Plotting all the results

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Jimmy needs to give me the right esitamte of effect right now here is what I am using

```
smaller_true_ATE <- 0.15
bigger_true_ATE <- 0.3

pos_beta <- 1
neg_beta <- -1
```

Loading Data

Compiling Binary Data

Get all the odd numbers $\beta_1 = 0.767$

```
binary_final_odd <-
  binary_scen_1 %>%
    mutate(n_sample = 1000, beta1 = 0.767, desired_prop = 0.1) %>%
  bind_rows(binary_scen_3 %>%
              mutate(n_sample = 1000, beta1 = 0.767, desired_prop = 0.2)) %>%
  bind_rows(binary_scen_5 %>%
              mutate(n_sample = 1000, beta1 = 0.767, desired_prop = 0.3)) %>%
  bind_rows(binary_scen_13 %>%
              mutate(n_sample = 100, beta1 = 0.767, desired_prop = 0.1)) %>%
  bind_rows(binary_scen_15 %>%
              mutate(n_sample = 100, beta1 = 0.767, desired_prop = 0.2)) %>%
  bind_rows(binary_scen_17 %>%
              mutate(n_sample = 100, beta1 = 0.767, desired_prop = 0.3))

binary_final_odd <- binary_final_odd %>%
  mutate(
    ATE_bias = ATE - smaller_true_ATE,
    empirical_bias = empirical_mean - smaller_true_ATE,
    boot_type = ifelse(boot_type == 0, "Simple", "Complex")
  )

rm(binary_scen_1, binary_scen_3, binary_scen_5,
   binary_scen_13, binary_scen_15, binary_scen_17)
```

Get all the even numbers $\beta_1 = 1.386$

```
binary_final_even <-
  binary_scen_2 %>%
    mutate(n_sample = 1000, beta1 = 1.386, desired_prop = 0.1) %>%
```

```
  bind_rows(binary_scen_4 %>%
              mutate(n_sample = 1000, beta1 = 1.386, desired_prop = 0.2)) %>%
  bind_rows(binary_scen_6 %>%
              mutate(n_sample = 1000, beta1 = 1.386, desired_prop = 0.3)) %>%
  bind_rows(binary_scen_14 %>%
              mutate(n_sample = 100, beta1 = 1.386, desired_prop = 0.1)) %>%
  bind_rows(binary_scen_16 %>%
              mutate(n_sample = 100, beta1 = 1.386, desired_prop = 0.2)) %>%
  bind_rows(binary_scen_18 %>%
              mutate(n_sample = 100, beta1 = 1.386, desired_prop = 0.3))


binary_final_even <- binary_final_even %>%
  mutate(
    ATE_bias = ATE - bigger_true_ATE,
    empirical_bias = empirical_mean - bigger_true_ATE,
    boot_type = ifelse(boot_type == 0, "Simple", "Complex")
  )

rm(binary_scen_2, binary_scen_4, binary_scen_6,
   binary_scen_14, binary_scen_16, binary_scen_18)
```

```
binary_final <- binary_final_even %>% bind_rows(binary_final_odd)
```

