# Simulation Summary (2S-PA Only)

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```
library(tidyverse)
```

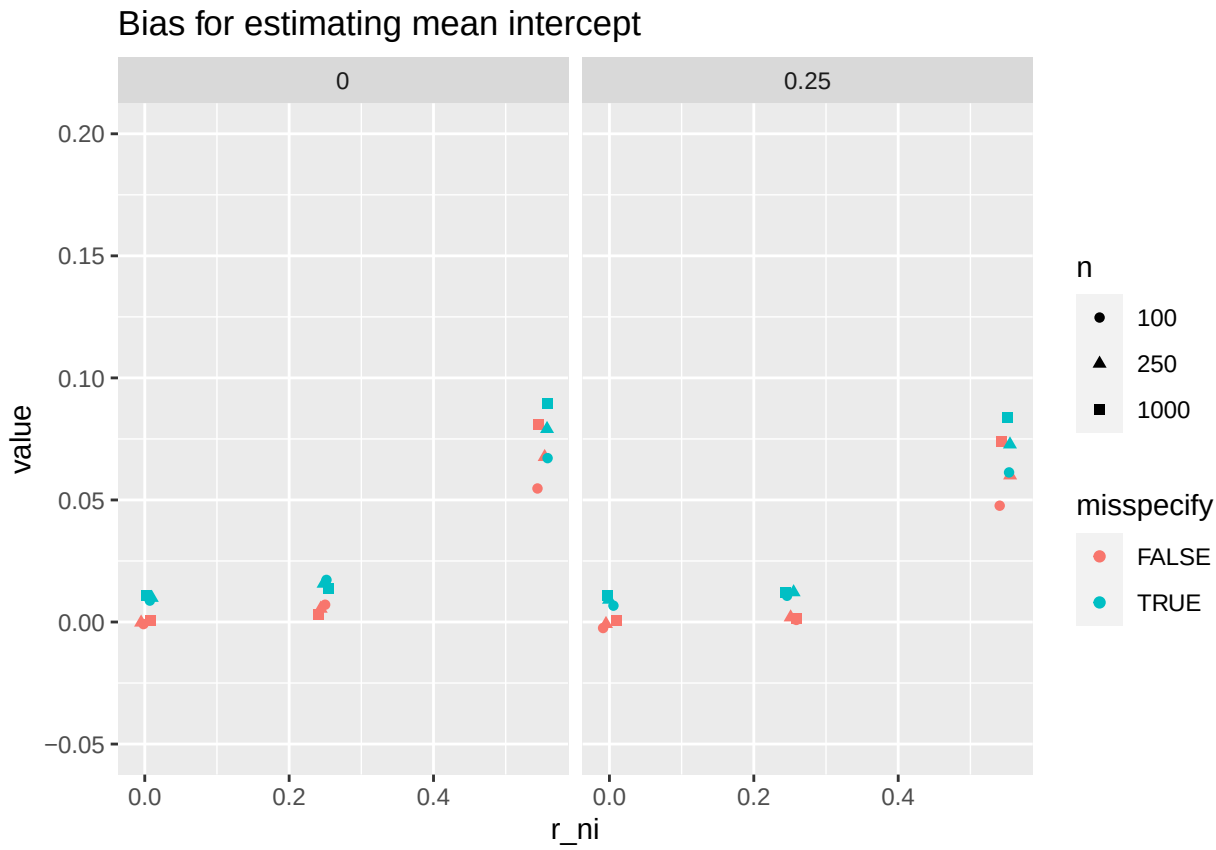
```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --

## v ggplot2 3.3.6     v purrr   0.3.4
## v tibble  3.1.8     v dplyr   1.0.9
## v tidyr   1.2.0     v stringr 1.4.0
## v readr   2.1.2     v forcats 0.5.1

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
