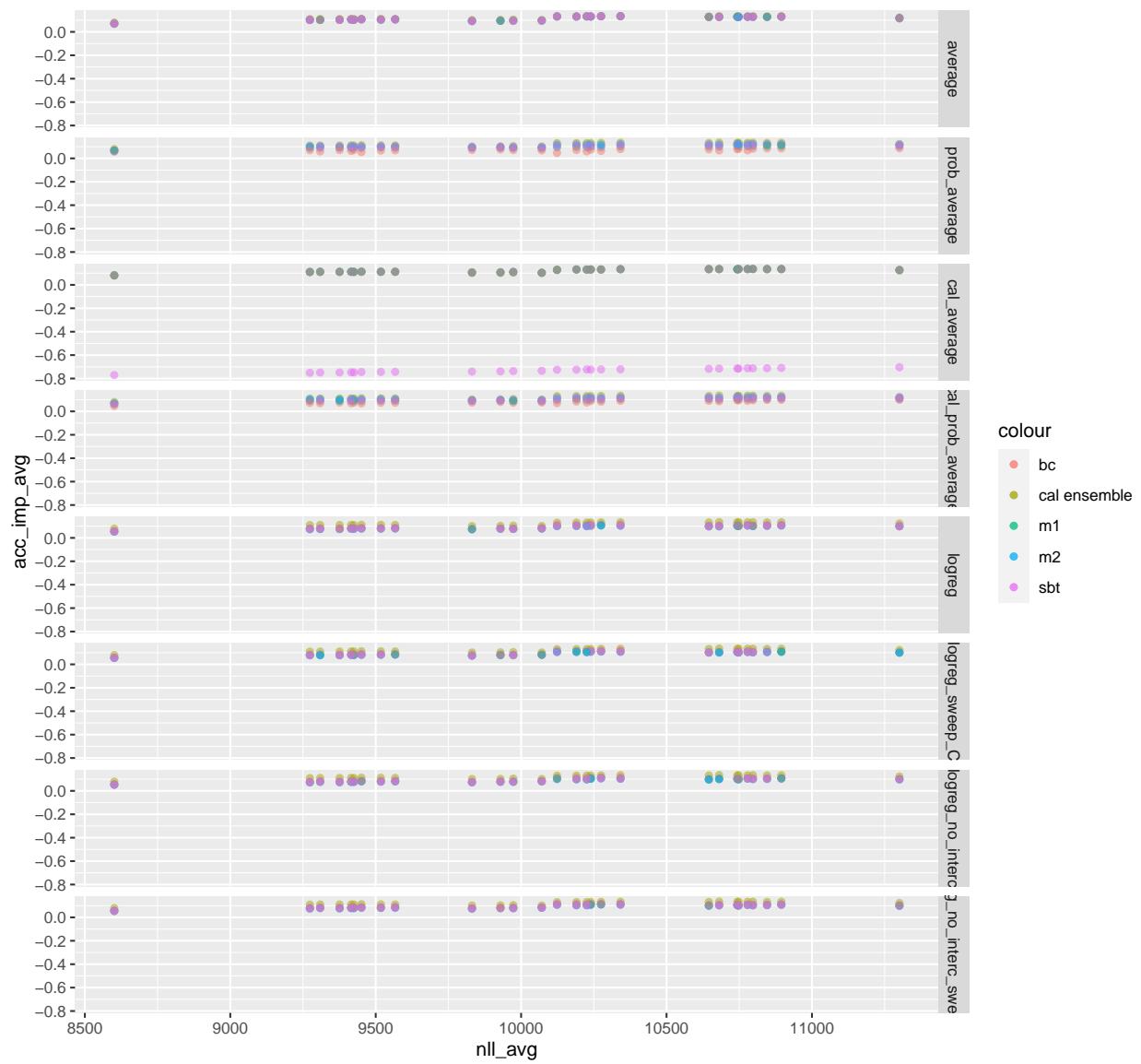
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Ensemble size 6



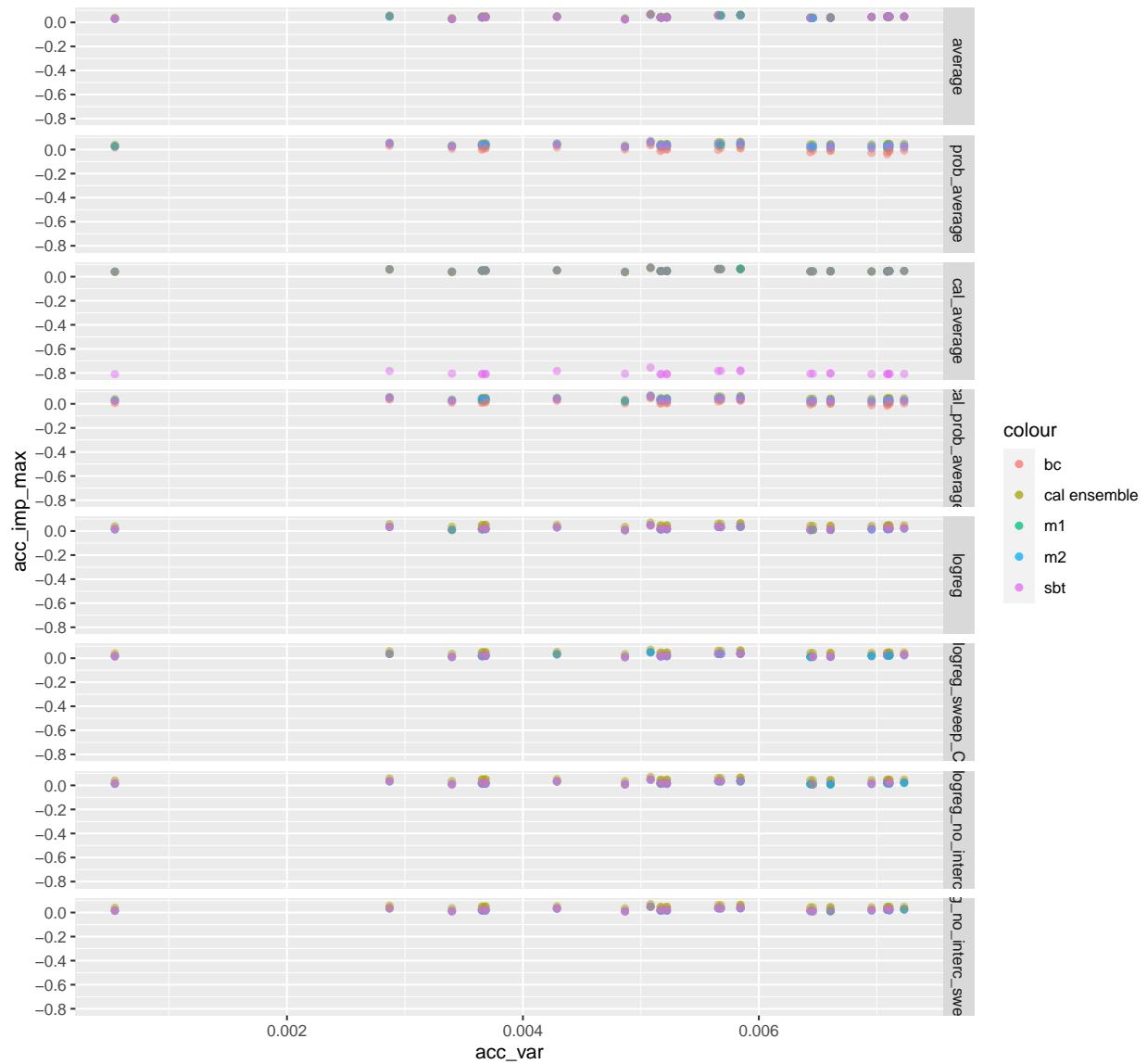
Accuracy improvement of ensemble over
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Ensemble size 6



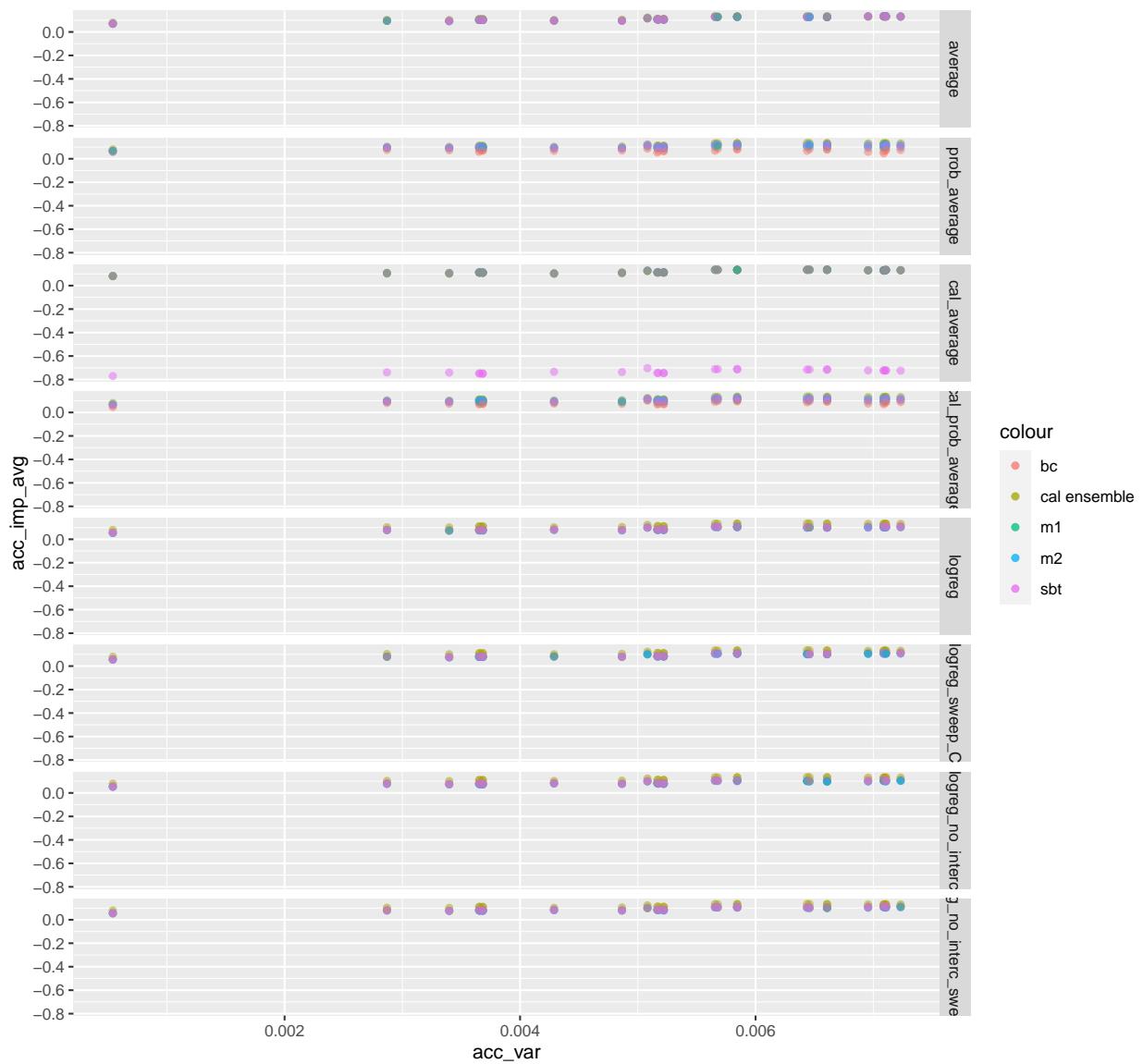
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Ensemble size 6



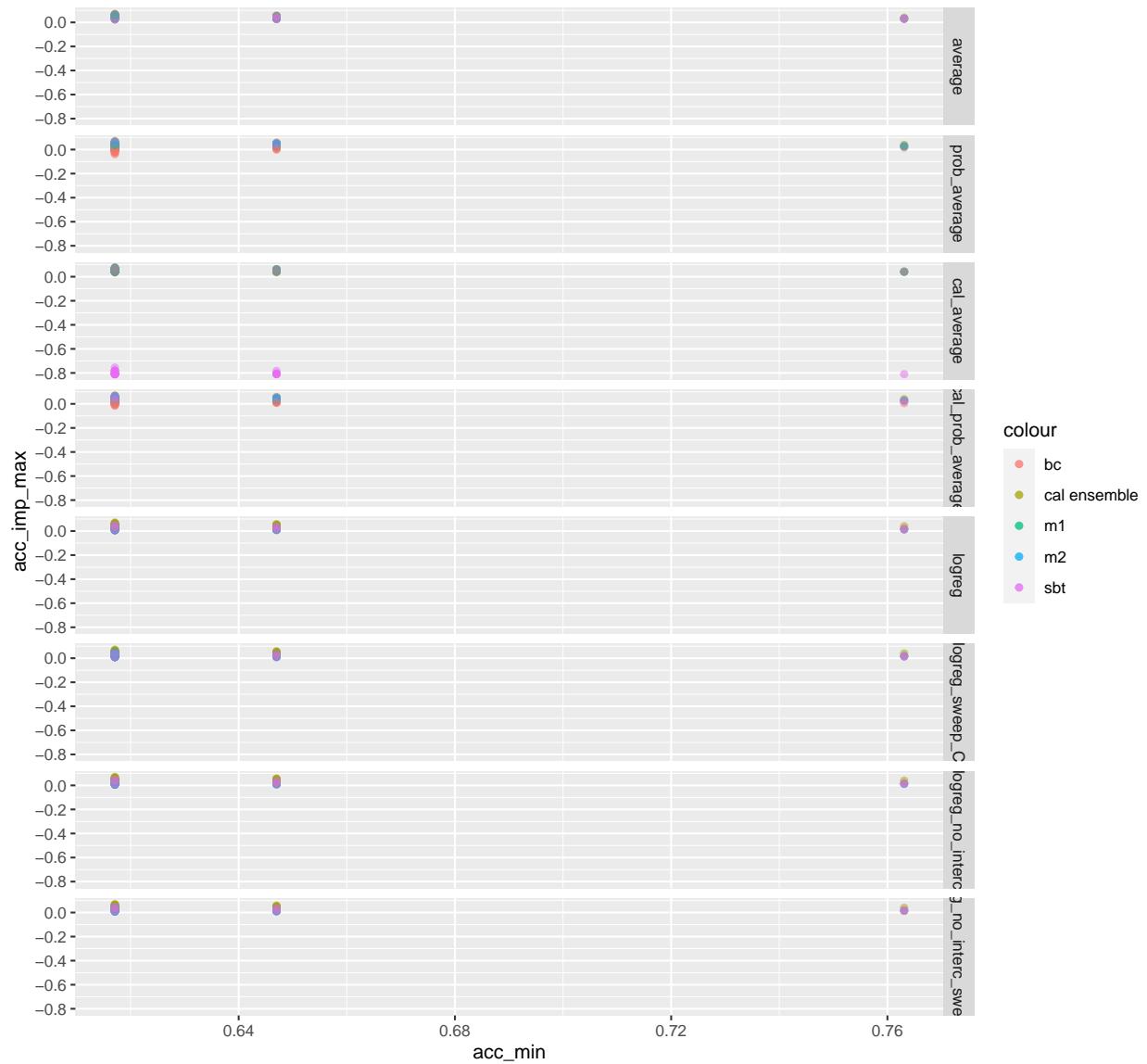
Accuracy improvement of ensemble over
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Ensemble size 6



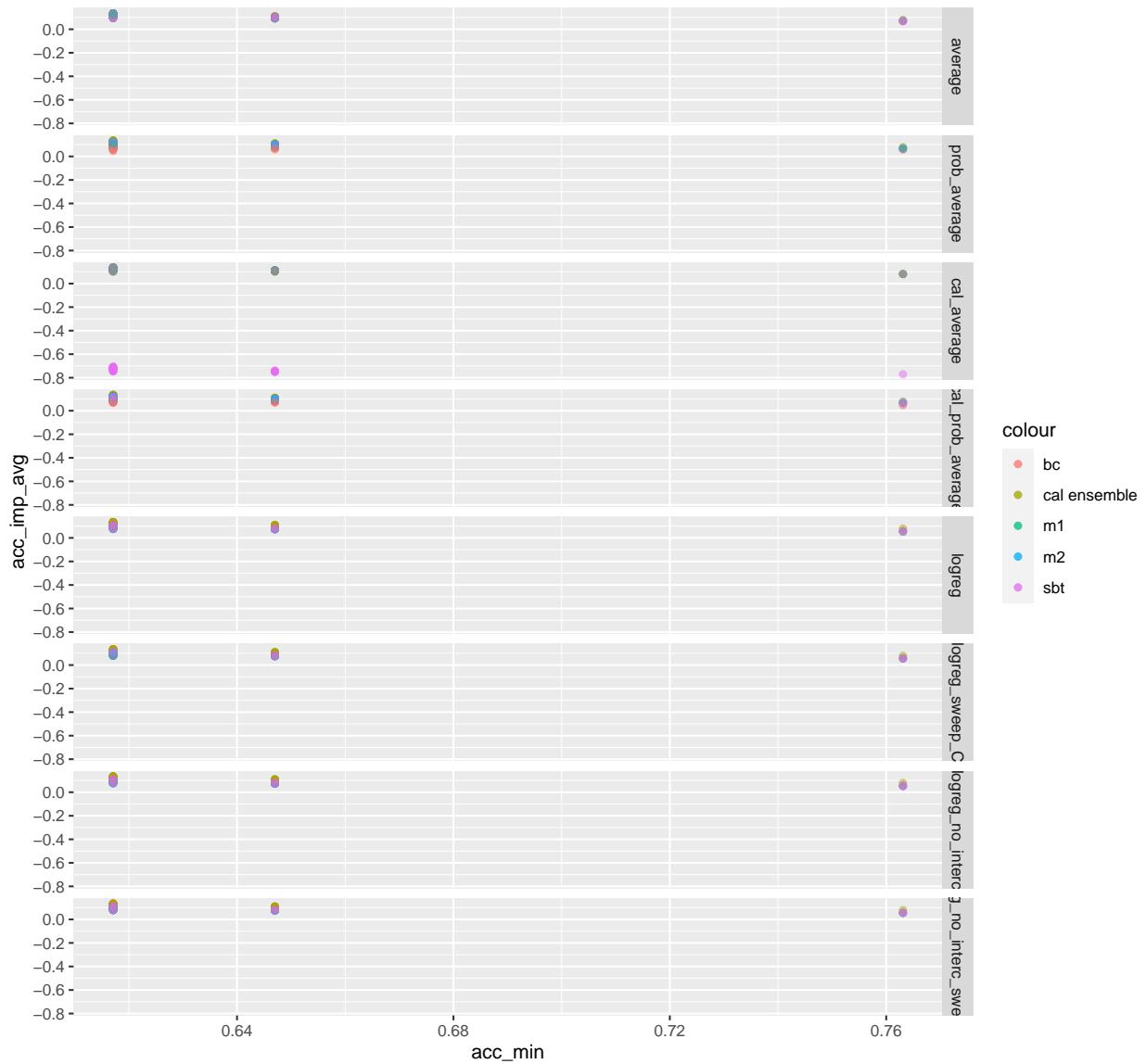
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Ensemble size 6



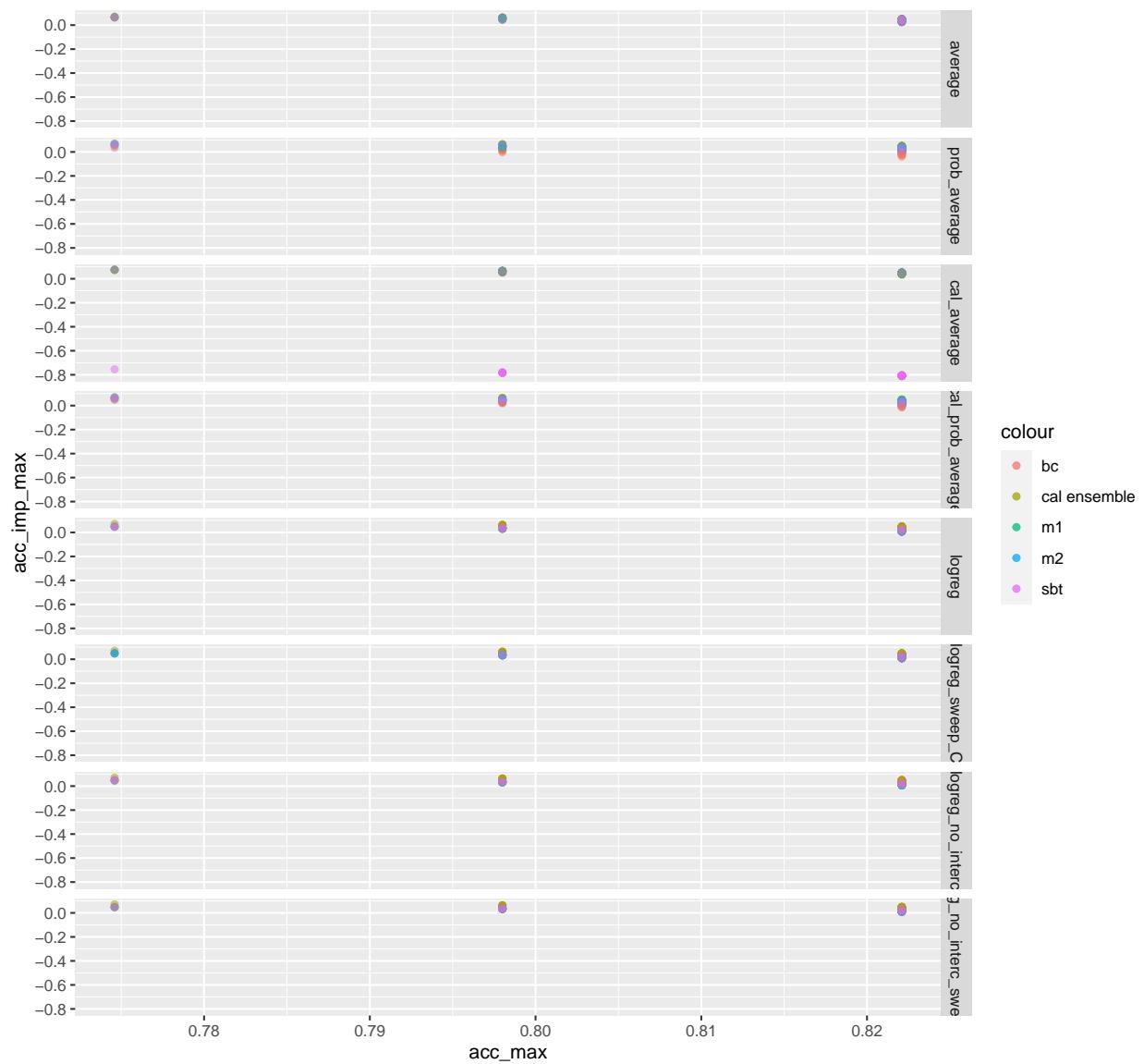
Accuracy improvement of ensemble over
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Ensemble size 6



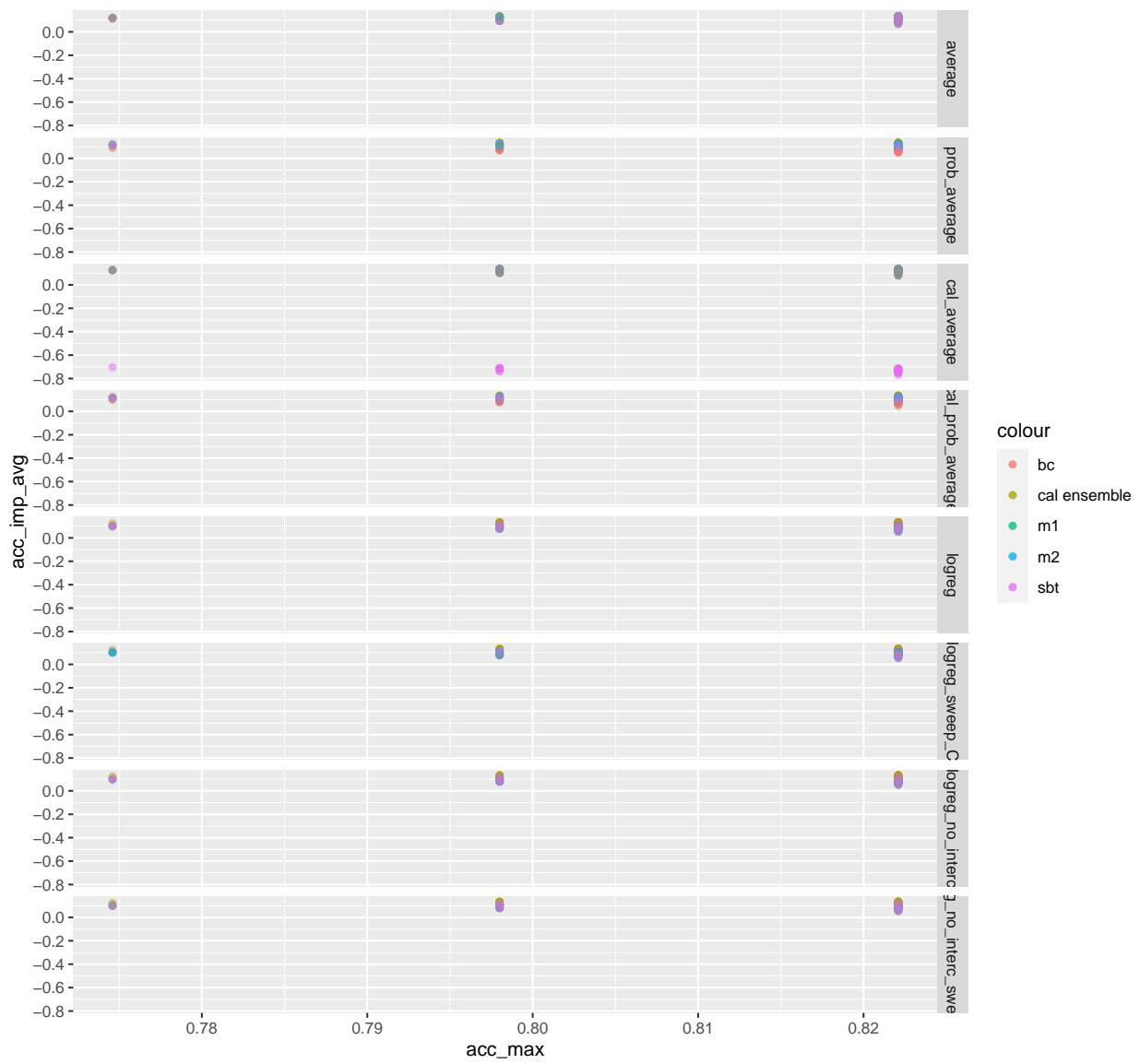
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Ensemble size 6



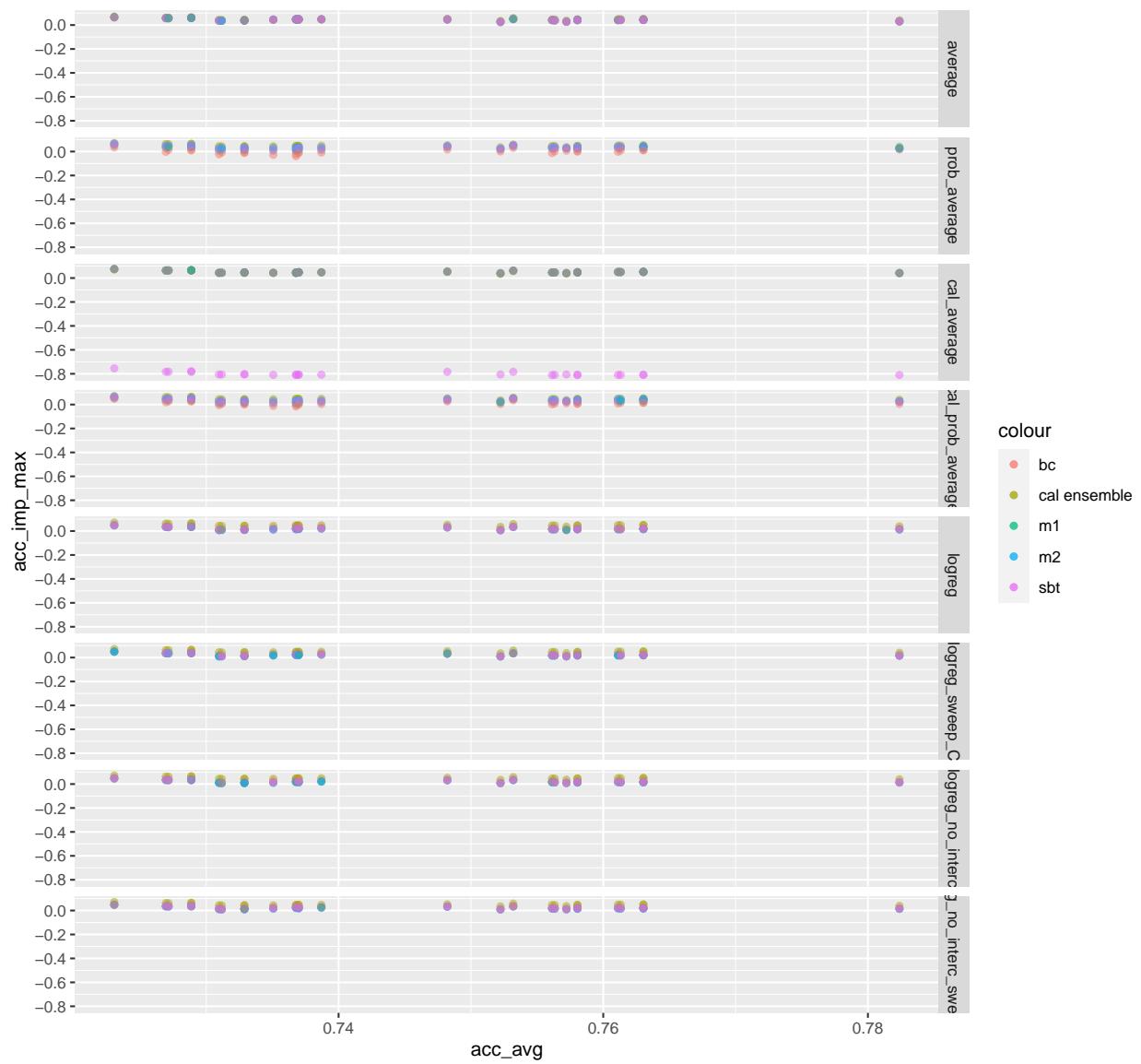
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Ensemble size 6



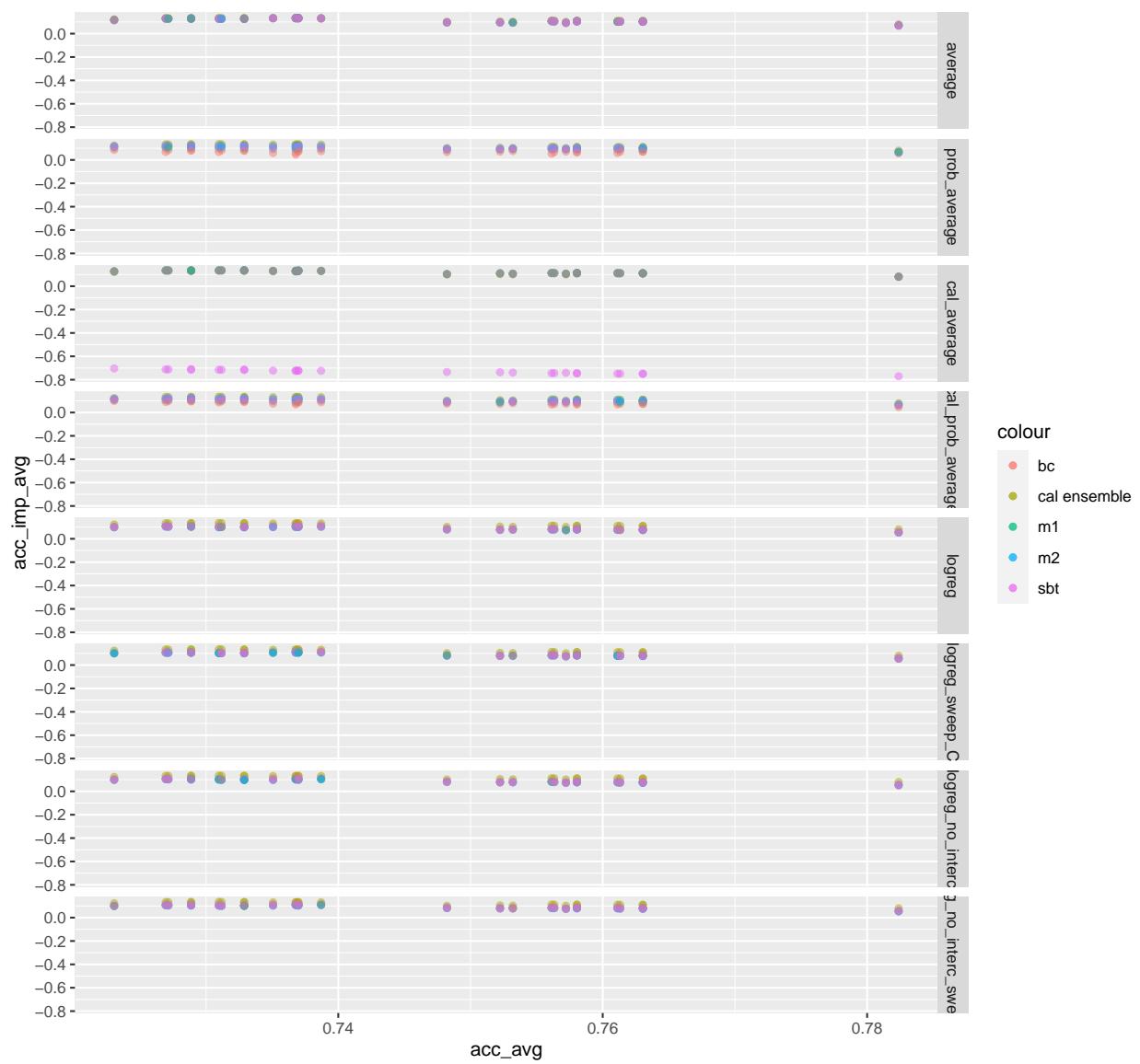
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Ensemble size 6



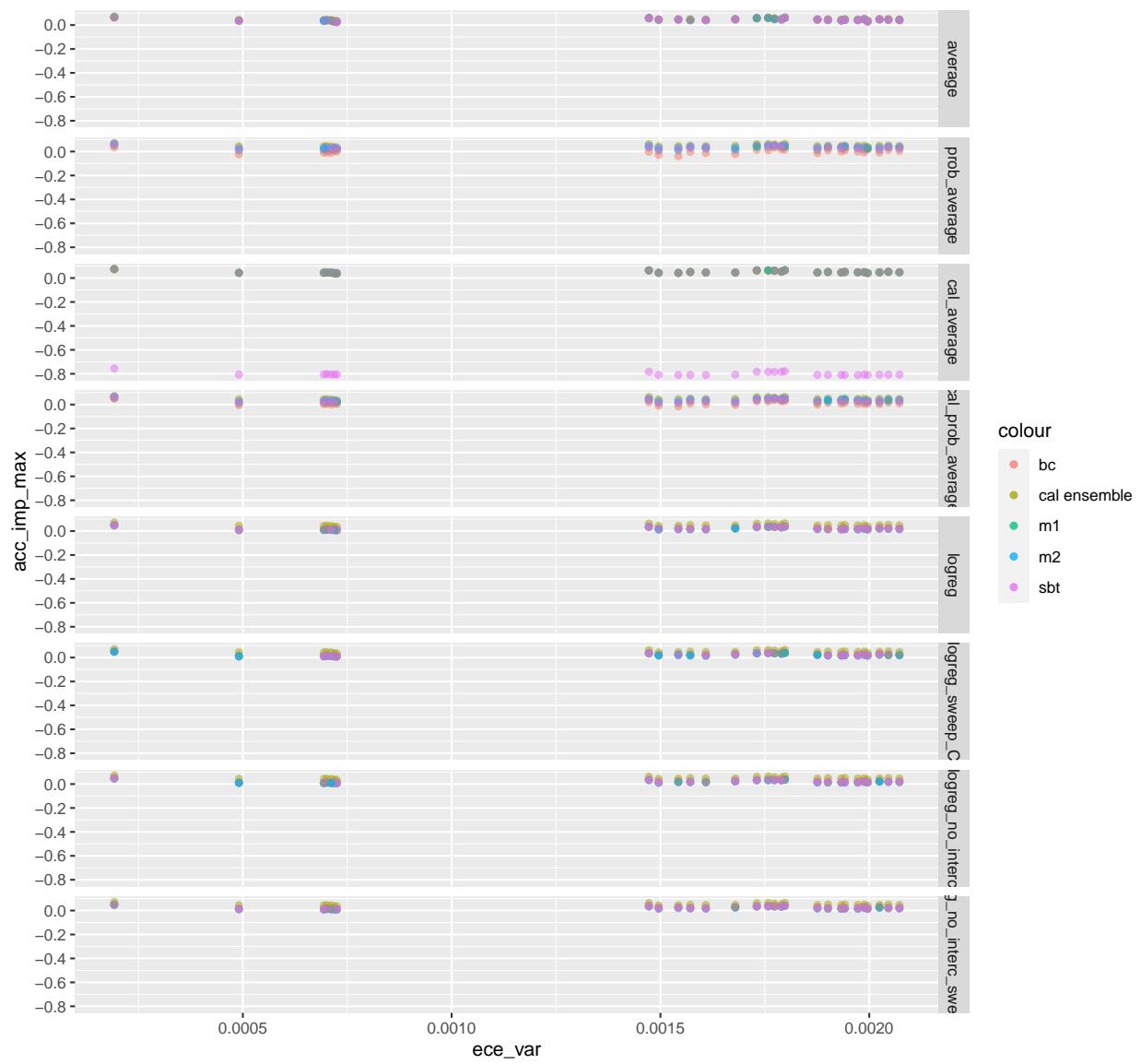
Accuracy improvement of ensemble over
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Ensemble size 6



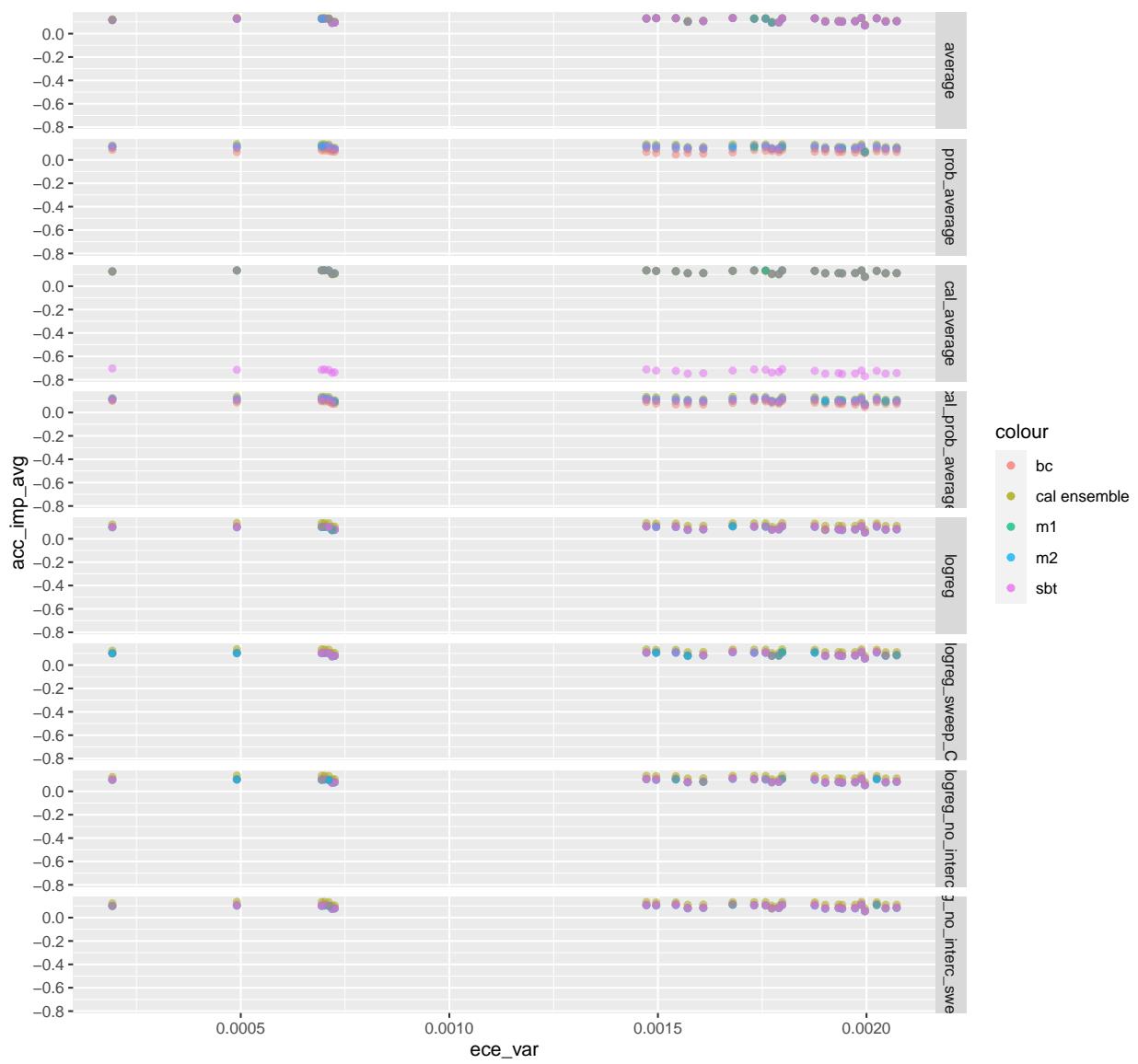
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Ensemble size 6



