

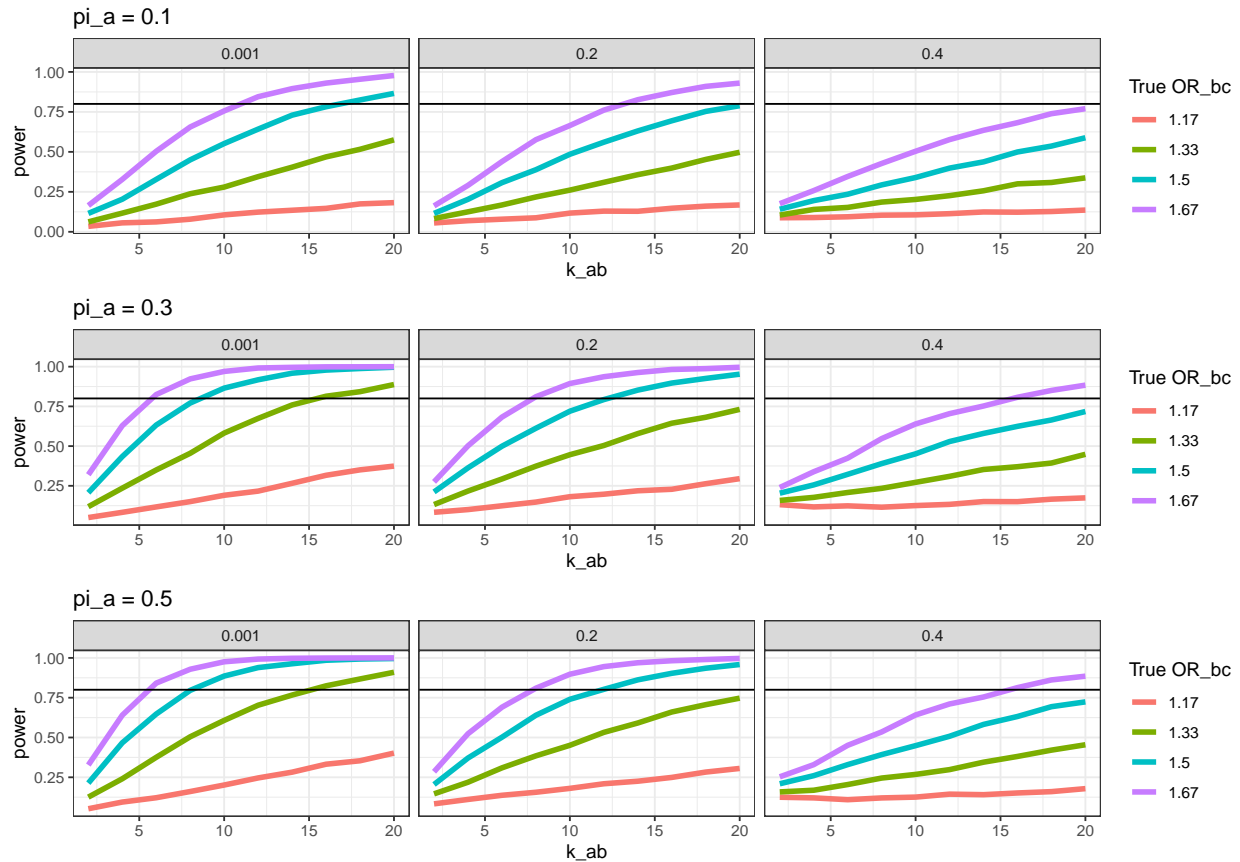
Result

Yicheng Shen

2023-03-12

```
load("df_indirect.RData")  
load("df_direct.RData")
```

```
a <- df_indirect %>% filter(pi_a == 0.1) %>%  
  ggplot(aes(x = k_ab, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.1)  
  
b <- df_indirect %>% filter(pi_a == 0.3) %>%  
  ggplot(aes(x = k_ab, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.3)  
  
c <- df_indirect %>% filter(pi_a == 0.5) %>%  
  ggplot(aes(x = k_ab, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.5)  
  
gridExtra::grid.arrange(a,b,c)
```