simres <- readRDS("simres_2spa_only.rds")
```

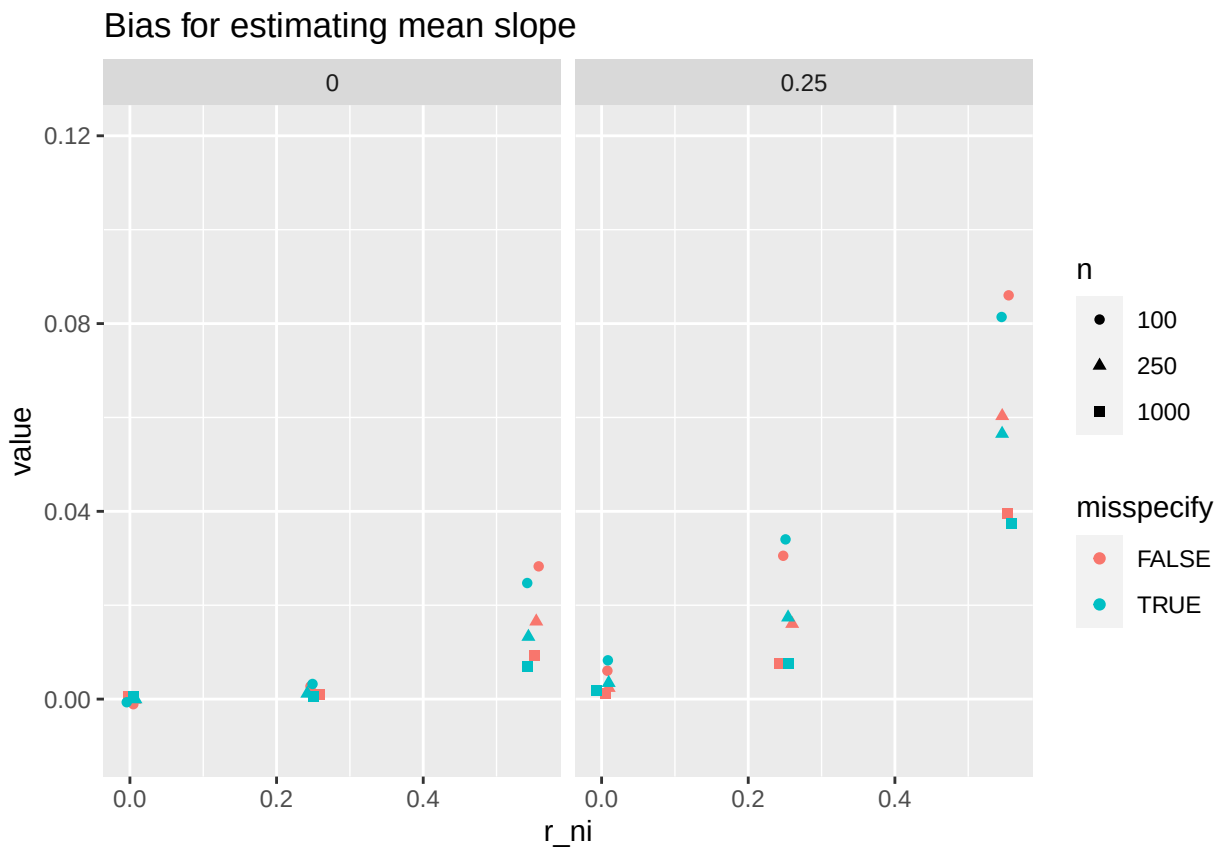
```
simres_long <- simres %>%
  tibble::rowid_to_column("cond") %>%
  pivot_longer(
    bias.est_TSPA_meani:coverage.ci_TSPA_vars,
    names_to = c("criteria", "method", "stat", "par"),
    values_to = "value",
    names_pattern = "(.*)_(.*)_(.*)(.)"