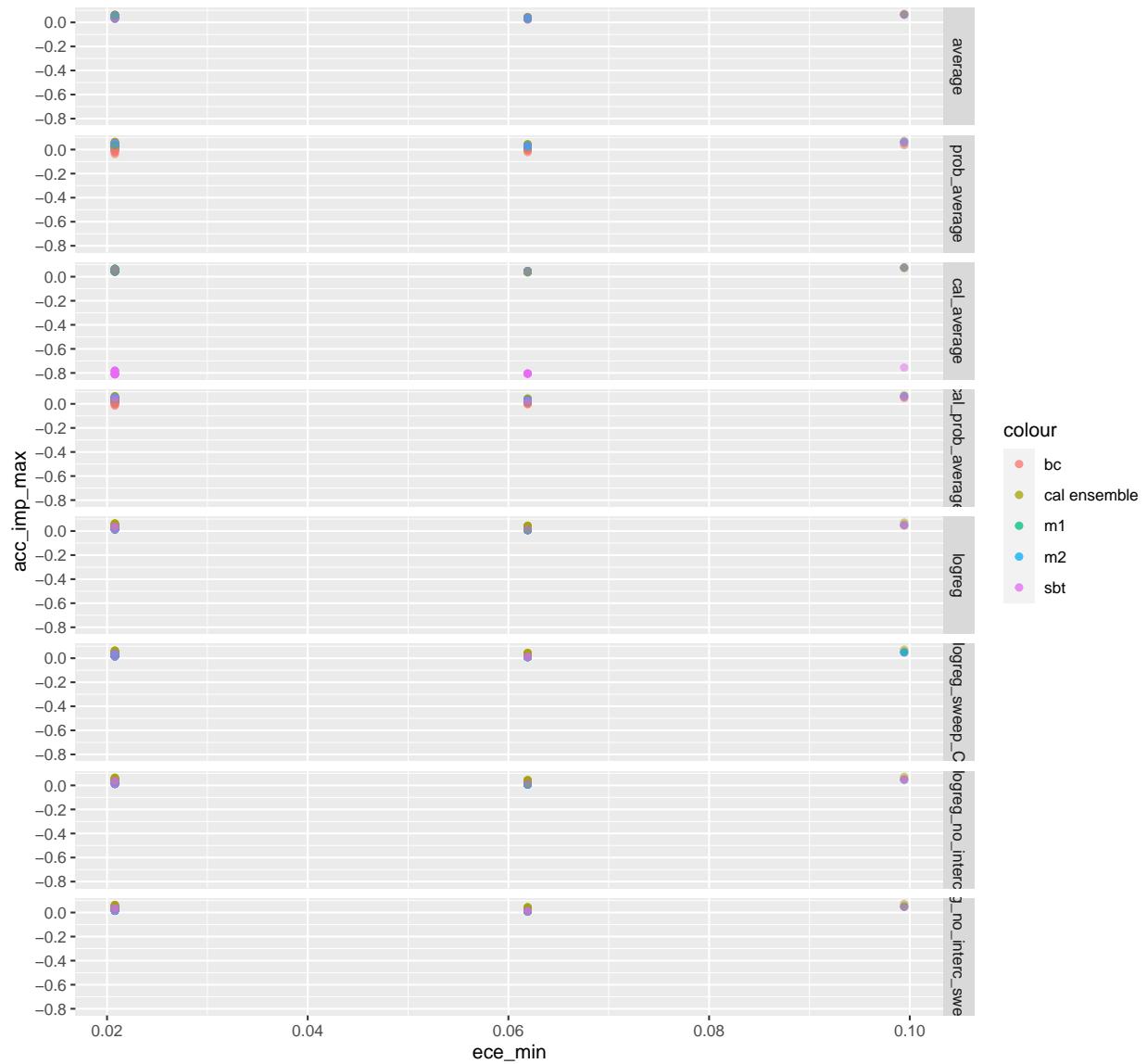
Accuracy improvement of ensemble over
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Ensemble size 6



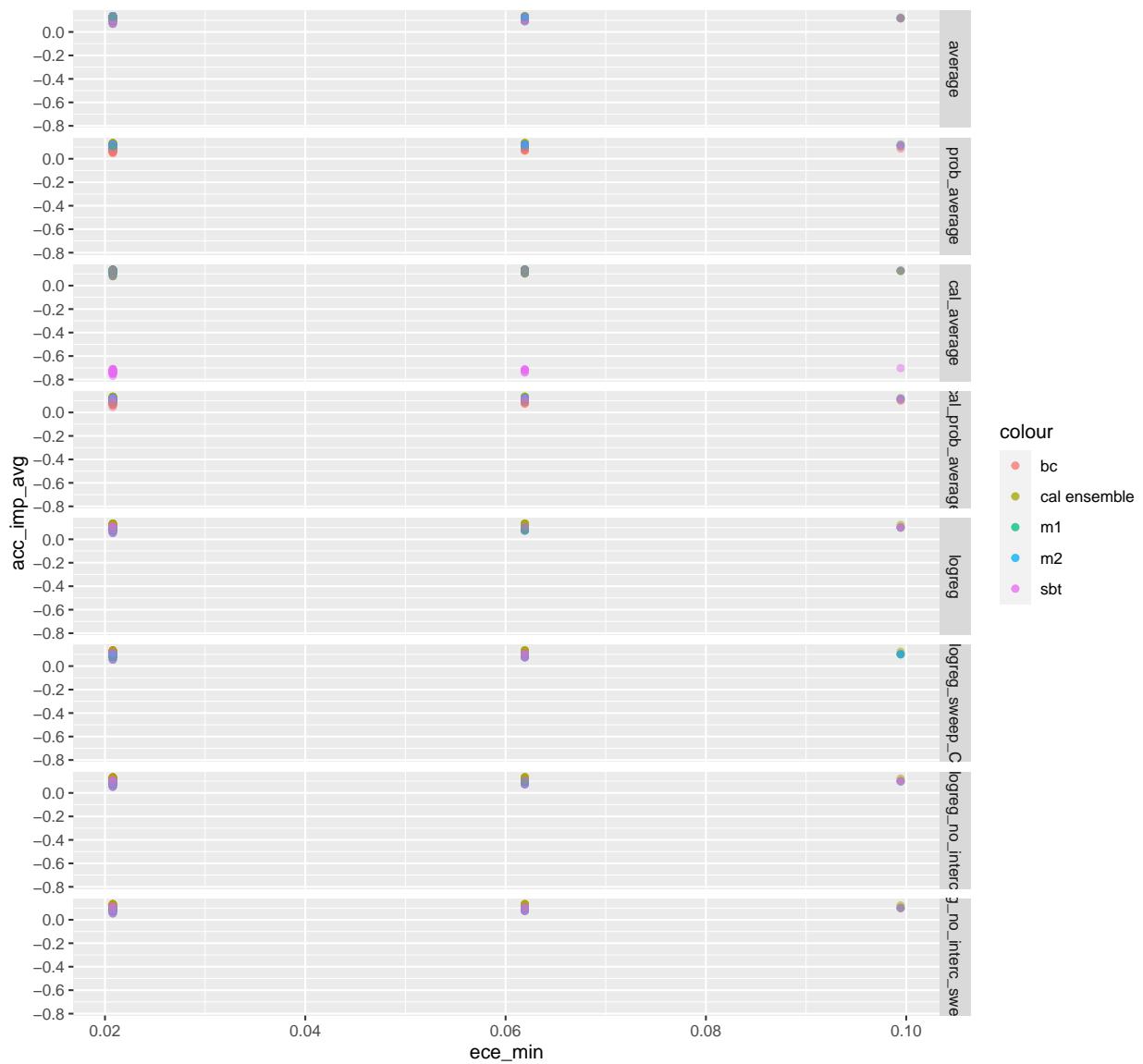
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Ensemble size 6



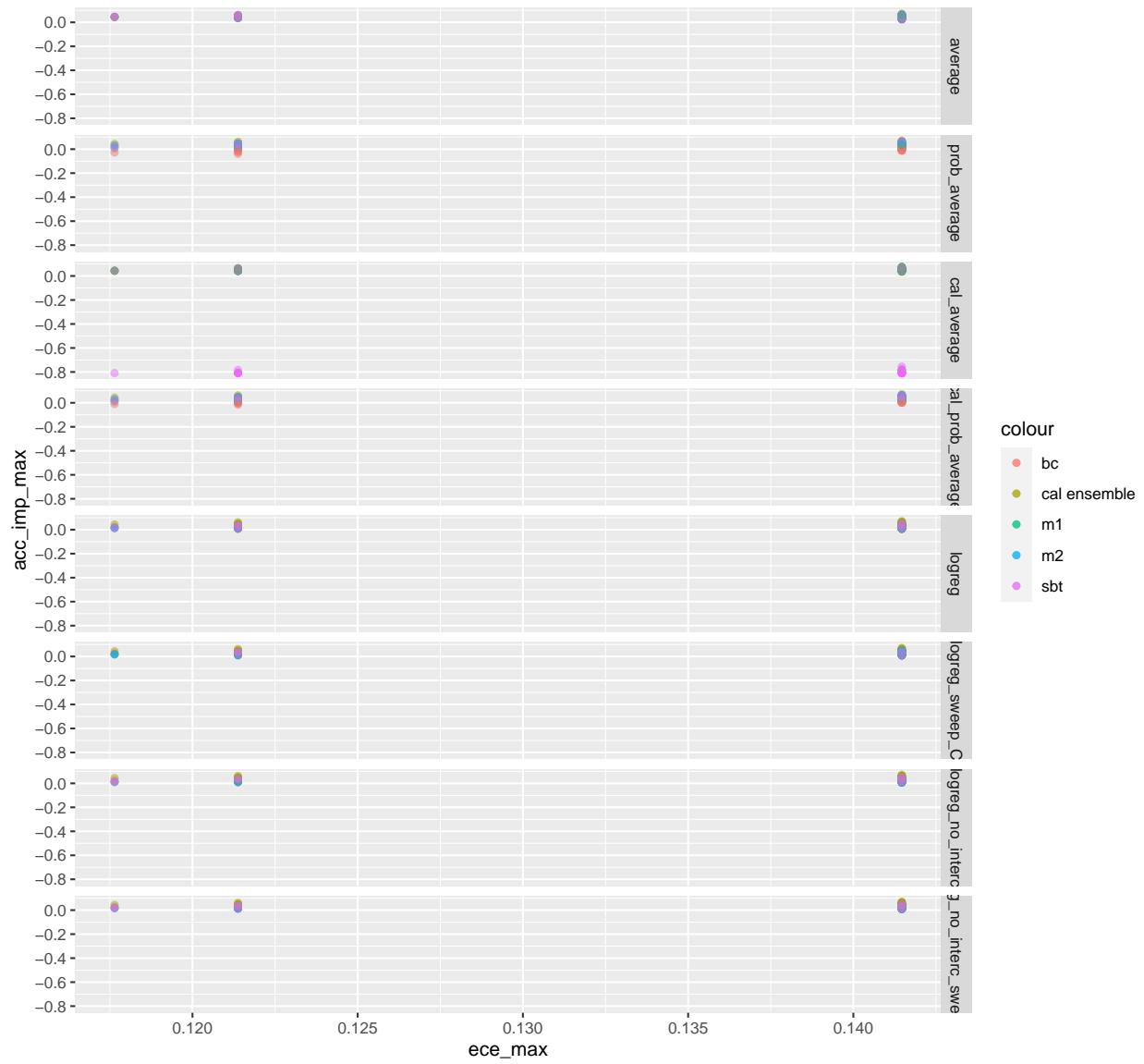
Accuracy improvement of ensemble over
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Ensemble size 6



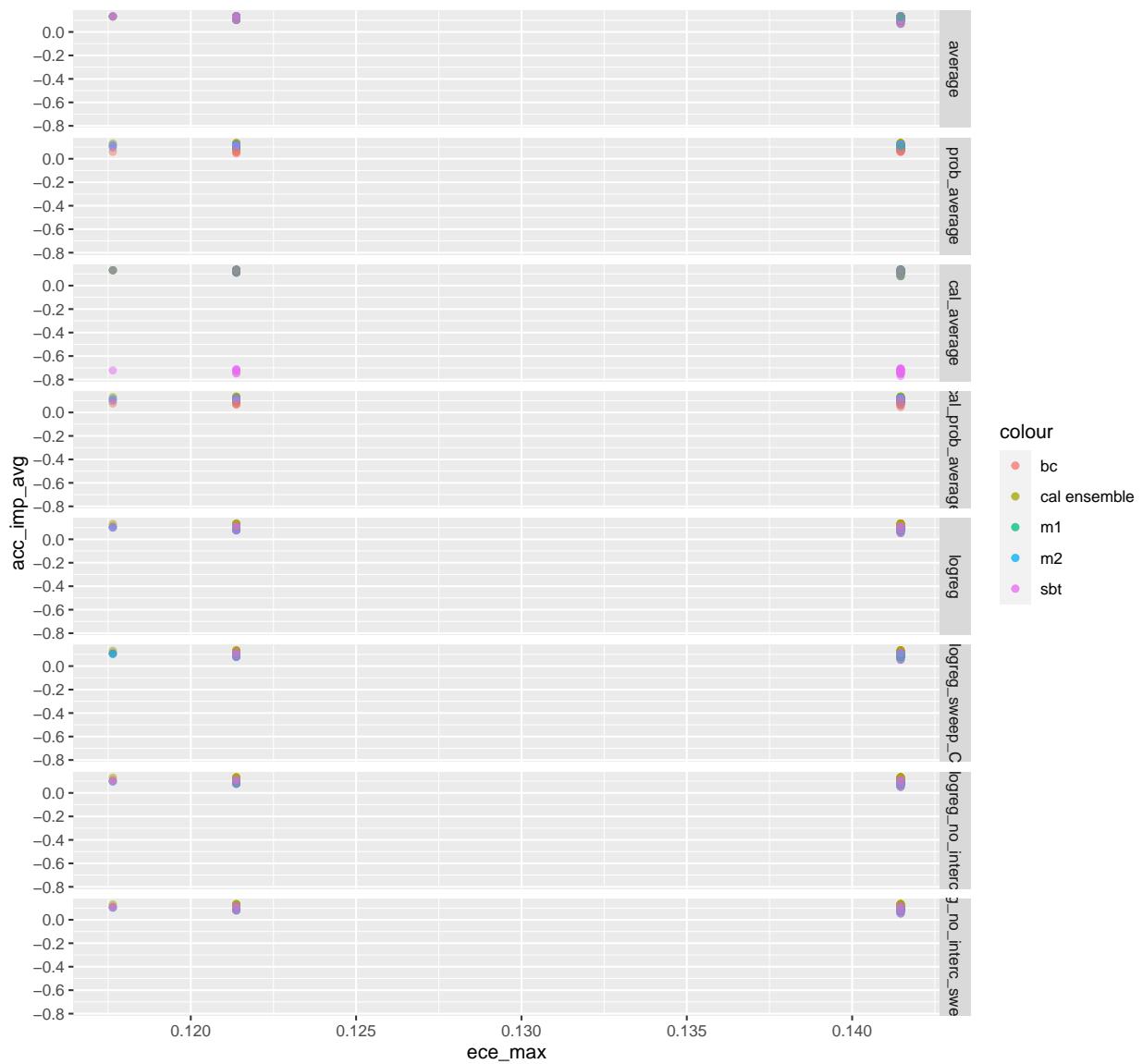
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Ensemble size 6



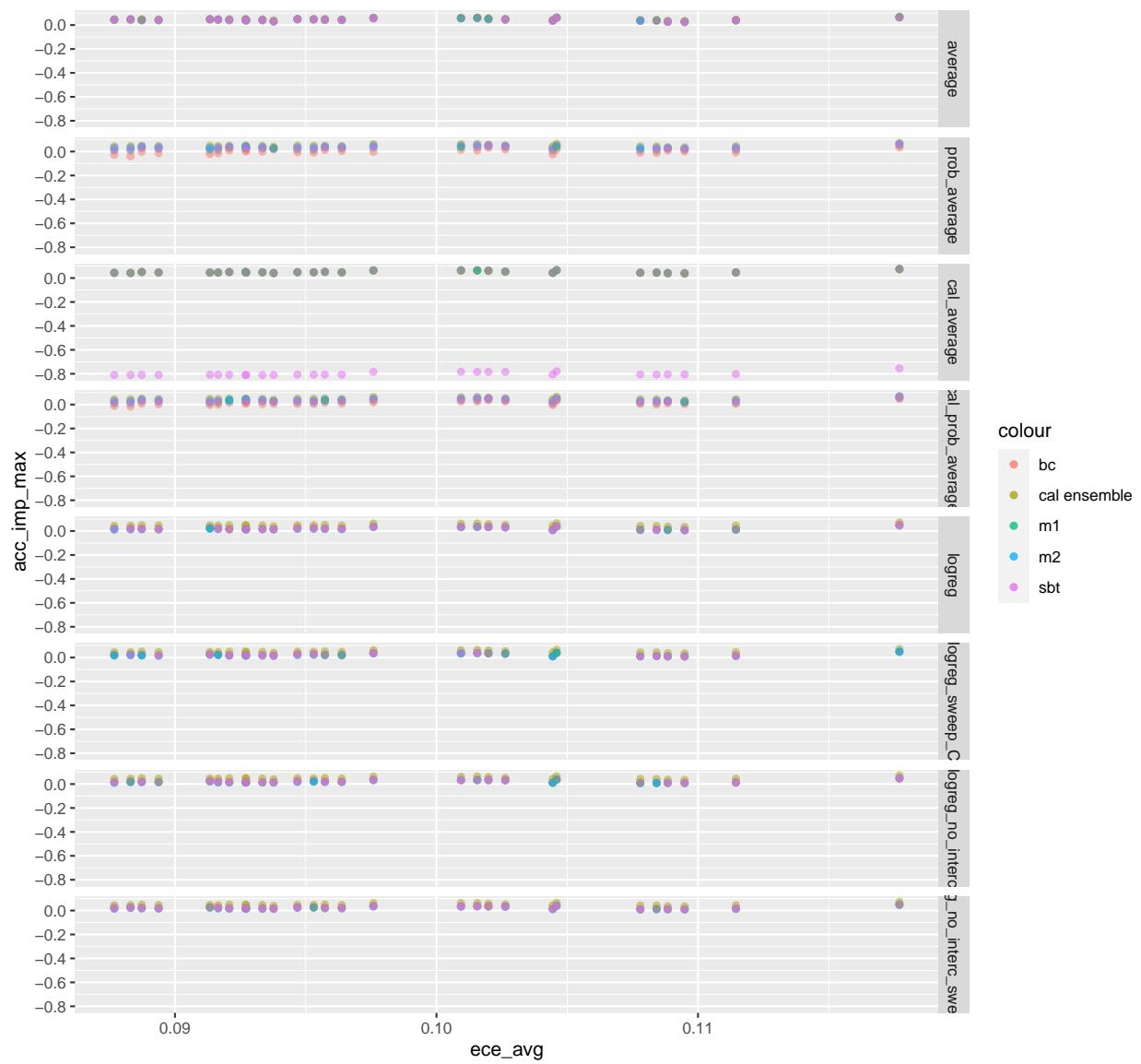
Accuracy improvement of ensemble over
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Ensemble size 6



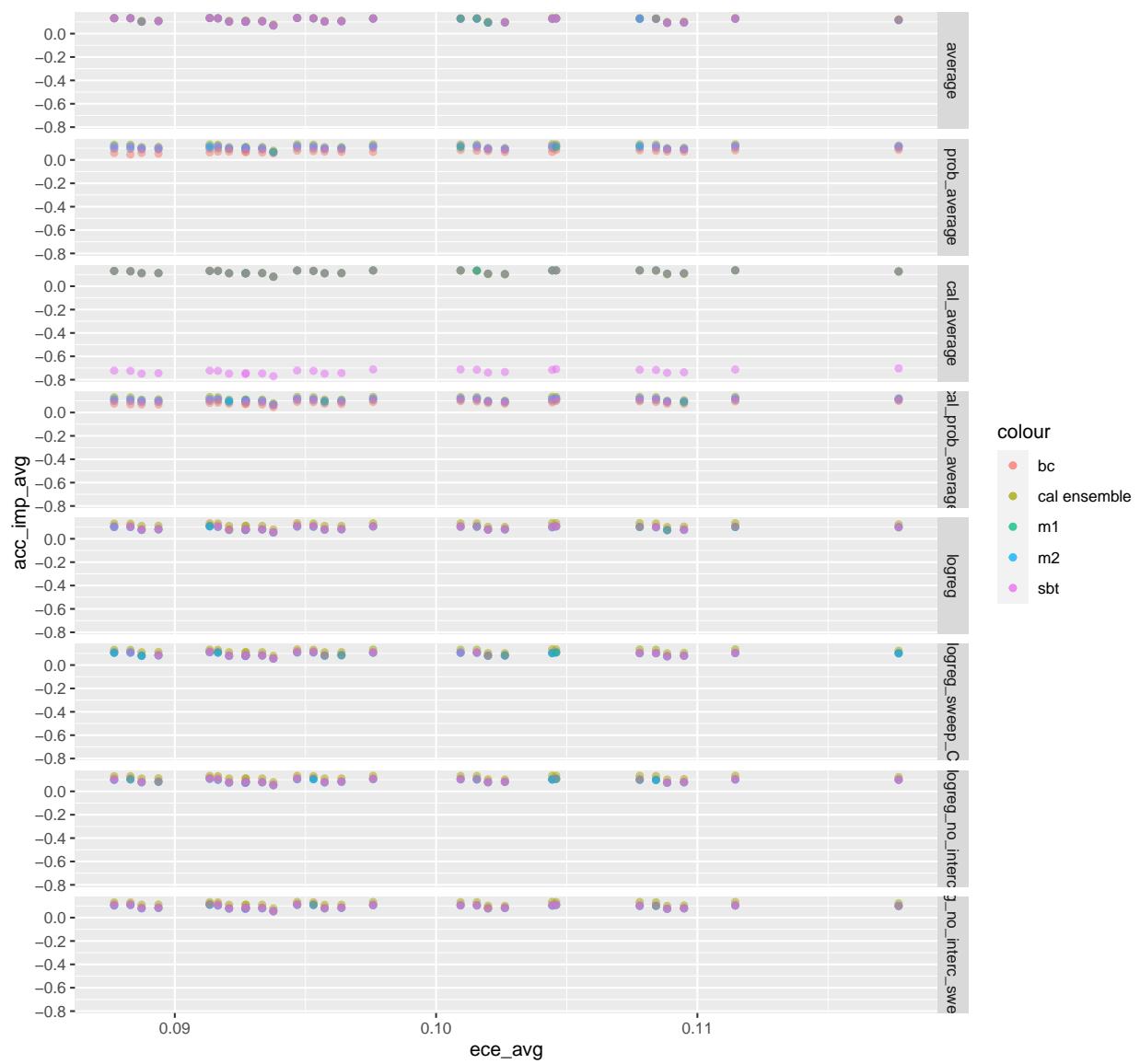
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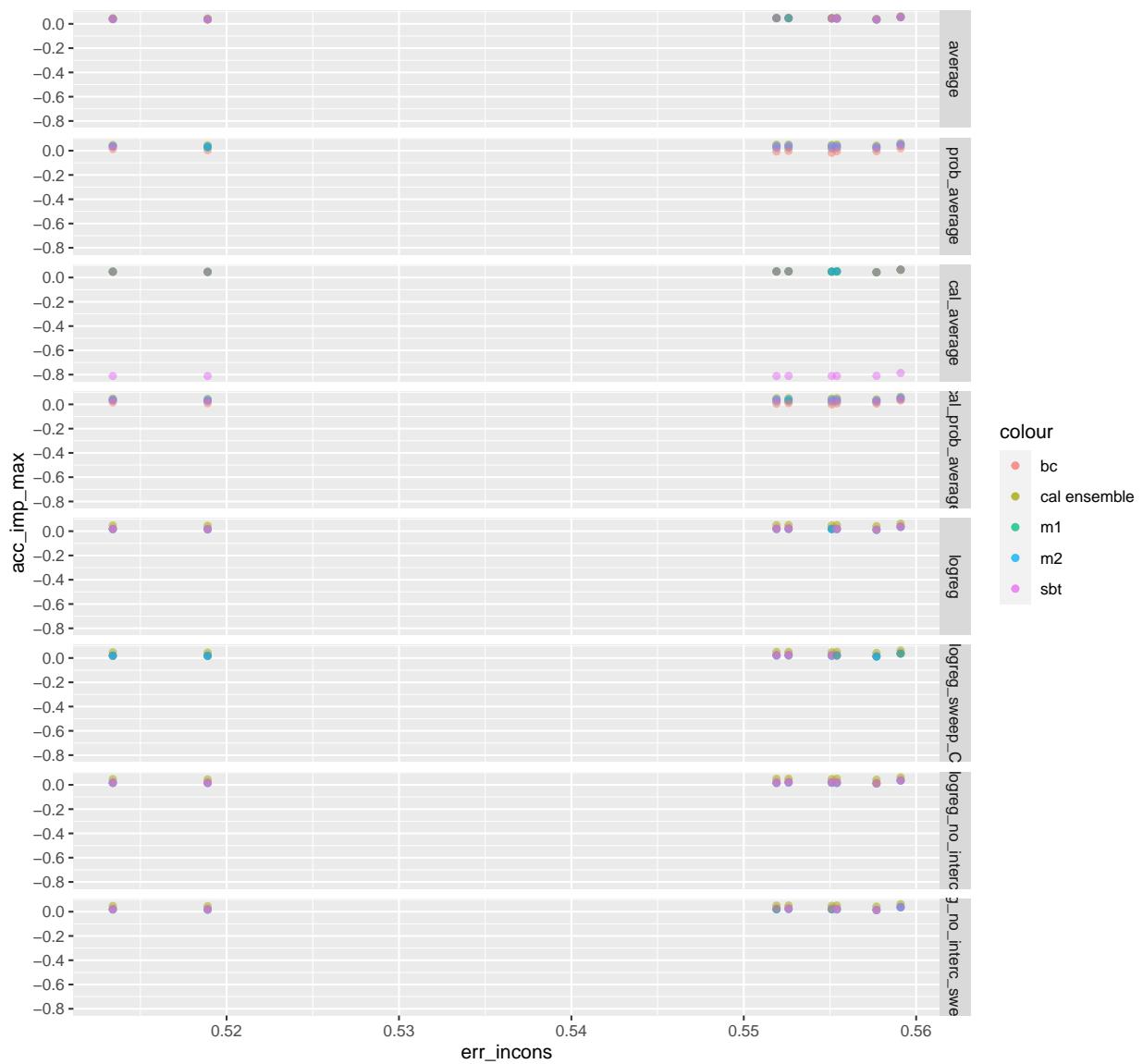
Accuracy improvement of ensemble over
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Ensemble size 6



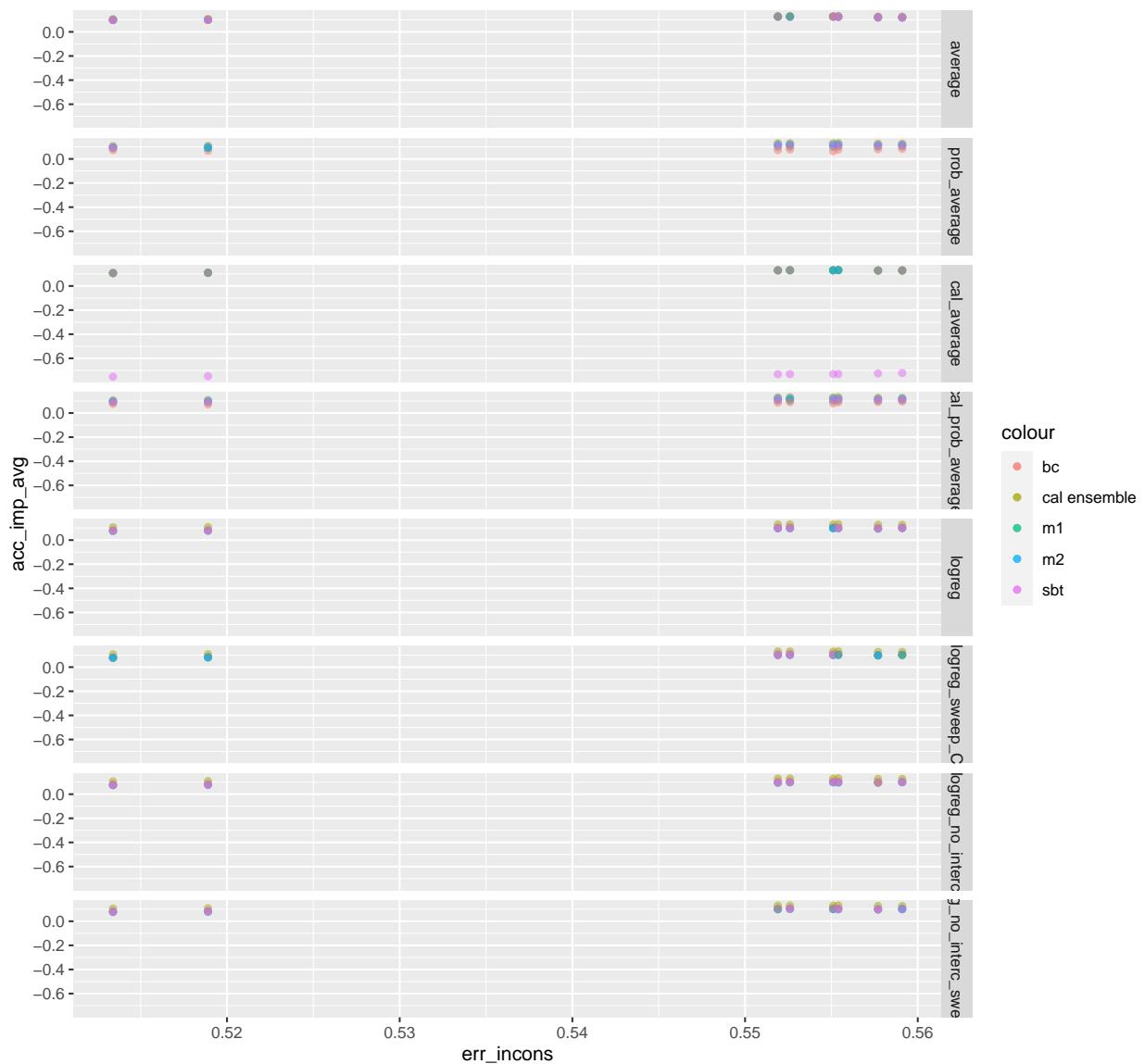
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Ensemble size 6



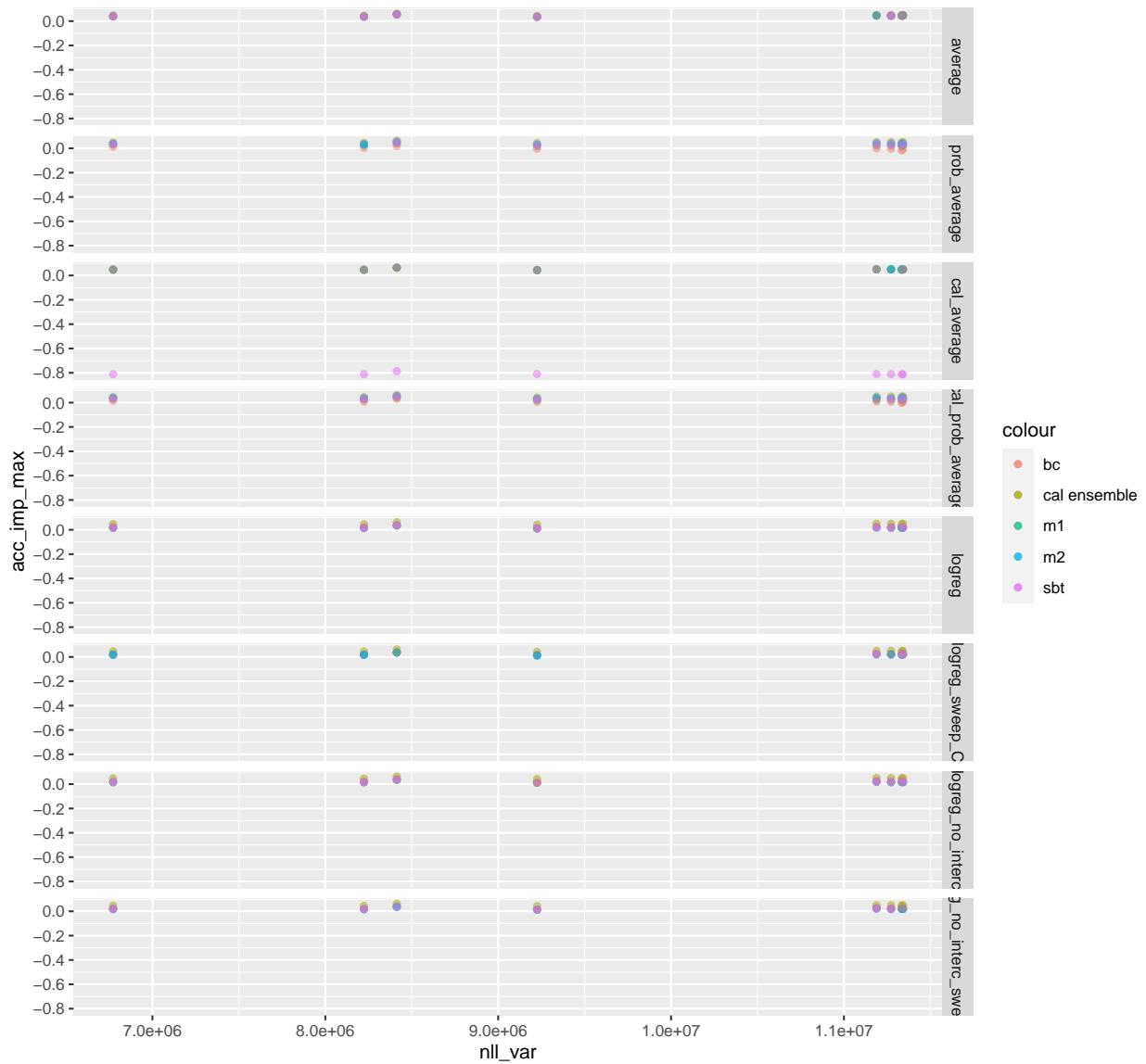
Accuracy improvement of ensemble over
the best of networks vs err_incons.
Ensemble size 7



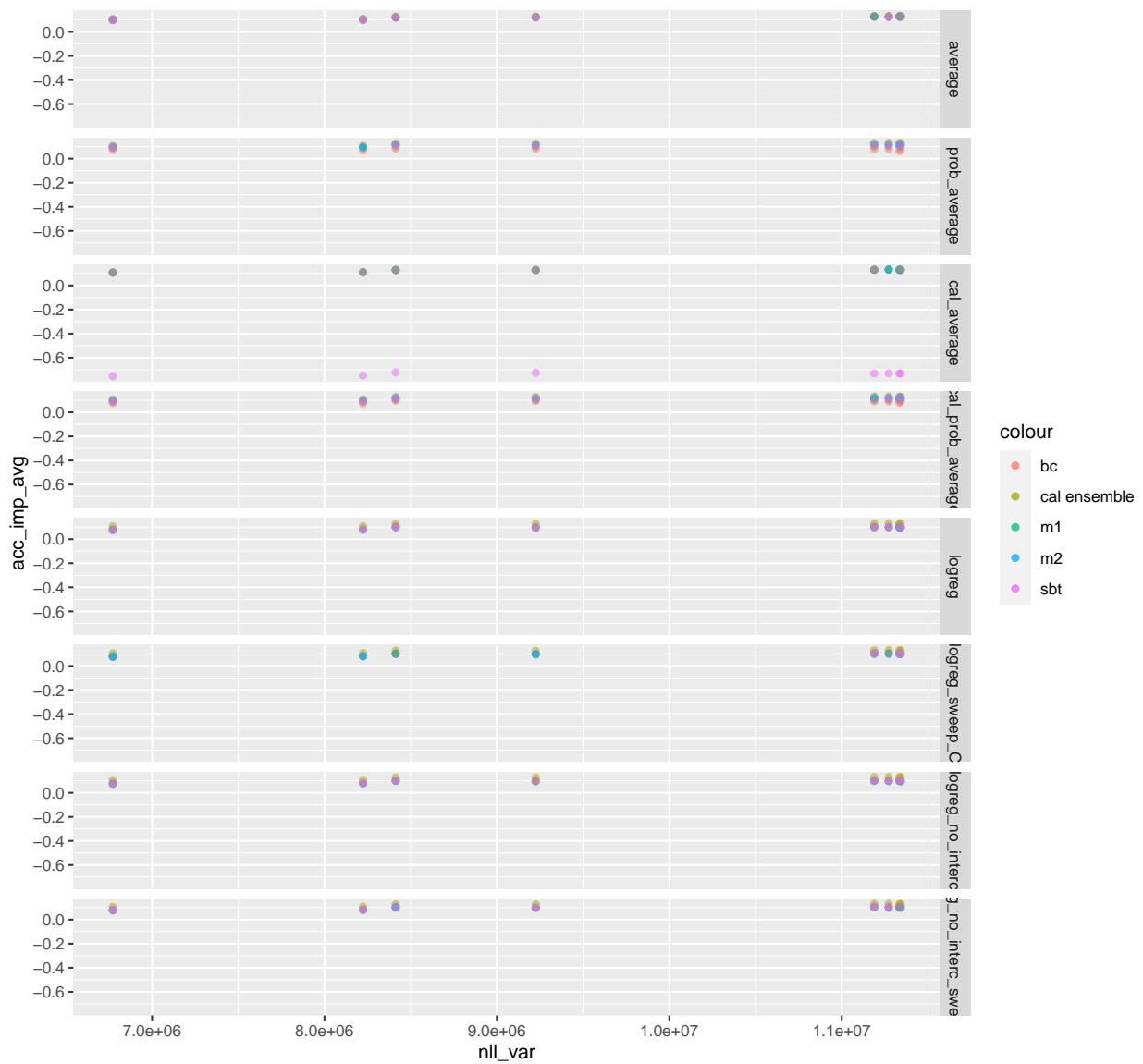
Accuracy improvement of ensemble over
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Ensemble size 7



