Simulation for wpd algorithm

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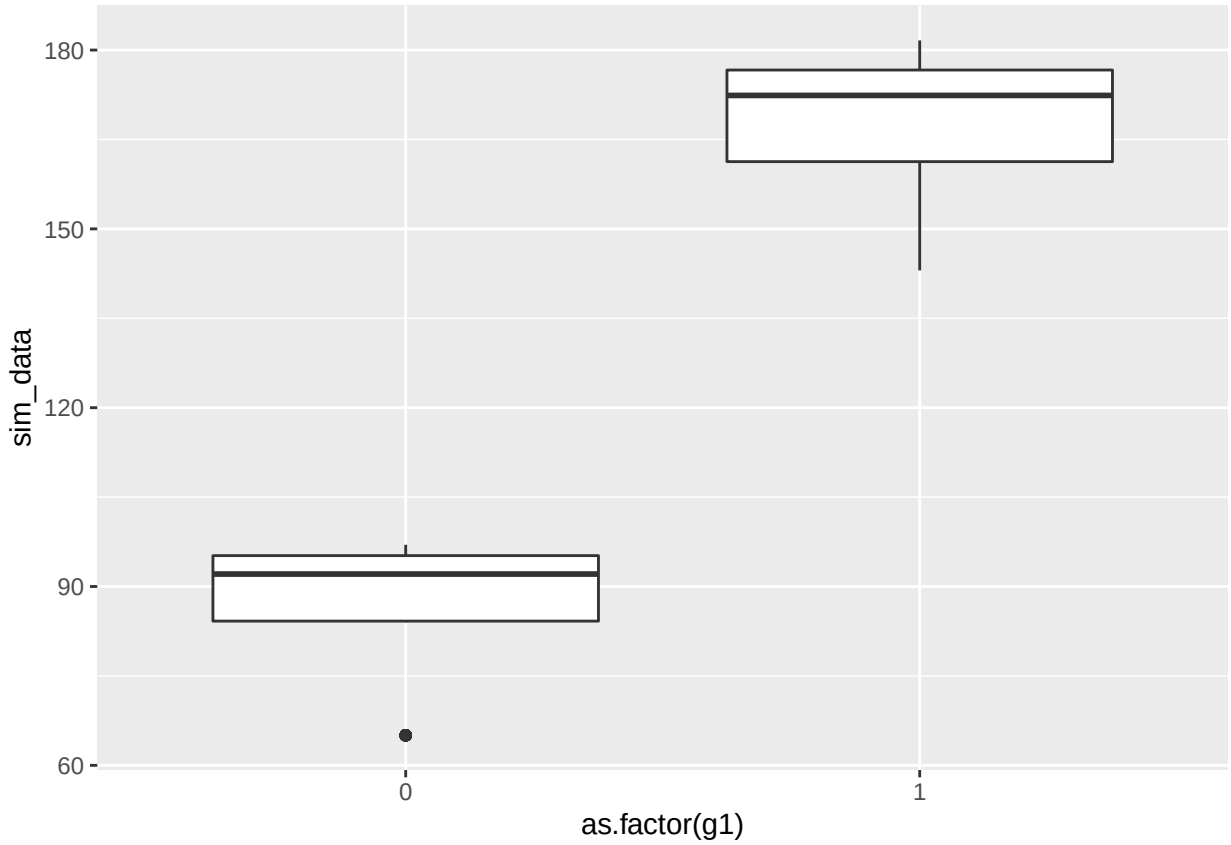
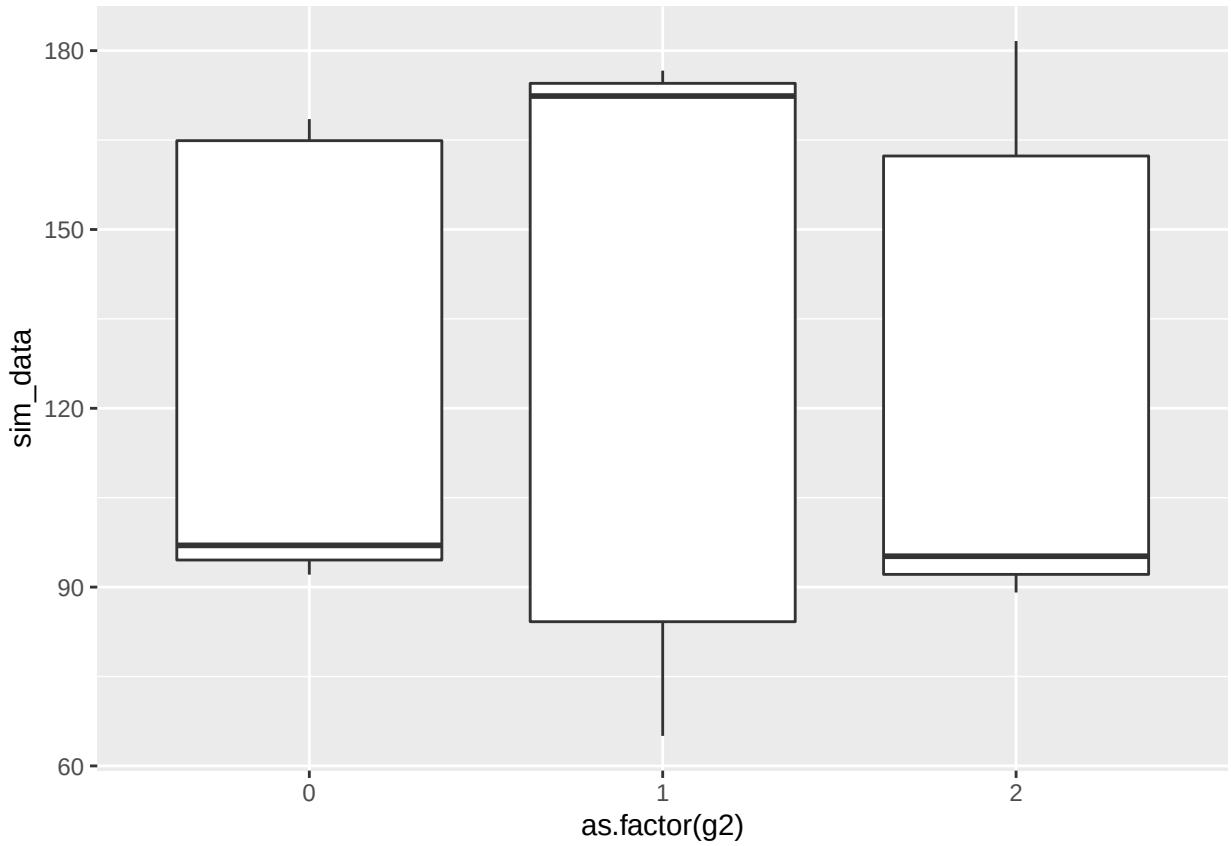
```
T <- seq(0, 500, 1)
g1 <- T %%2
g2 <- T %%3

g3 <- T %%4
data <- tibble::tibble(T, g1, g2, g3)

generate_dist <- function(x){
  if(x==0)
    sim_dist <- distributional::dist_normal(0,1)
  if(x==1)
    sim_dist <- distributional::dist_normal(2,1)
  if(x==2)
    sim_dist <- distributional::dist_normal(4,1)
  if(x==3)
    sim_dist <- distributional::dist_normal(6,1)
  return(sim_dist)
}