  )
```

## Bias

```
simres_long %>%
  filter(criteria == "bias.est", stat == "mean",
         par == "i") %>%
  mutate(n = as.factor(n)) %>%
  ggplot(aes(x = r_ni, y = value)) +
  geom_point(aes(shape = n, col = misspecify),
             position = position_jitter(width = .01)) +
  # geom_line(aes(shape = n, col = misspecify)) +
  facet_grid(~ kappa2) +
  ylim(-.05, .2) +
  labs(title = "Bias for estimating mean intercept")
```

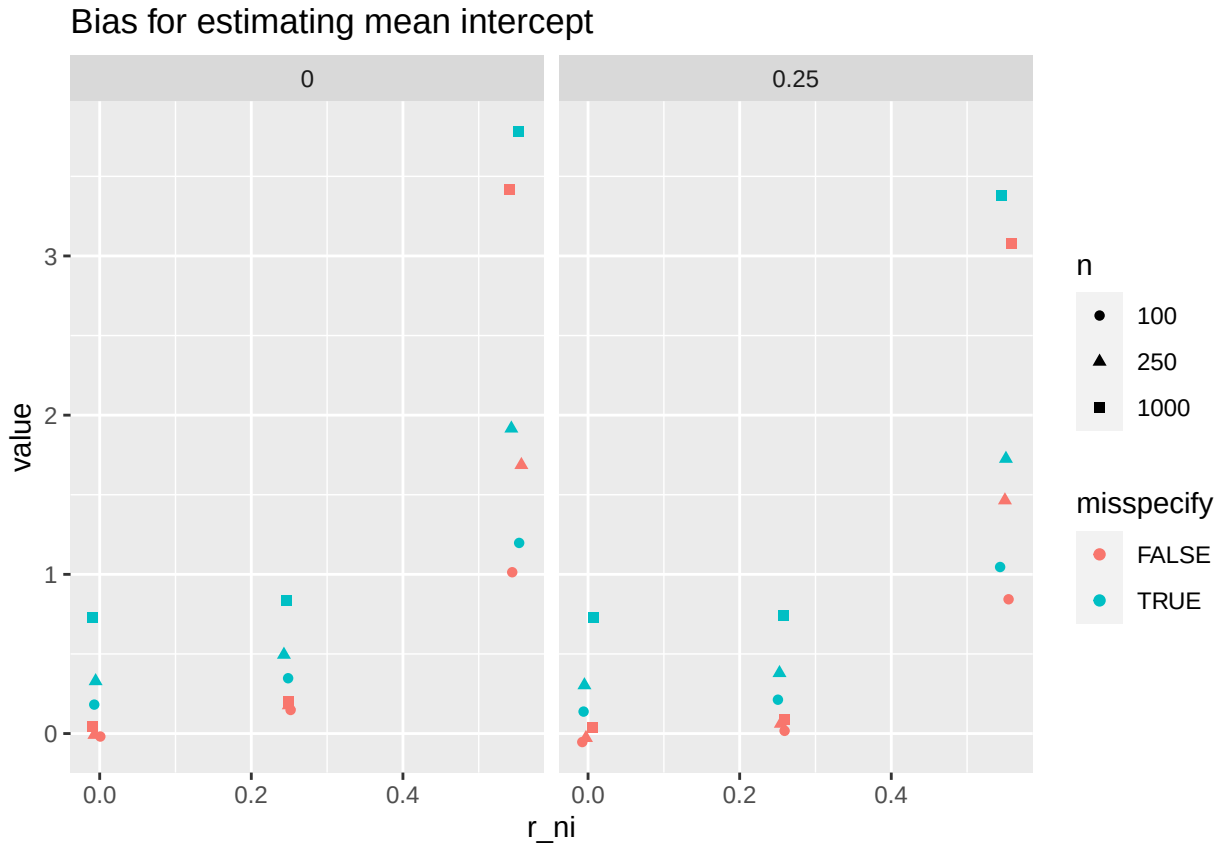



```
simres_long %>%
  filter(criteria == "bias.est", stat == "mean",
         par == "s") %>%
  mutate(n = as.factor(n)) %>%