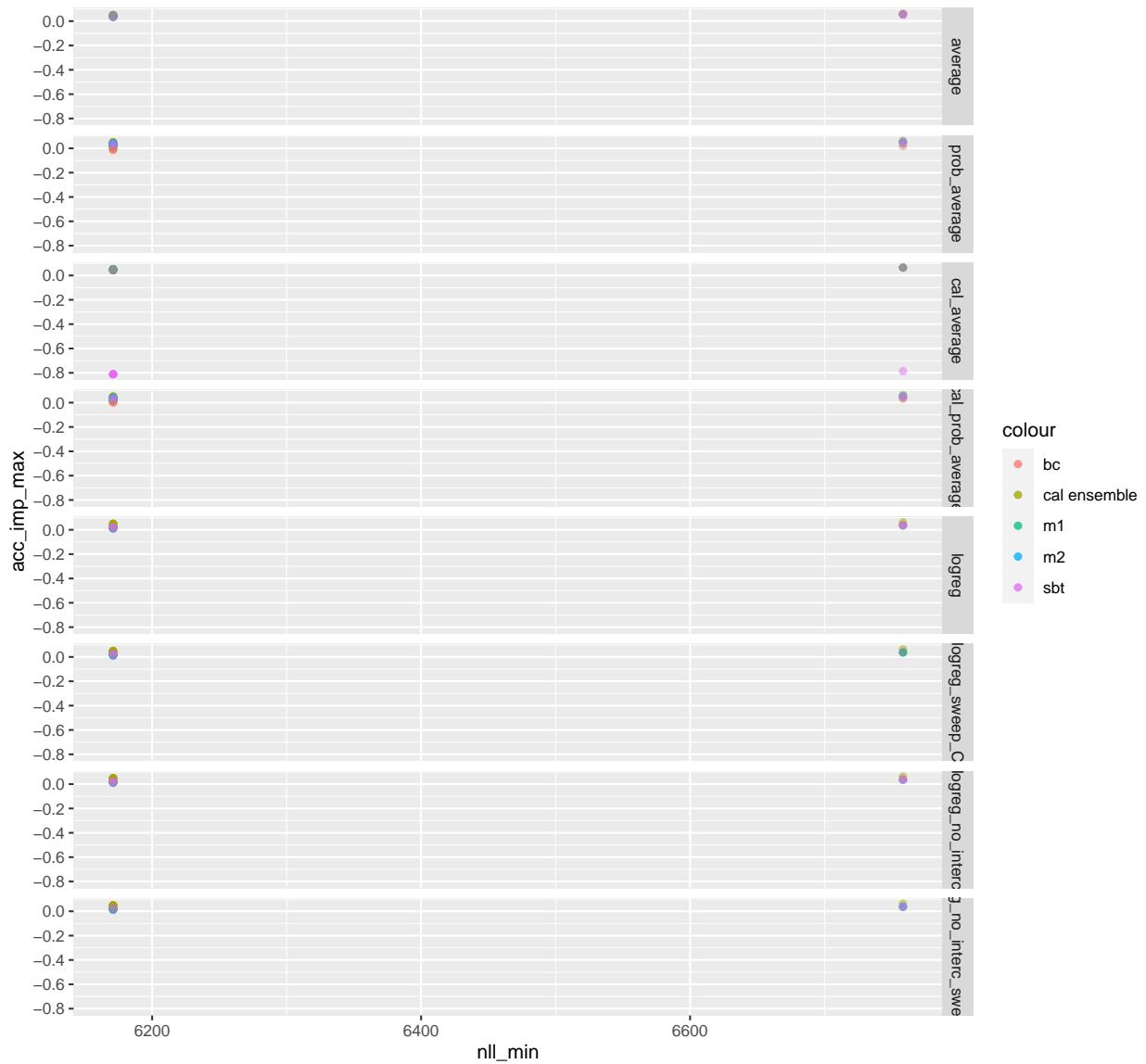
Accuracy improvement of ensemble over
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Ensemble size 7



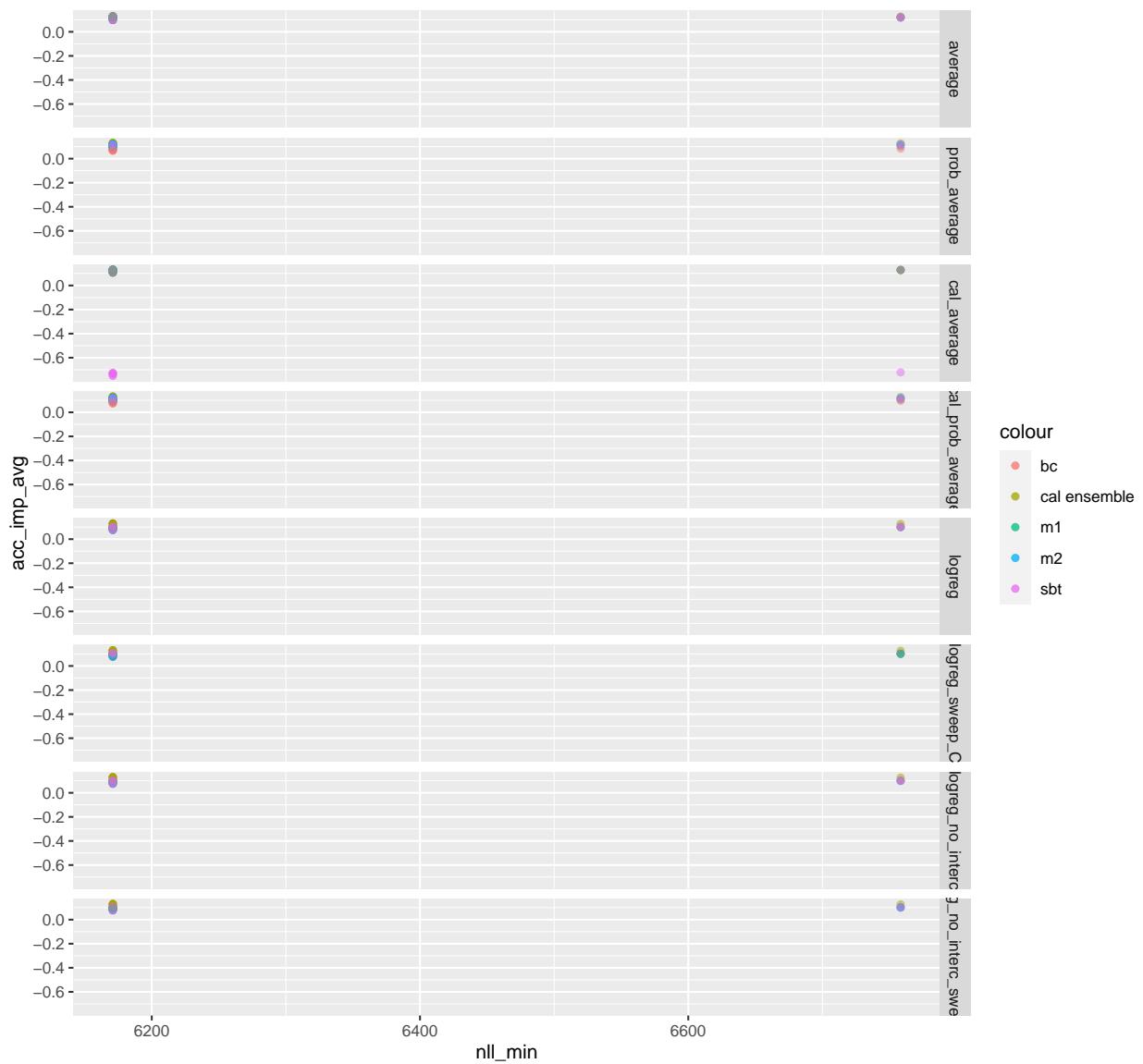
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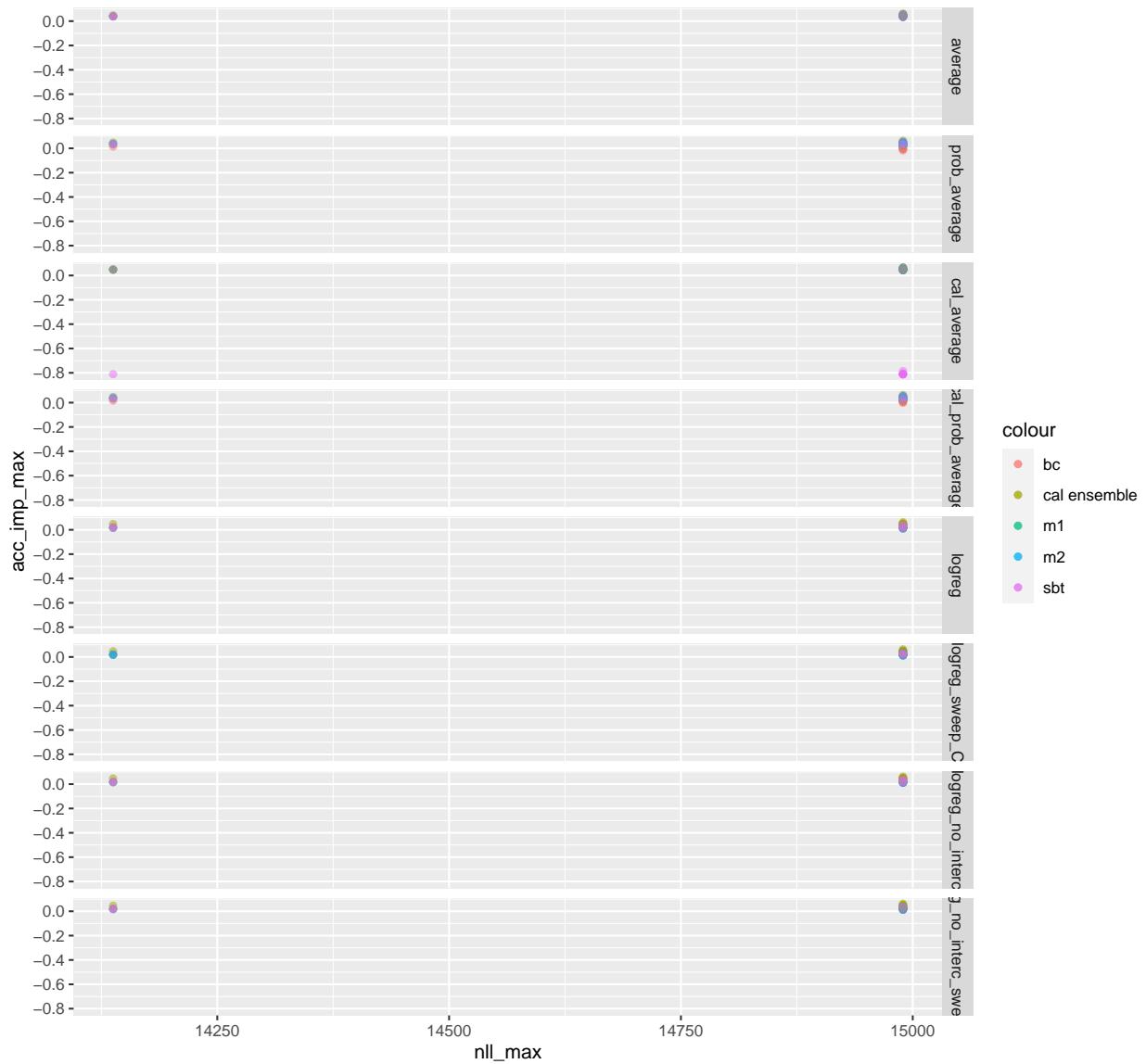
Accuracy improvement of ensemble over
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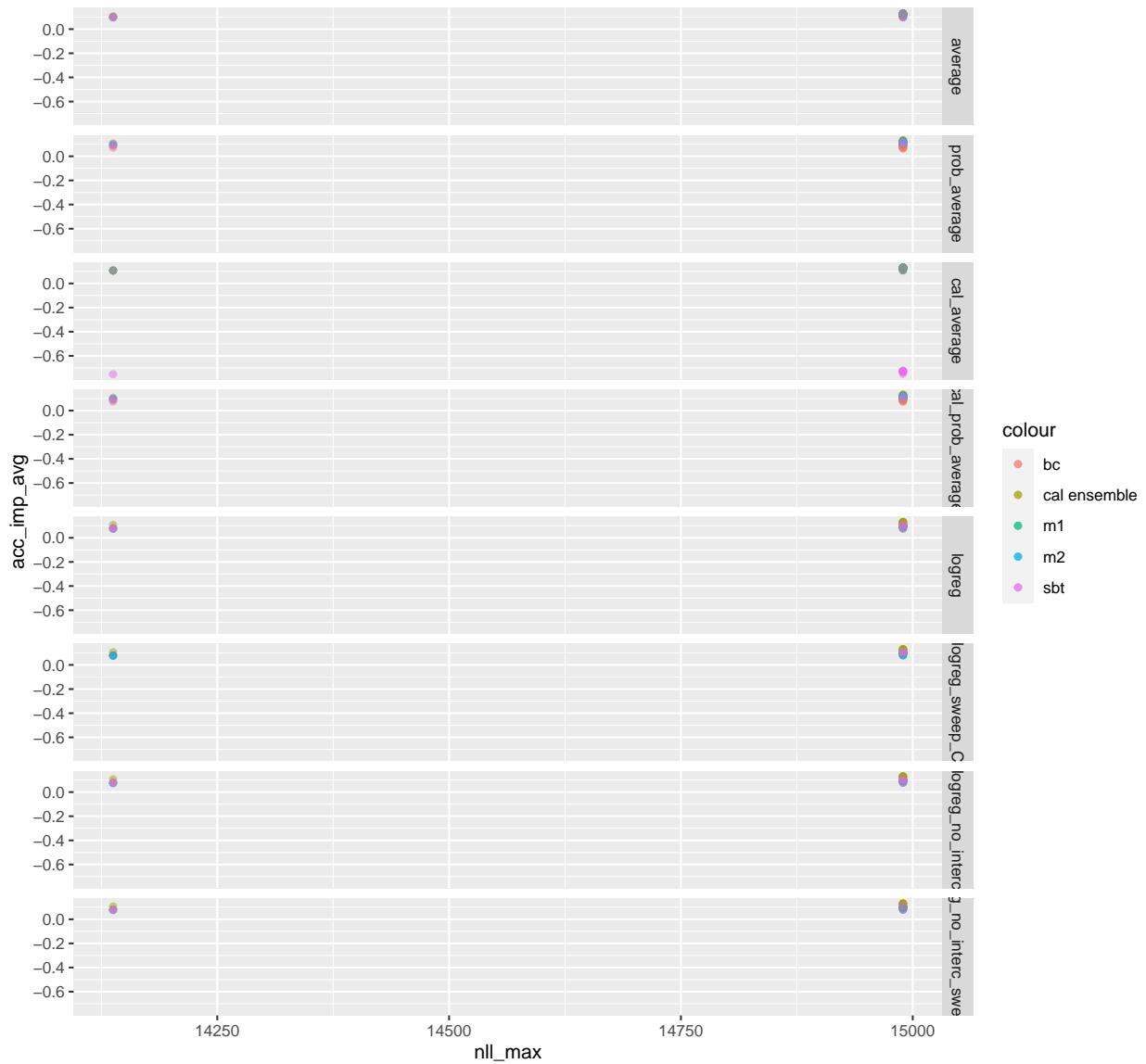
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Ensemble size 7



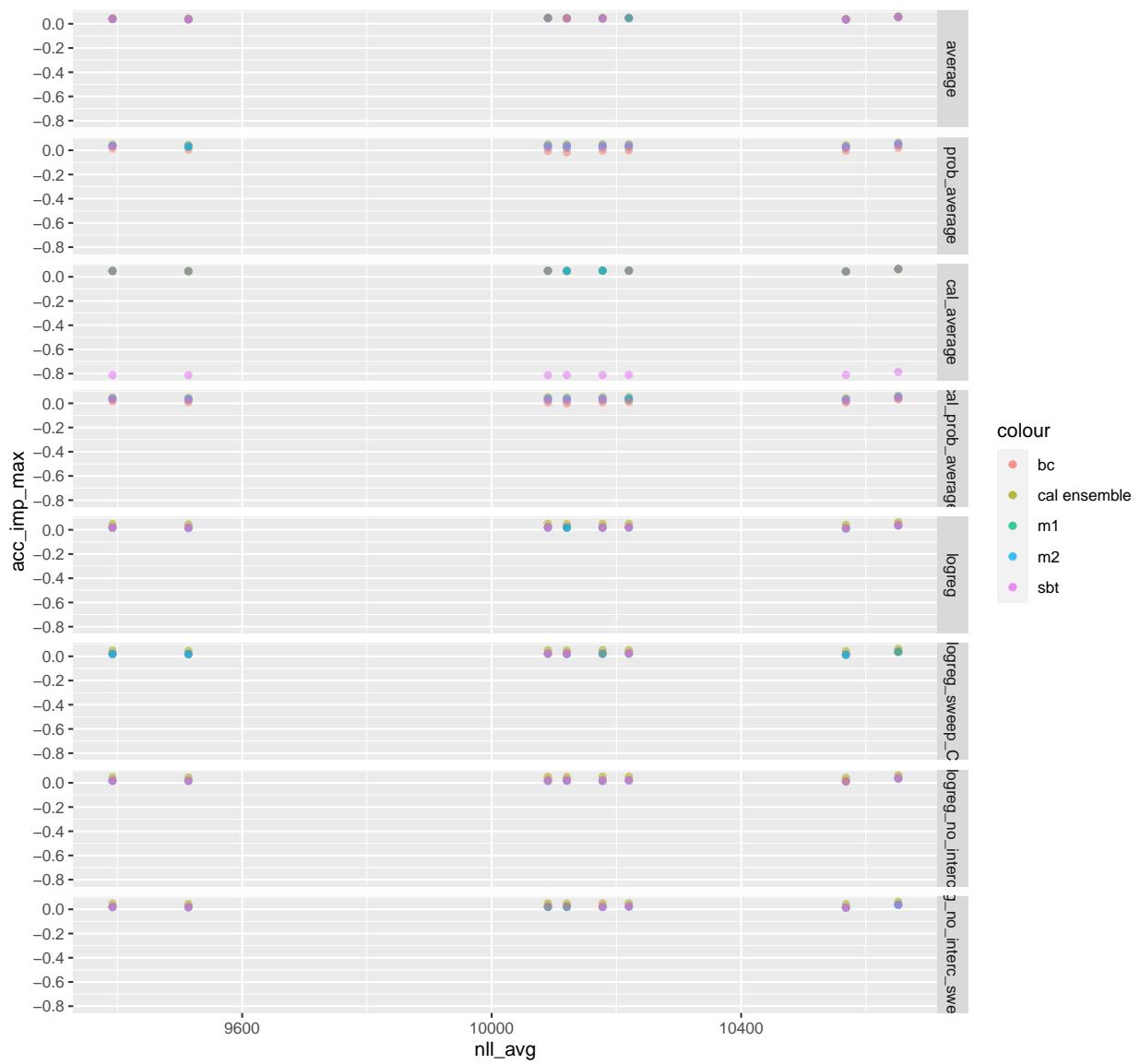
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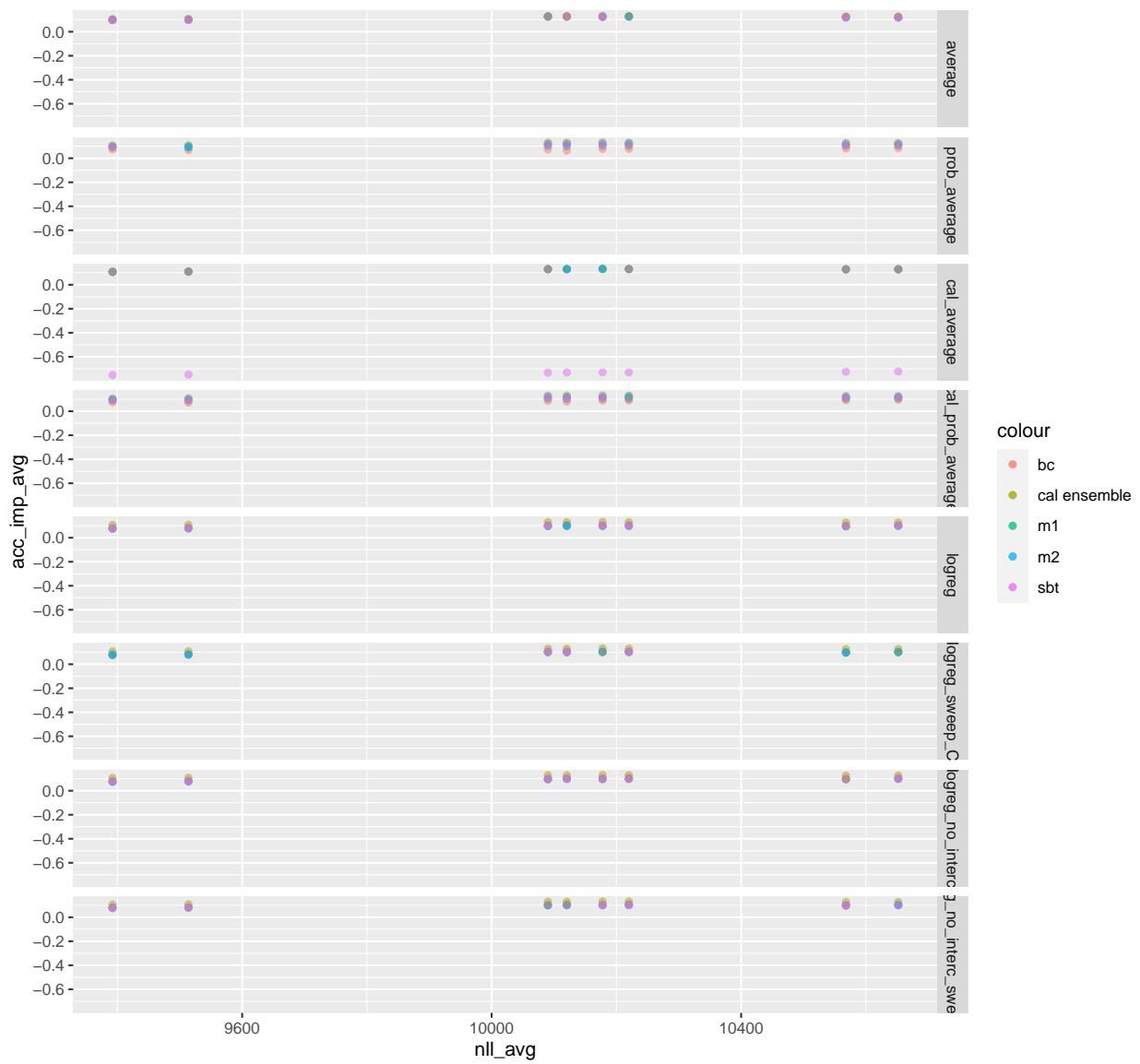
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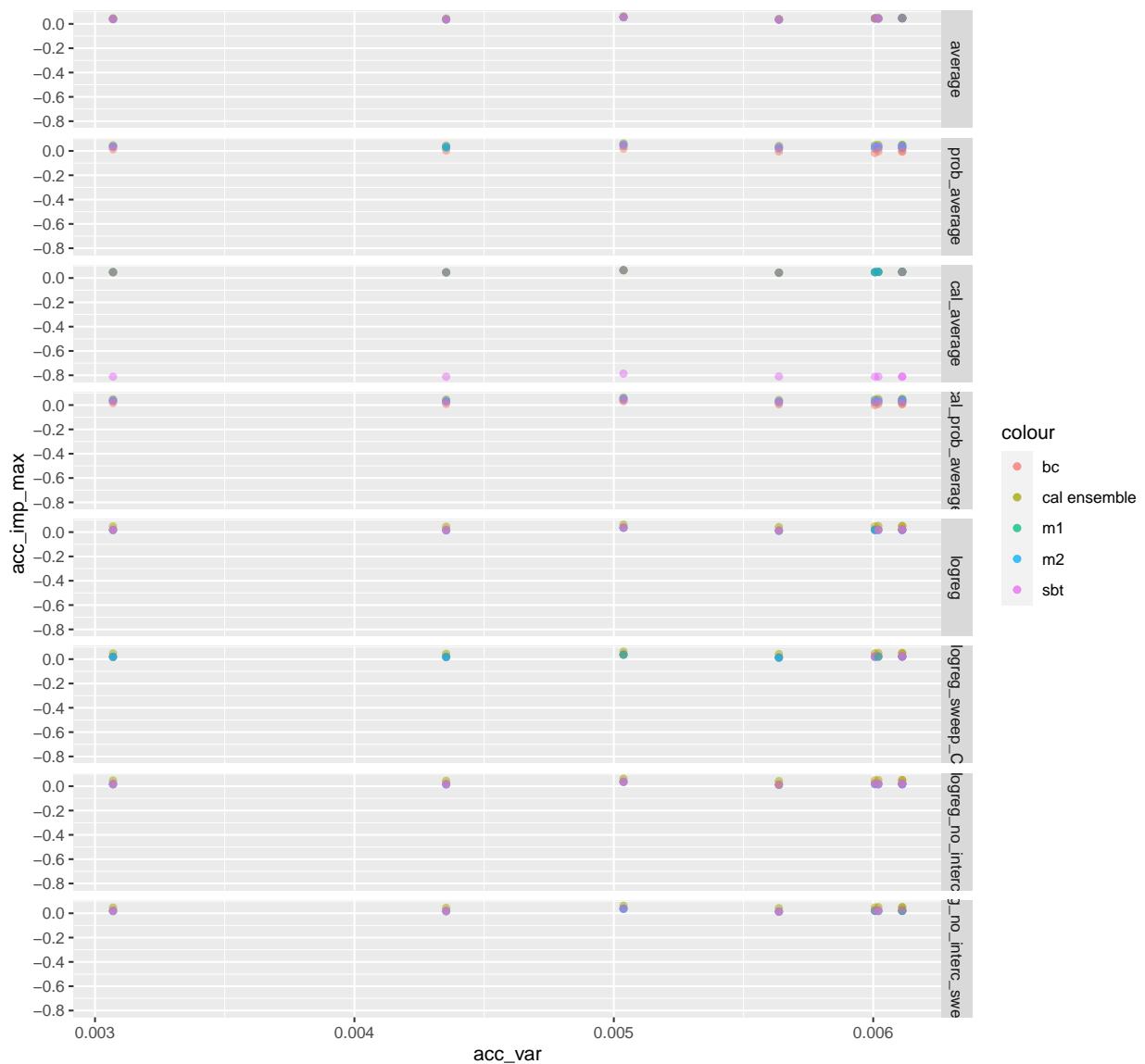
Accuracy improvement of ensemble over
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Ensemble size 7



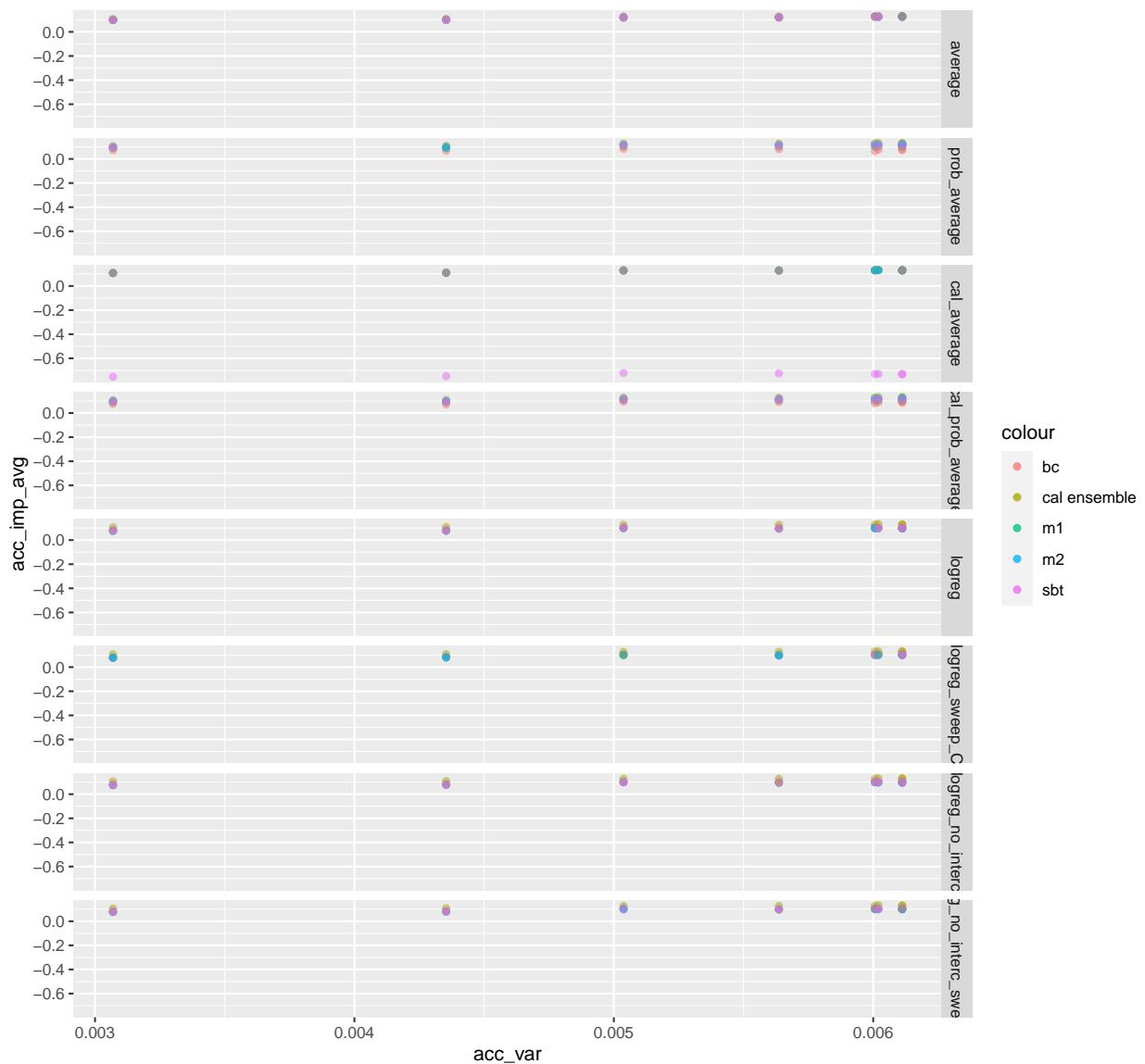
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Ensemble size 7



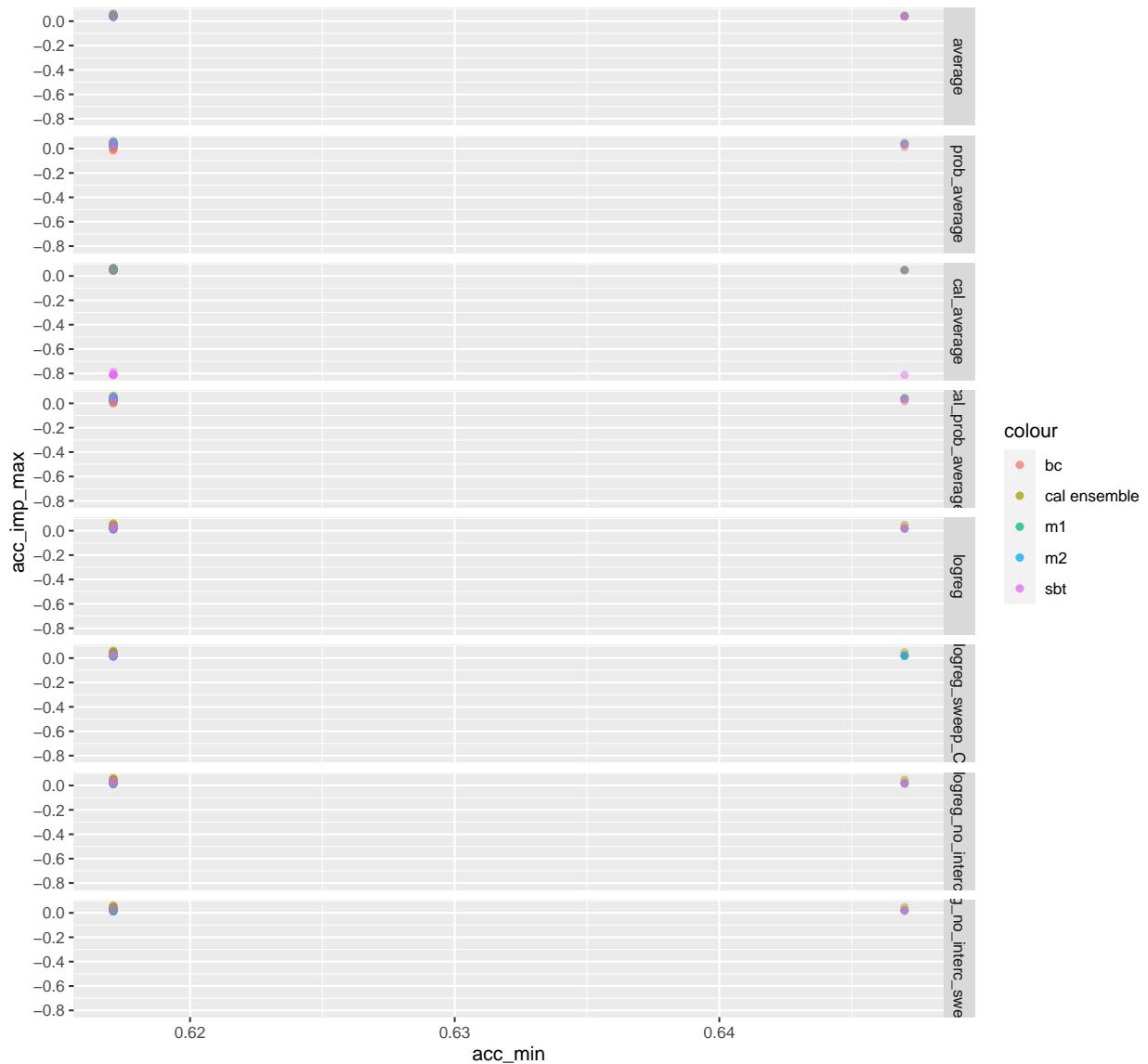
Accuracy improvement of ensemble over
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Ensemble size 7



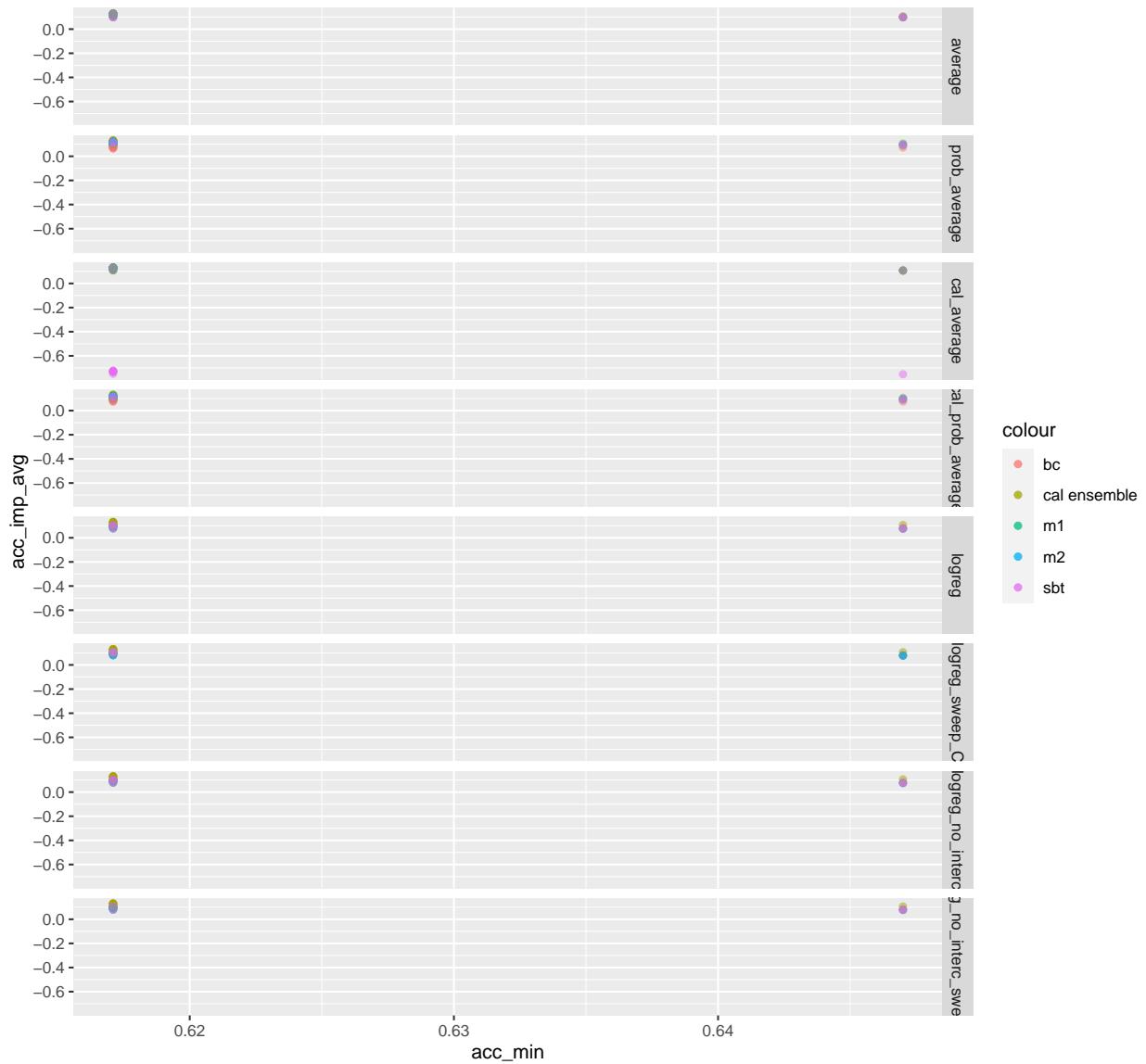
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Ensemble size 7