Compiling Continuous Data

```
continuous_final_odd <-
  cont_df_scen_1 %>%
    mutate(n_sample = 1000, beta1 = pos_beta, desired_prop = 0.1) %>%
  bind_rows(cont_df_scen_3 %>%
              mutate(n_sample = 1000, beta1 = pos_beta, desired_prop = 0.2)) %>%
  bind_rows(cont_df_scen_5 %>%
              mutate(n_sample = 1000, beta1 = pos_beta, desired_prop = 0.3)) %>%
  bind_rows(cont_df_scen_13 %>%
              mutate(n_sample = 100, beta1 = pos_beta, desired_prop = 0.1)) %>%
  bind_rows(cont_df_scen_15 %>%
              mutate(n_sample = 100, beta1 = pos_beta, desired_prop = 0.2)) %>%
  bind_rows(cont_df_scen_17 %>%
              mutate(n_sample = 100, beta1 = pos_beta, desired_prop = 0.3)) %>%
  mutate(
    ATE_bias = ATE - pos_beta,
    empirical_bias = empirical_mean - pos_beta,
    boot_type = ifelse(boot_type == 0, "Simple", "Complex")
  )

rm(cont_df_scen_1, cont_df_scen_3, cont_df_scen_5,
   cont_df_scen_13, cont_df_scen_15, cont_df_scen_17)
```

```
continuous_final_even <-
  cont_df_scen_2 %>%
    mutate(n_sample = 1000, beta1 = neg_beta, desired_prop = 0.1) %>%
  bind_rows(cont_df_scen_4 %>%
```

```
              mutate(n_sample = 1000, beta1 = neg_beta, desired_prop = 0.2)) %>%
  bind_rows(cont_df_scen_6 %>%
              mutate(n_sample = 1000, beta1 = neg_beta, desired_prop = 0.3)) %>%
  bind_rows(cont_df_scen_14 %>%
              mutate(n_sample = 100, beta1 = neg_beta, desired_prop = 0.1)) %>%
  bind_rows(cont_df_scen_16 %>%
              mutate(n_sample = 100, beta1 = neg_beta, desired_prop = 0.2)) %>%
  bind_rows(cont_df_scen_18 %>%
              mutate(n_sample = 100, beta1 = neg_beta, desired_prop = 0.3)) %>%
  mutate(
    ATE_bias = ATE - neg_beta,
    empirical_bias = empirical_mean - neg_beta,
    boot_type = ifelse(boot_type == 0, "Simple", "Complex")
  )

rm(cont_df_scen_2, cont_df_scen_4, cont_df_scen_6,
   cont_df_scen_14, cont_df_scen_16, cont_df_scen_18)
```

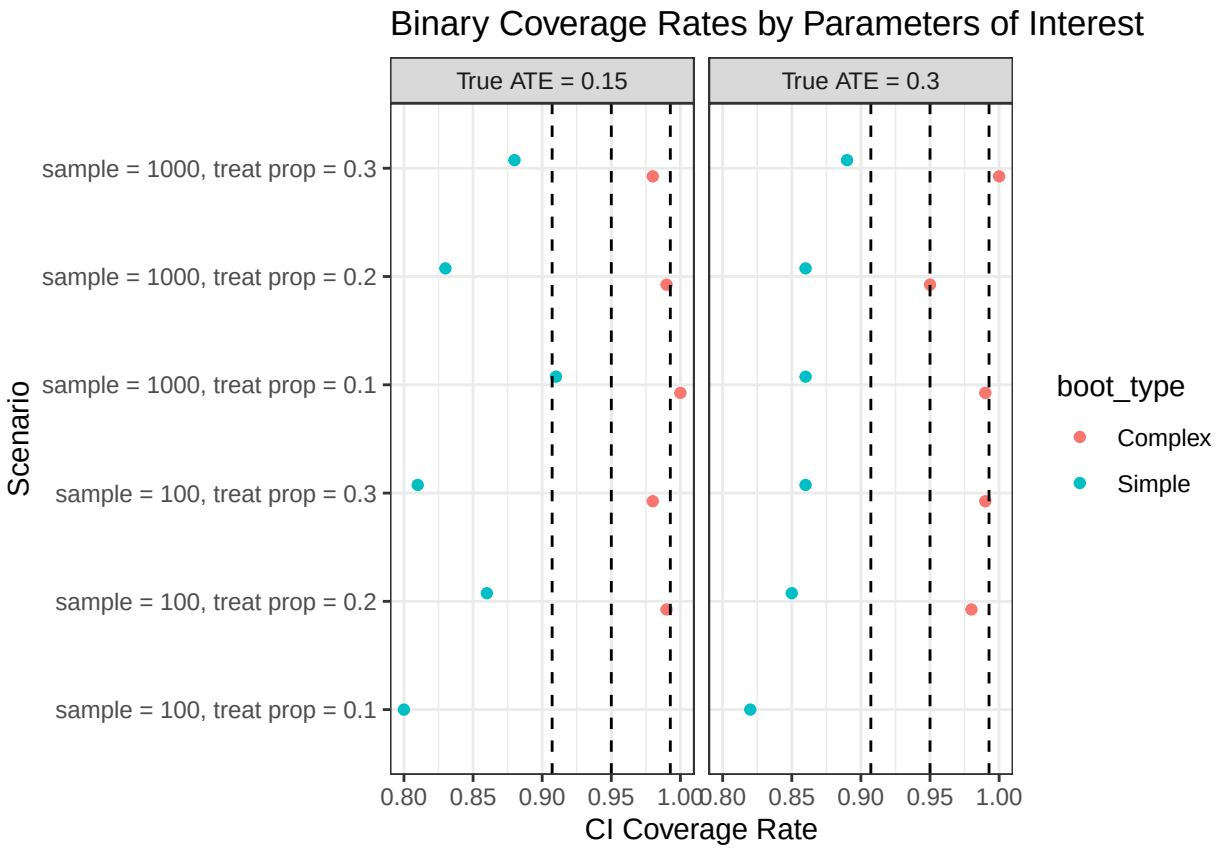
```
continuous_final <-
  continuous_final_odd %>%
  bind_rows(continuous_final_even)

rm(continuous_final_even, continuous_final_odd)
```