  ggplot(aes(x = r_ni, y = value)) +
  geom_point(aes(shape = n, col = misspecify),
             position = position_jitter(width = .01)) +
  # geom_line(aes(shape = n, col = misspecify)) +
  facet_grid(~ kappa2) +
  ylim(-.01, .12) +
  labs(title = "Bias for estimating mean slope")
```

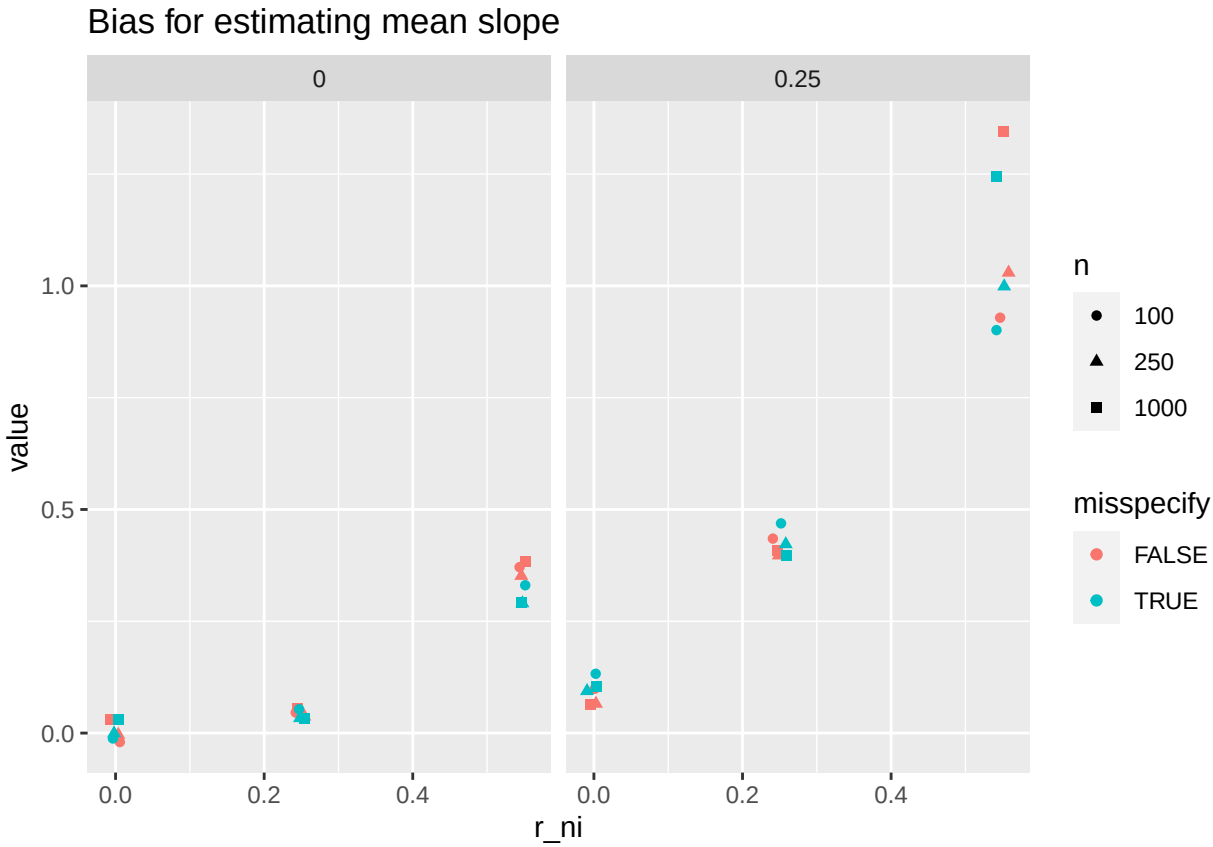



### Standardized Bias

```
simres_long %>%
  filter(criteria == "std_bias.est", stat == "mean",
         par == "i") %>%
  mutate(n = as.factor(n)) %>%
  ggplot(aes(x = r_ni, y = value)) +
  geom_point(aes(shape = n, col = misspecify),
             position = position_jitter(width = .01)) +