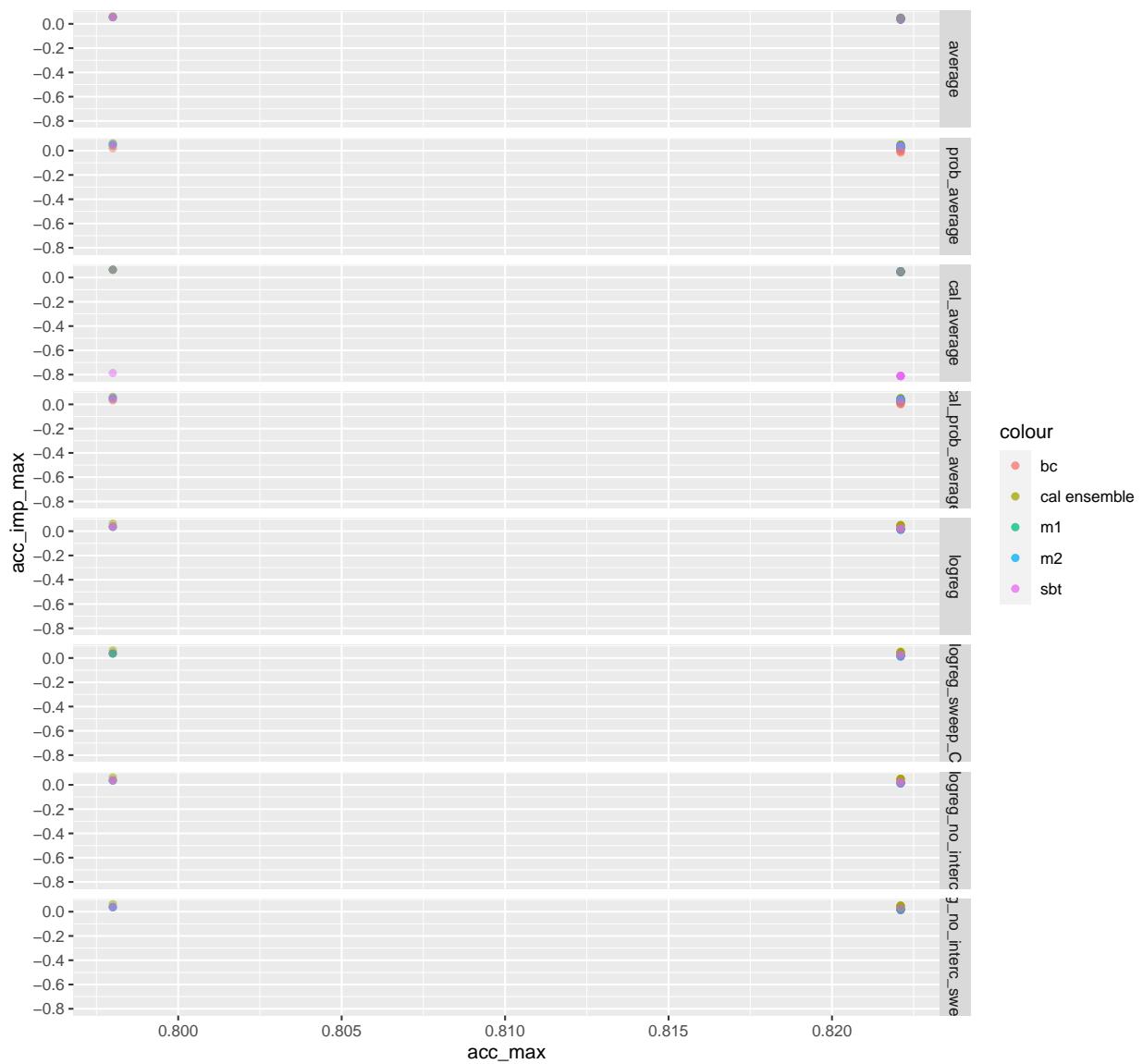
Accuracy improvement of ensemble over
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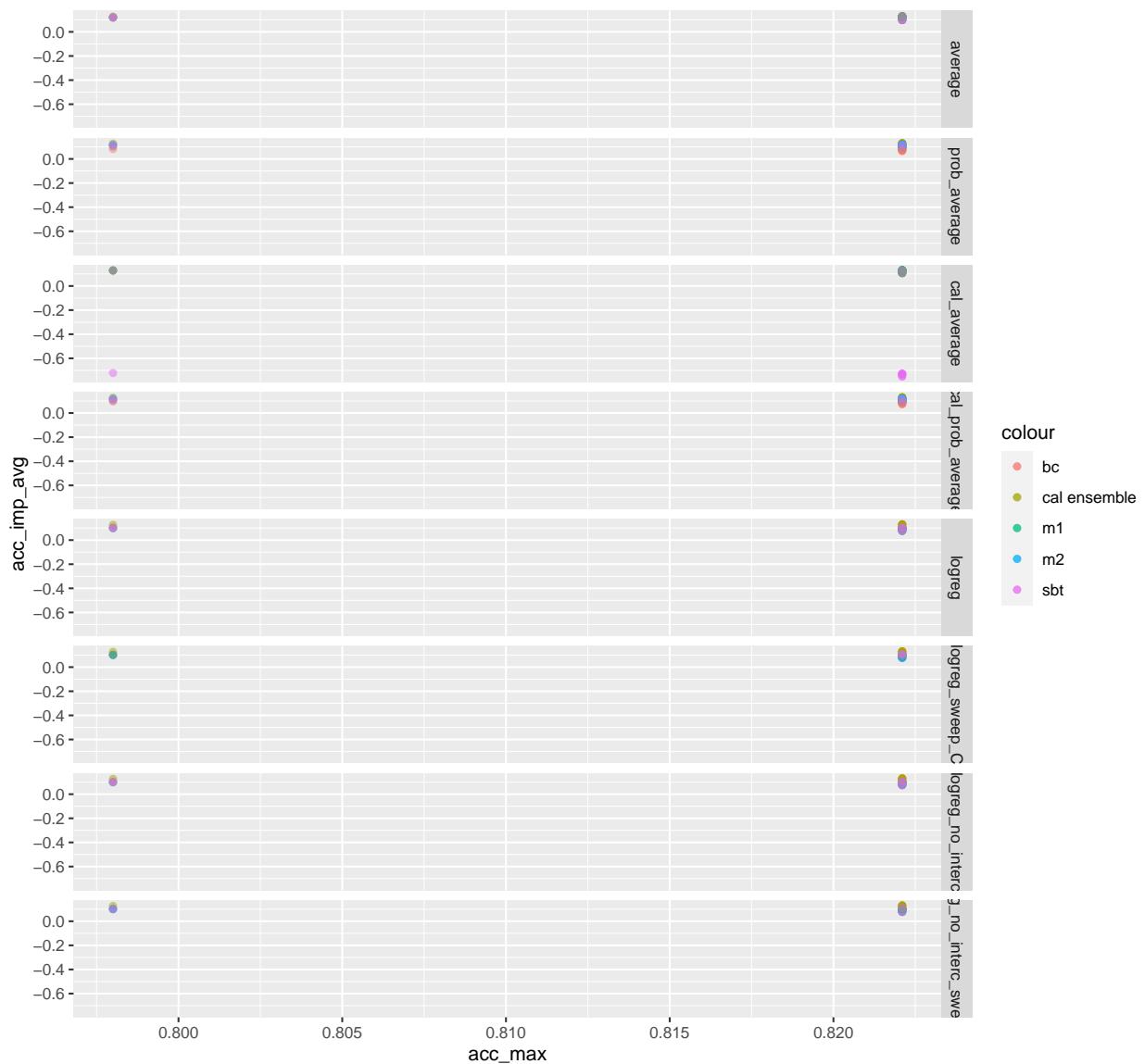
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Ensemble size 7



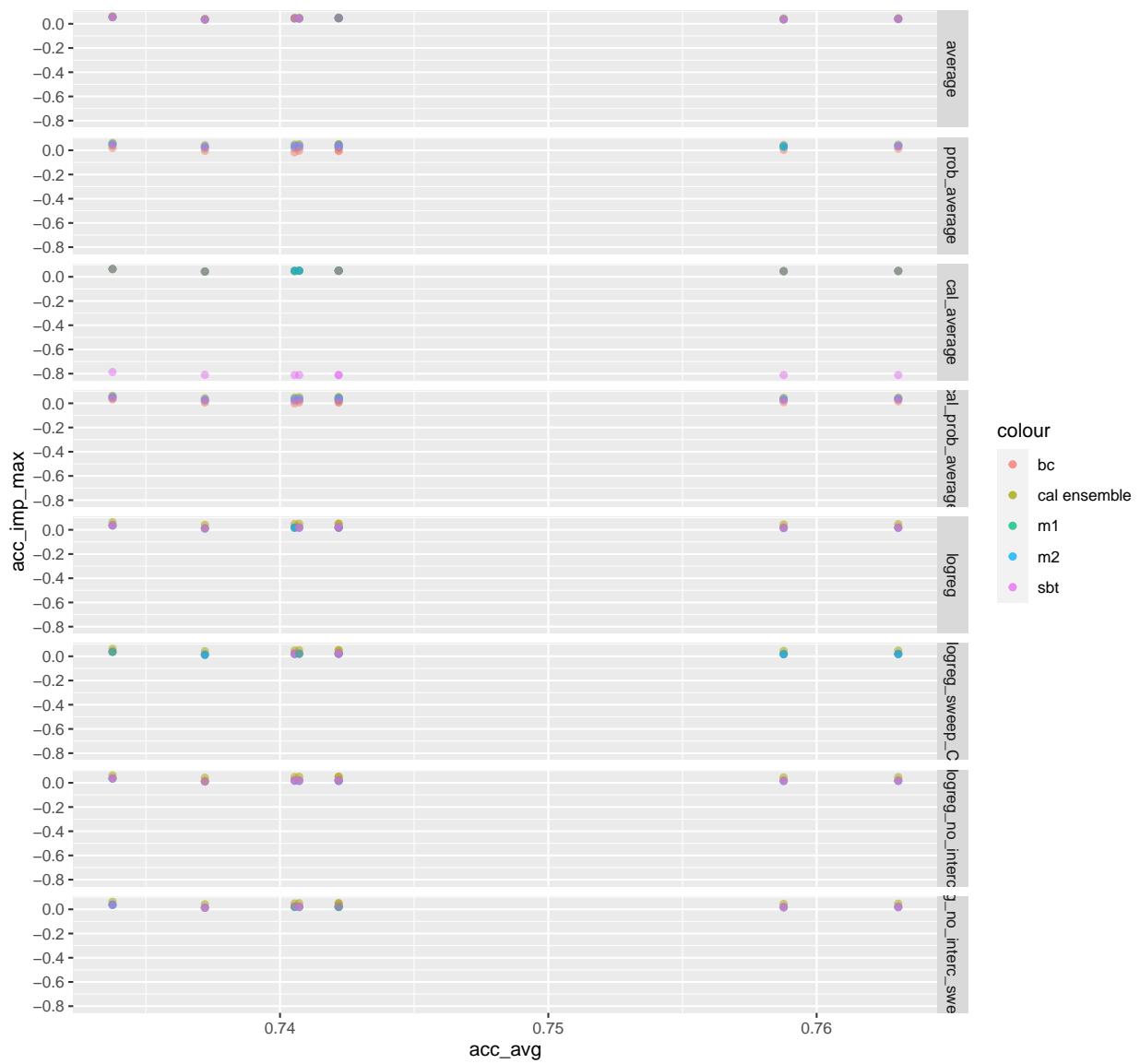
Accuracy improvement of ensemble over
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Ensemble size 7



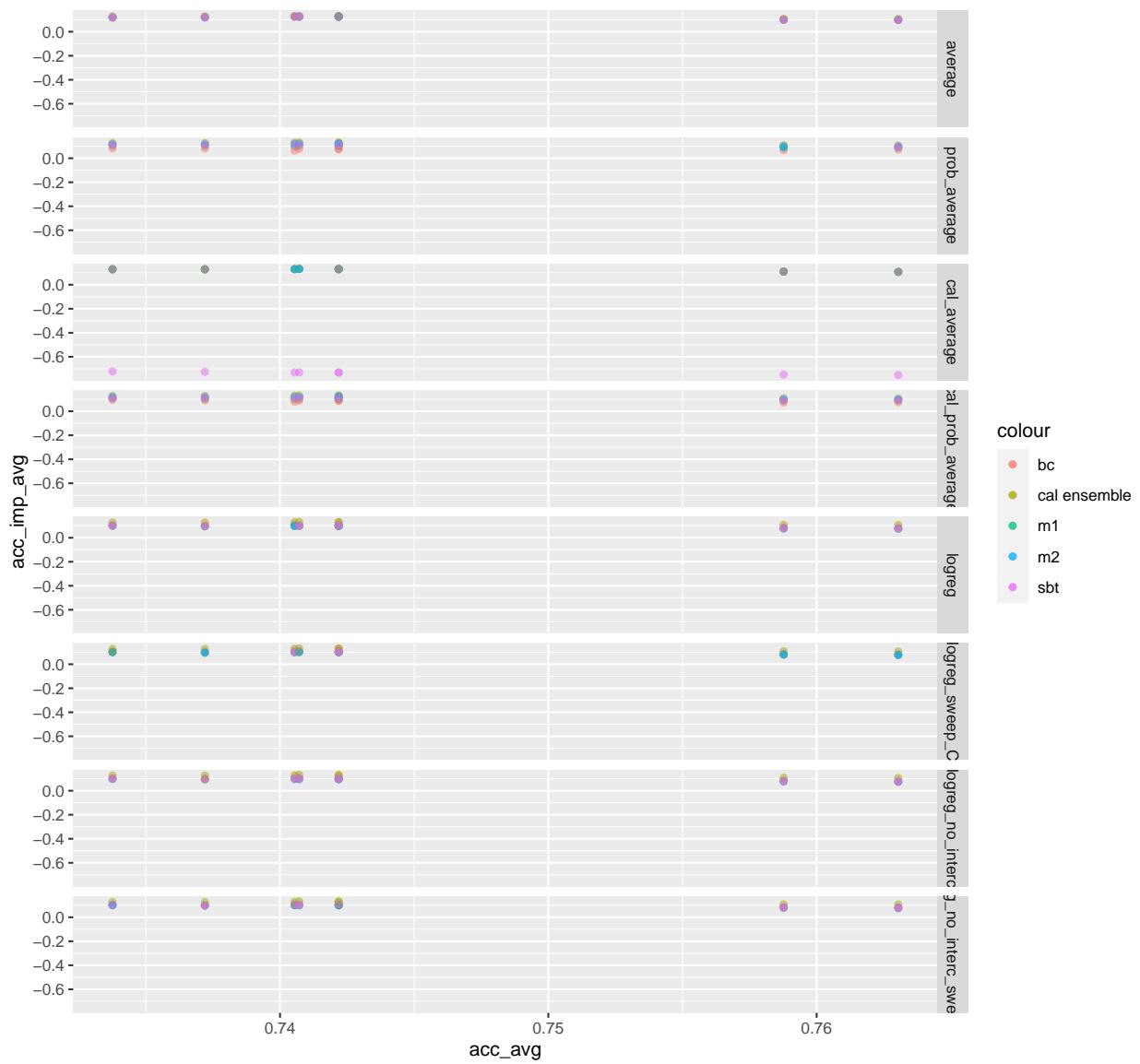
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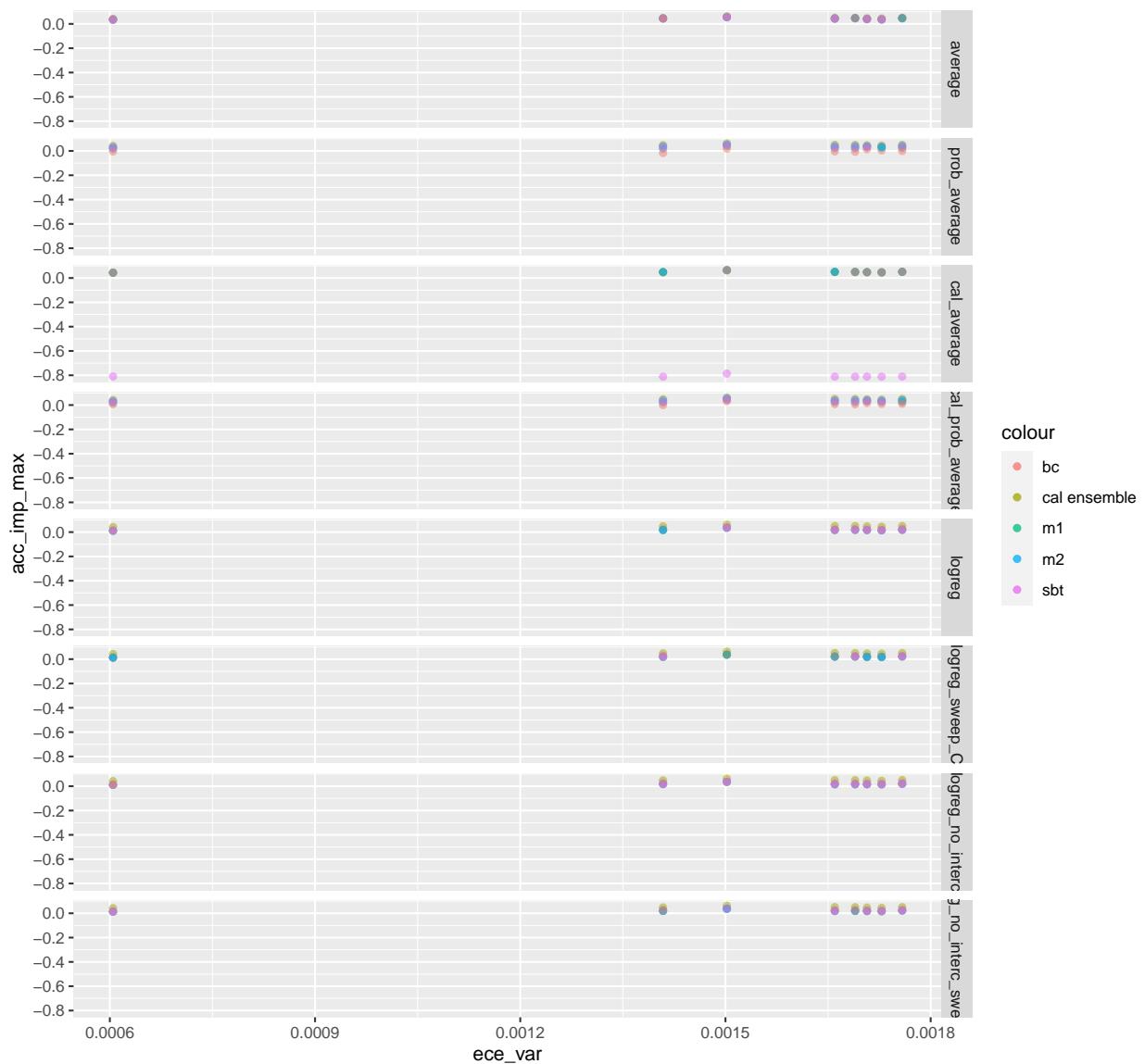
Accuracy improvement of ensemble over
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Ensemble size 7



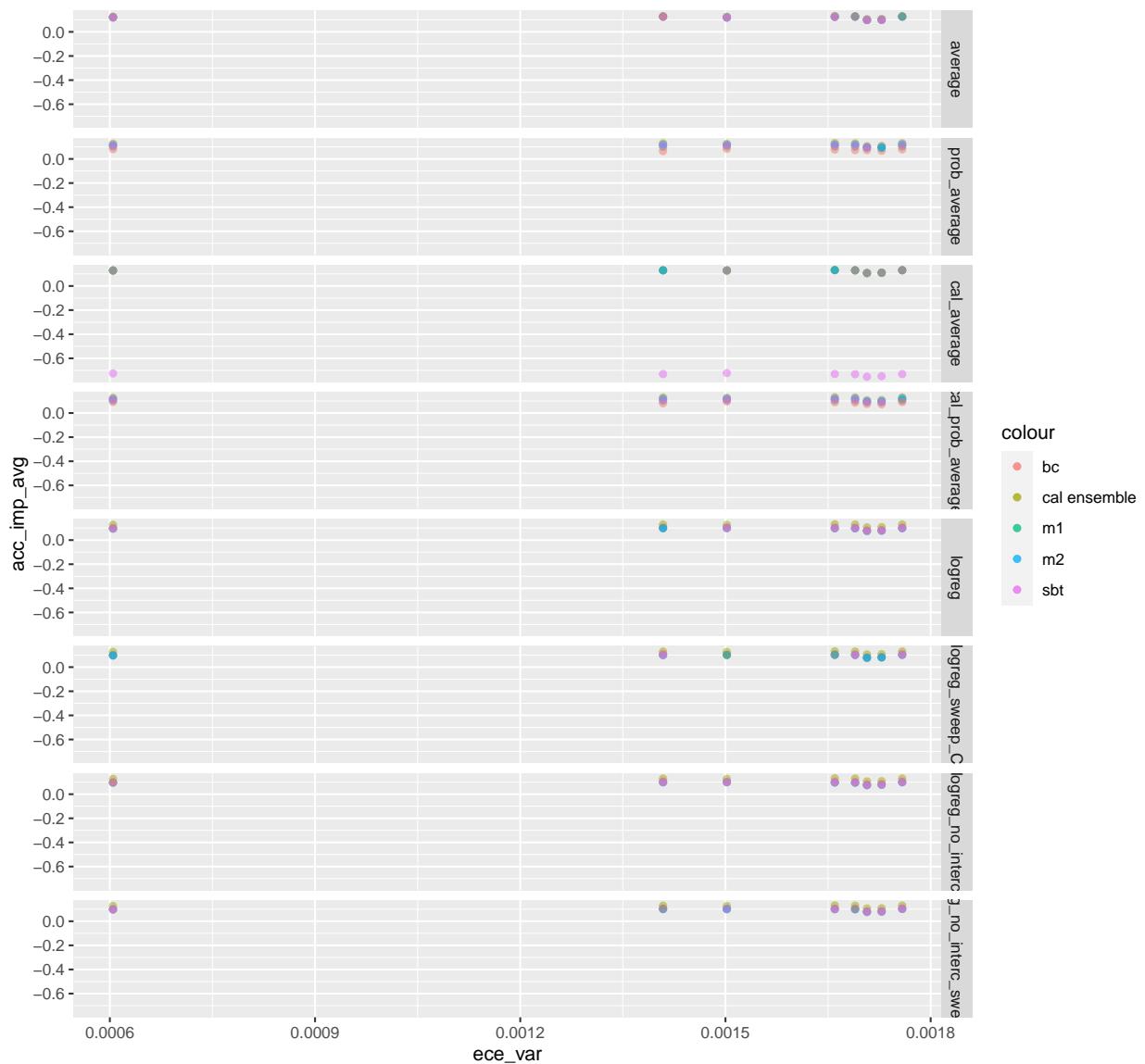
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Ensemble size 7



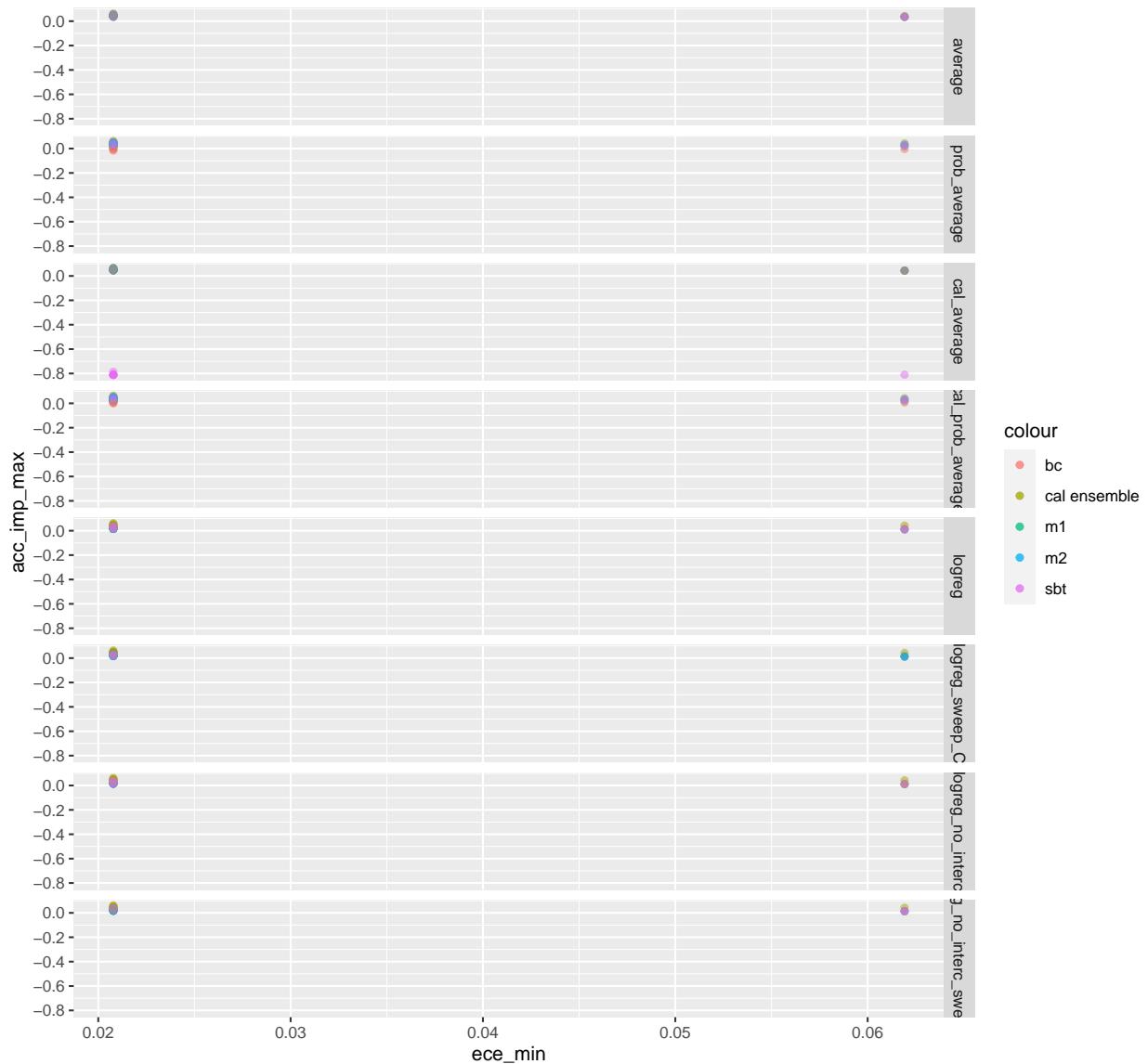
Accuracy improvement of ensemble over
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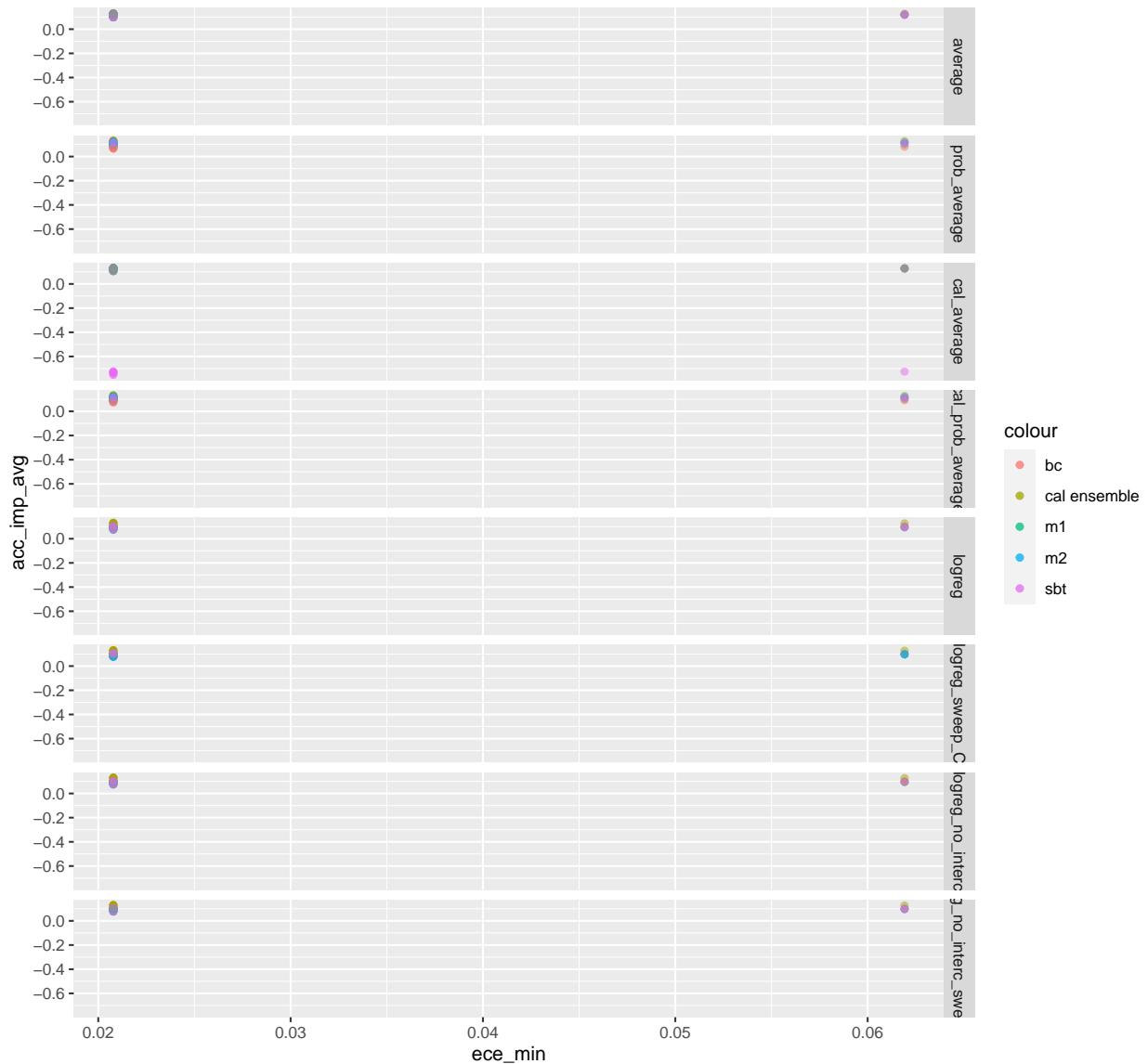
Accuracy improvement of ensemble over
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Ensemble size 7



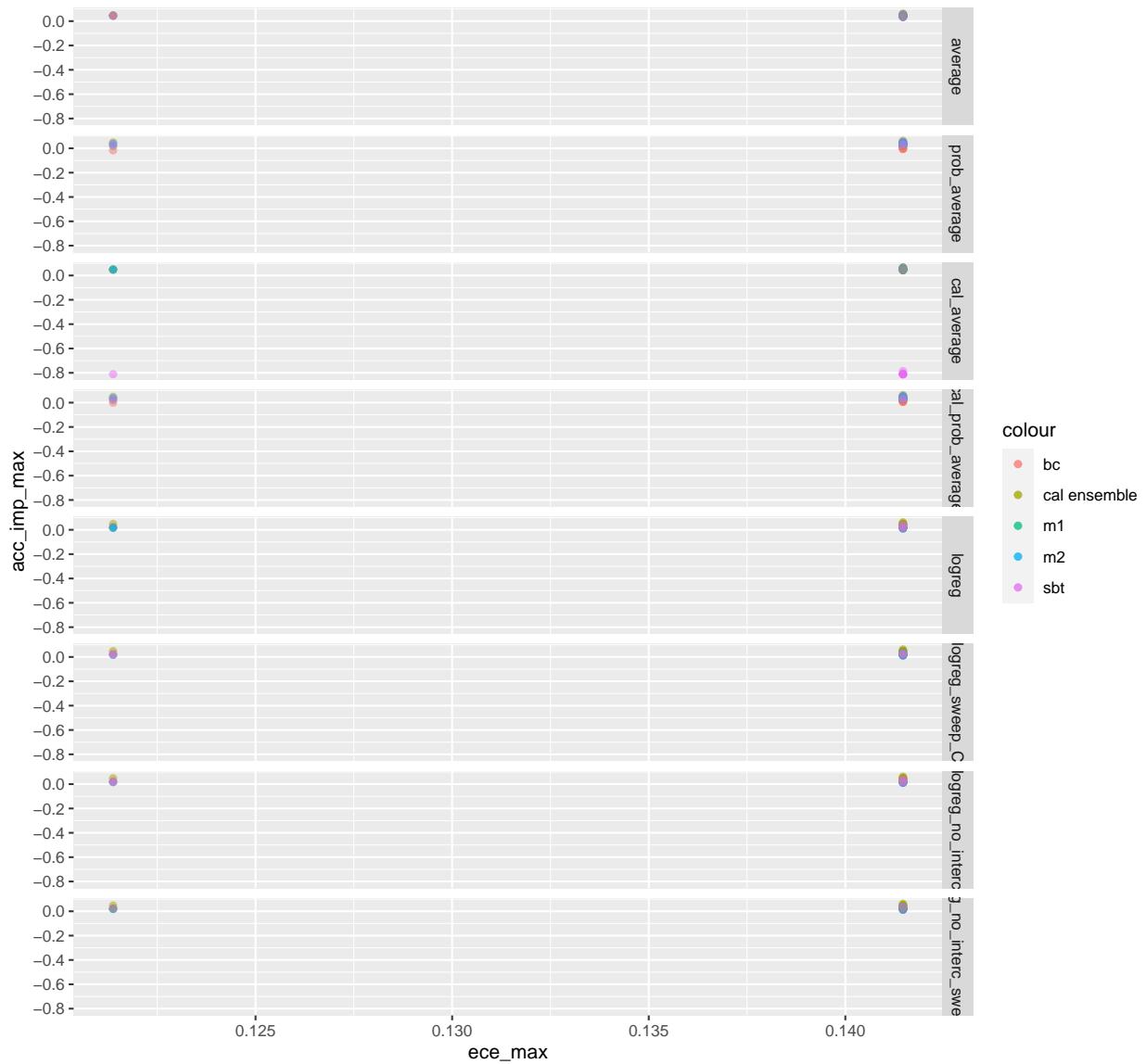
Accuracy improvement of ensemble over
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Ensemble size 7



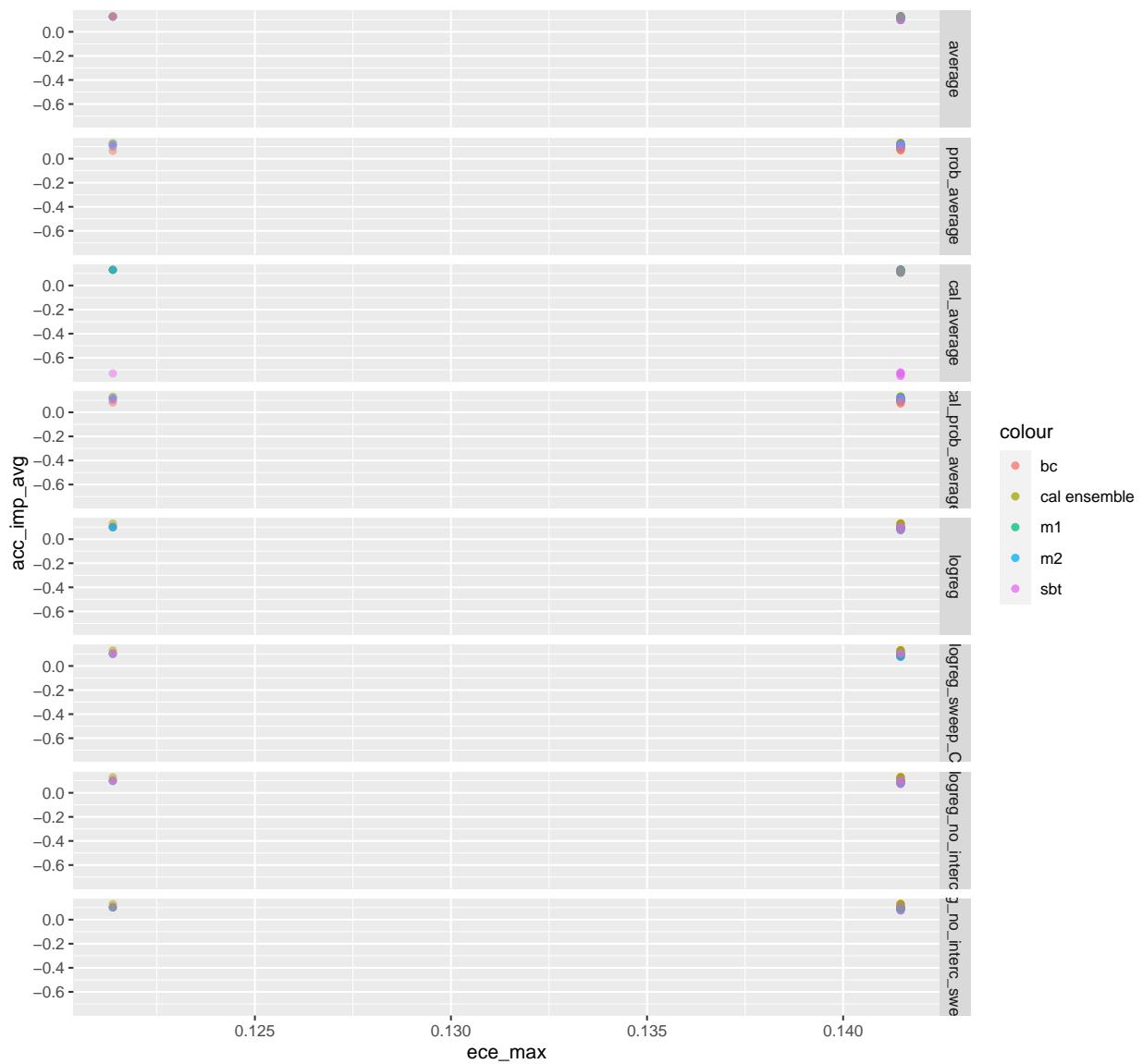
Accuracy improvement of ensemble over
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Ensemble size 7



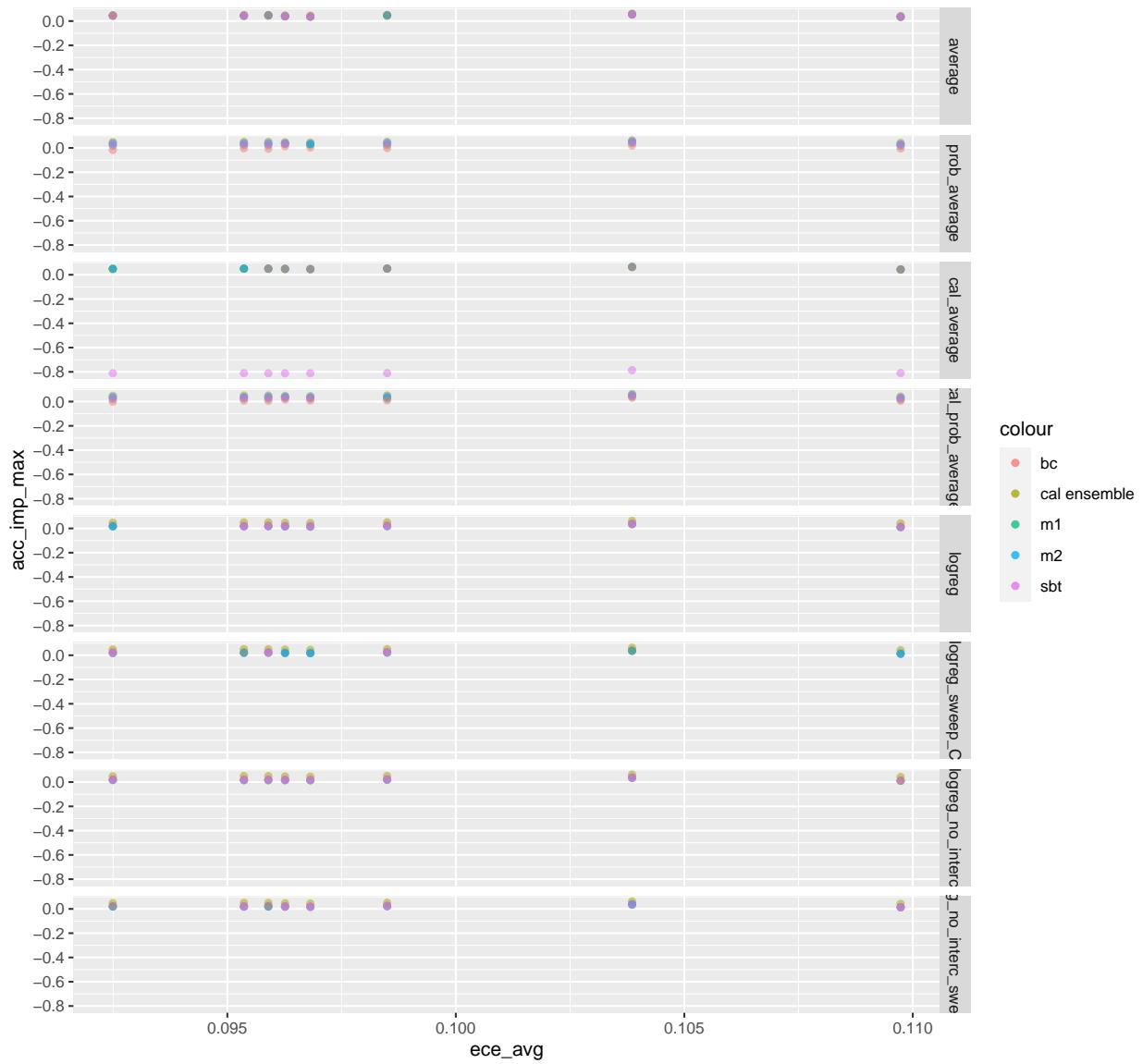
Accuracy improvement of ensemble over
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Ensemble size 7