Binary Coverage Rates

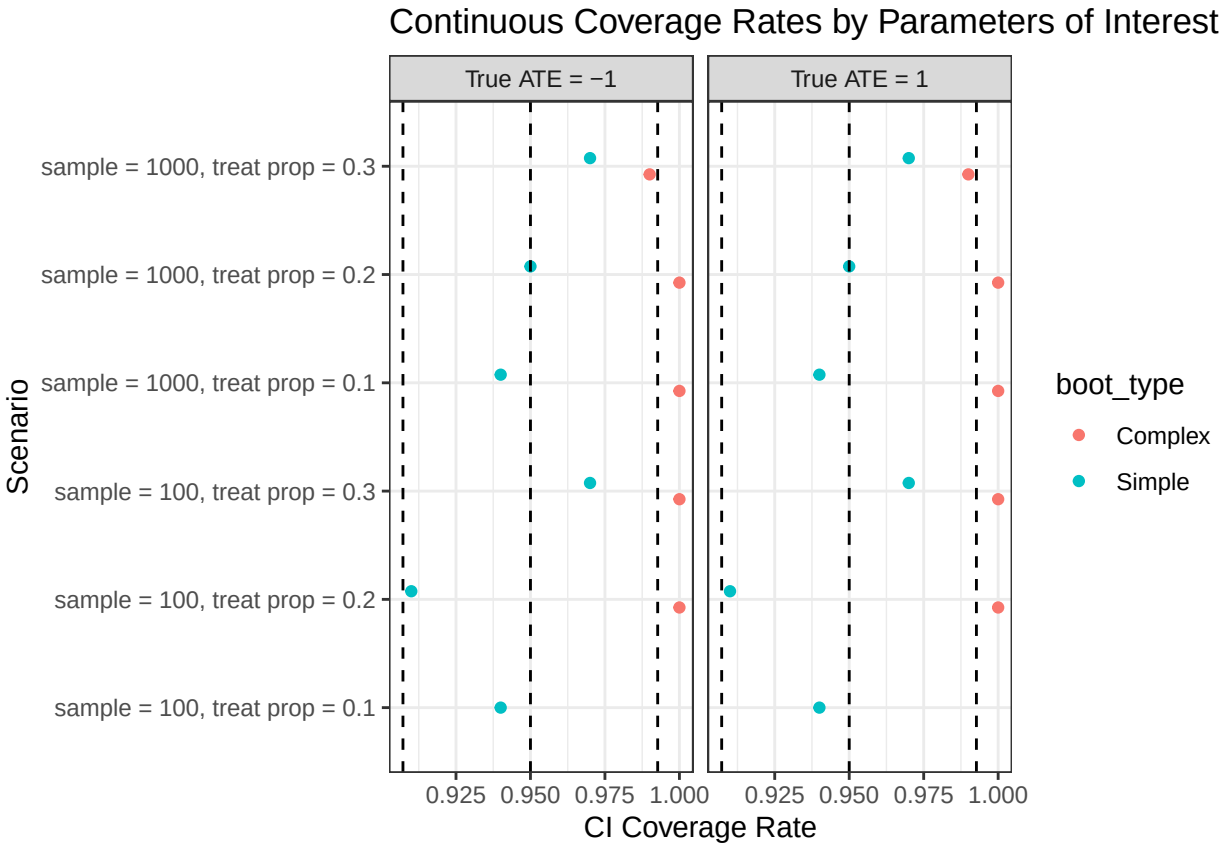
```
## `summarise()` regrouping output by 'new_name', 'treat_effect' (override with `.groups` argument)
```