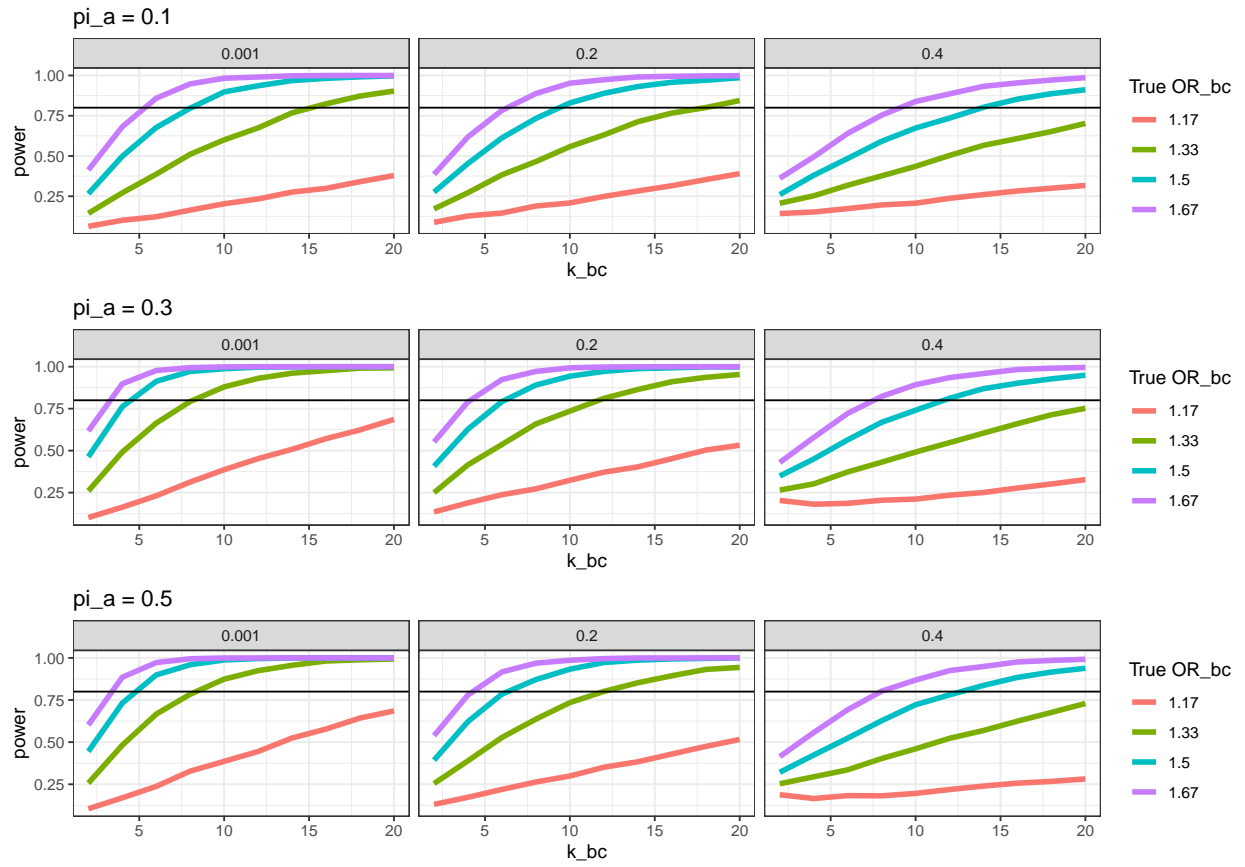


```
d <- df_direct %>% filter(pi_a == 0.1) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.8) +
  facet_wrap(~tau) + labs(title = "pi_a = 0.1", color = "True OR_bc") + theme_bw()

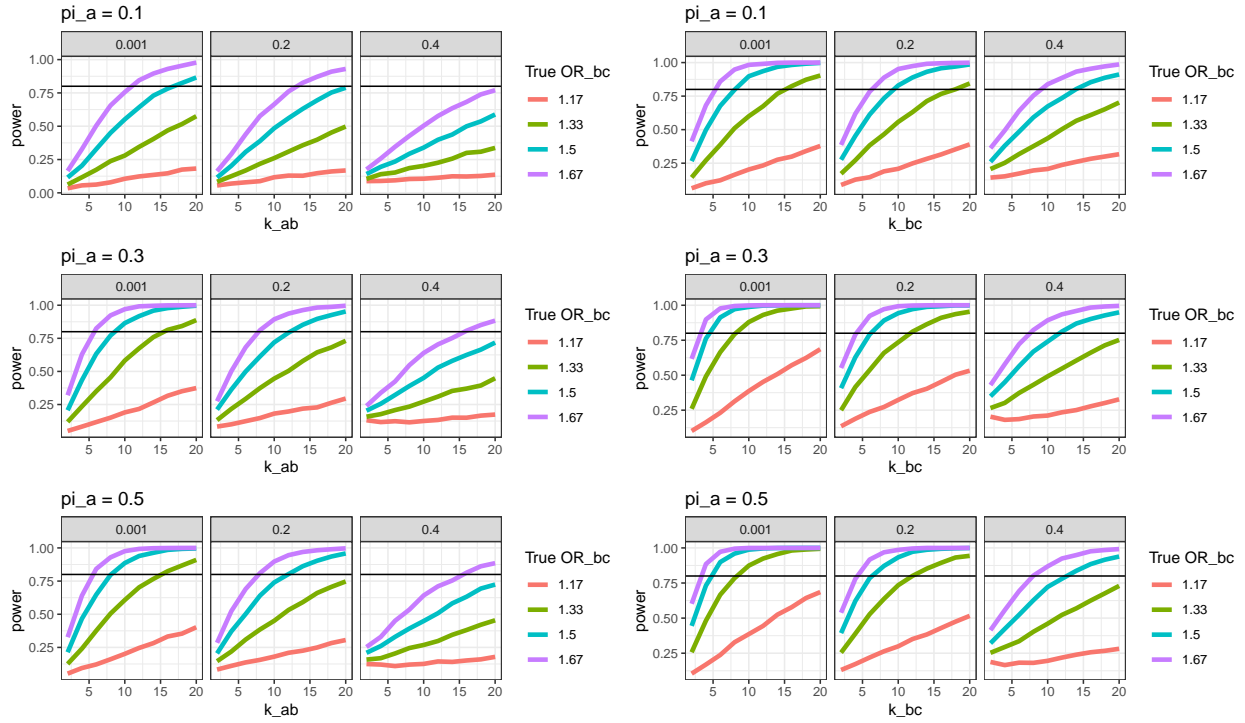
e <- df_direct %>% filter(pi_a == 0.3) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.8) +
  facet_wrap(~tau) + labs(title = "pi_a = 0.3", color = "True OR_bc") + theme_bw()

f <- df_direct %>% filter(pi_a == 0.5) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.8) +
  facet_wrap(~tau) + labs(title = "pi_a = 0.5", color = "True OR_bc") + theme_bw()

gridExtra::grid.arrange(d,e,f)
```



```
gridExtra::grid.arrange(a, d, b, e, c, f, ncol = 2)
```