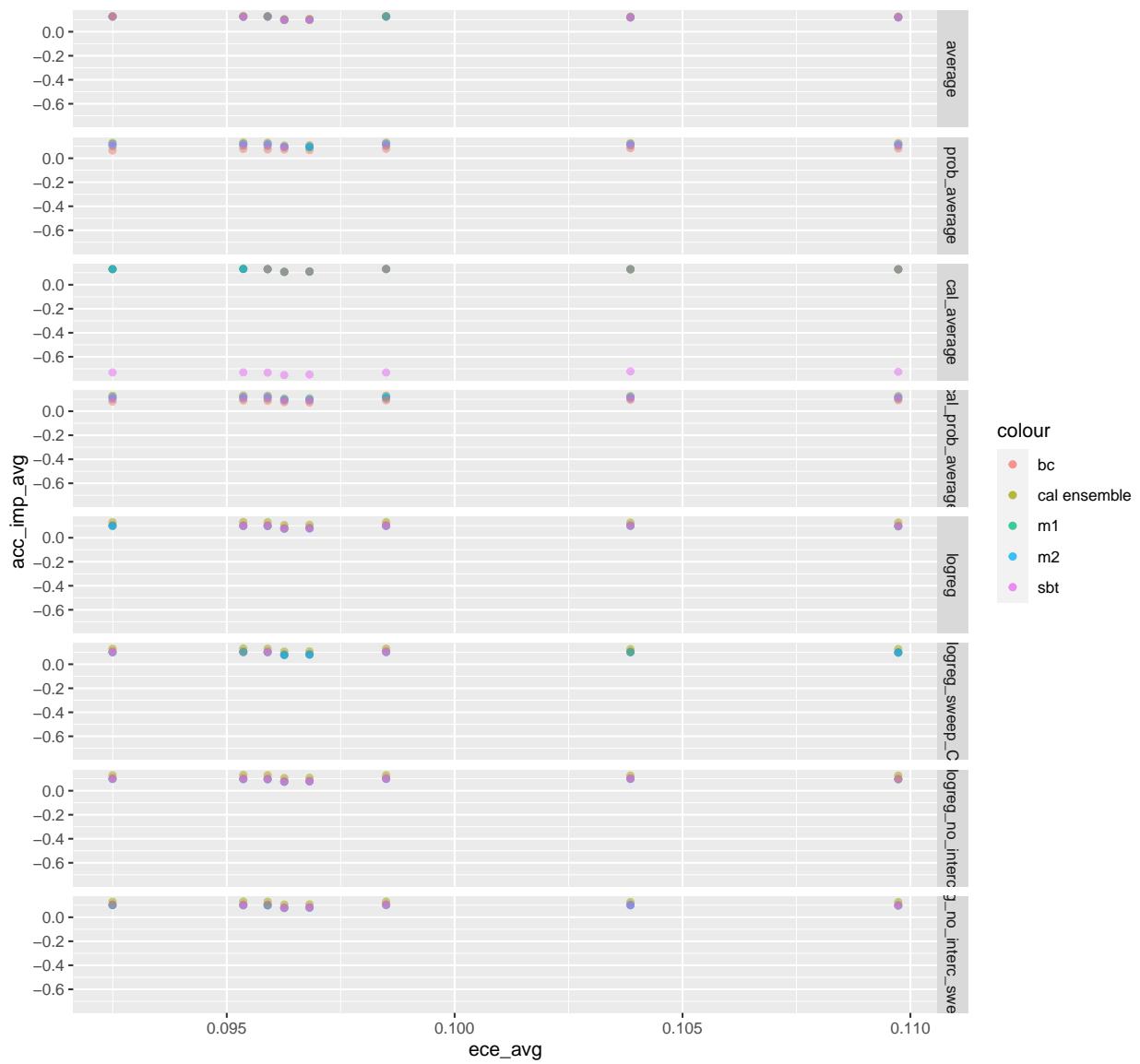
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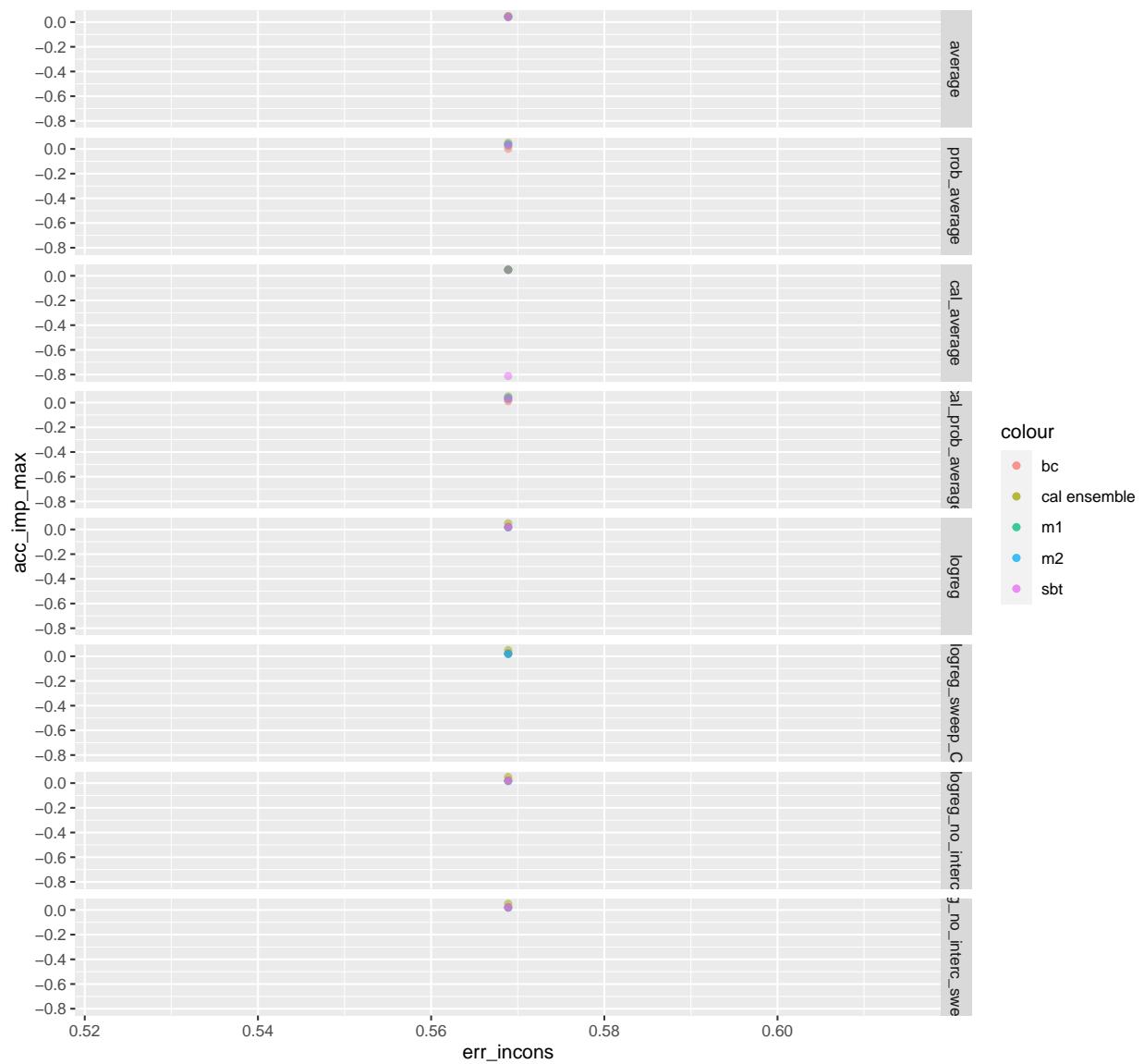
Accuracy improvement of ensemble over
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Ensemble size 7



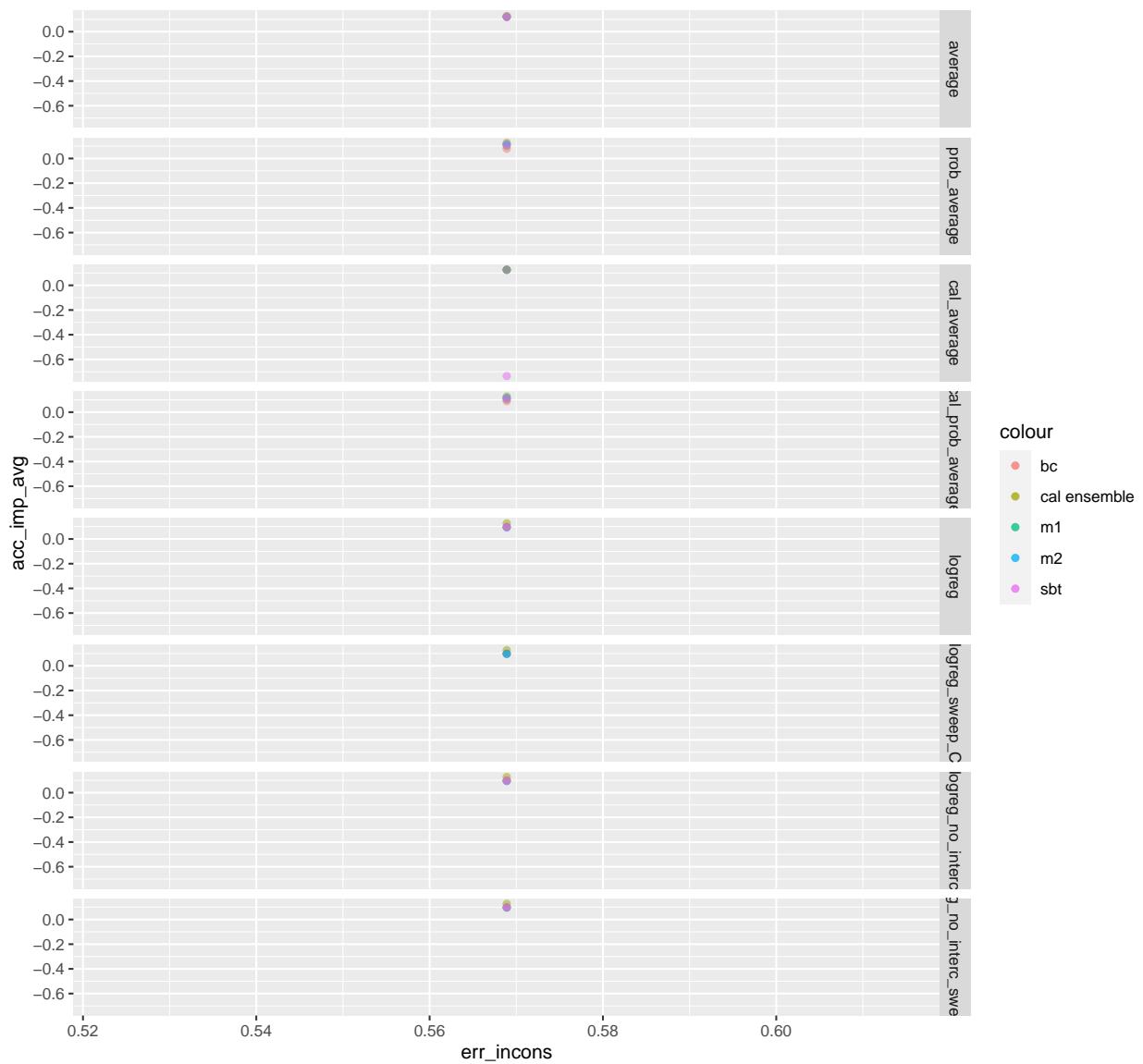
Accuracy improvement of ensemble over
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Ensemble size 7



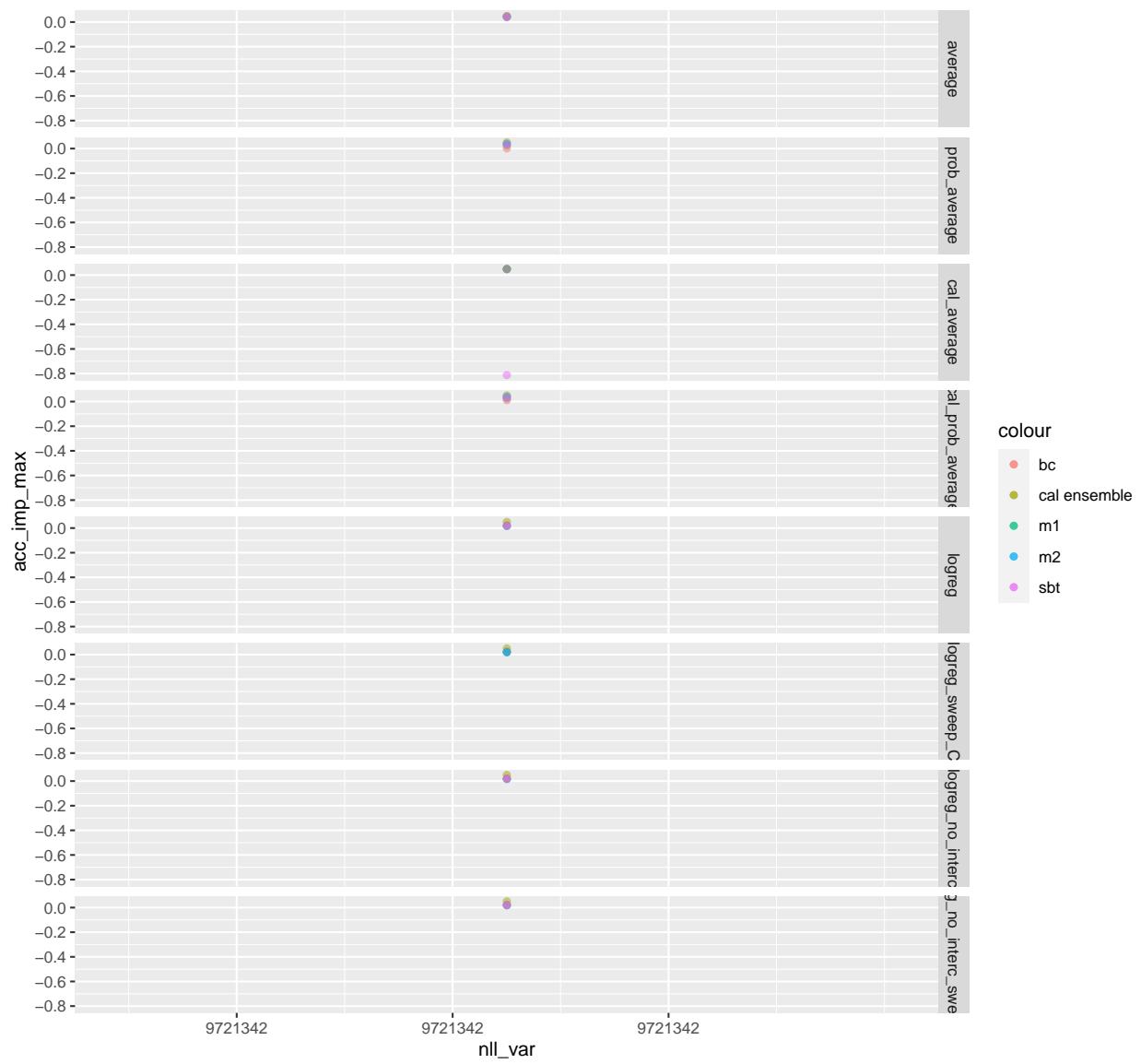
Accuracy improvement of ensemble over
the best of networks vs err_incons.
Ensemble size 8



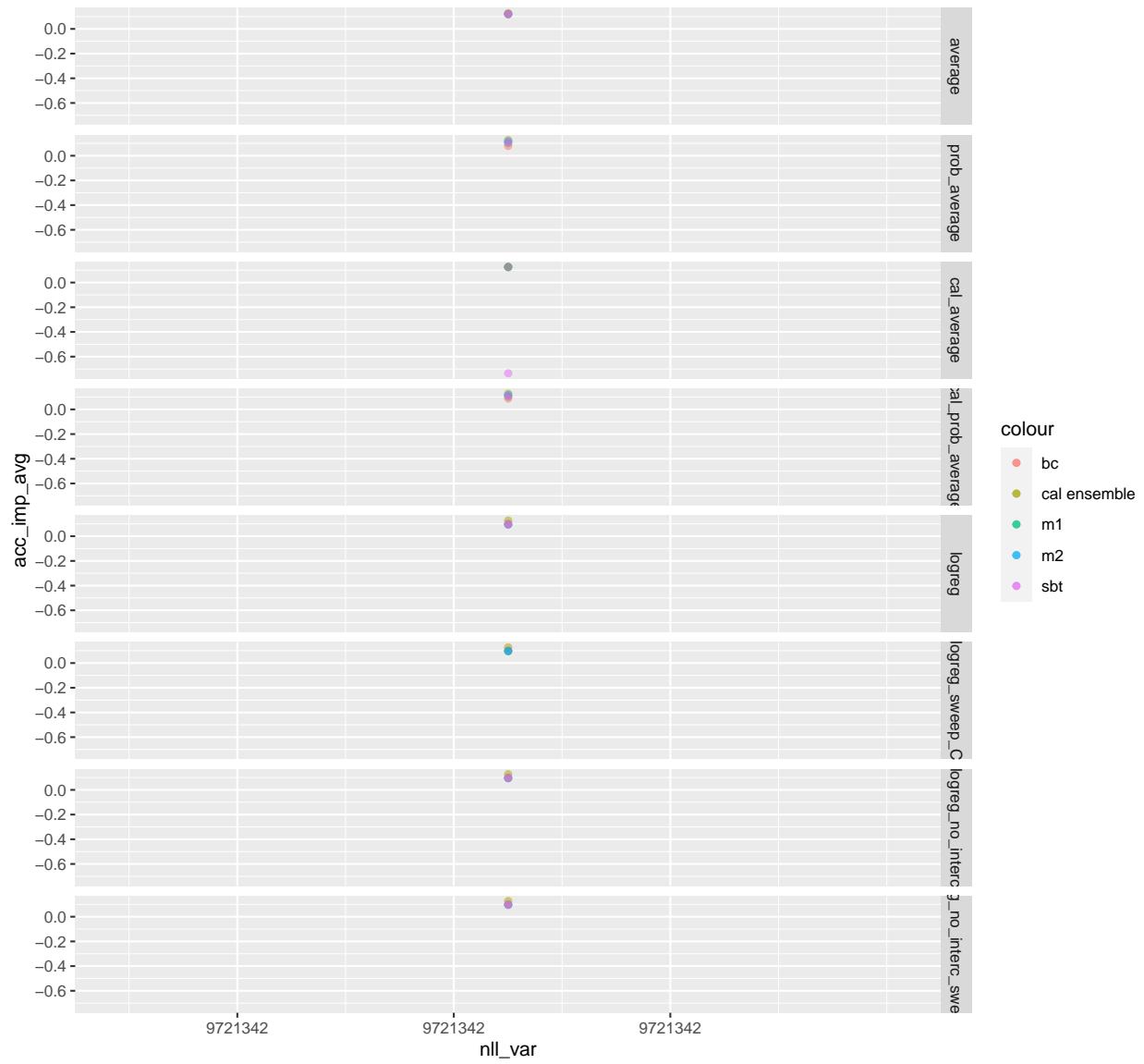
Accuracy improvement of ensemble over
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Ensemble size 8



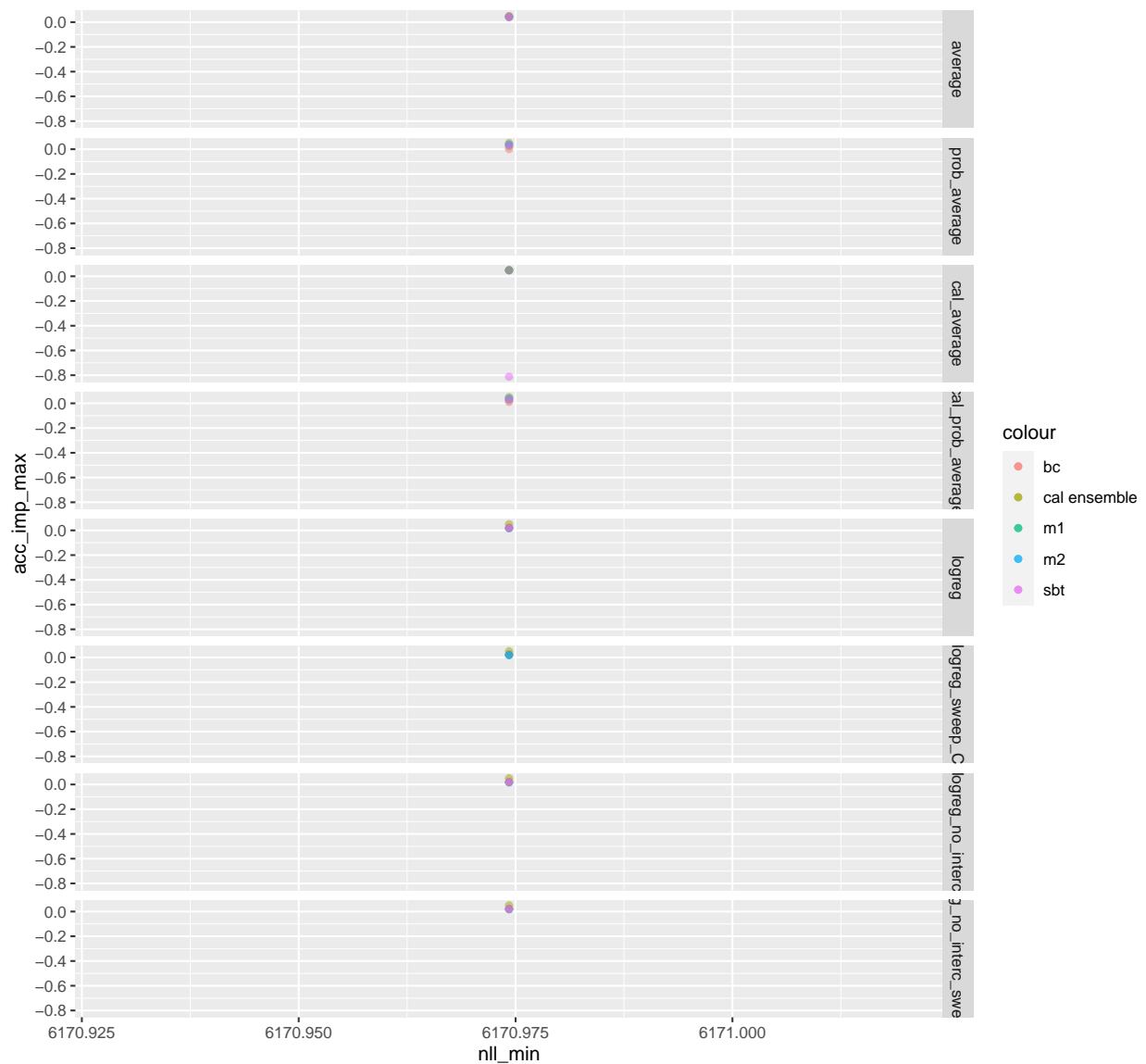
Accuracy improvement of ensemble over
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Ensemble size 8



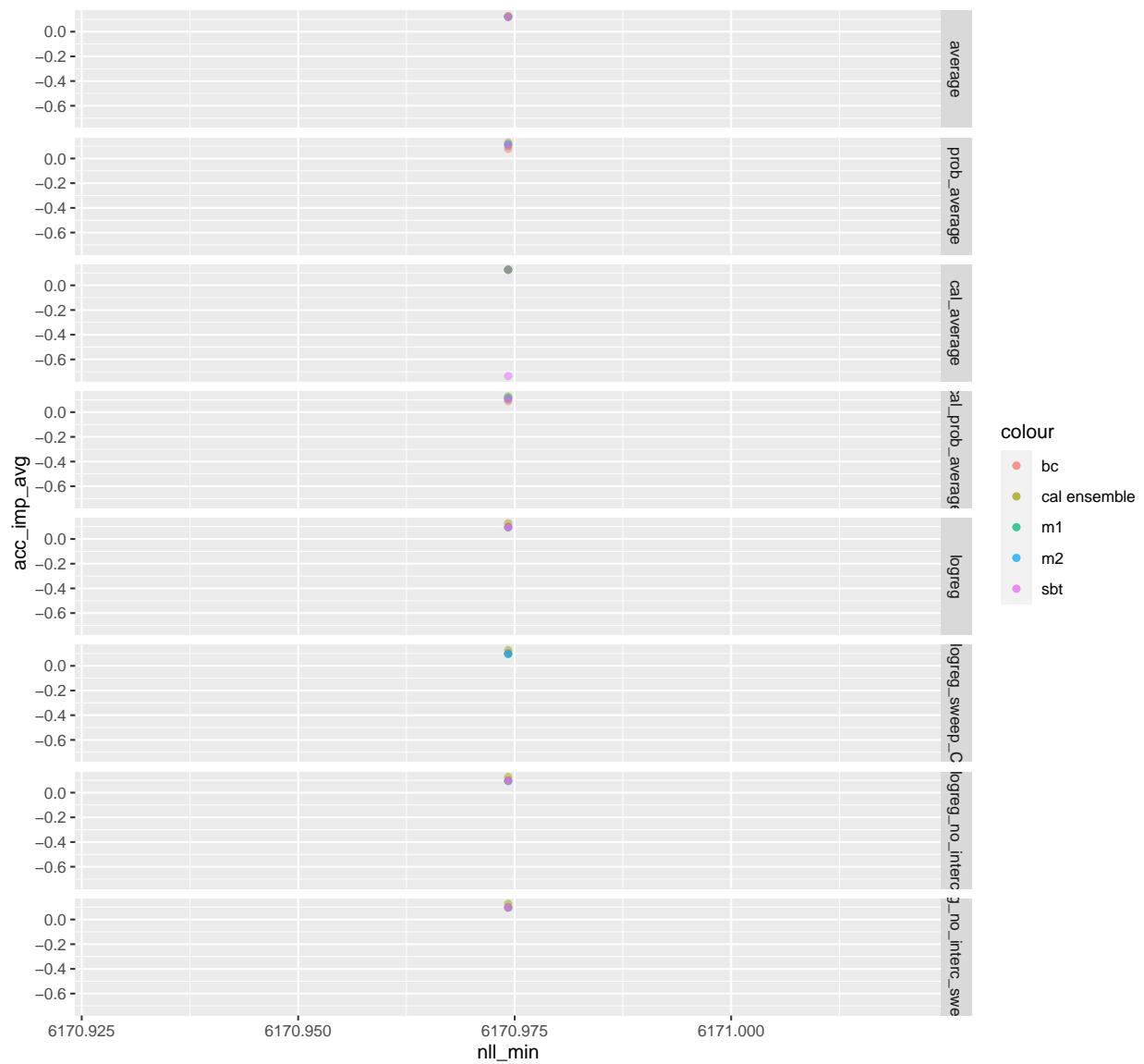
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Ensemble size 8



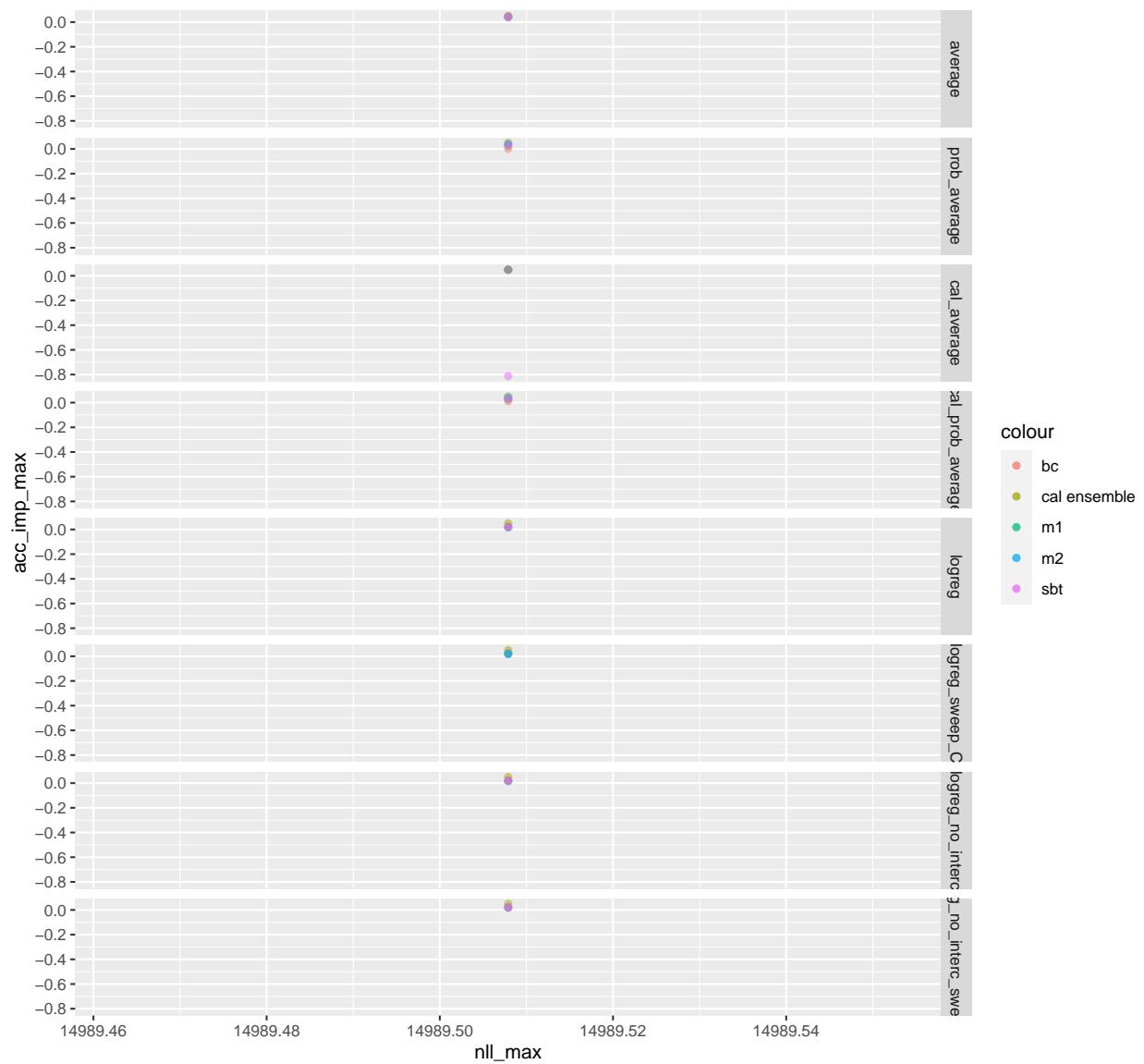
Accuracy improvement of ensemble over
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Ensemble size 8



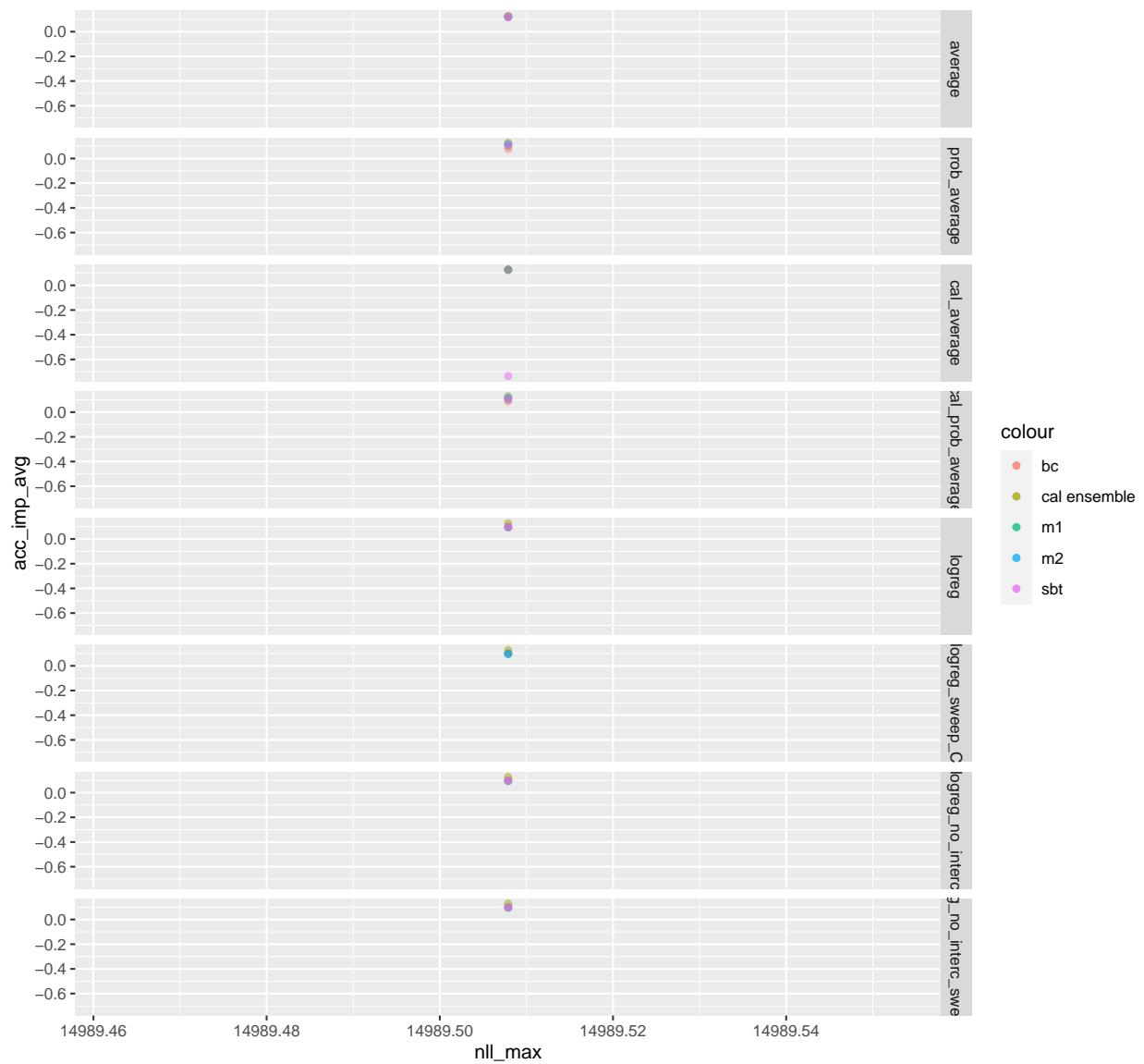
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Ensemble size 8



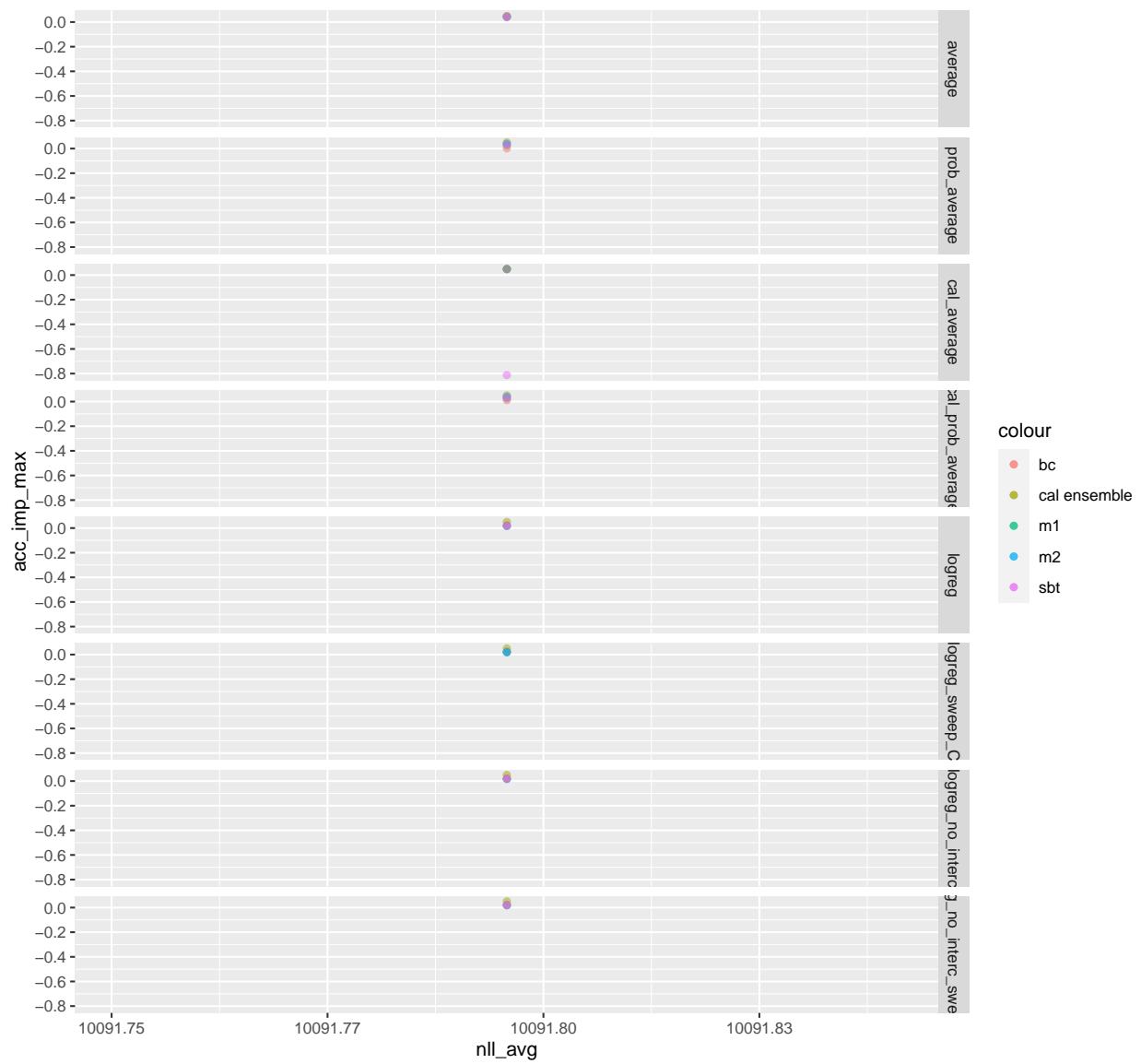
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Ensemble size 8