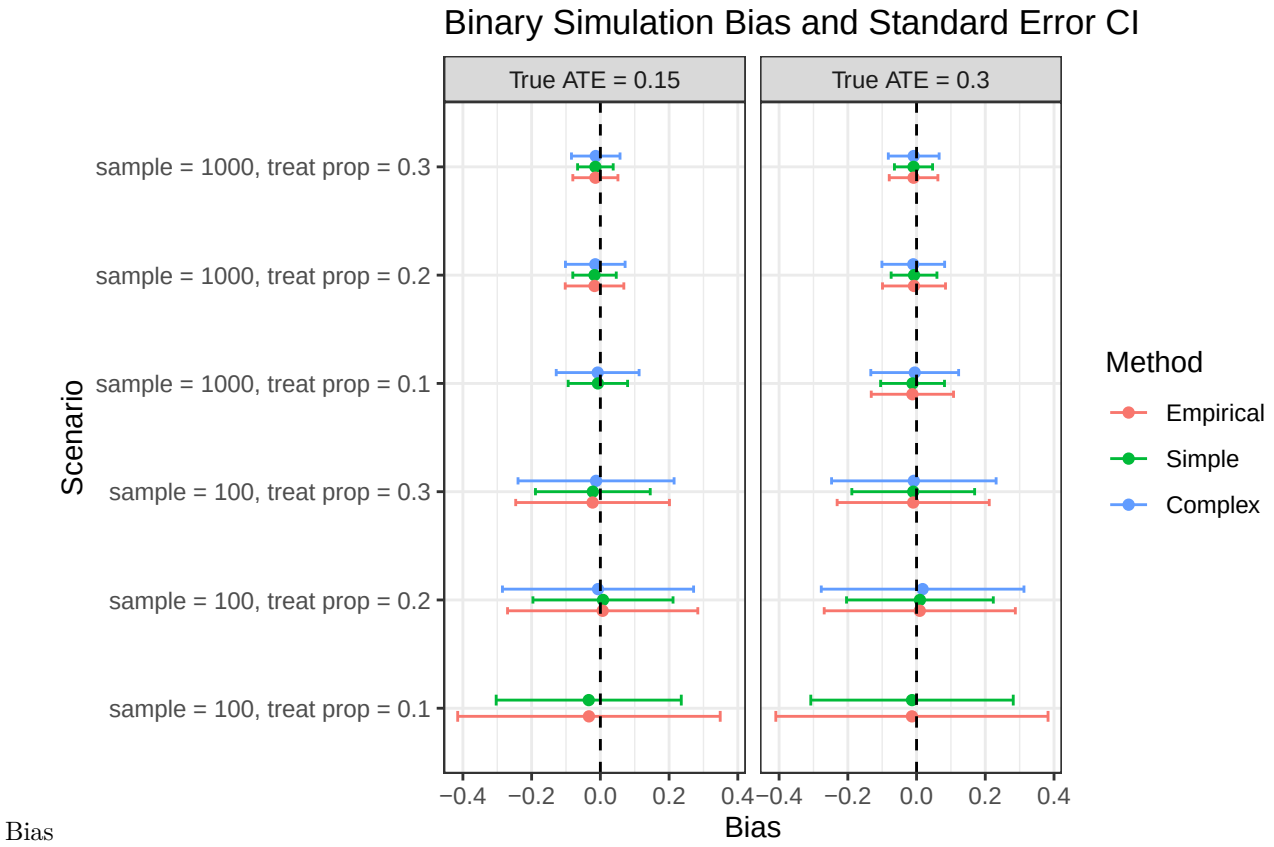
name the scenarios by sample size and treat prop and facet by the treatment effect