  # geom_line(aes(shape = n, col = misspecify)) +
  facet_grid(~ kappa2) +
  labs(title = "Bias for estimating mean intercept")
```

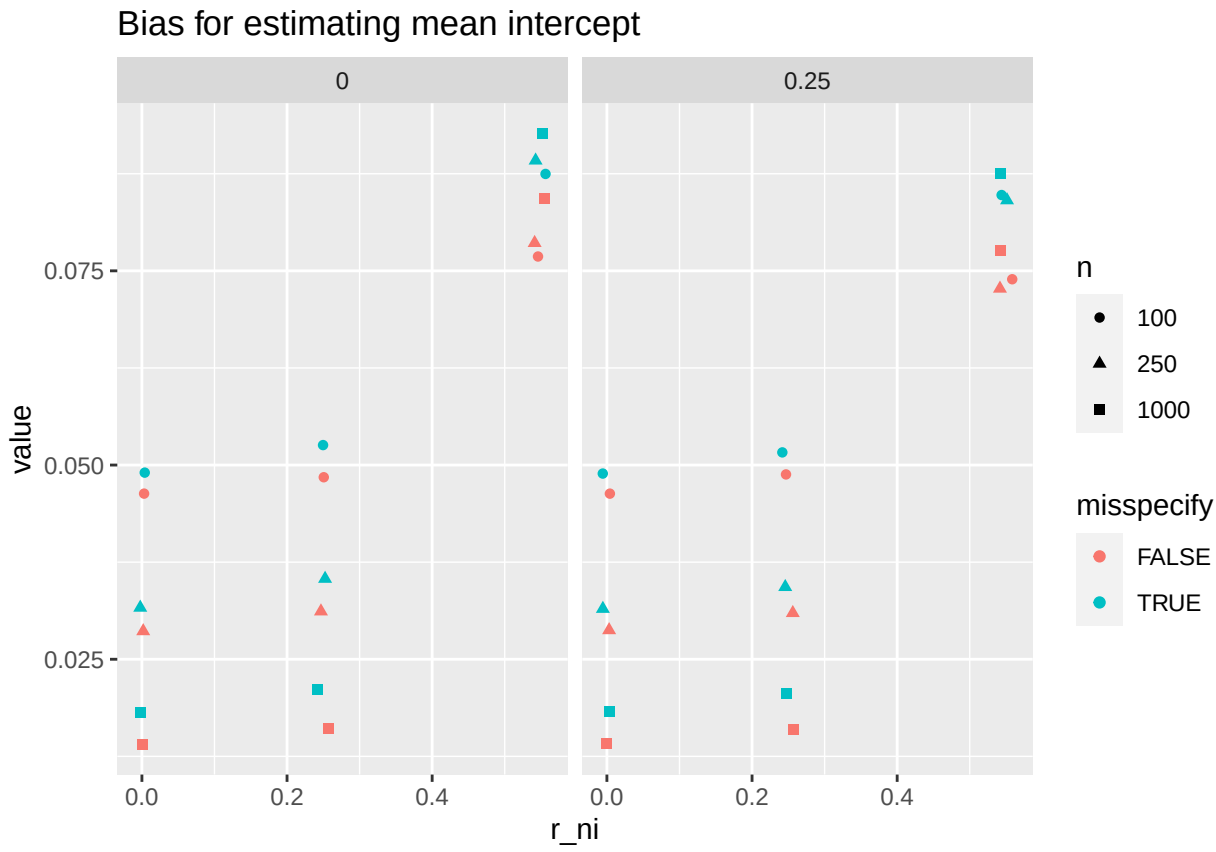



```
simres_long %>%
  filter(criteria == "std_bias.est", stat == "mean",
         par == "s") %>%
  mutate(n = as.factor(n)) %>%
  ggplot(aes(x = r_ni, y = value)) +
  geom_point(aes(shape = n, col = misspecify),
             position = position_jitter(width = .01)) +
  # geom_line(aes(shape = n, col = misspecify)) +
  facet_grid(~ kappa2) +
  labs(title = "Bias for estimating mean slope")
```

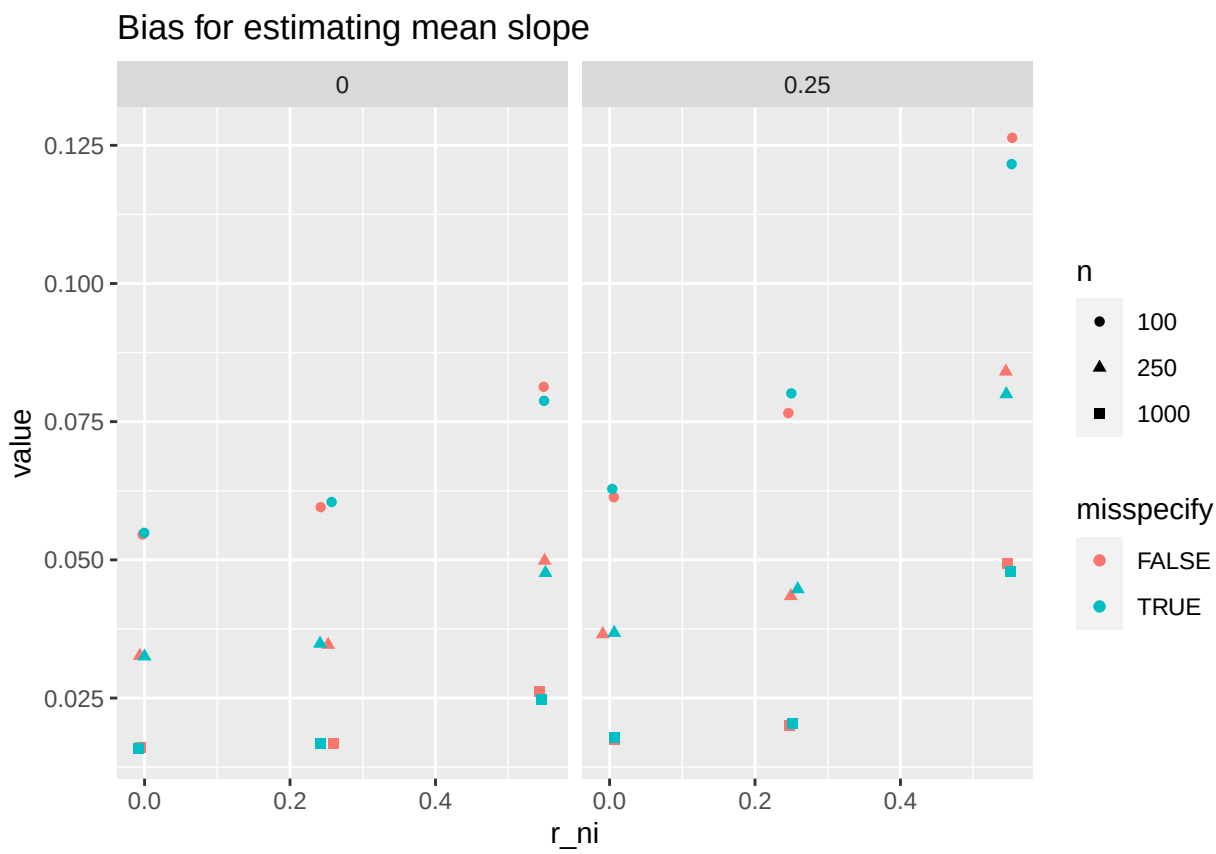