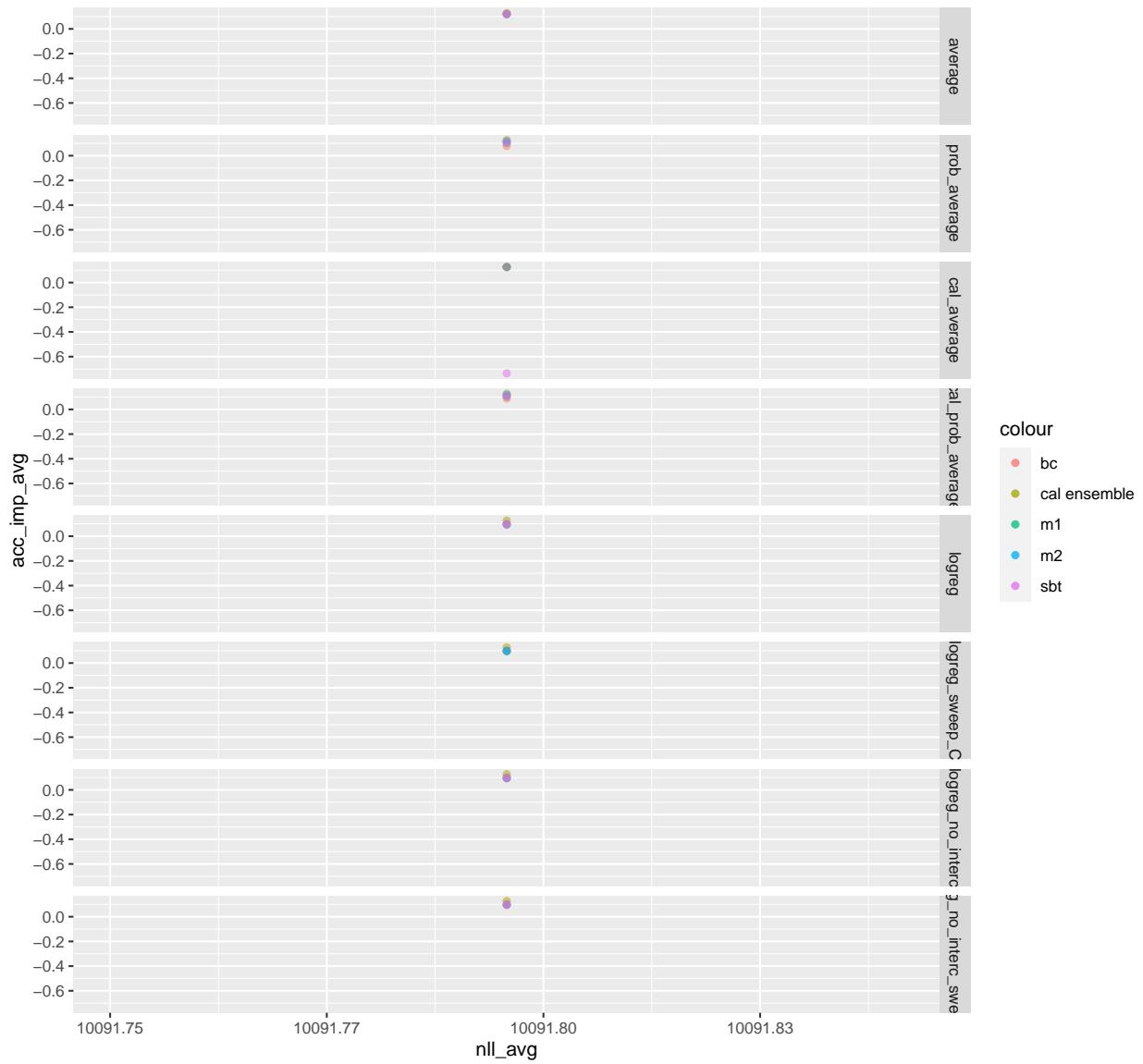
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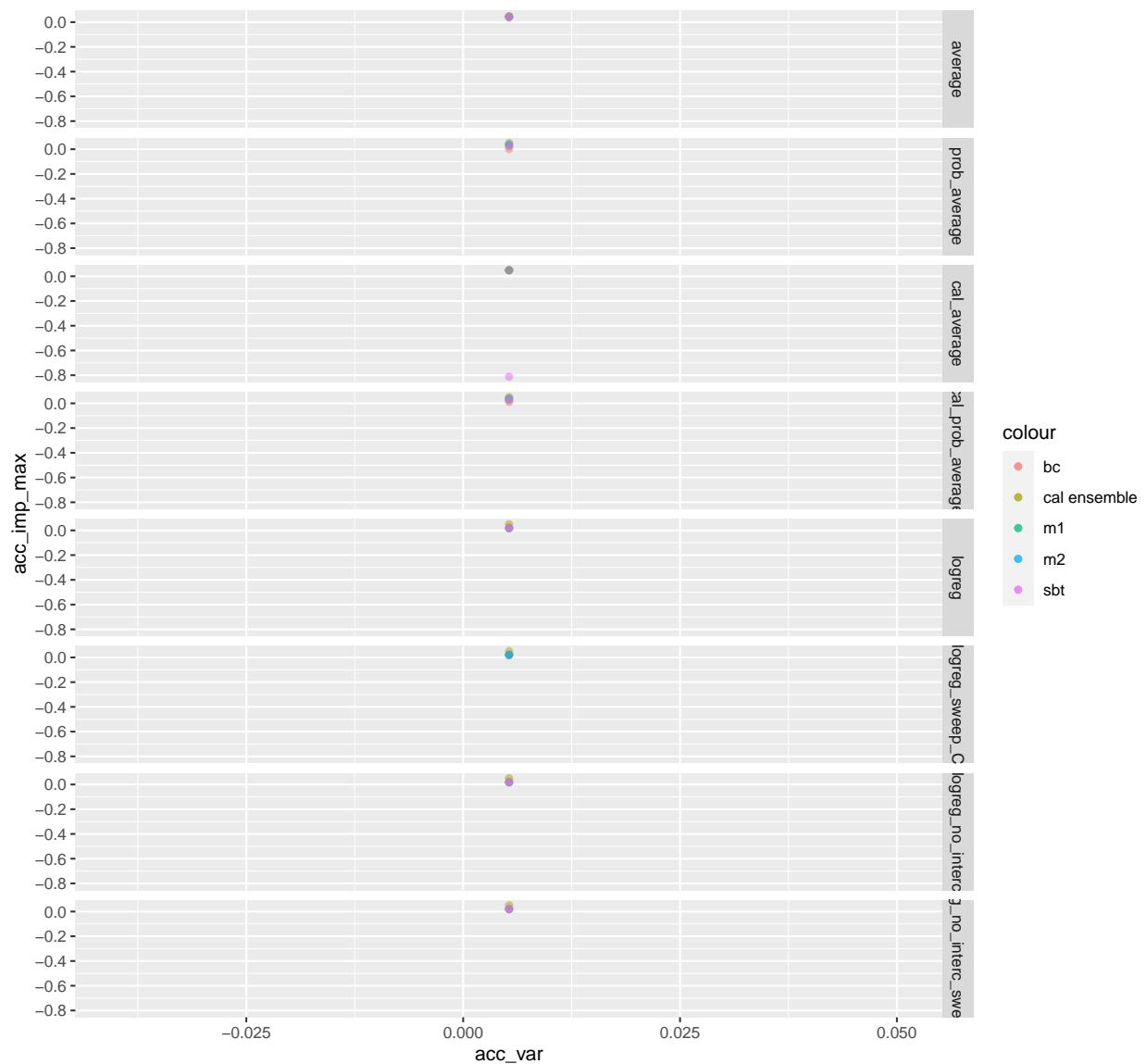
Accuracy improvement of ensemble over
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Ensemble size 8



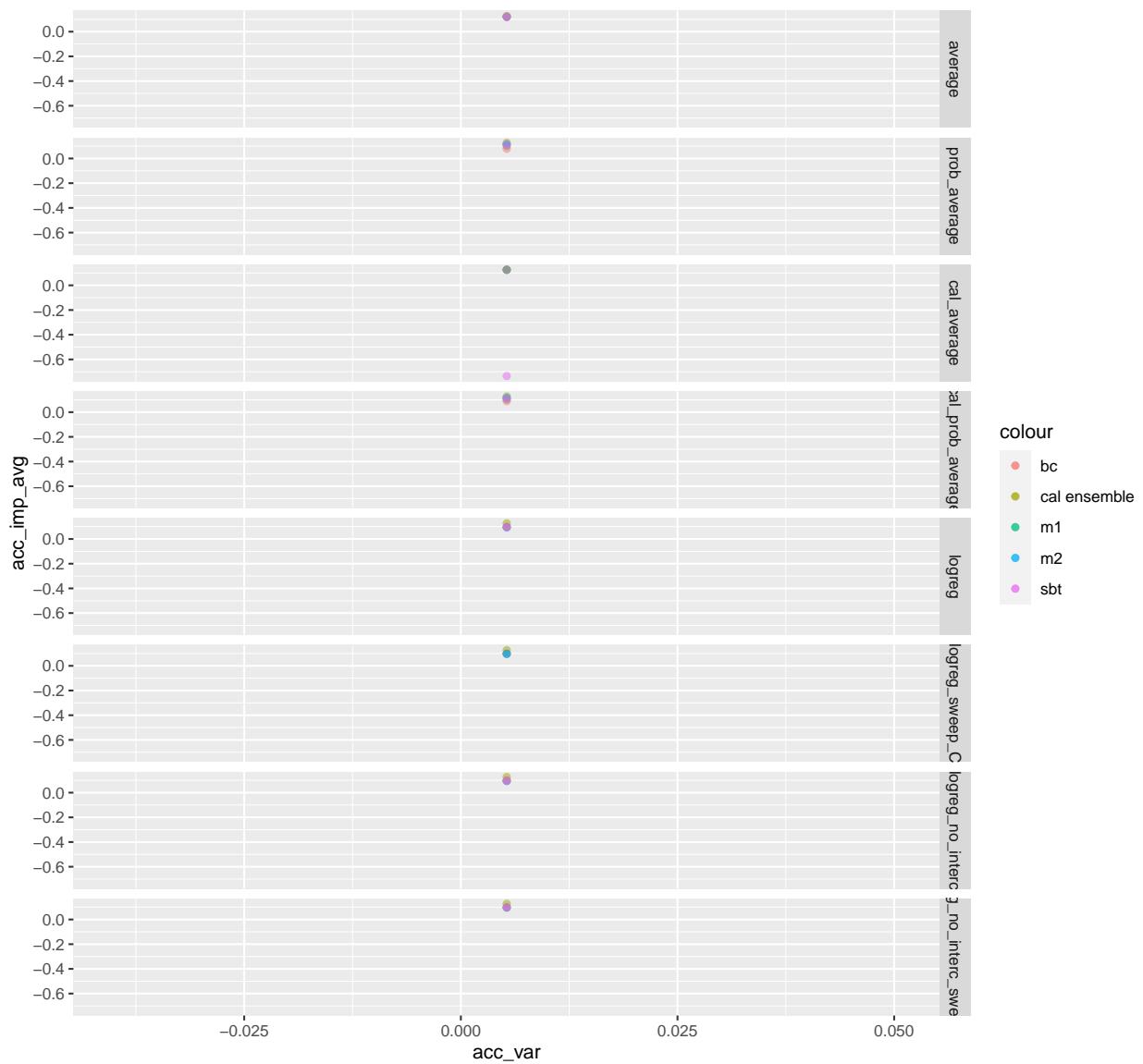
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Ensemble size 8



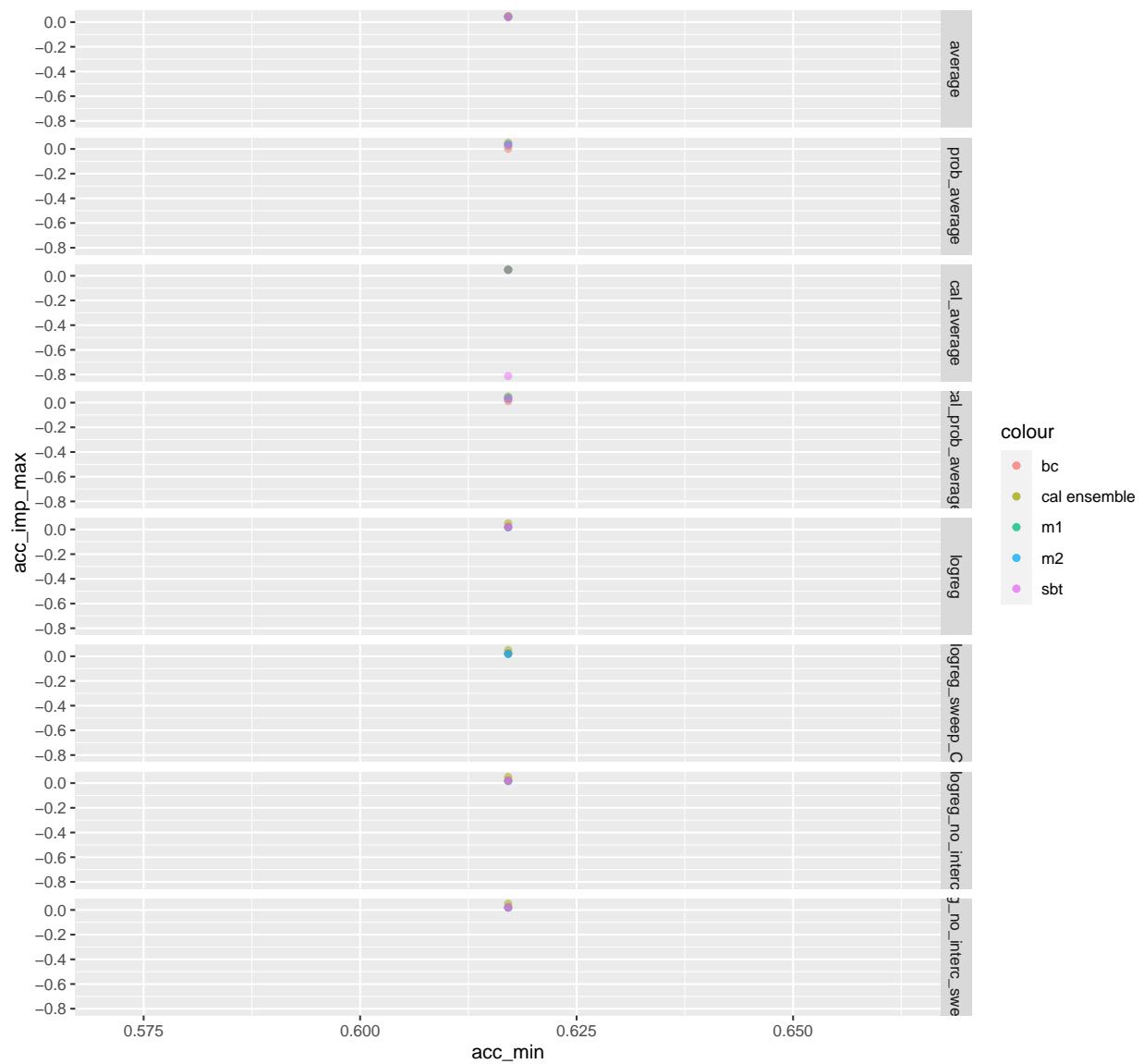
Accuracy improvement of ensemble over
the best of networks vs acc_var.
Ensemble size 8



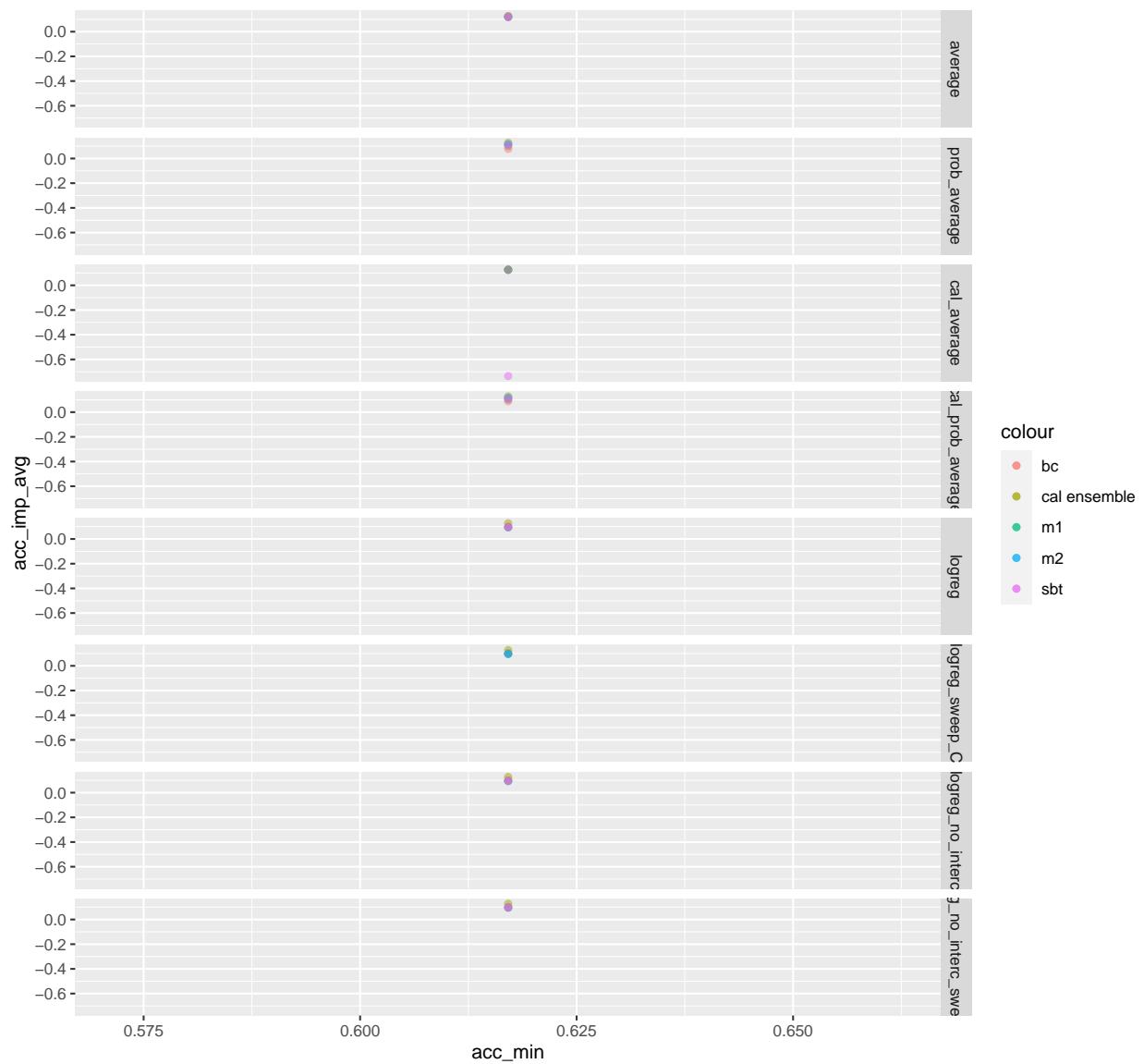
Accuracy improvement of ensemble over
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Ensemble size 8



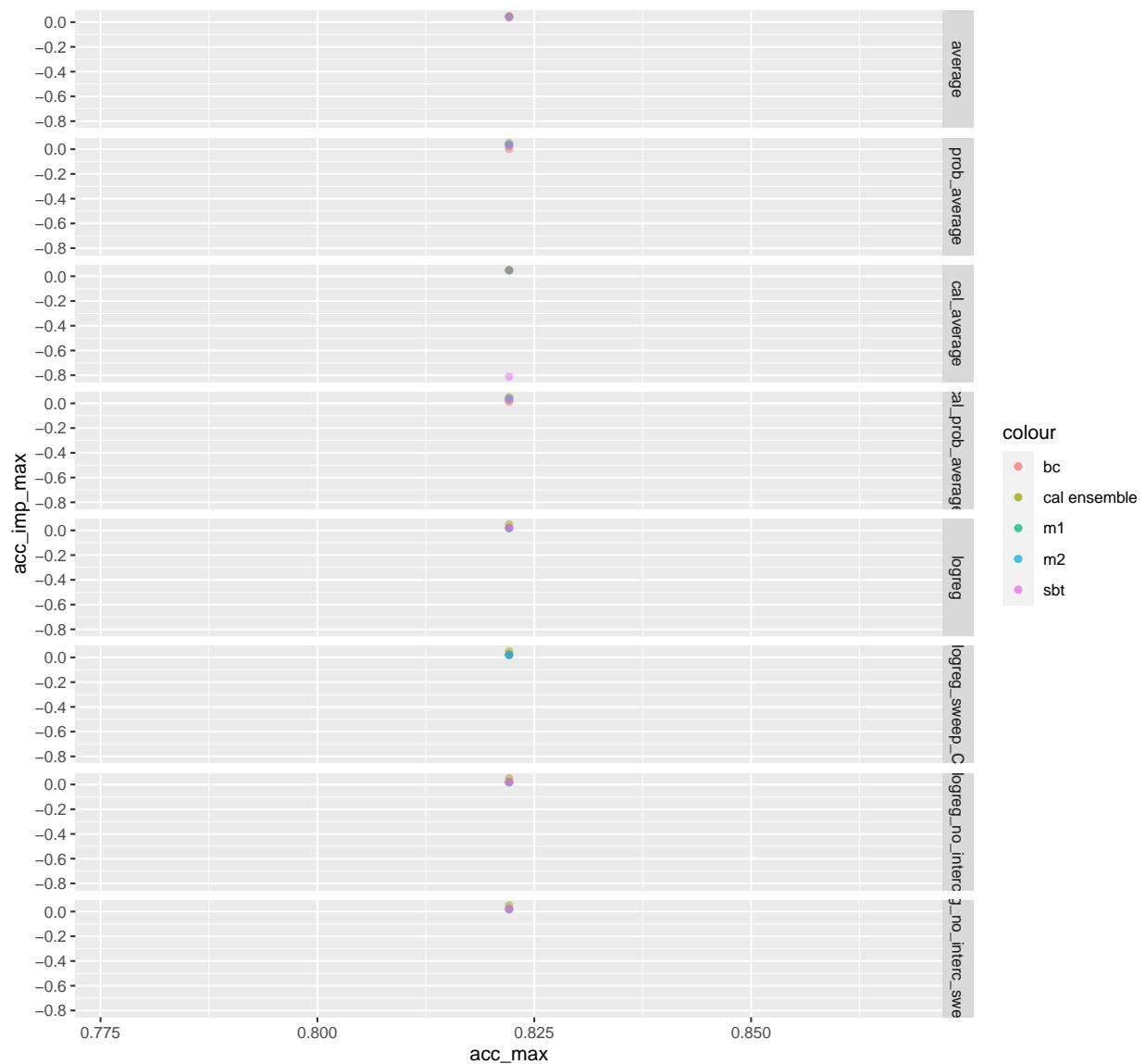
Accuracy improvement of ensemble over
the best of networks vs acc_min.
Ensemble size 8



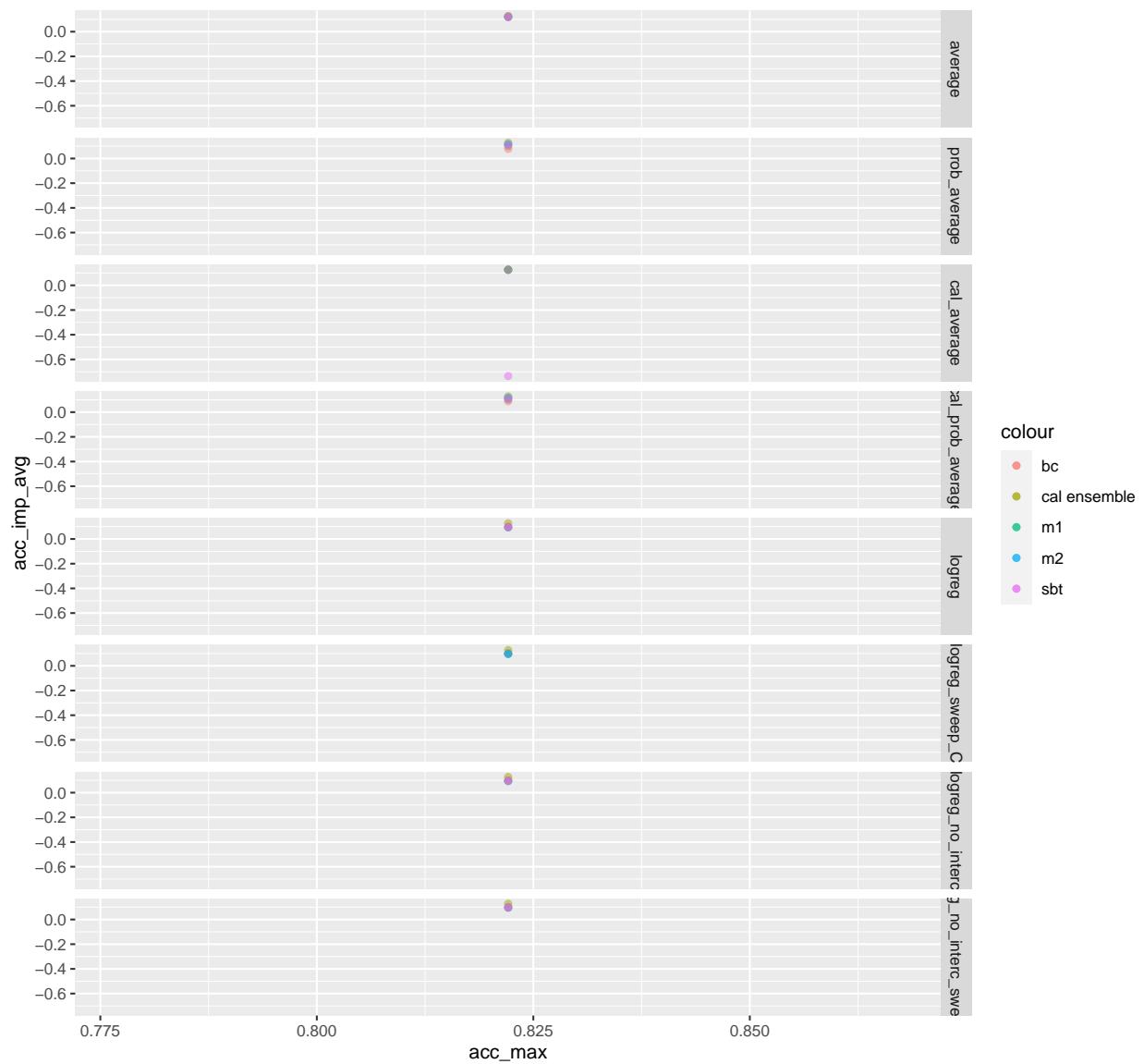
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Ensemble size 8



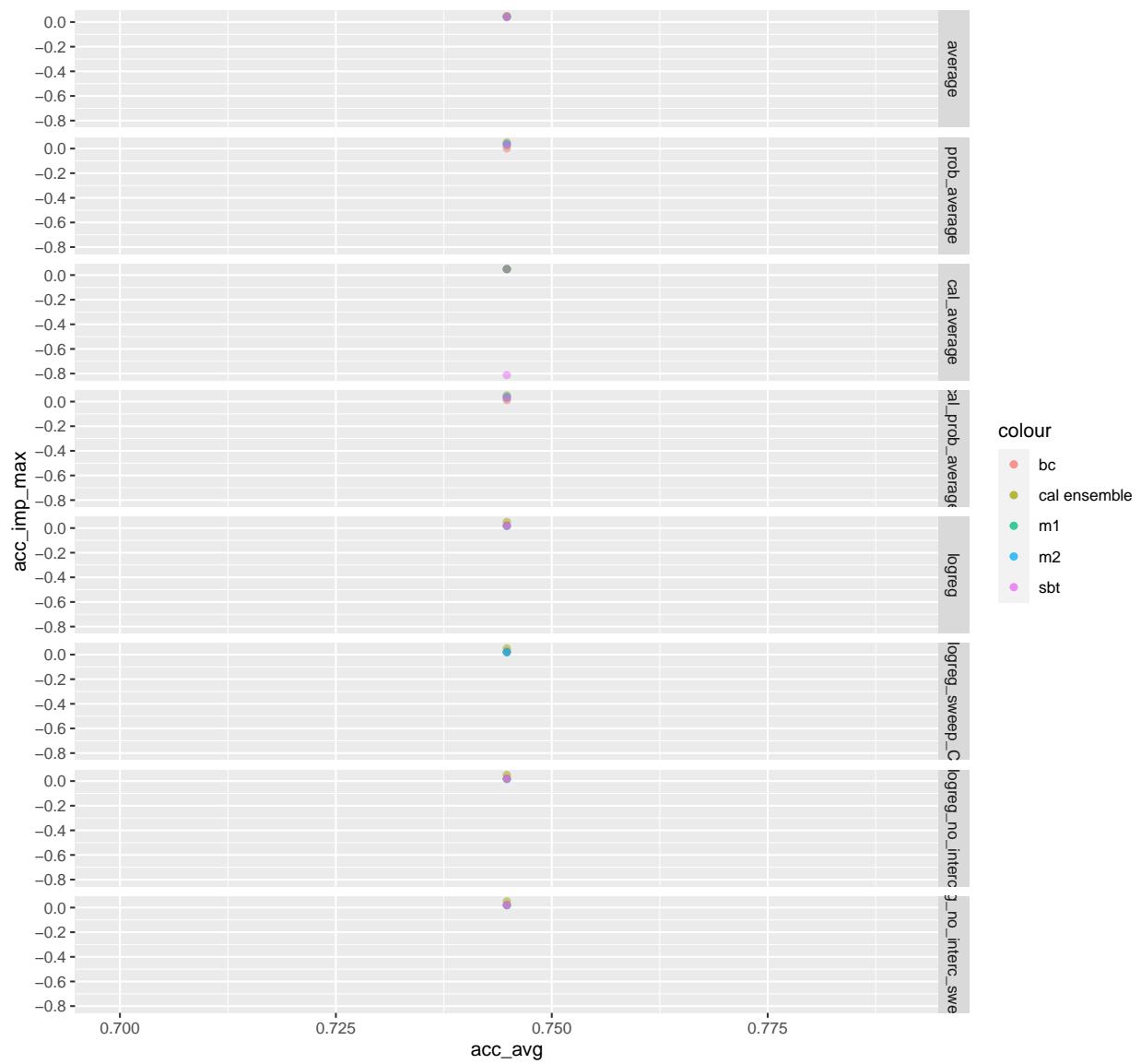
Accuracy improvement of ensemble over
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Ensemble size 8



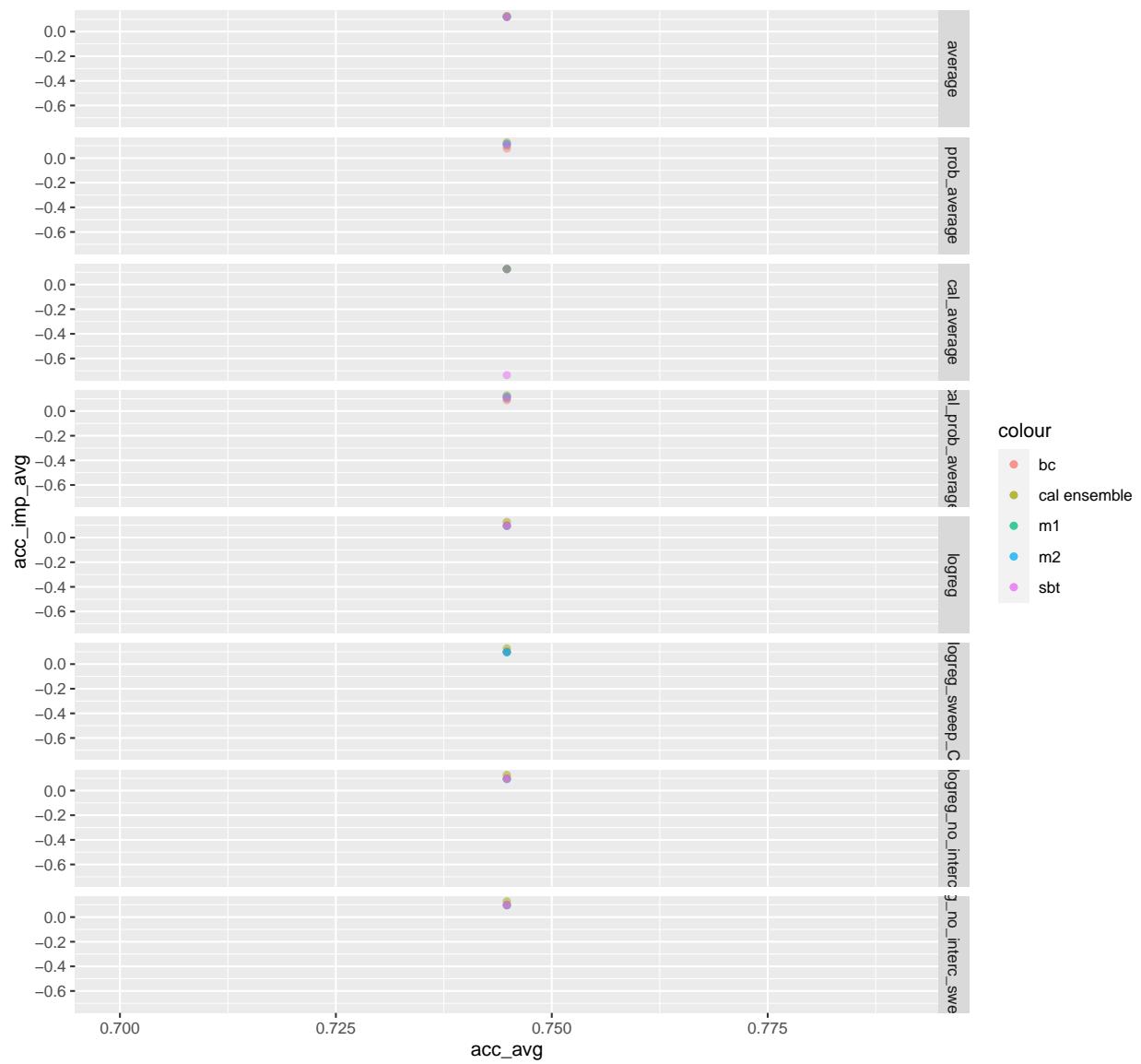
Accuracy improvement of ensemble over
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Ensemble size 8



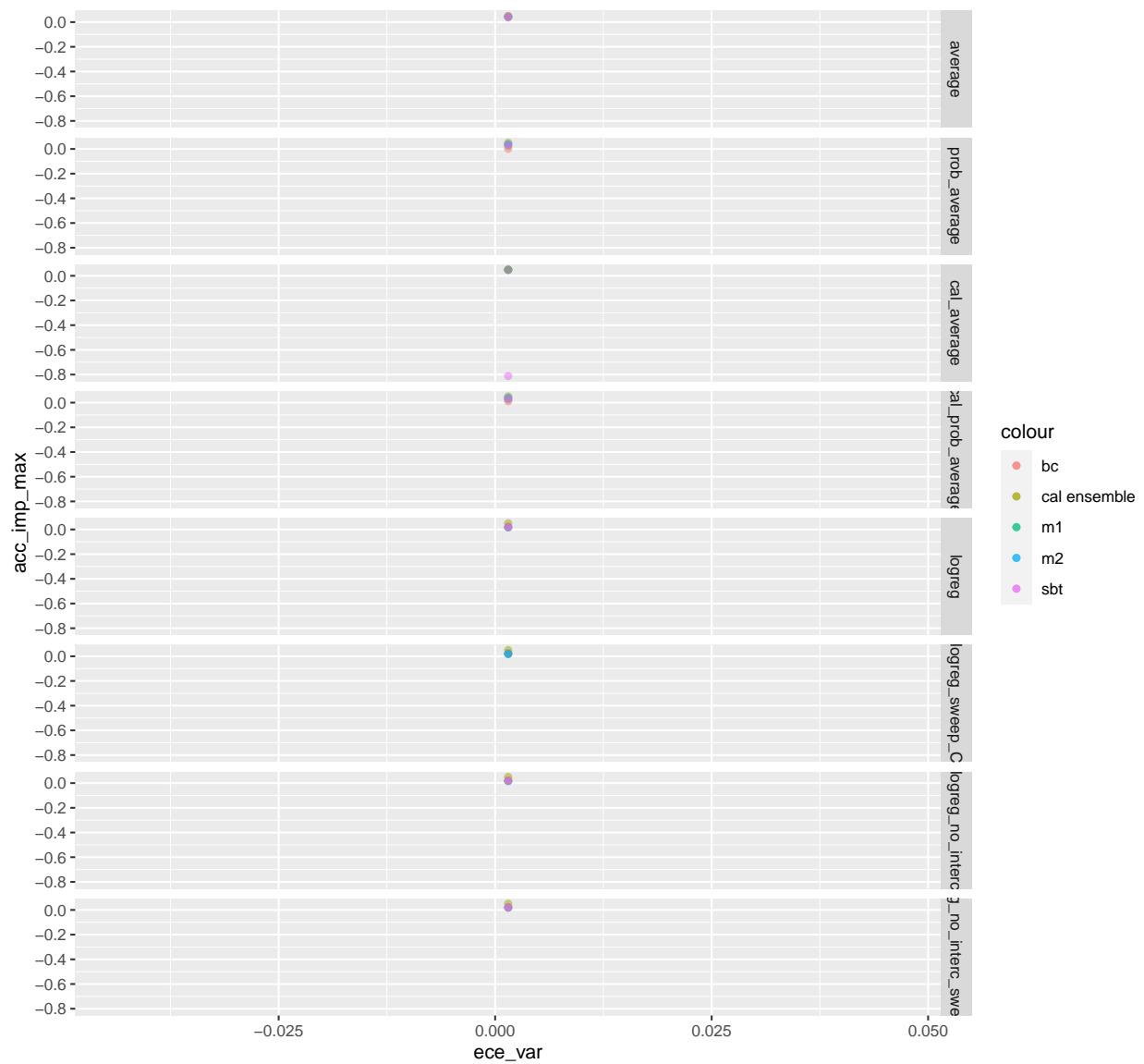
Accuracy improvement of ensemble over
the best of networks vs acc_avg.
Ensemble size 8



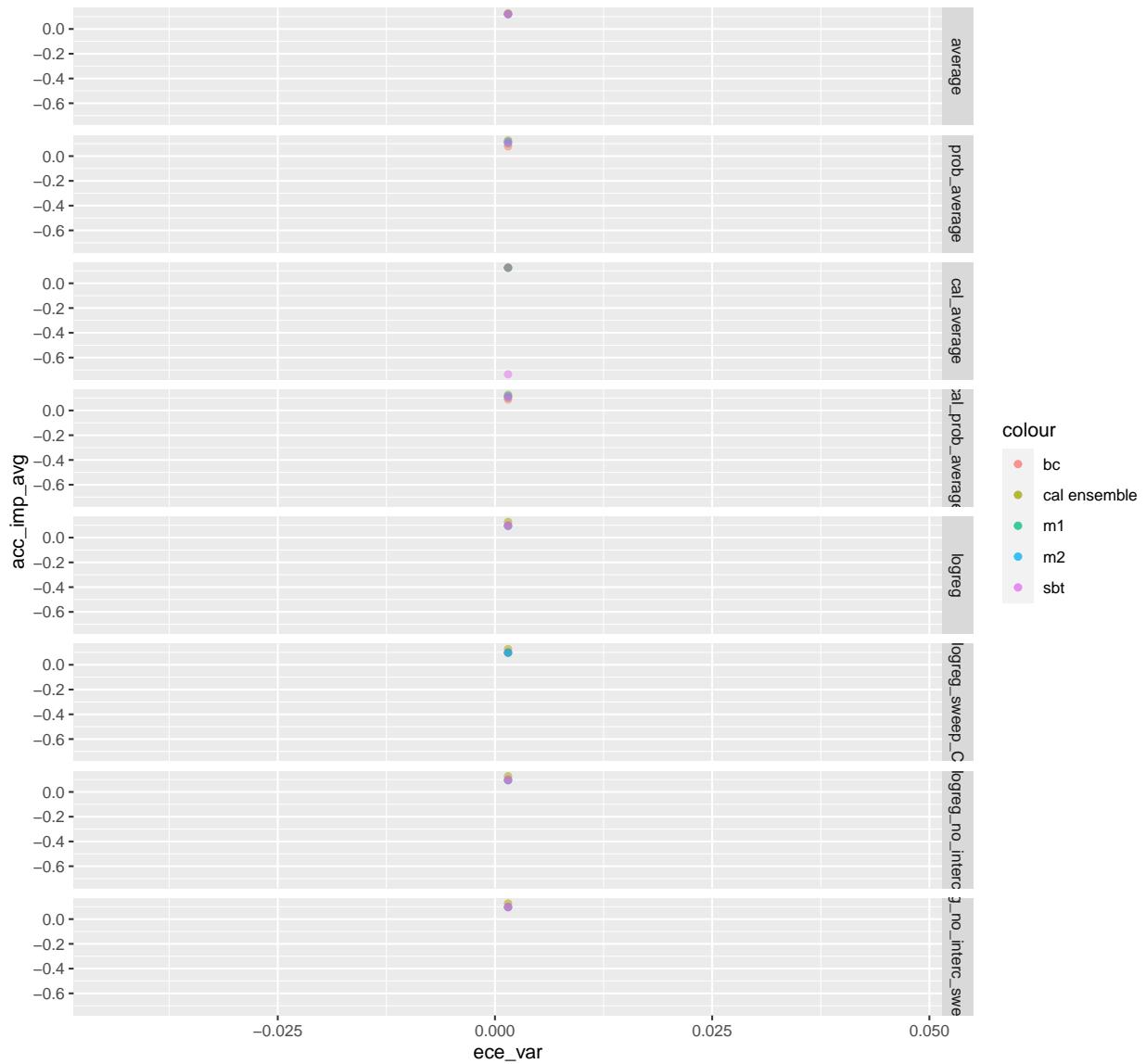
Accuracy improvement of ensemble over
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Ensemble size 8