set.seed(12345)

y <- data %>% group_split(g1)
sim_data_g1 <- map(seq_len(length(y)),
      function(z){
  univec =  y %>% magrittr::extract2(z,) %>% select(T, g1)
  value = univec %>% distinct(g1) %>% pull(g1)
  return_value = generate_dist(value) %>% distributional::generate(nrow(univec)) %>% unlist() %>% as_ti
    bind_cols(univec)
  }) %>% bind_rows() %>% select(T, g1, value)

g2_value = generate(dist_normal(mu = 0, sigma = 1), times = nrow(sim_data_g1)) %>% unlist() %>% as_tibb

g3_value = generate(dist_normal(mu = 2, sigma = 1), times = nrow(sim_data_g1)) %>% unlist() %>% as_tibb


total_data <- sim_data_g1 %>%
  arrange(T) %>%
  left_join(data) %>%
  rename("g1_value" = "value") %>%
  bind_cols(g2_value, g3_value) %>%
  select(T, g1, g2, g3, everything()) %>%
  group_by(g1, g2, g3) %>%
  mutate(sim_data = sum(g1_value, g2_value, g3_value))
```

```
## Joining, by = c("T", "g1")
```

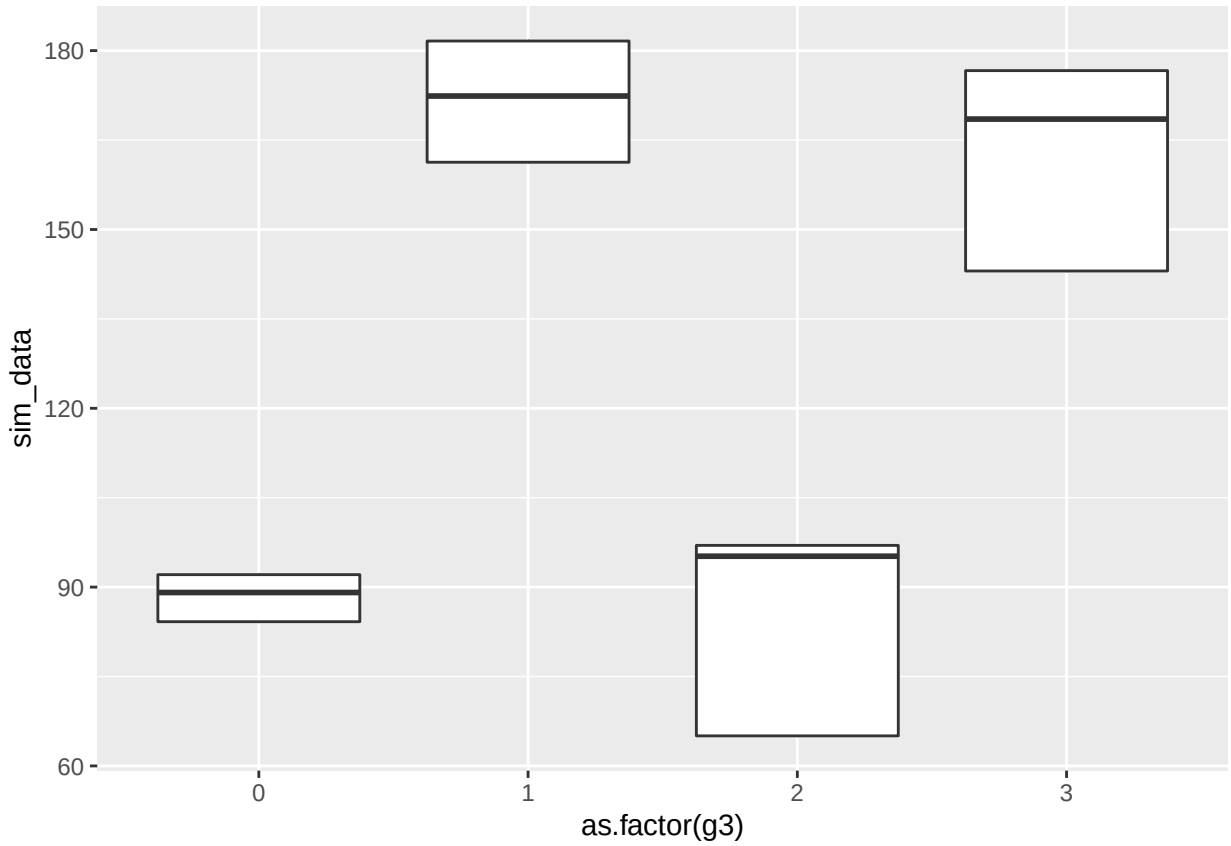
```
ggplot(total_data, aes(x = as.factor(g1), y = sim_data)) + geom_boxplot()
```



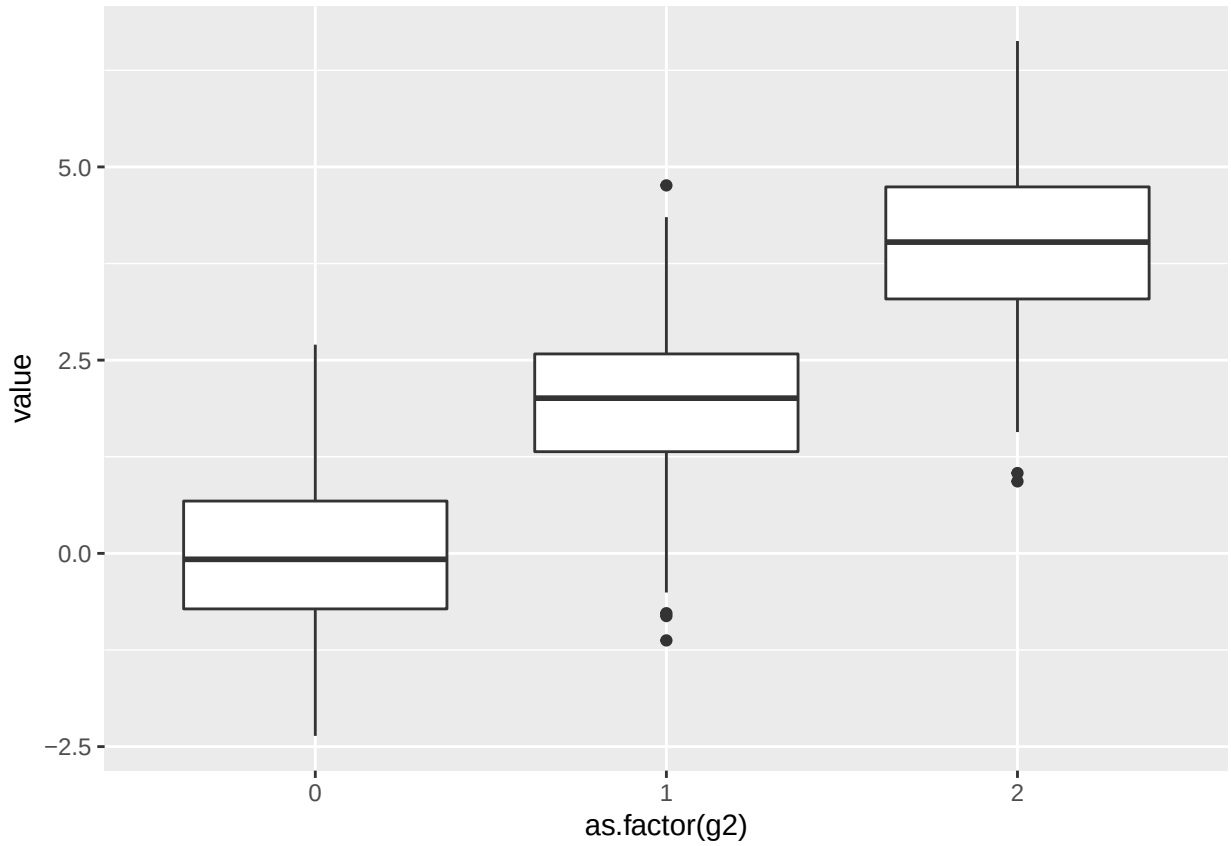

```