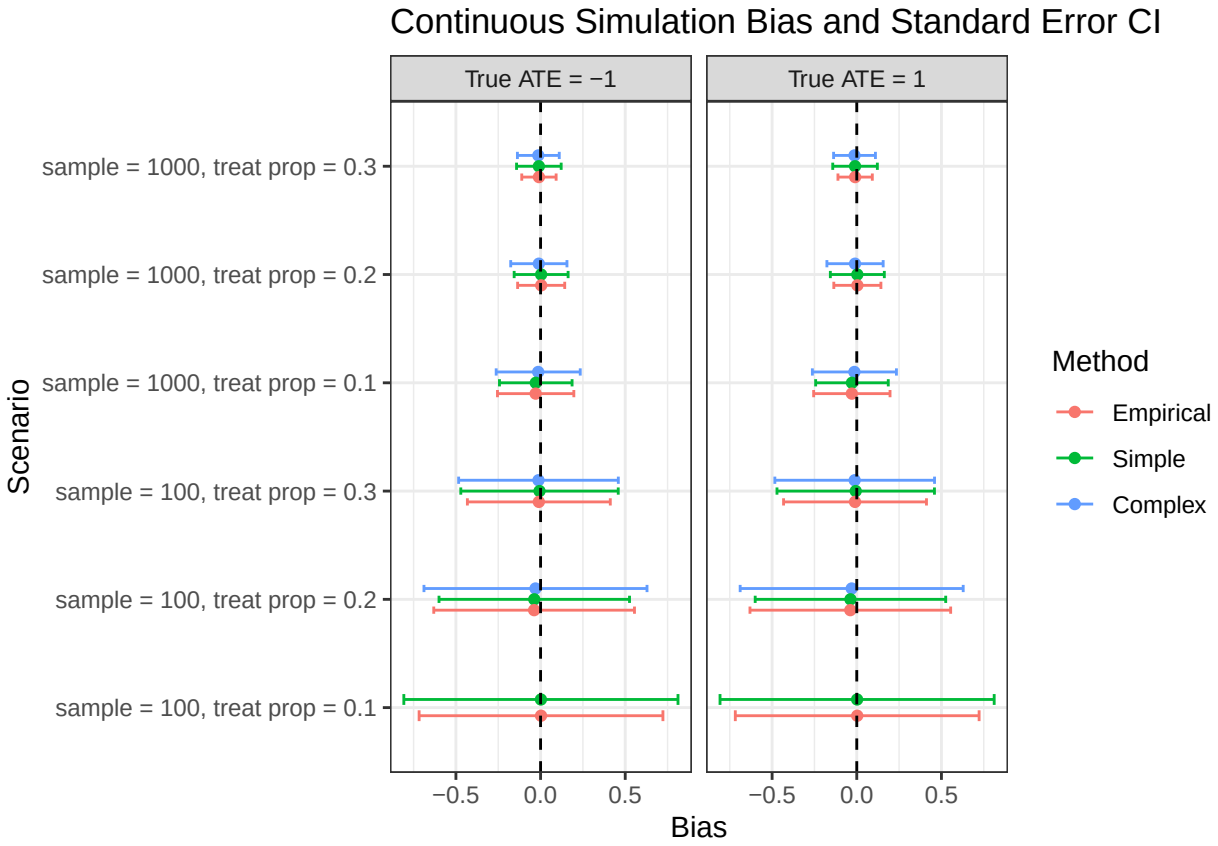
Continuous Coverage Rates

```
## `summarise()` regrouping output by 'new_name', 'treat_effect' (override with `.groups` argument)
```