## RMSE

```
simres_long %>%
  filter(criteria == "rmse.est", stat == "mean",
         par == "i") %>%
  mutate(n = as.factor(n)) %>%
  ggplot(aes(x = r_ni, y = value)) +
  geom_point(aes(shape = n, col = misspecify),
             position = position_jitter(width = .01)) +
  # geom_line(aes(shape = n, col = misspecify)) +
  facet_grid(~ kappa2) +
  labs(title = "Bias for estimating mean intercept")
```

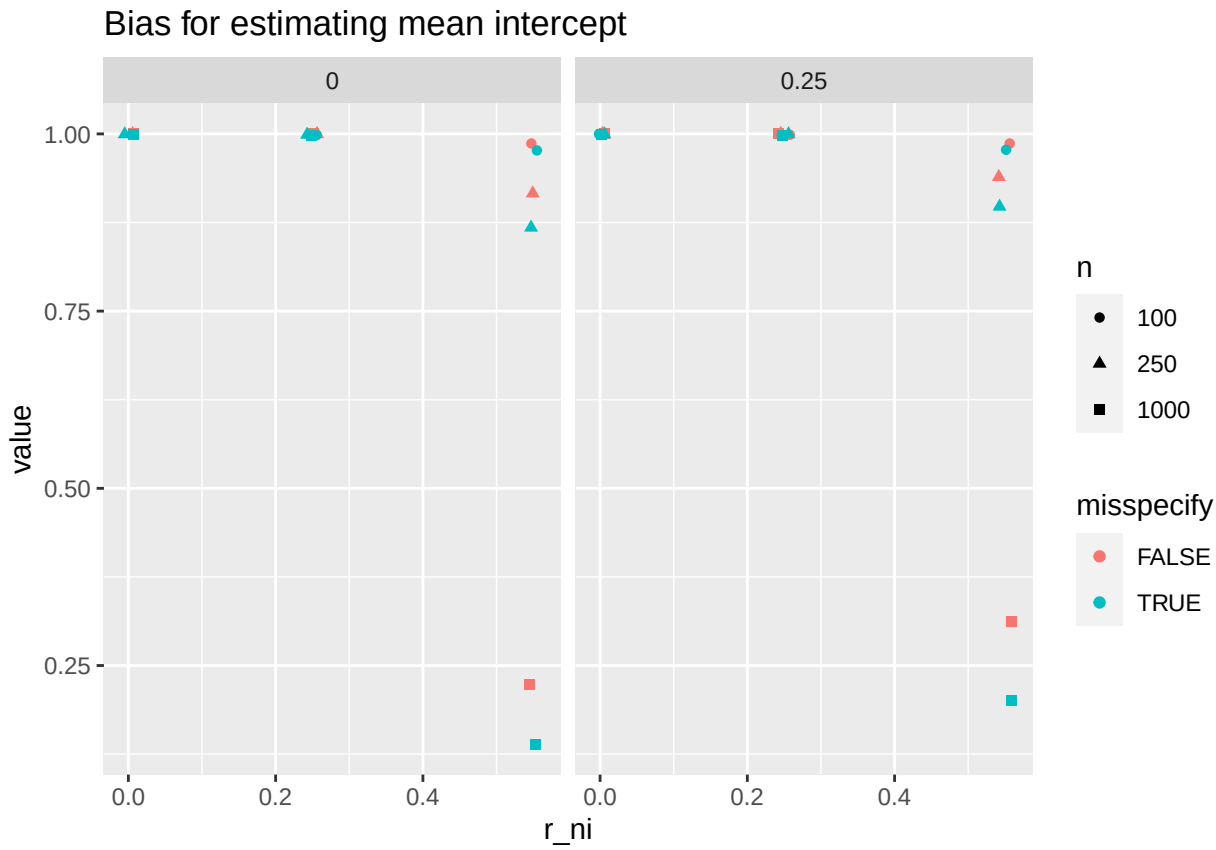



```
simres_long %>%
  filter(criteria == "rmse.est", stat == "mean",
         par == "s") %>%
  mutate(n = as.factor(n)) %>%
  ggplot(aes(x = r_ni, y = value)) +