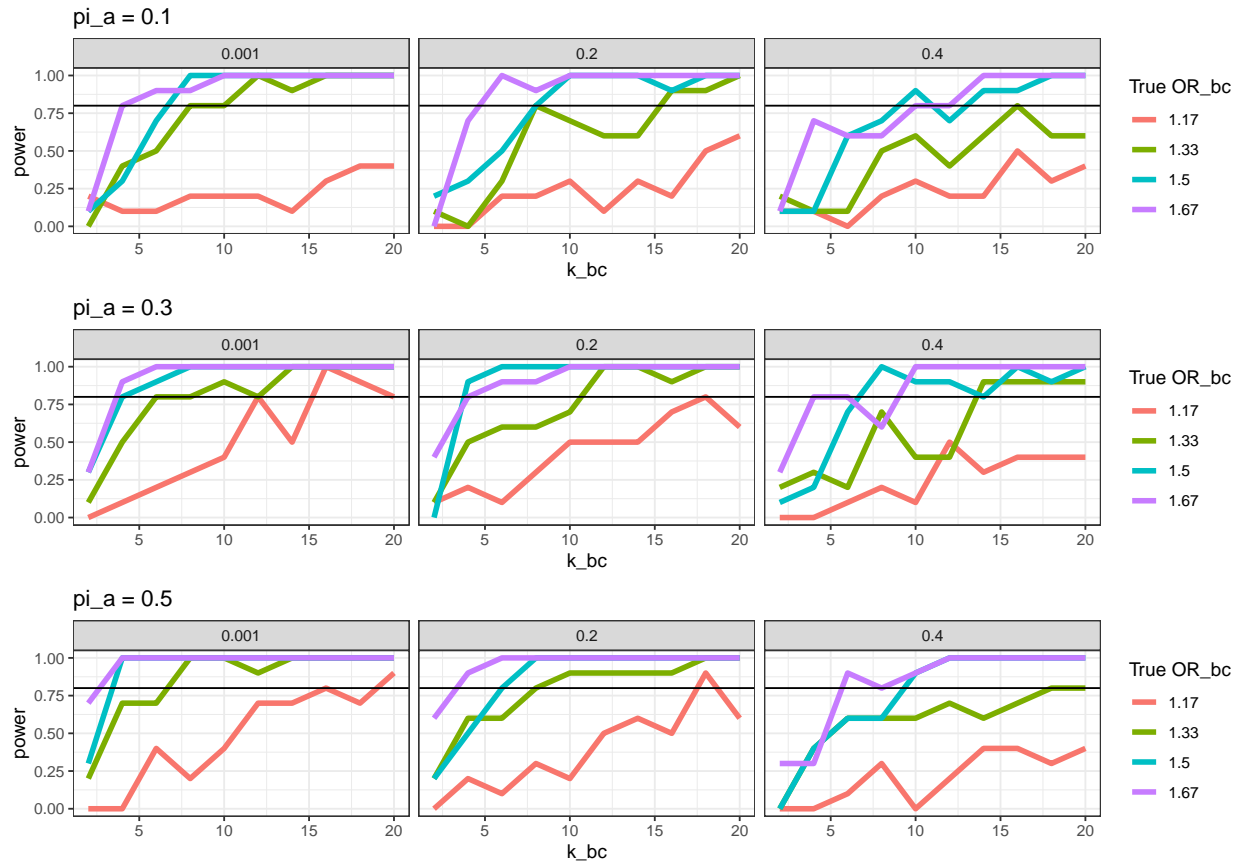


```
load("df_BNMA.RData")
a <- df_BNMA %>% filter(pi_a == 0.1) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.8) +
  facet_wrap(~tau) + labs(title = "pi_a = 0.1", color = "True OR_bc") + theme_bw()

b <- df_BNMA %>% filter(pi_a == 0.3) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.8) +
  facet_wrap(~tau) + labs(title = "pi_a = 0.3", color = "True OR_bc") + theme_bw()

c <- df_BNMA %>% filter(pi_a == 0.5) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.8) +
  facet_wrap(~tau) + labs(title = "pi_a = 0.5", color = "True OR_bc") + theme_bw()

gridExtra::grid.arrange(a,b,c)
```



New settings

```
load("df_NMA_new.RData")
load("df_indirect_new.RData")
load("df_direct_new.RData")

load("df_NMA_new_0.1.RData")
load("df_indirect_new_0.1.RData")
load("df_direct_new_0.1.RData")
```