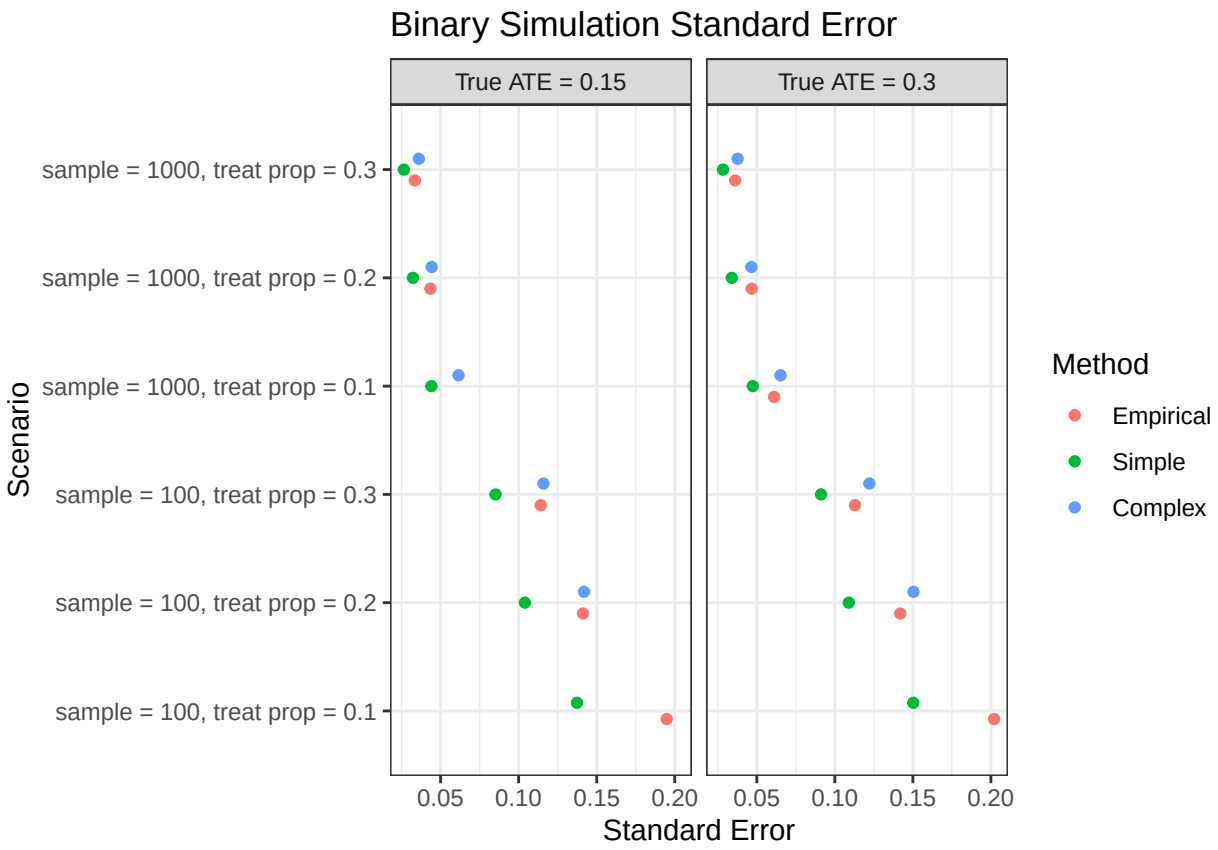

Continuous Coverage Rates by Parameters of Interest
True ATE = −1
True ATE = 1
sample = 1000, treat prop = 0.3
sample = 1000, treat prop = 0.2
sample = 1000, treat prop = 0.1
sample = 100, treat prop = 0.3
sample = 100, treat prop = 0.2
sample = 100, treat prop = 0.1
Scenario
0.925 0.950 0.975 1.000
CI Coverage Rate
boot_type
Complex
Simple