  geom_point(aes(shape = n, col = misspecify),
             position = position_jitter(width = .01)) +
  # geom_line(aes(shape = n, col = misspecify)) +
  facet_grid(~ kappa2) +
  labs(title = "Bias for estimating mean slope")
```

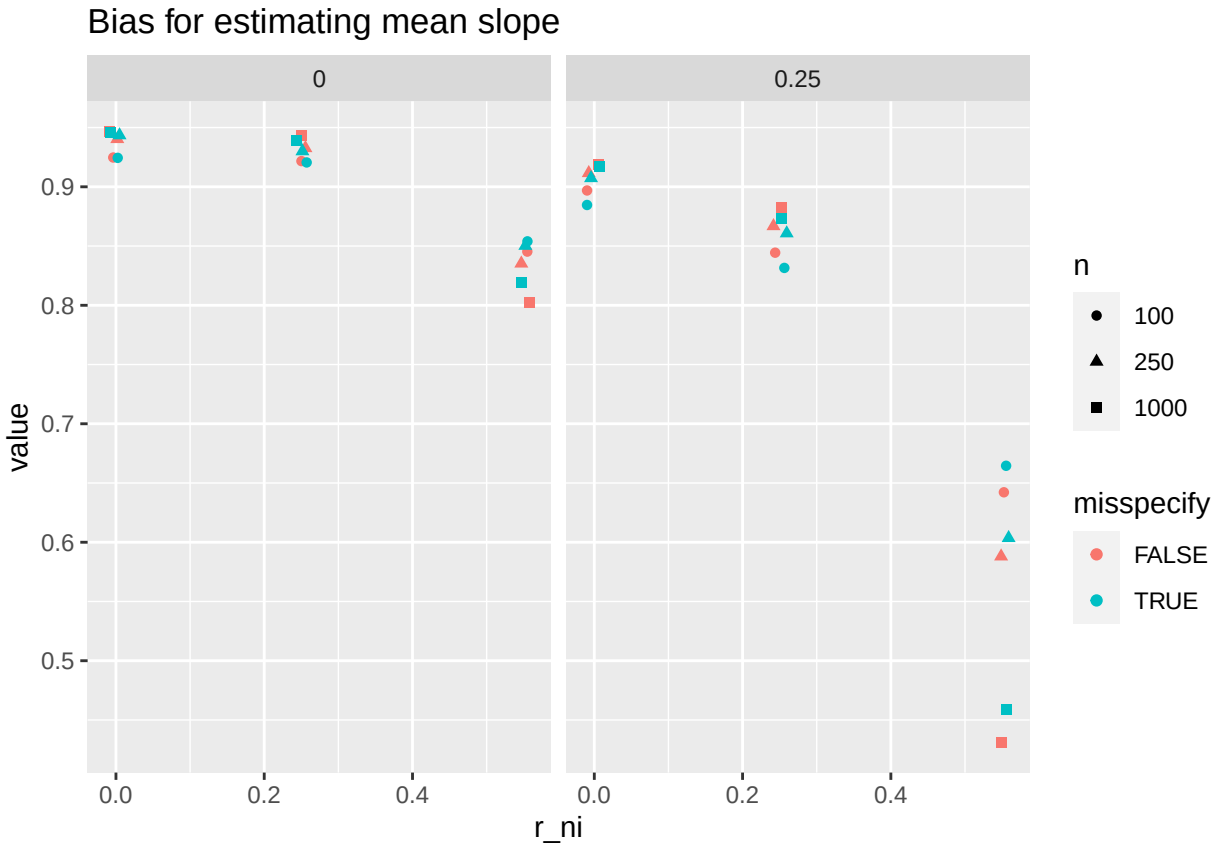



### Confidence Interval Converge

```
simres_long %>%
  filter(criteria == "coverage.ci", stat == "mean",
         par == "i") %>%
  mutate(n = as.factor(n)) %>%
  ggplot(aes(x = r_ni, y = value)) +
  geom_point(aes(shape = n, col = misspecify),
             position = position_jitter(width = .01)) +
  # geom_line(aes(shape = n, col = misspecify)) +
  facet_grid(~ kappa2) +
  labs(title = "Bias for estimating mean intercept")
```




```
simres_long %>%
  filter(criteria == "coverage.ci", stat == "mean",
         par == "s") %>%
  mutate(n = as.factor(n)) %>%
  ggplot(aes(x = r_ni, y = value)) +
  geom_point(aes(shape = n, col = misspecify),
             position = position_jitter(width = .01)) +
  # geom_line(aes(shape = n, col = misspecify)) +
  facet_grid(~ kappa2) +
  labs(title = "Bias for estimating mean slope")
```


Bias for estimating mean slope
0
0.25
value
0.9
0.8
0.7
0.6
0.5
0.0
0.2
0.4
r_ni
n
100
250
1000
misspecify
FALSE
TRUE