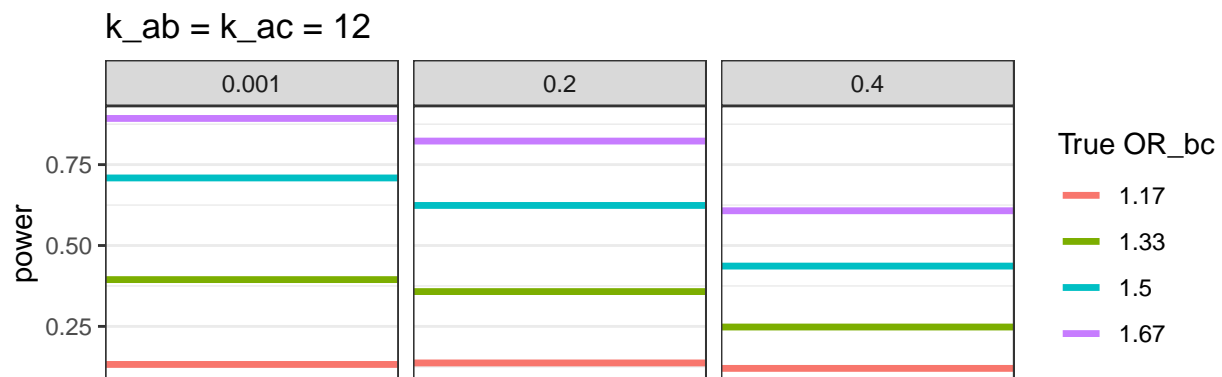
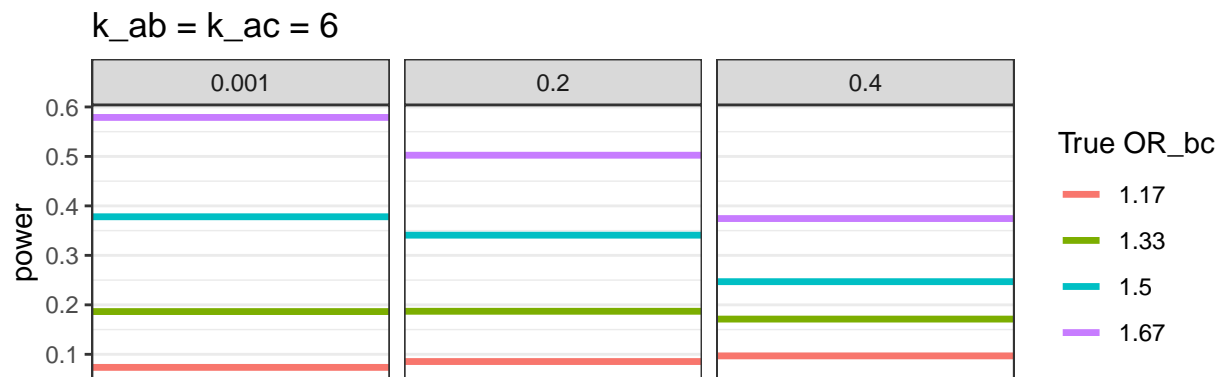
df_indirect_new

```
## # A tibble: 24 x 10
## # Groups:   k_ab, k_ac, pi_a, OR_ab, OR_ac, tau [24]
##   pi_a OR_ab OR_ac tau k_ab OR_bc pi_b pi_c k_ac power
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1  0.1  1.2  1.4 0.001     6  1.17 0.118 0.135     6 0.0736
## 2  0.1  1.2  1.4  0.2     6  1.17 0.118 0.135     6 0.0854
## 3  0.1  1.2  1.4  0.4     6  1.17 0.118 0.135     6 0.0968
## 4  0.1  1.2  1.6 0.001     6  1.33 0.118 0.151     6 0.186
## 5  0.1  1.2  1.6  0.2     6  1.33 0.118 0.151     6 0.187
## 6  0.1  1.2  1.6  0.4     6  1.33 0.118 0.151     6 0.171
```

```
## 7 0.1 1.2 1.8 0.001 6 1.5 0.118 0.167 6 0.378
## 8 0.1 1.2 1.8 0.2 6 1.5 0.118 0.167 6 0.341
## 9 0.1 1.2 1.8 0.4 6 1.5 0.118 0.167 6 0.247
## 10 0.1 1.2 2 0.001 6 1.67 0.118 0.182 6 0.579
## # i 14 more rows
```

```
gridExtra::grid.arrange(

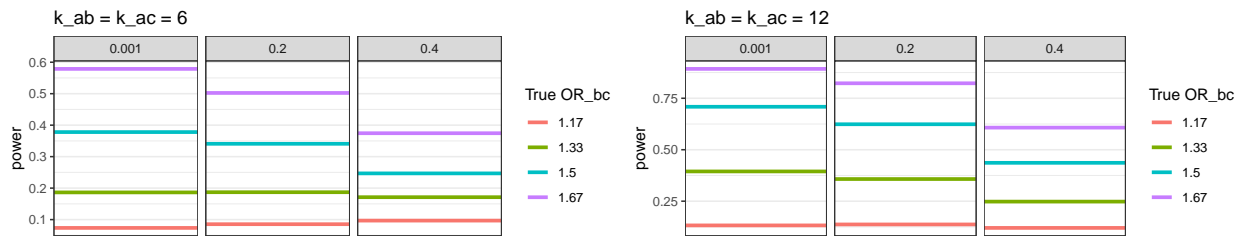
df_indirect_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_ac, y = power, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = power),
    facet_wrap(~tau) + labs(title = "k_ab = k_ac = 6", color = "True OR_bc", x = "") + theme_bw()
,
df_indirect_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_ac, y = power, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = power),
    facet_wrap(~tau) + labs(title = "k_ab = k_ac = 12", color = "True OR_bc", x = "") + theme_bw()
)
```



```
gridExtra::grid.arrange(

df_indirect_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_ac, y = power, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = power),
    facet_wrap(~tau) + labs(title = "k_ab = k_ac = 6", color = "True OR_bc", x = "") + theme_bw()
,
df_indirect_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_ac, y = power, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = power),
    facet_wrap(~tau) + labs(title = "k_ab = k_ac = 12", color = "True OR_bc", x = "") + theme_bw()
)
```

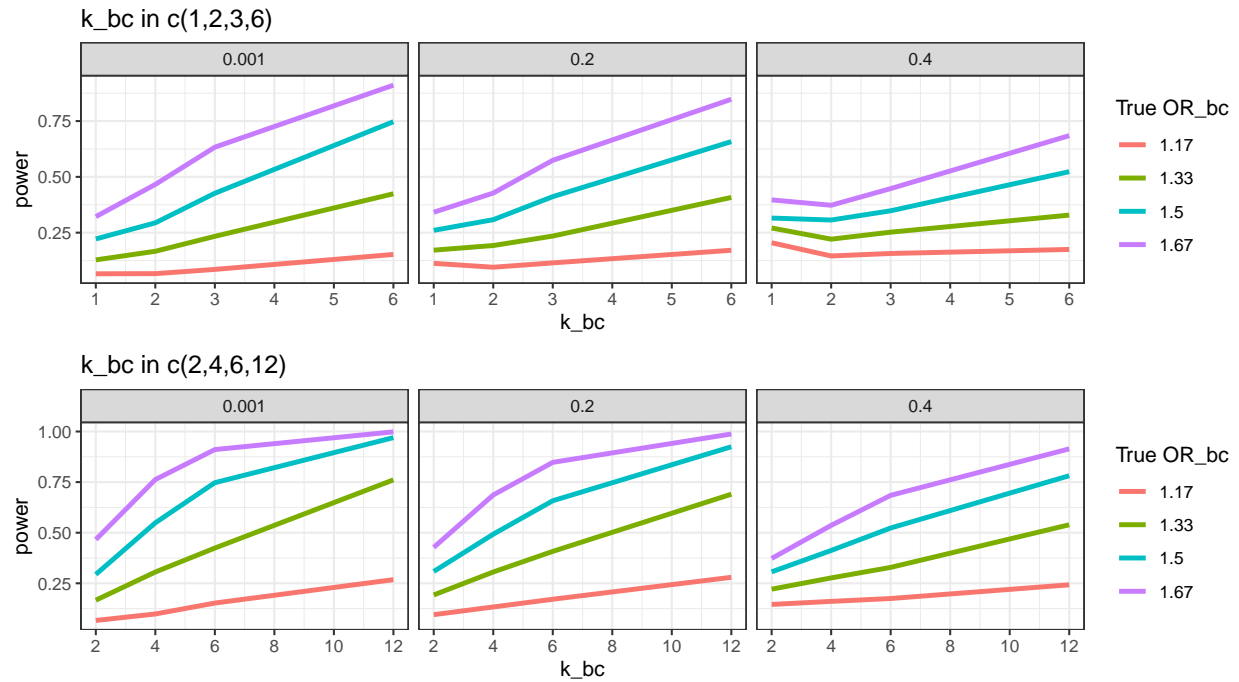
```
facet_wrap(~tau) + labs(title = "k_ab = k_ac = 12", color = "True OR_bc", x = "") + theme_bw(), ncol = 2)
```



```
df_direct_new
```

```
## # A tibble: 96 x 9
## # Groups:   k_bc, pi_a, OR_ab, OR_ac, tau [72]
##   k_bc pi_a OR_ab OR_ac tau OR_bc pi_b pi_c power
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1     1     0.1  1.2   1.4 0.001  1.17 0.118 0.135 0.0658
## 2     1     0.1  1.2   1.4 0.2    1.17 0.118 0.135 0.113
## 3     1     0.1  1.2   1.4 0.4    1.17 0.118 0.135 0.205
## 4     1     0.1  1.2   1.6 0.001  1.33 0.118 0.151 0.128
## 5     1     0.1  1.2   1.6 0.2    1.33 0.118 0.151 0.172
## 6     1     0.1  1.2   1.6 0.4    1.33 0.118 0.151 0.271
## 7     1     0.1  1.2   1.8 0.001  1.5   0.118 0.167 0.222
## 8     1     0.1  1.2   1.8 0.2    1.5   0.118 0.167 0.260
## 9     1     0.1  1.2   1.8 0.4    1.5   0.118 0.167 0.315
## 10    1     0.1  1.2   2    0.001  1.67 0.118 0.182 0.322
## # i 86 more rows
```