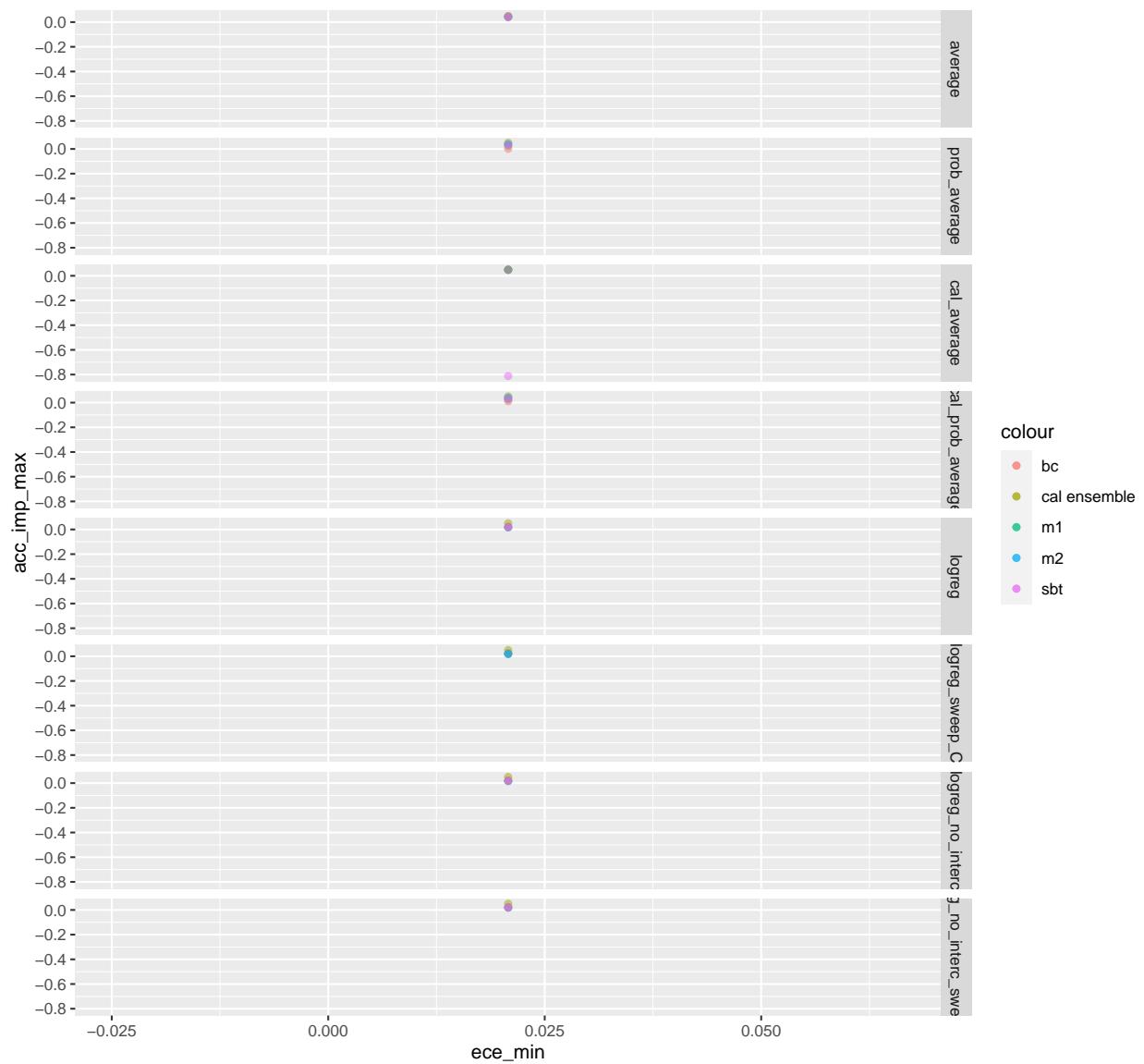
Accuracy improvement of ensemble over
the best of networks vs ece_var.
Ensemble size 8



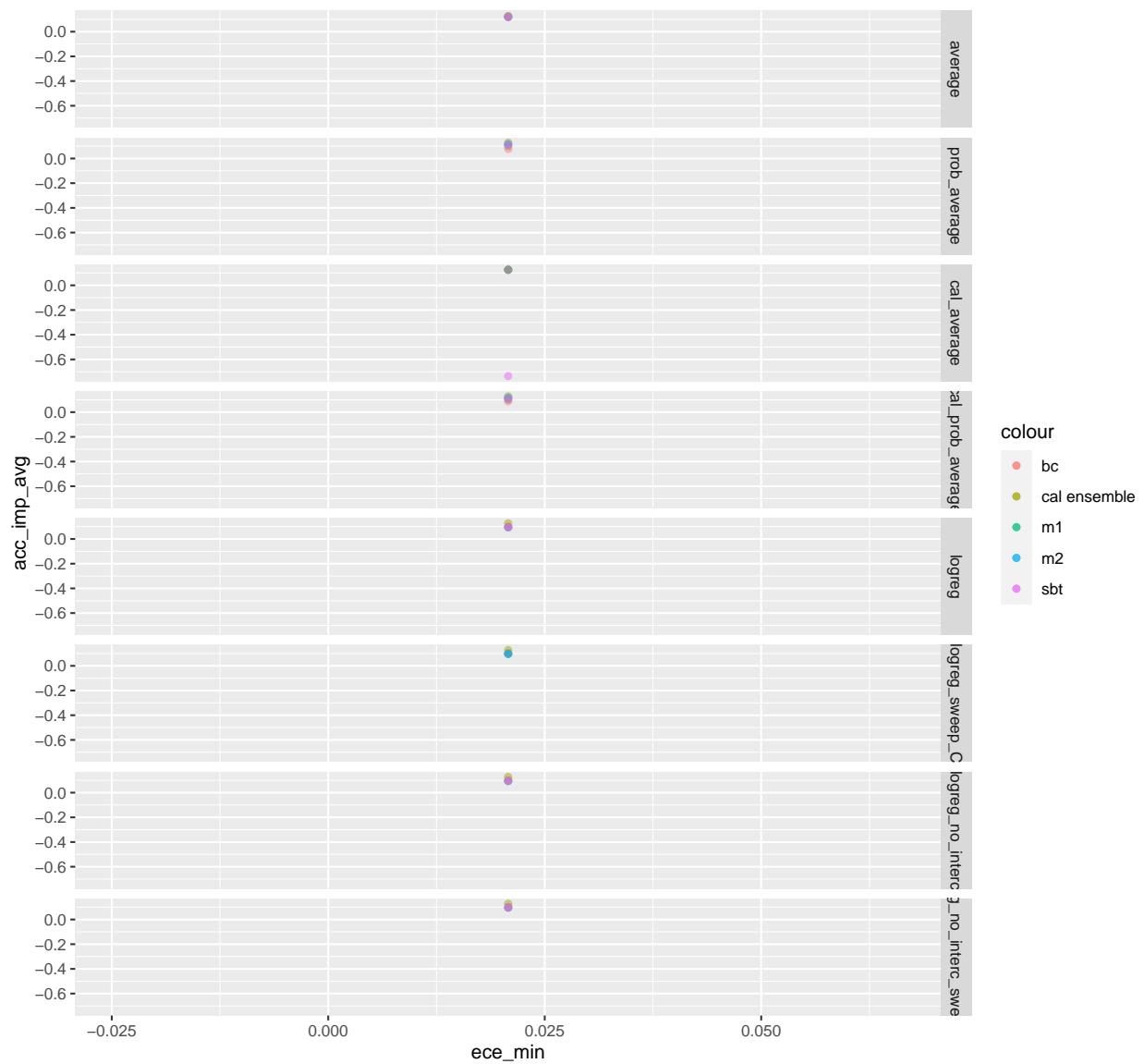
Accuracy improvement of ensemble over
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Ensemble size 8



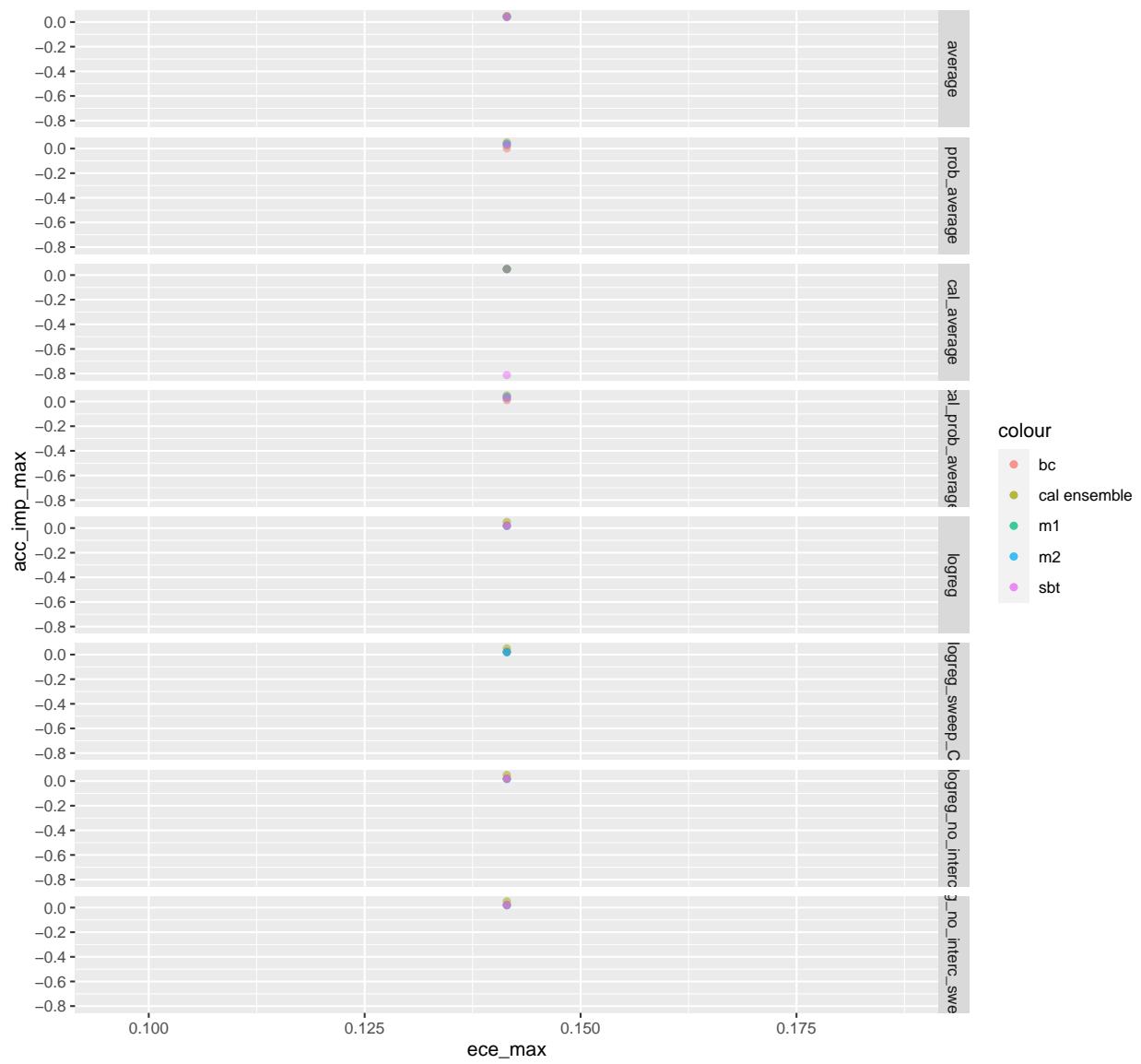
Accuracy improvement of ensemble over
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Ensemble size 8



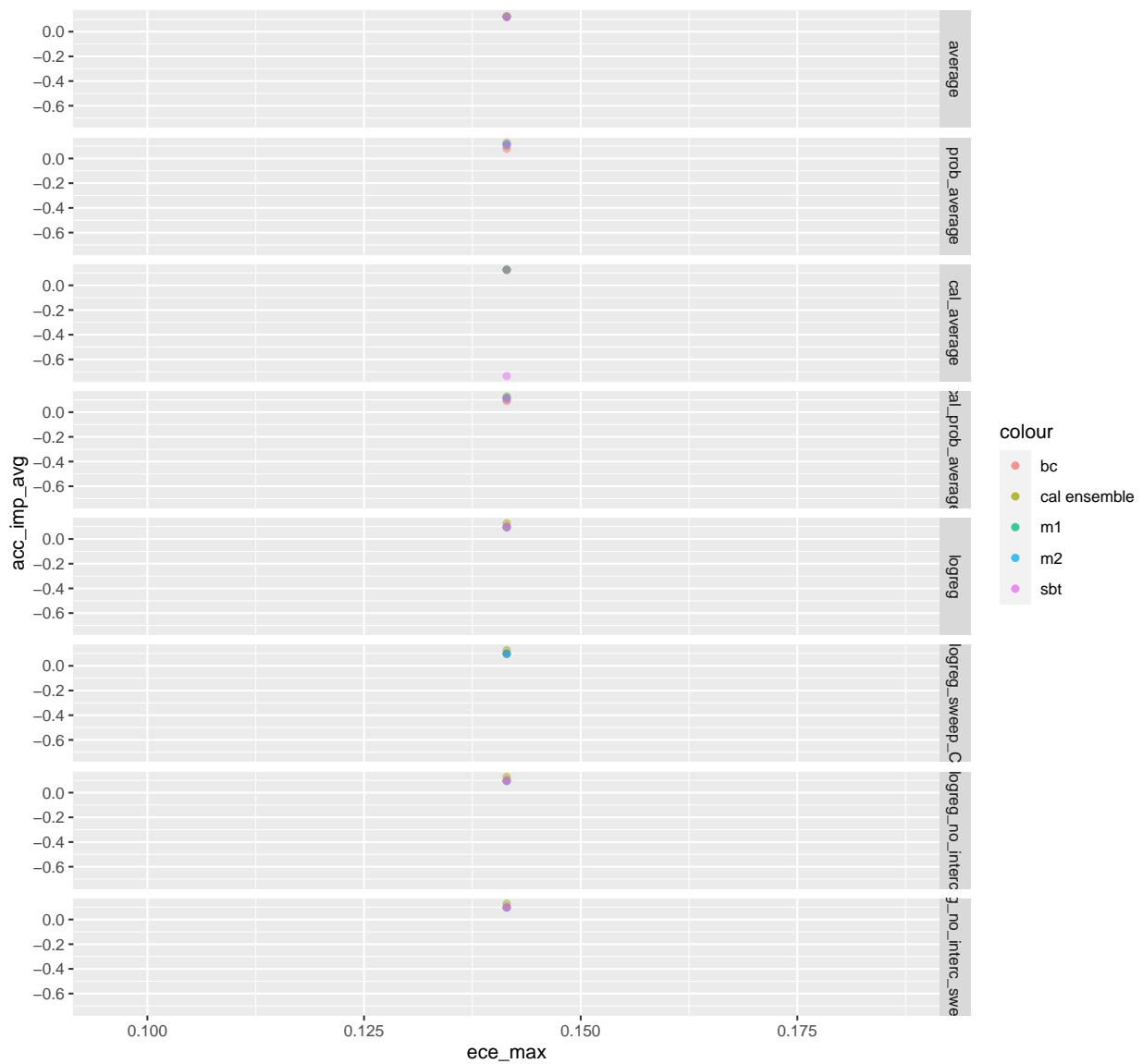
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Ensemble size 8



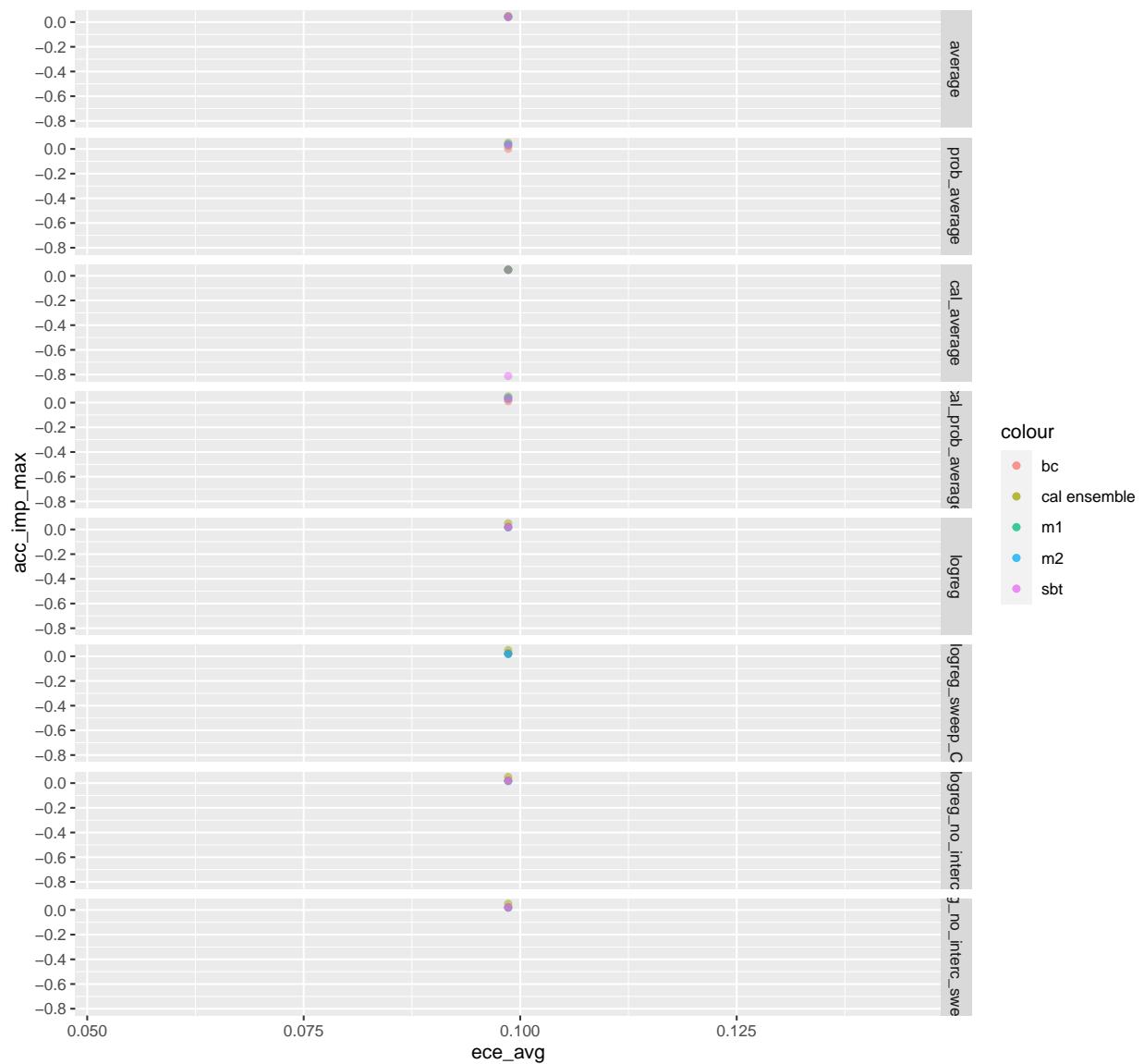
Accuracy improvement of ensemble over
the best of networks vs ece_max.
Ensemble size 8



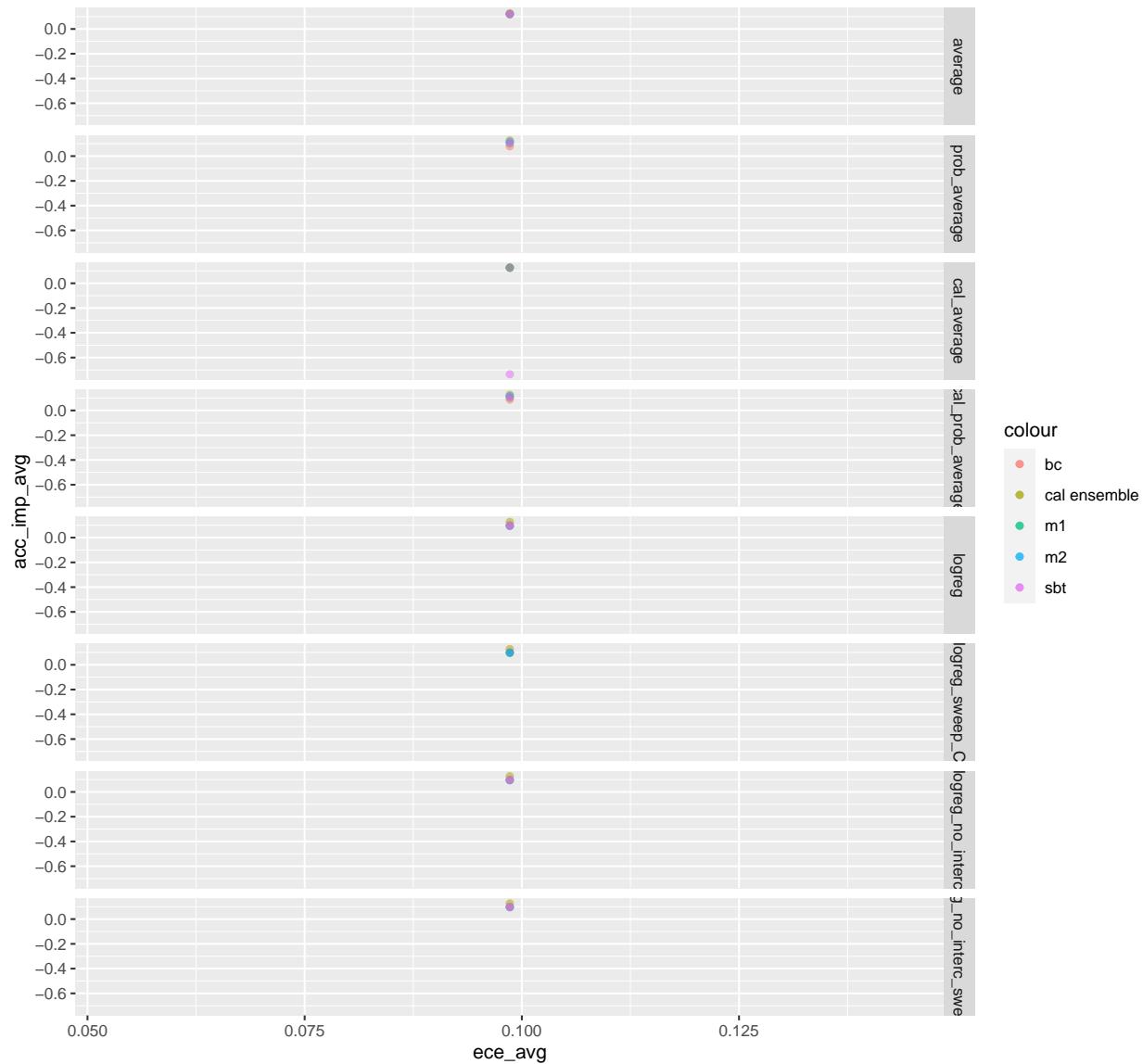
Accuracy improvement of ensemble over
the average of networks vs ece_max.
Ensemble size 8



Accuracy improvement of ensemble over
the best of networks vs ece_avg.
Ensemble size 8

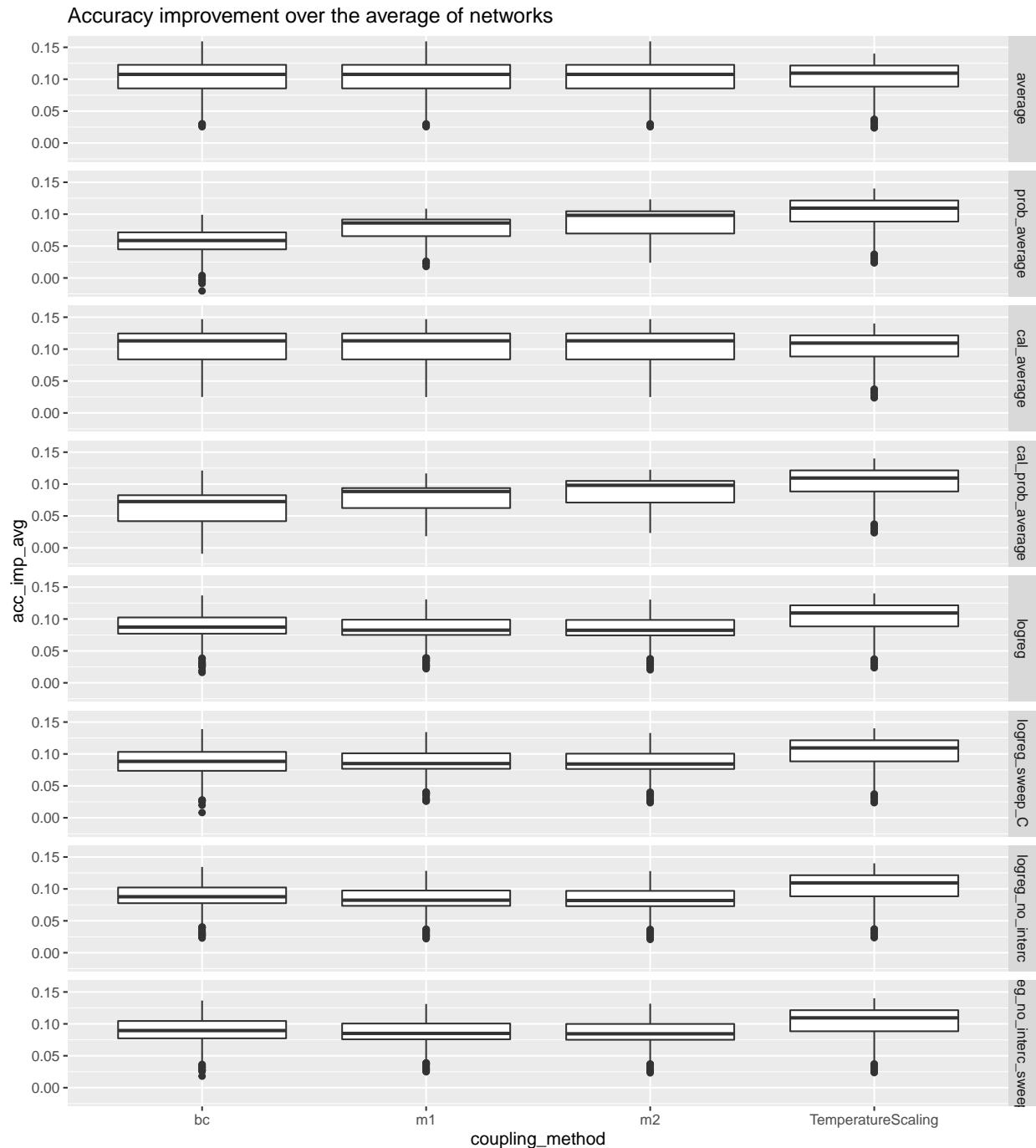


Accuracy improvement of ensemble over
the average of networks vs ece_avg.
Ensemble size 8



```
imp_avg_plot <- ggplot() +
  geom_boxplot(data=ens_pwc_plt_df %>% filter(coupling_method != "sbt"), mapping=aes(x=coupling_method,
  geom_boxplot(data=ens_cal_plt_df, mapping=aes(x=calibrating_method, y=acc_imp_avg)) +
  facet_grid(rows=vars(combining_method)) +
  ggtitle("Accuracy improvement over the average of networks"))

print(imp_avg_plot)
```

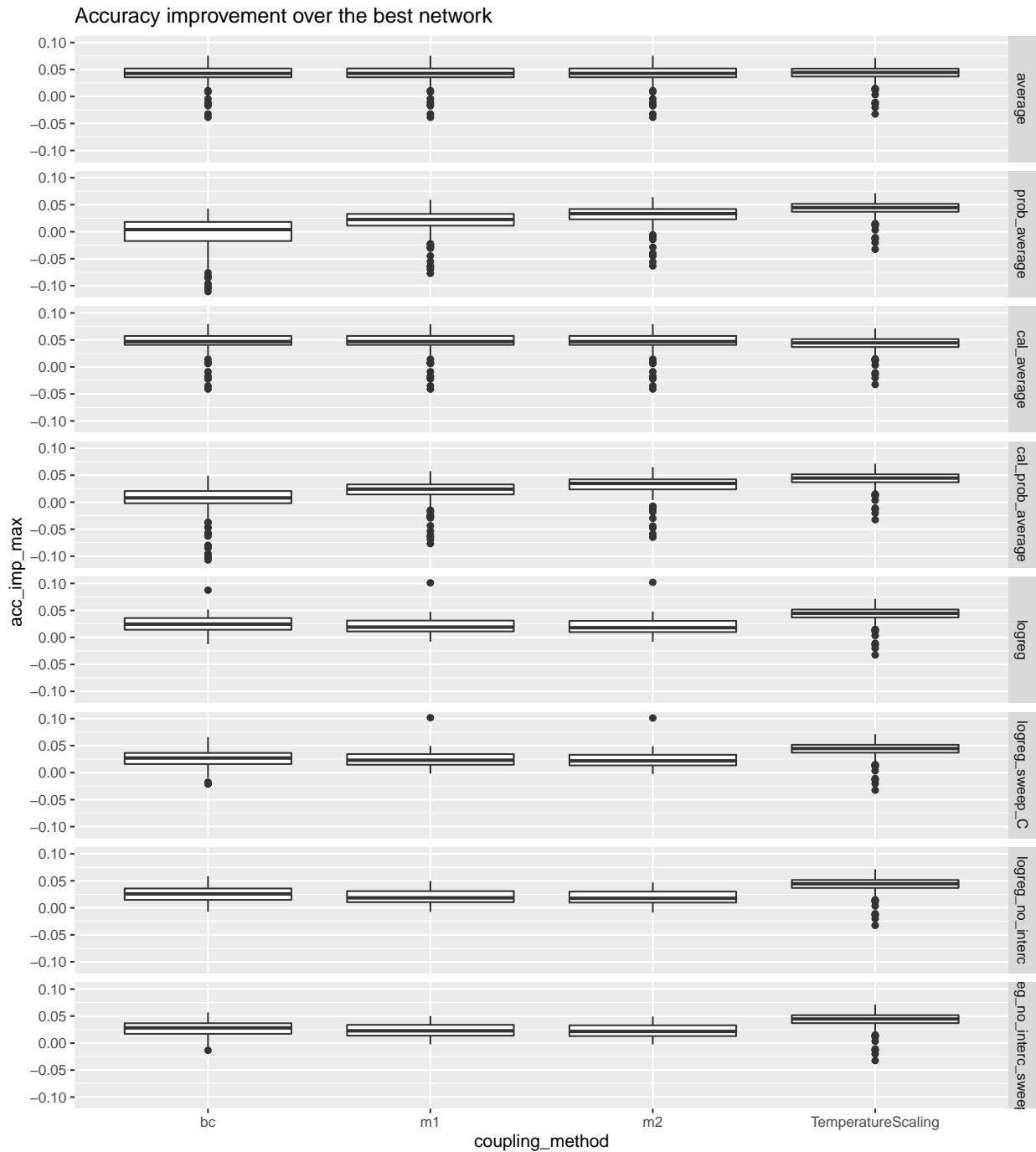


```

imp_max_plot <- ggplot() +
  geom_boxplot(data=ens_pwc_plt_df %>% filter(coupling_method != "sbt"), mapping=aes(x=coupling_method,
  geom_boxplot(data=ens_cal_plt_df, mapping=aes(x=calibrating_method, y=acc_imp_max)) +
  facet_grid(rows=vars(combining_method)) +
  ggtitle("Accuracy improvement over the best network")

print(imp_max_plot)

```



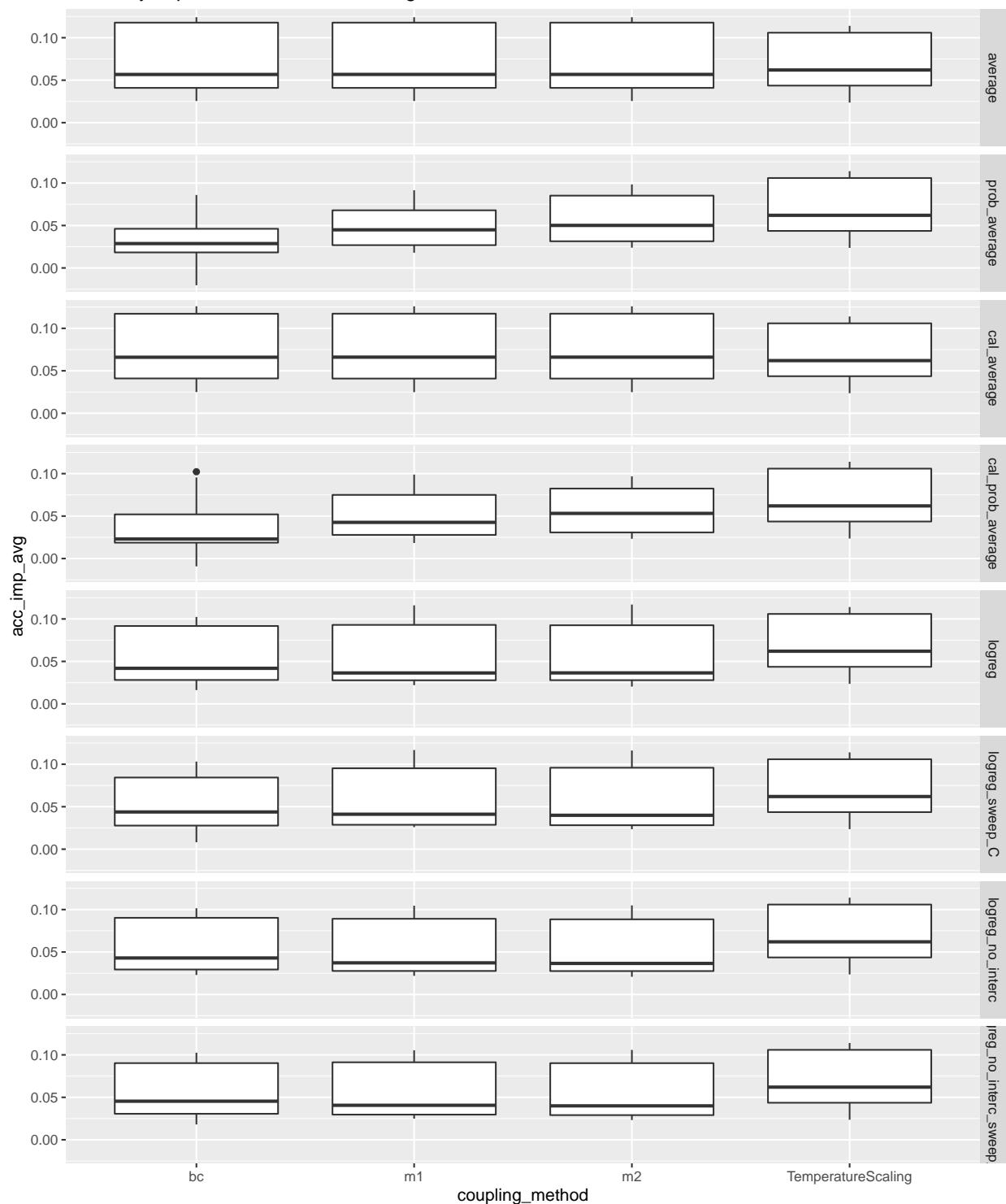
```

for (sss in unique(ens_cal_plt_df$combination_size))
{
  imp_avg_plot <- ggplot() +
    geom_boxplot(data=ens_pwc_plt_df %>% filter(coupling_method != "sbt" & combination_size==sss), mapping=aes(x=coupling_method, y=acc_imp_max))
    geom_boxplot(data=ens_cal_plt_df %>% filter(combination_size == sss), mapping=aes(x=calibrating_method, y=acc_imp_max))
  facet_grid(rows=vars(combining_method)) +
  ggttitle(sprintf("Accuracy improvement over the average of networks, ensemble size %s", sss))

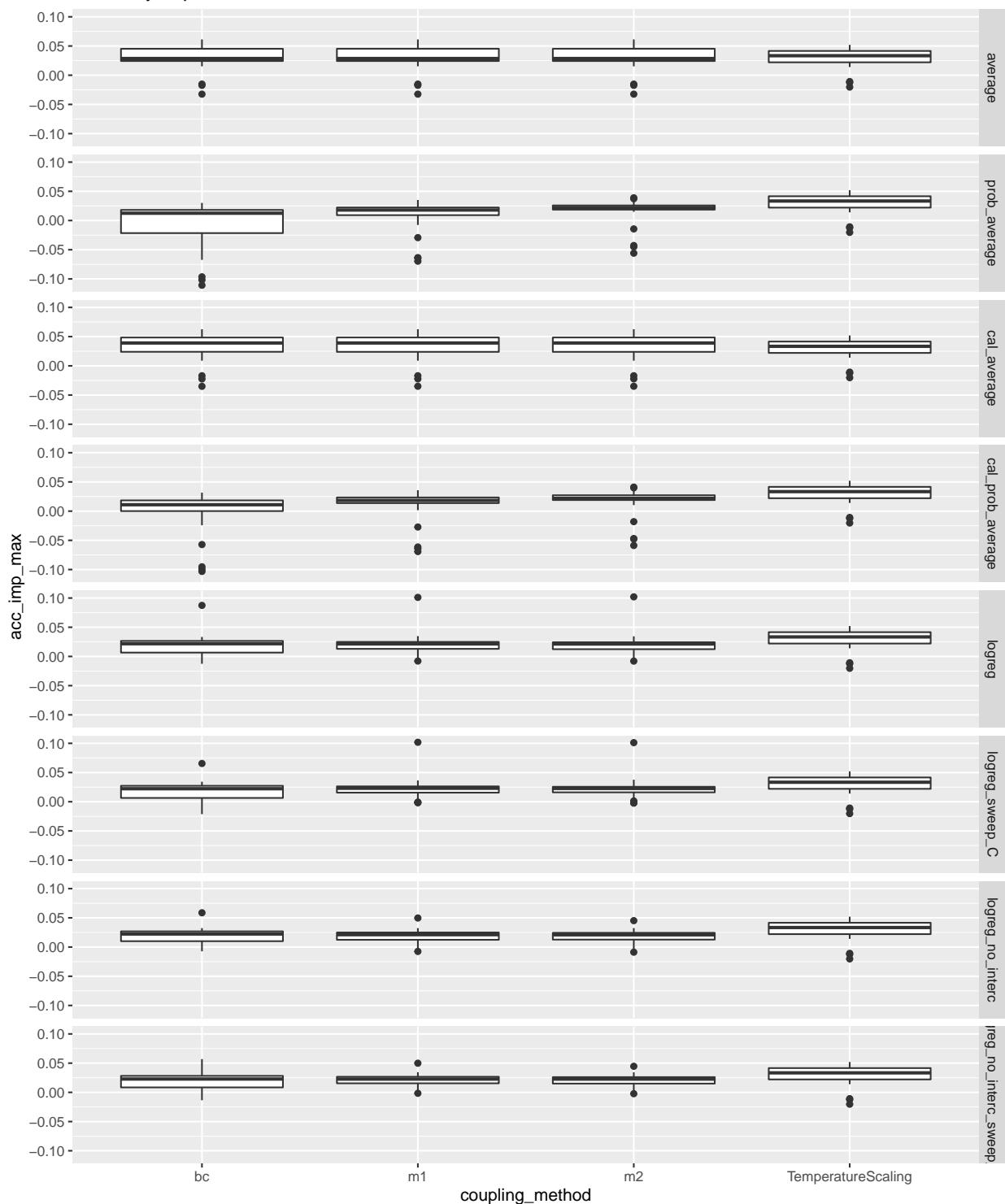
  print(imp_avg_plot)
}
  
```

```
imp_max_plot <- ggplot() +  
  geom_boxplot(data=ens_pwc_plt_df %>% filter(coupling_method != "sbt" & combination_size == sss), mapping=aes(x=coupling_method)) +  
  geom_boxplot(data=ens_cal_plt_df %>% filter(combination_size == sss), mapping=aes(x=calibrating_method)) +  
  facet_grid(rows=vars(combining_method)) +  
  ggtitle(sprintf("Accuracy improvement over the best of networks, ensemble size %s", sss))  
  
print(imp_max_plot)  
}
```