ggplot(total_data, aes(x = as.factor(g2), y = sim_data)) + geom_boxplot()
```



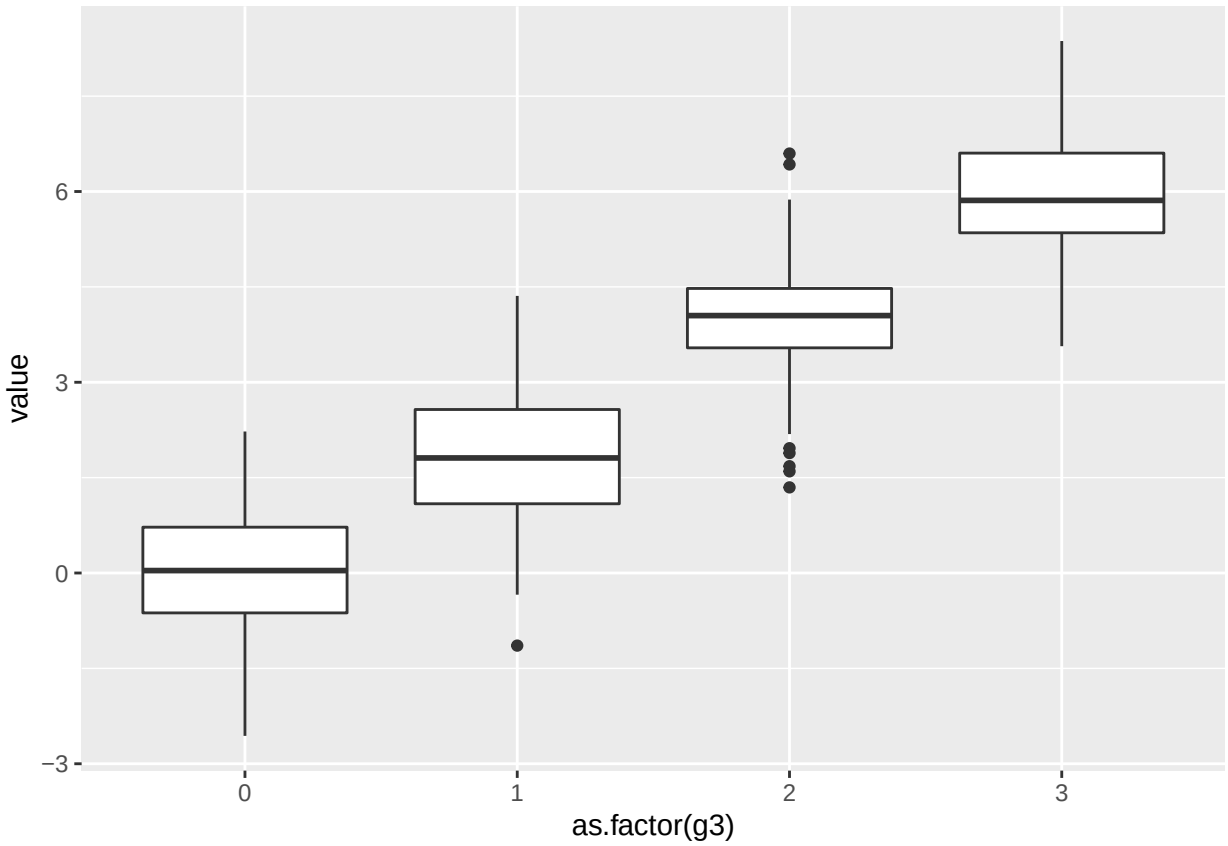

```
ggplot(total_data, aes(x = as.factor(g3), y = sim_data)) + geom_boxplot()
```




```
y <- data %>% group_split(g2)

sim_data_g2 <- map(seq_len(length(y)),
      function(z){
  univec =  y %>% magrittr::extract2(z,) %>% select(T, g2)
  value = univec %>% distinct(g2) %>% pull(g2)
  return_value = generate_dist(value) %>% distributional::generate(nrow(univec)) %>% unlist() %>% as_til
    bind_cols(univec)
  }) %>% bind_rows() %>% select(T, g2, value)

ggplot(sim_data_g2, aes(x = as.factor(g2), y = value)) + geom_boxplot()
```




```
y <- data %>% group_split(g3)

sim_data_g3 <- map(seq_len(length(y)),
      function(z){
  univec =  y %>% magrittr::extract2(z,) %>% select(T, g3)
  value = univec %>% distinct(g3) %>% pull(g3)
  return_value = generate_dist(value) %>% distributional::generate(nrow(univec)) %>% unlist() %>% as_til
    bind_cols(univec)
  }) %>% bind_rows() %>% select(T, g3, value)

ggplot(sim_data_g3, aes(x = as.factor(g3), y = value)) + geom_boxplot()
```


value
6
3
0
−3
0
1
2
3
as.factor(g3)