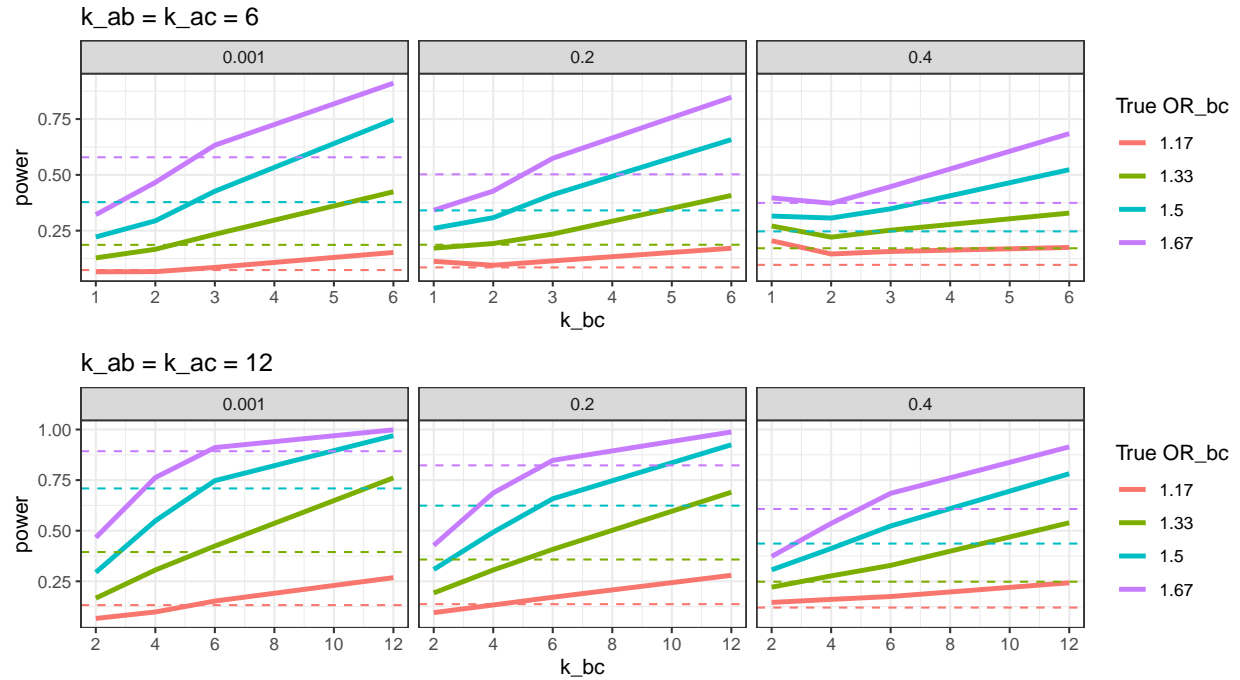
```
gridExtra::grid.arrange(
  df_direct_new %>% filter(k_bc %in% c(1,2,3,6)) %>%
    ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
    facet_wrap(~tau) + labs(title = "k_bc in c(1,2,3,6)", color = "True OR_bc") + theme_bw() + scale_x_continuous(
      ,
    ),
  df_direct_new %>% filter(k_bc %in% c(2,4,6,12)) %>%
    ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
    facet_wrap(~tau) + labs(title = "k_bc in c(2,4,6,12)", color = "True OR_bc") + theme_bw() + scale_x_continuous(
      ,
    )
)
```



Compard direct and indirect evidence powers

```
gridExtra::grid.arrange(
```

```
df_direct_new %>% filter(k_bc %in% c(1,2,3,6)) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 6", color = "True OR_bc") + theme_bw() + geom_hline(lin
,
df_direct_new %>% filter(k_bc %in% c(2,4,6,12)) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 12", color = "True OR_bc") + theme_bw() + geom_hline(
)
```