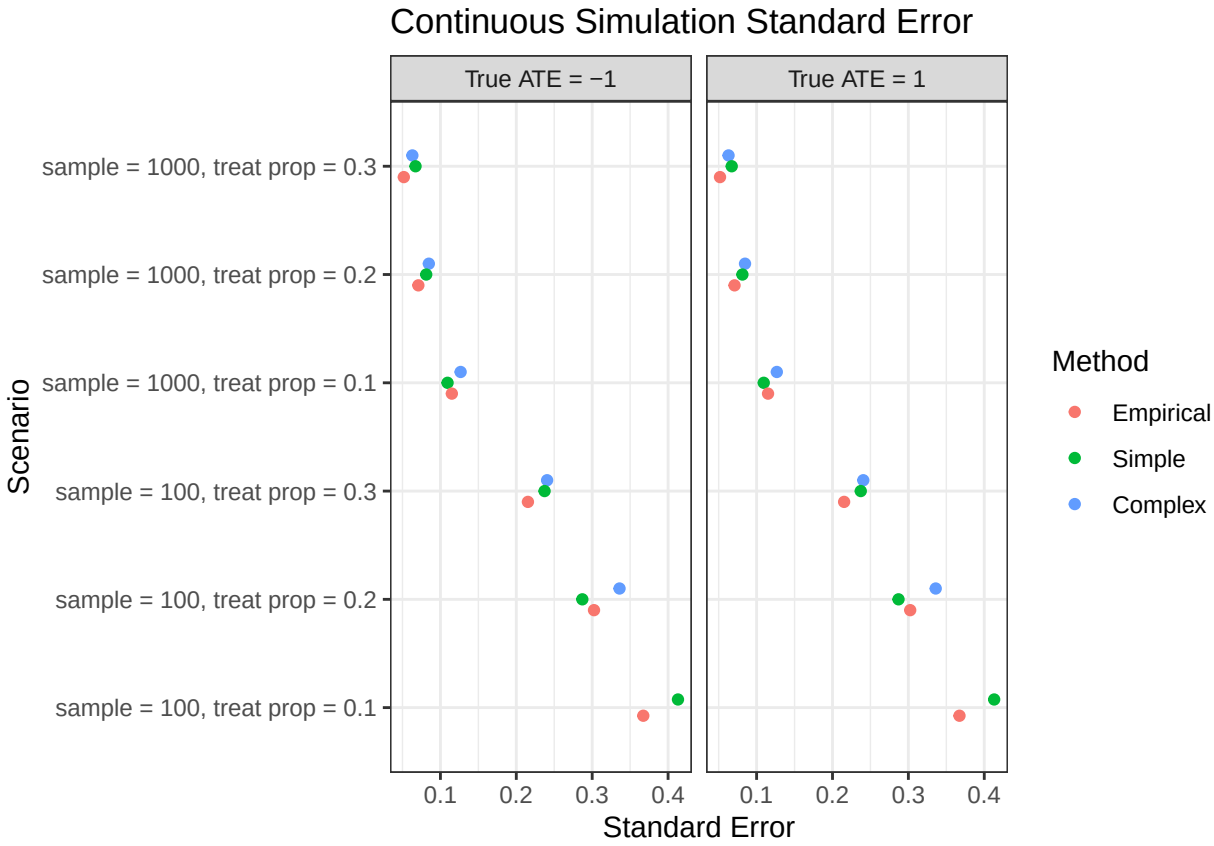

Binary Simulation Bias and Standard Error CI
True ATE = 0.15
True ATE = 0.3
sample = 1000, treat prop = 0.3
sample = 1000, treat prop = 0.2
sample = 1000, treat prop = 0.1
sample = 100, treat prop = 0.3
sample = 100, treat prop = 0.2
sample = 100, treat prop = 0.1
Scenario
−0.4 −0.2 0.0 0.2 0.4
Bias
Method
Empirical
Simple
Complex

Bias


Continuous Simulation Bias and Standard Error CI
True ATE = −1
True ATE = 1
sample = 1000, treat prop = 0.3
sample = 1000, treat prop = 0.2
sample = 1000, treat prop = 0.1
sample = 100, treat prop = 0.3
sample = 100, treat prop = 0.2
sample = 100, treat prop = 0.1
Scenario
−0.5
0.0
0.5
Bias
Method
Empirical
Simple
Complex

Standard Error




Continuous Simulation Standard Error
True ATE = −1
True ATE = 1
Scenario
sample = 1000, treat prop = 0.3
sample = 1000, treat prop = 0.2
sample = 1000, treat prop = 0.1
sample = 100, treat prop = 0.3
sample = 100, treat prop = 0.2
sample = 100, treat prop = 0.1
0.1
0.2
0.3
0.4
Standard Error
Method
Empirical
Simple
Complex