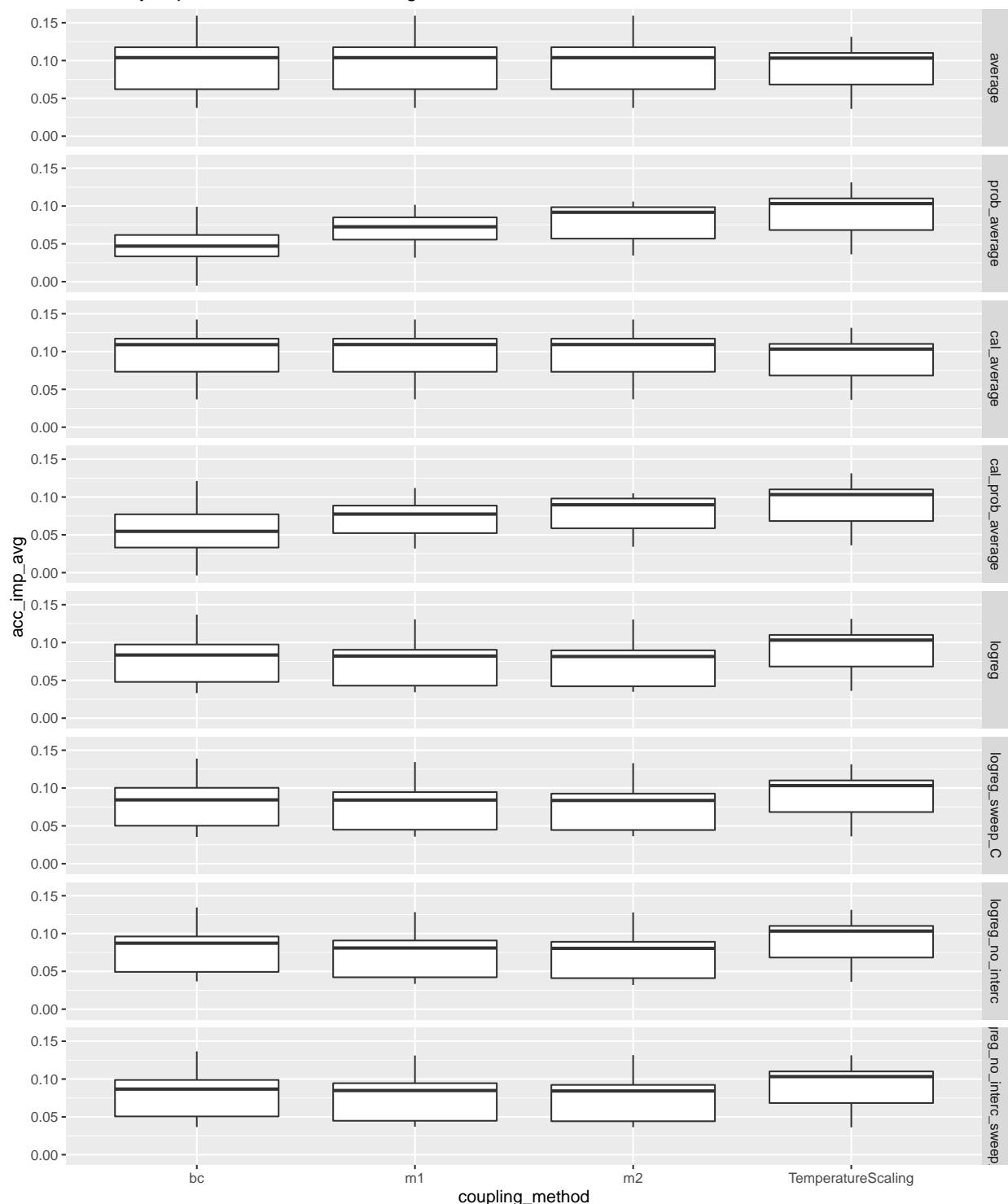
Accuracy improvement over the average of networks, ensemble size 2



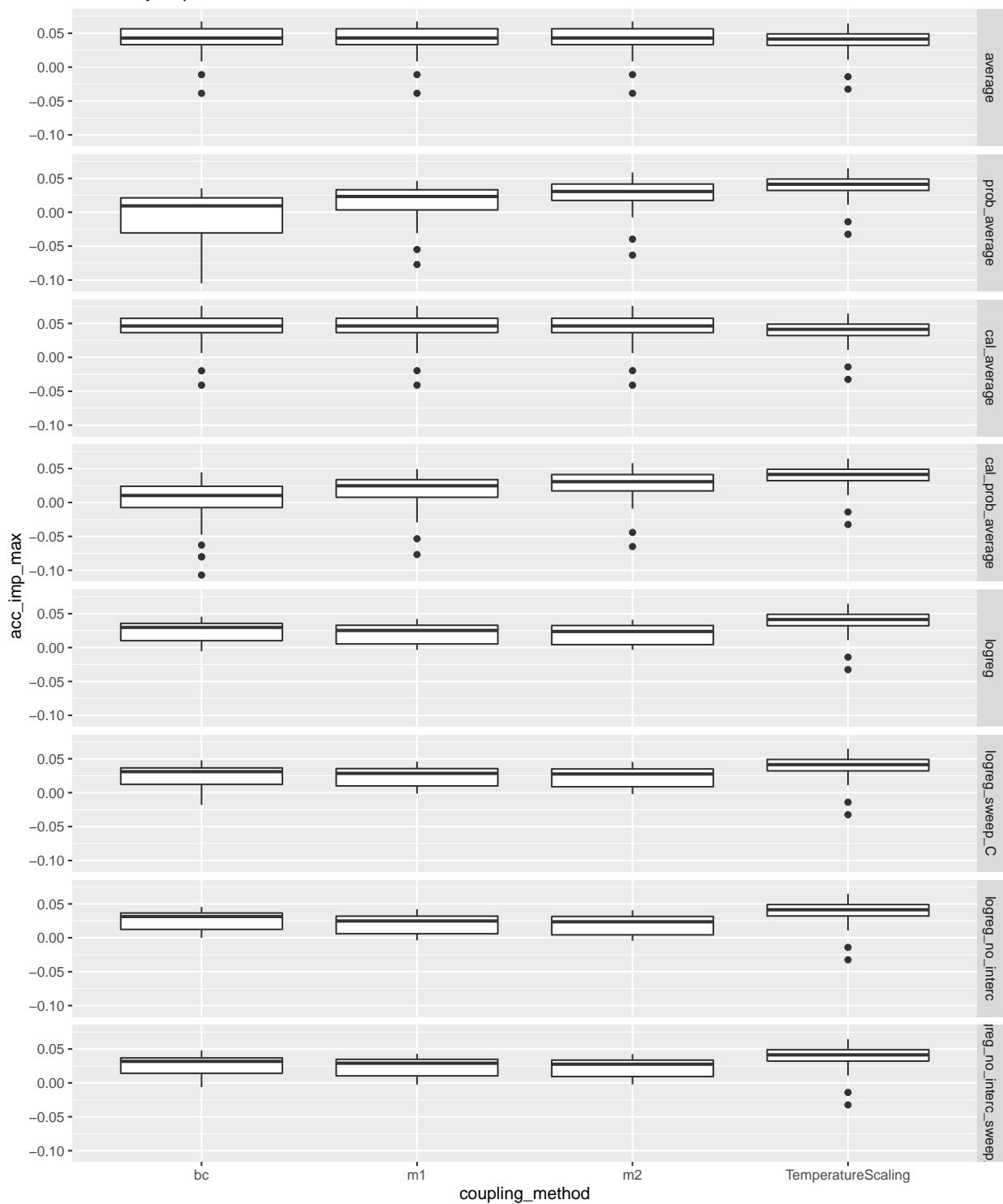
Accuracy improvement over the best of networks, ensemble size 2

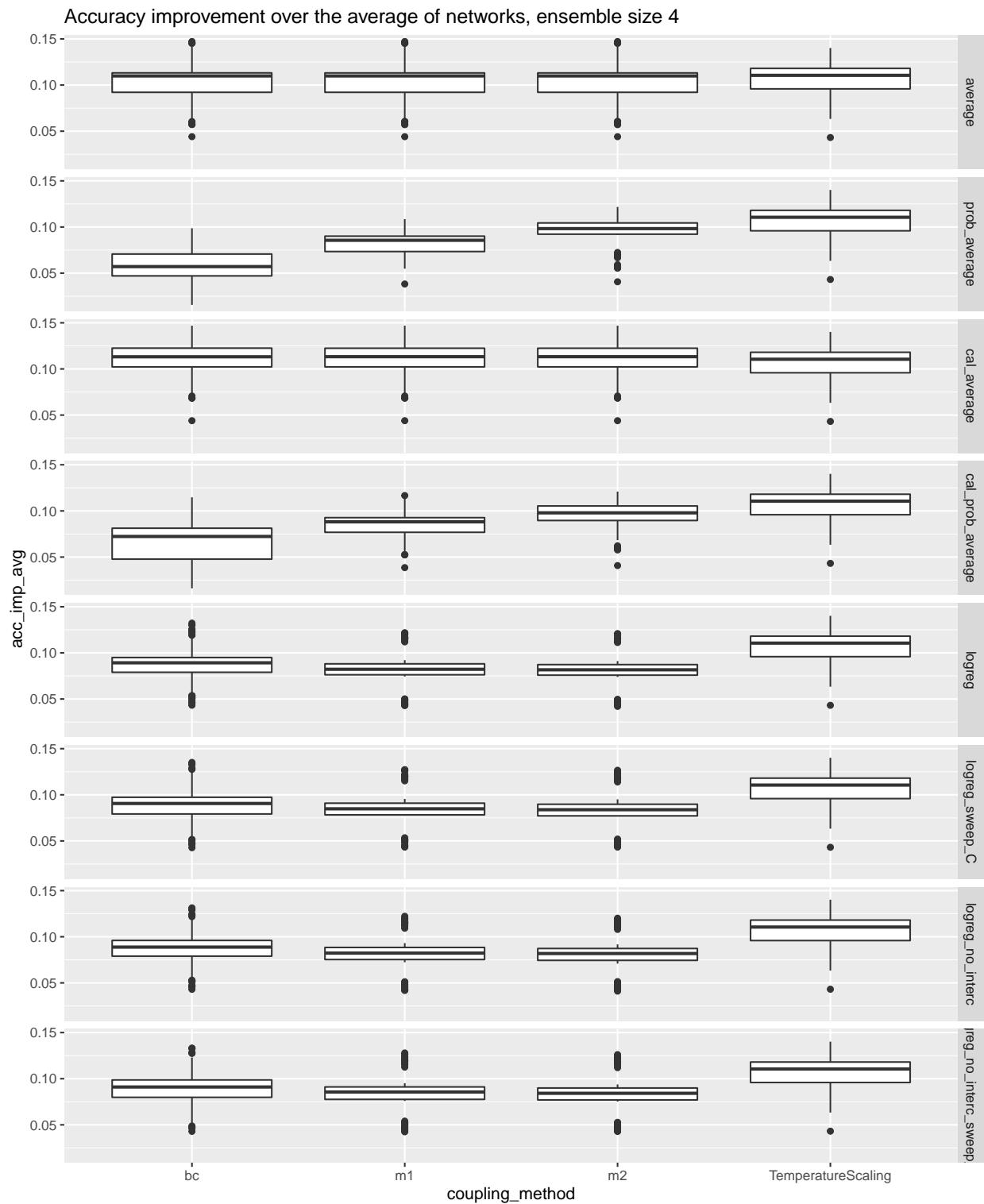


Accuracy improvement over the average of networks, ensemble size 3

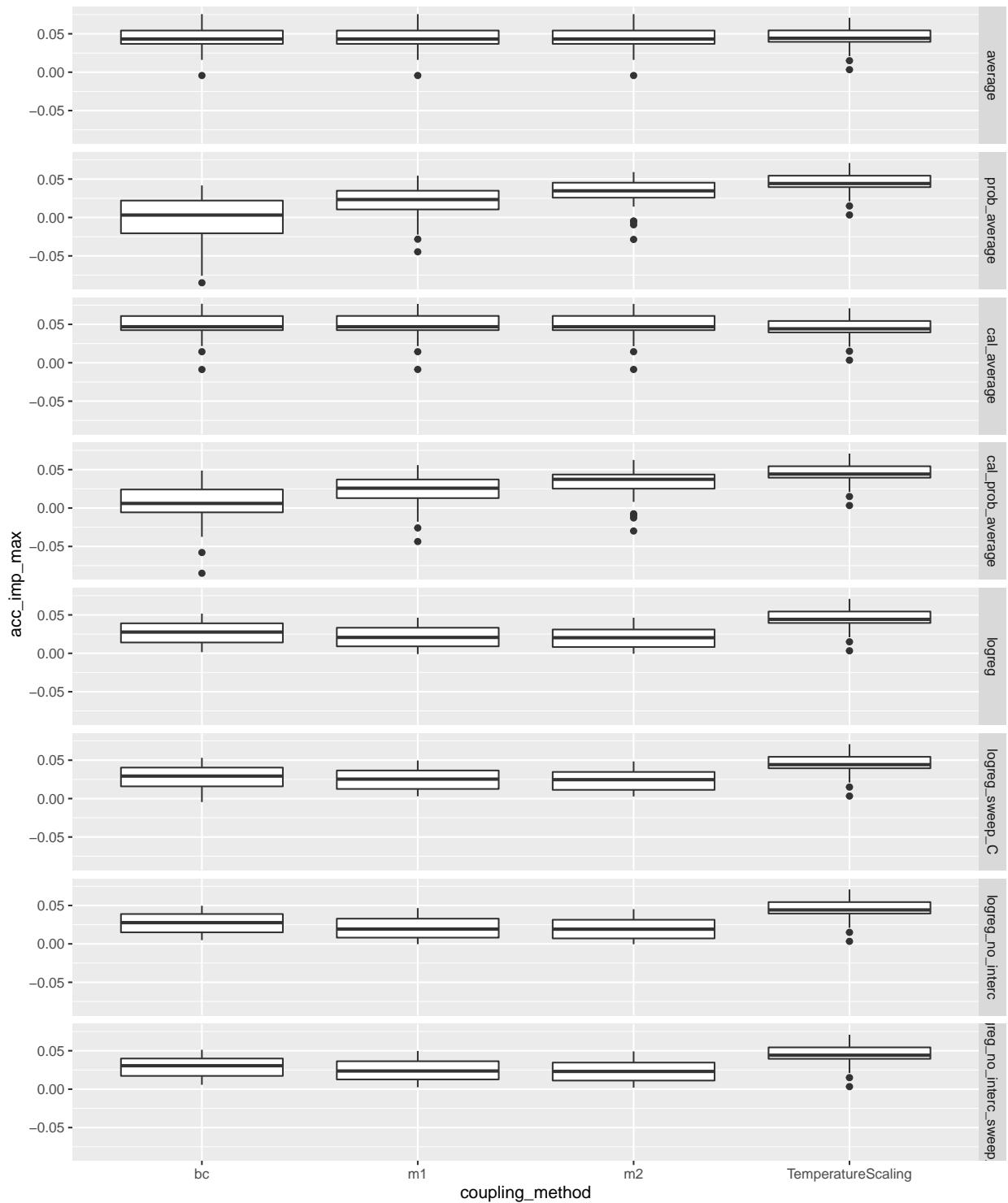


Accuracy improvement over the best of networks, ensemble size 3

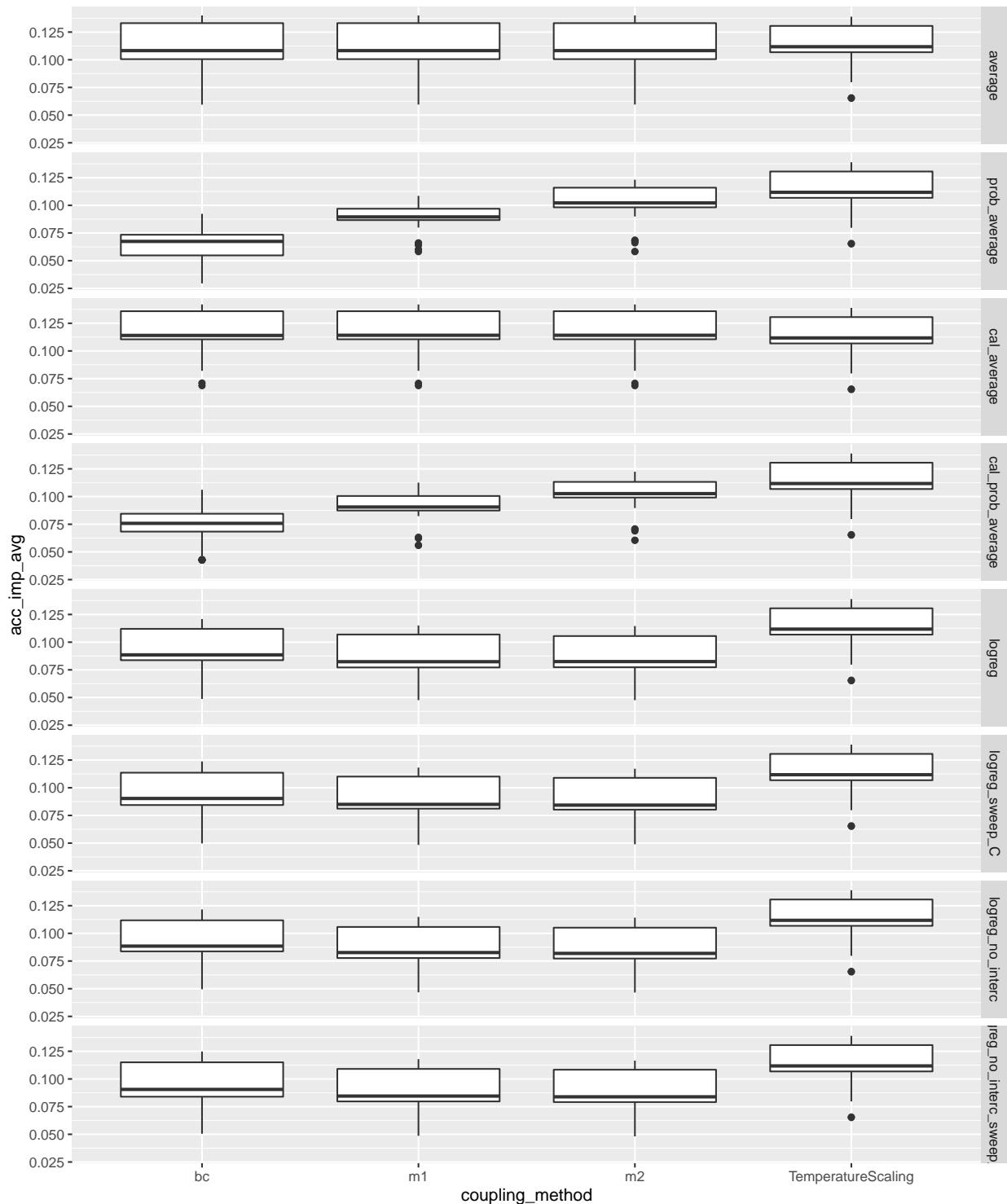




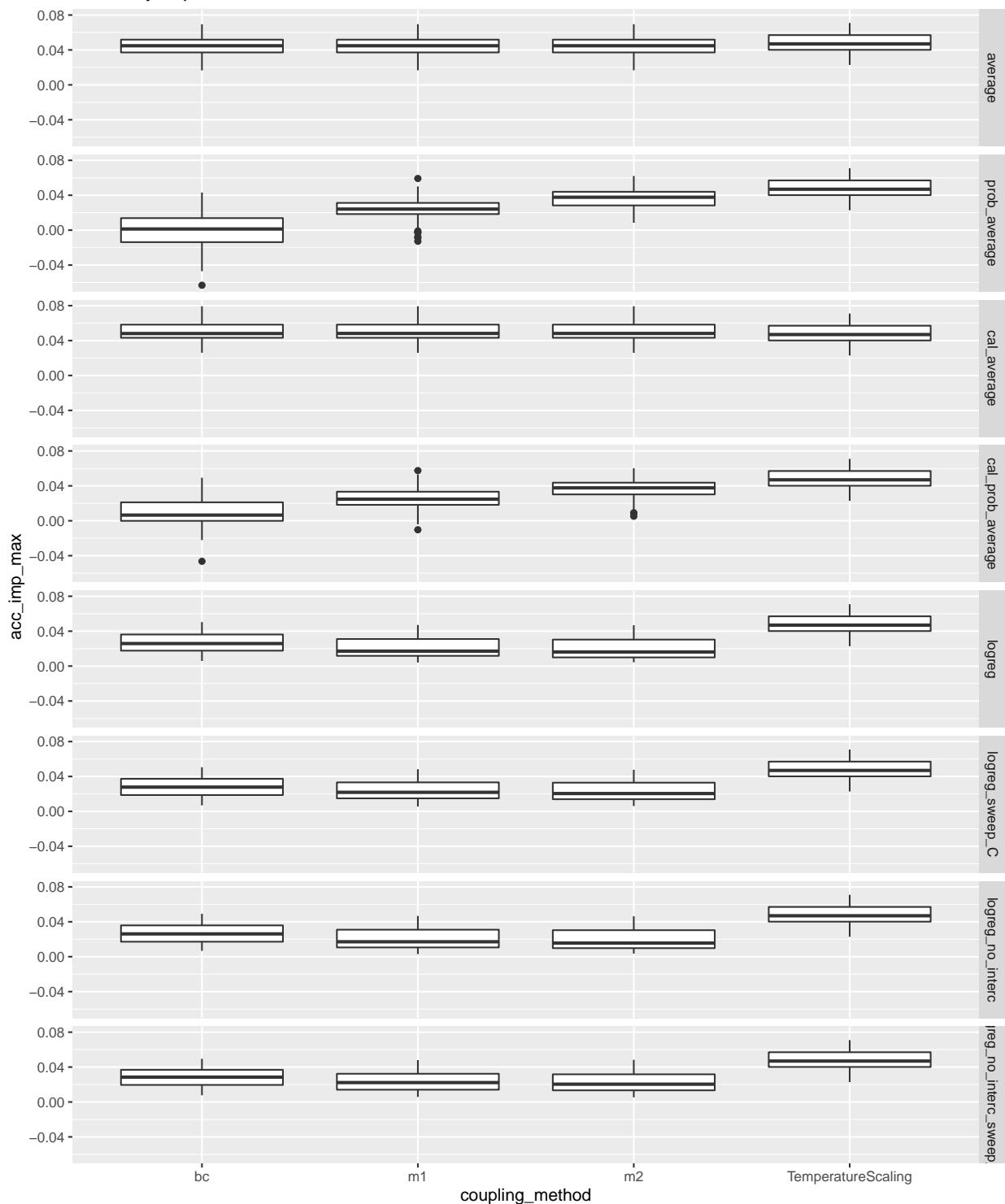
Accuracy improvement over the best of networks, ensemble size 4

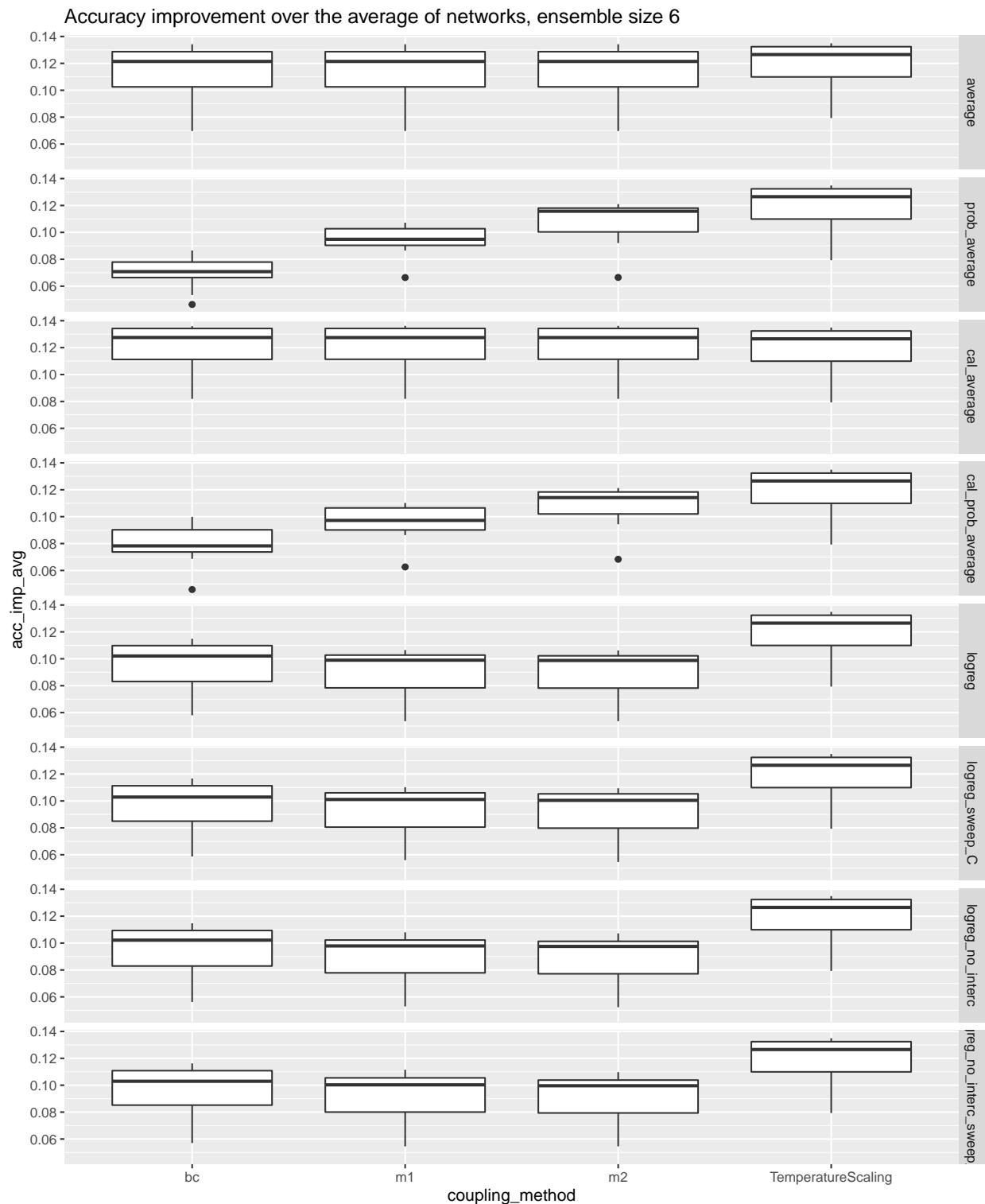


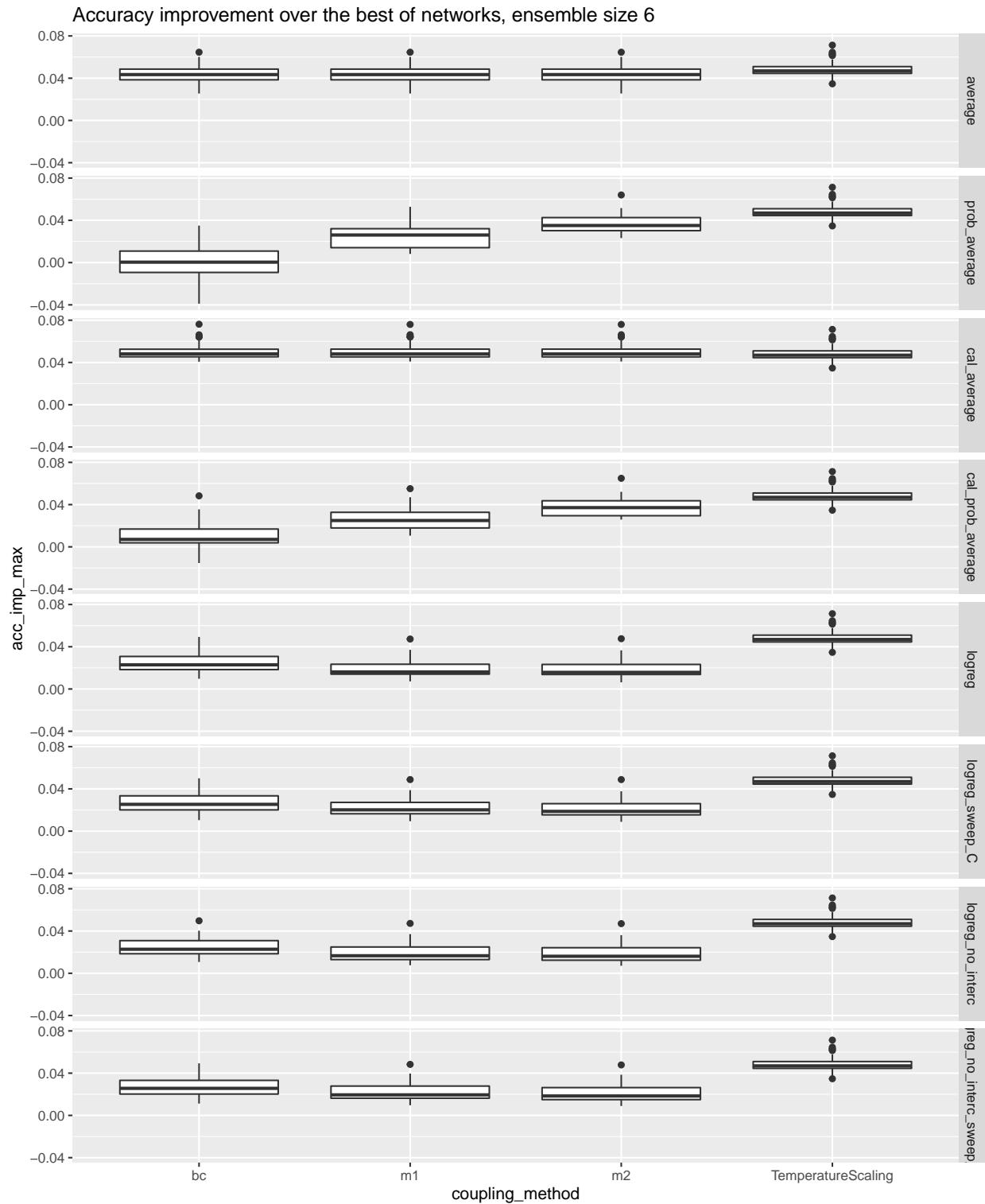
Accuracy improvement over the average of networks, ensemble size 5



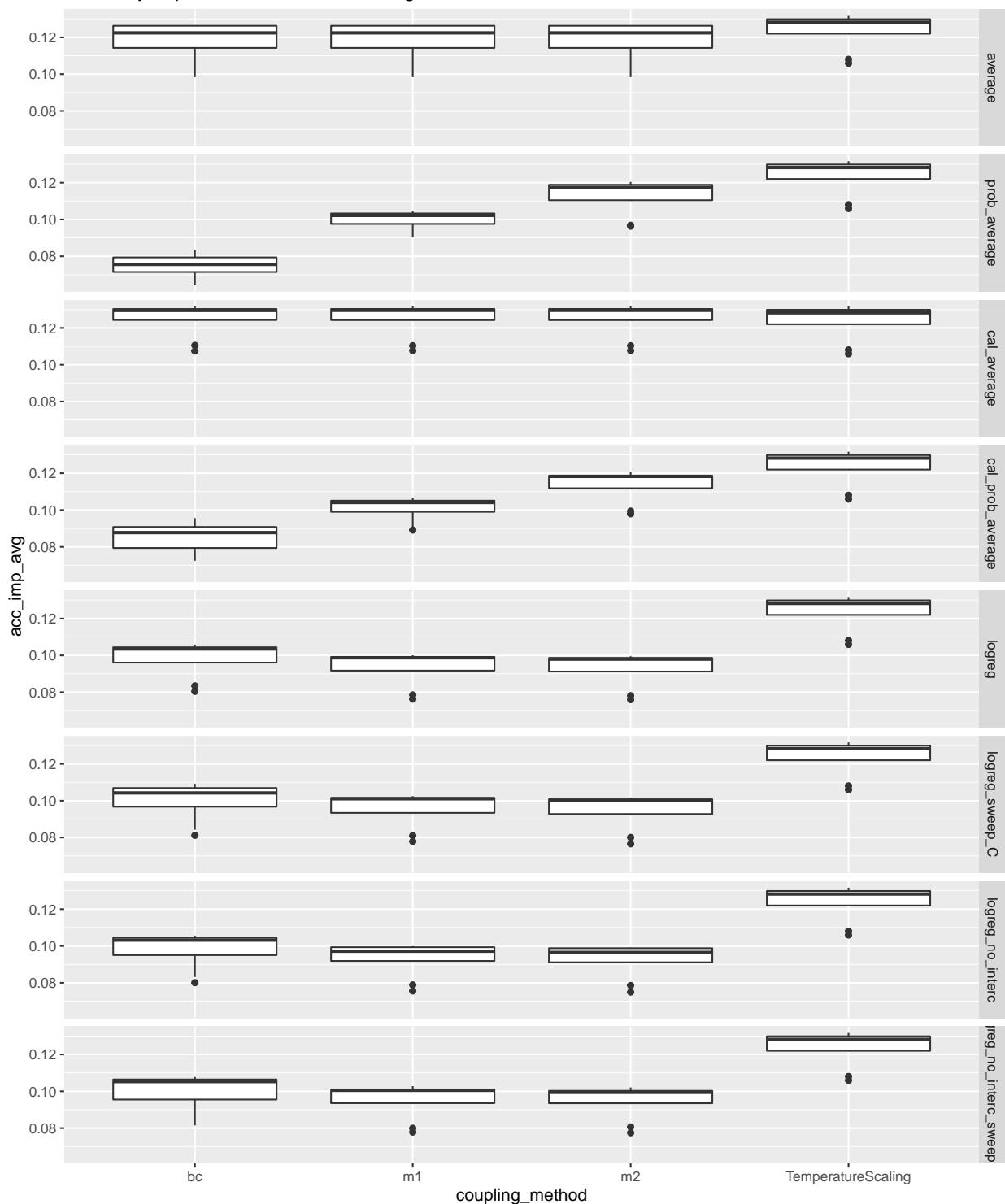
Accuracy improvement over the best of networks, ensemble size 5



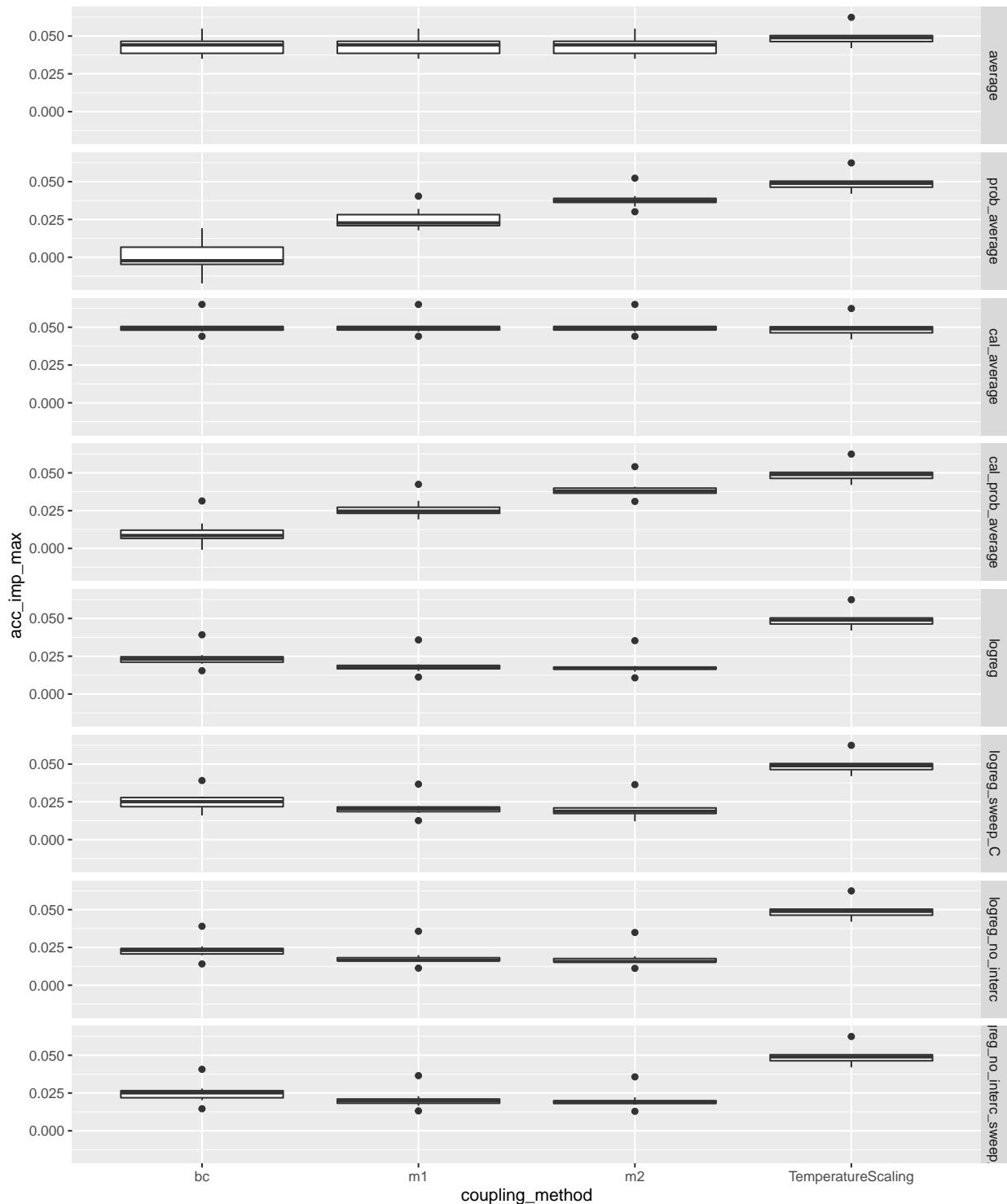




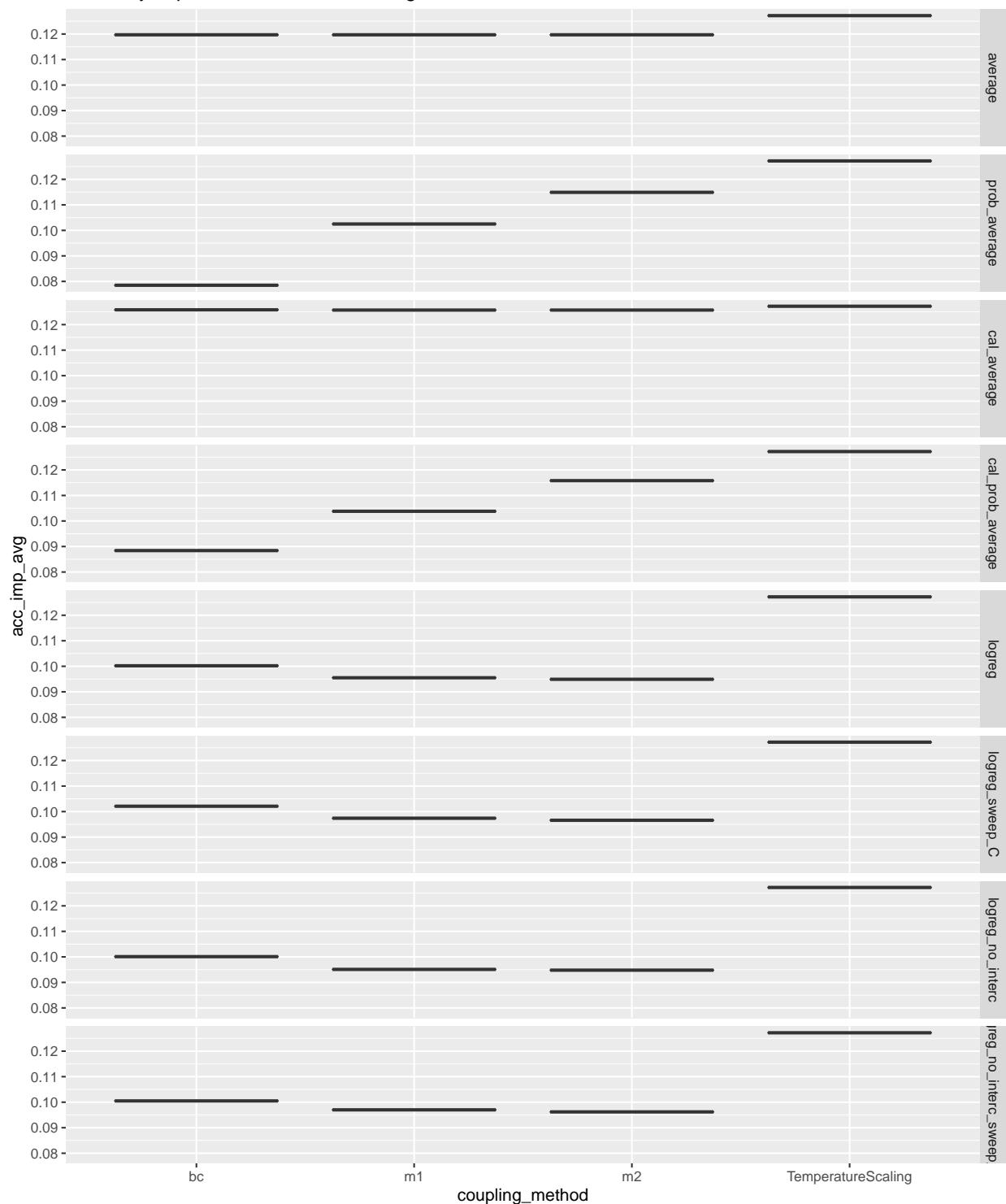
Accuracy improvement over the average of networks, ensemble size 7



Accuracy improvement over the best of networks, ensemble size 7



Accuracy improvement over the average of networks, ensemble size 8



Accuracy improvement over the best of networks, ensemble size 8