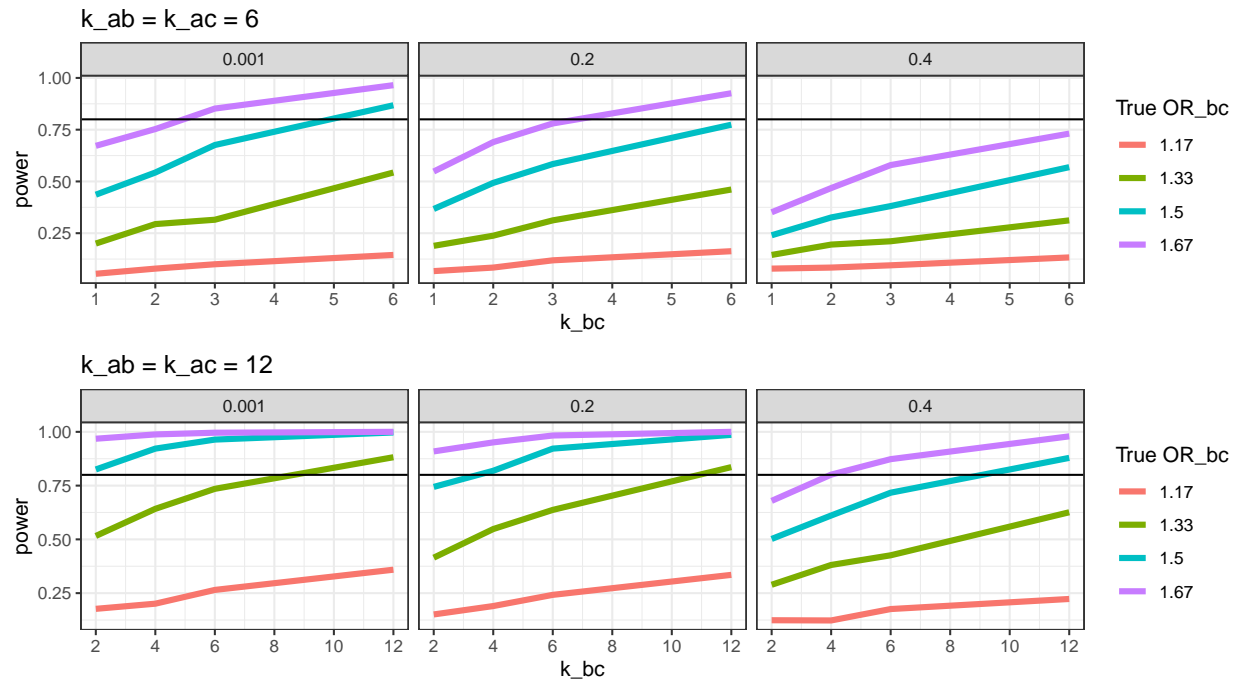



BNMA

```
a <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.8) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 6", color = "True OR_bc") + theme_bw() + scale_x_continuous(breaks = 1:6)

b <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.5) + geom_hline(yintercept = 0.8) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 12", color = "True OR_bc") + theme_bw() + scale_x_continuous(breaks = 2:12)

gridExtra::grid.arrange(a,b)
```

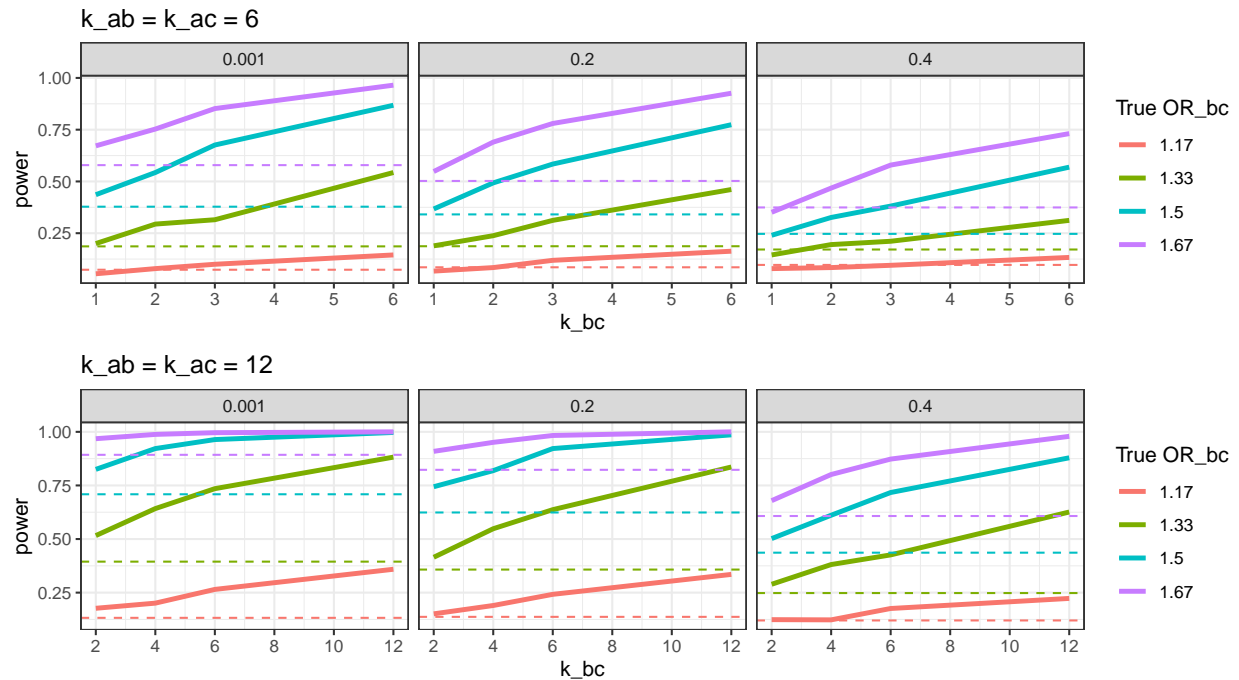


Compare BNMA and indirect evidence only

```
a <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 6", color = "True OR_bc") + theme_bw() + geom_hline(lin
```

```
b <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 12", color = "True OR_bc") + theme_bw() + geom_hline(
```

```
gridExtra::grid.arrange(a,b)
```

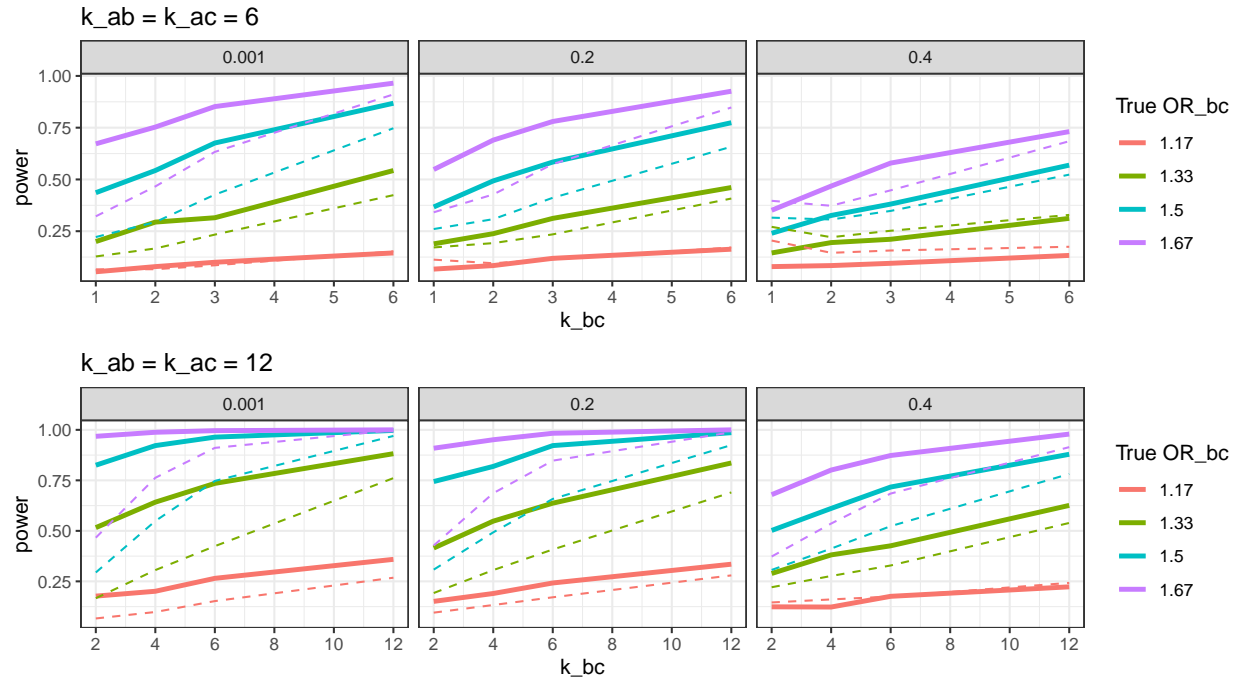


Compare BNMA and direct evidence only

```
a <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 6", color = "True OR_bc") + theme_bw() + geom_line(linetype = "dashed", color = "black", size = 0.5)

b <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 12", color = "True OR_bc") + theme_bw() + geom_line(linetype = "dashed", color = "black", size = 0.5)

gridExtra::grid.arrange(a,b)
```



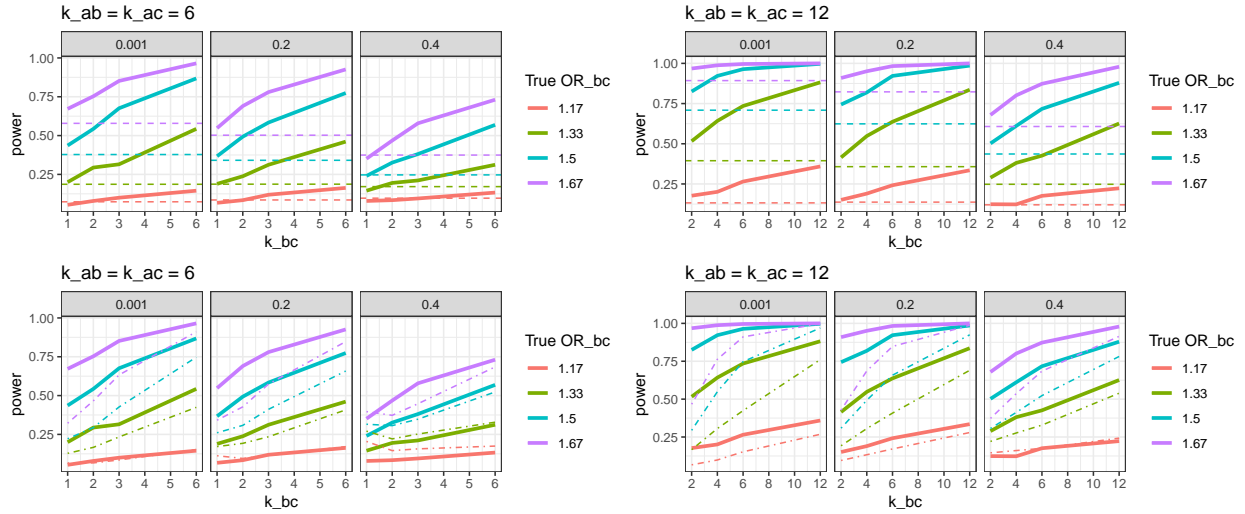
```
a <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 6", color = "True OR_bc") + theme_bw() + geom_hline(lin

b <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 12", color = "True OR_bc") + theme_bw() + geom_hline(

c <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 6", color = "True OR_bc") + theme_bw() + geom_line(lin

d <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "k_ab = k_ac = 12", color = "True OR_bc") + theme_bw() + geom_line(lin

gridExtra::grid.arrange(a,b,c,d,ncol = 2)
```



specific

```
df_indirect_new %>% filter(k_ab == 6, k_ac == 6, pi_a == 0.5, OR_ab == 1.2, OR_ac == 1.4, tau == 0.4) %>%
```

```
## # A tibble: 0 x 1
## # i 1 variable: power <dbl>
```

```
df_direct_new %>% filter(k_bc == 2, pi_a == 0.5, OR_ab == 1.2, OR_ac == 1.4, tau == 0.4) %>% ungroup() %>%
```

```
## # A tibble: 0 x 1
## # i 1 variable: power <dbl>
```

```
df_BNMA_new %>% filter(k_ab == 6, k_ac == 6, k_bc == 2, pi_a == 0.5, OR_ab == 1.2, OR_ac == 1.4, tau == 0.4) %>%
```

```
## # A tibble: 0 x 1
## # i 1 variable: power <dbl>
```

```
df_indirect_new %>% filter(k_ab == 6, k_ac == 6, pi_a == 0.5, OR_ab == 1.2, OR_ac == 1.6, tau == 0.2) %>%
```

```
## # A tibble: 0 x 1
## # i 1 variable: power <dbl>
```

```
df_direct_new %>% filter(k_bc == 2, pi_a == 0.5, OR_ab == 1.2, OR_ac == 1.6, tau == 0.2) %>% ungroup() %>%
```

```
## # A tibble: 0 x 1
## # i 1 variable: power <dbl>
```

```
df_BNMA_new %>% filter(k_ab == 6, k_ac == 6, k_bc == 2, pi_a == 0.5, OR_ab == 1.2, OR_ac == 1.6, tau == 0.2) %>%
```

```
## # A tibble: 0 x 1
## # i 1 variable: power <dbl>
```

```
df_indirect_new %>% filter(k_ab == 6, k_ac == 6, OR_ab == 1.2, OR_ac == 1.6, tau == 0.2) %>% ungroup()
```

```
## # A tibble: 1 x 1
##   power
##   <dbl>
## 1 0.187
```

```
df_direct_new %>% filter(k_bc == 6, OR_ab == 1.2, OR_ac == 1.6, tau == 0.2) %>% ungroup() %>% select(power)
```

```
## # A tibble: 2 x 1
##   power
##   <dbl>
## 1 0.408
## 2 0.408
```

```
df_BNMA_new %>% filter(k_ab == 6, k_ac == 6, k_bc == 6, OR_ab == 1.2, OR_ac == 1.6, tau == 0.2) %>% ungroup()
```

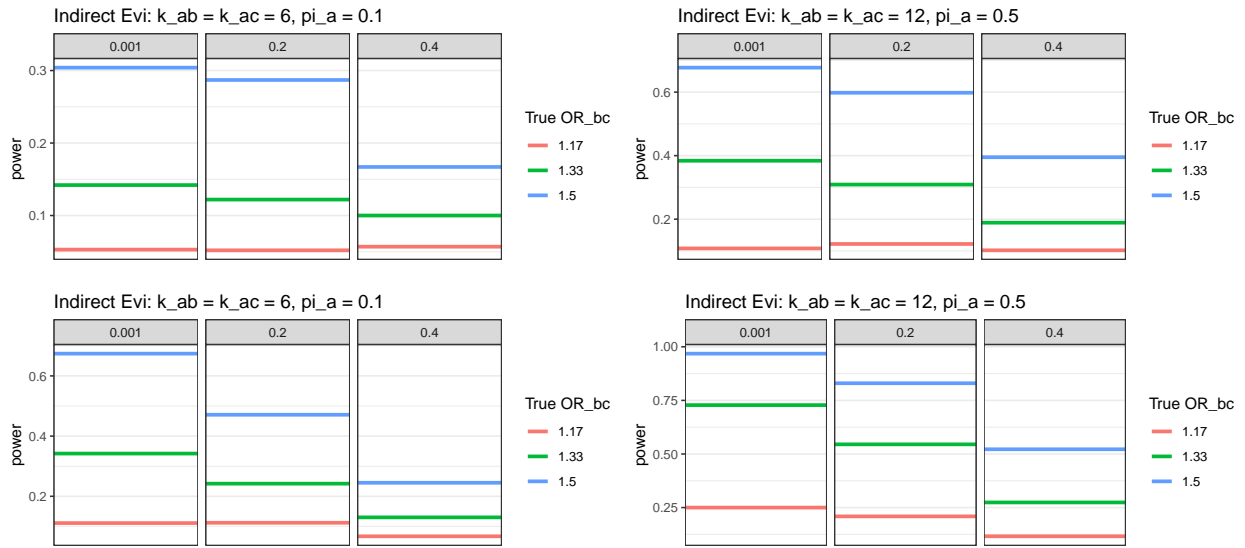
```
## # A tibble: 1 x 1
##   power
##   <dbl>
## 1 0.461
```

All bayesian gemtc

```
load("df_indirect_BNMA.RData")
load("df_direct_BNMA.RData")
load("df_overall_BNMA.RData")
```

```
# power in indirect evidence
gridExtra::grid.arrange(
```

```
df_indirect_new %>% filter(k_ab == 6, pi_a == 0.1) %>%
  ggplot(aes(x = k_ac, y = power, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = power)) +
  facet_wrap(~tau) + labs(title = "Indirect Evi: k_ab = k_ac = 6, pi_a = 0.1", color = "True OR_bc", x = "k_ac", y = "power")
,
df_indirect_new %>% filter(k_ab == 12, pi_a == 0.1) %>%
  ggplot(aes(x = k_ac, y = power, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = power)) +
  facet_wrap(~tau) + labs(title = "Indirect Evi: k_ab = k_ac = 12, pi_a = 0.1", color = "True OR_bc", x = "k_ac", y = "power")
,
df_indirect_new %>% filter(k_ab == 6, pi_a == 0.5) %>%
  ggplot(aes(x = k_ac, y = power, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = power)) +
  facet_wrap(~tau) + labs(title = "Indirect Evi: k_ab = k_ac = 6, pi_a = 0.5", color = "True OR_bc", x = "k_ac", y = "power")
,
df_indirect_new %>% filter(k_ab == 12, pi_a == 0.5) %>%
  ggplot(aes(x = k_ac, y = power, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = power)) +
  facet_wrap(~tau) + labs(title = "Indirect Evi: k_ab = k_ac = 12, pi_a = 0.5", color = "True OR_bc", x = "k_ac", y = "power")
)
```



```
# ranking correct in indirect evidence
```

```
gridExtra::grid.arrange(
```

```
df_indirect_new %>% filter(k_ab == 6, pi_a == 0.1) %>%
```

```
  ggplot(aes(x = k_ac, y = rank_correct, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = rank_correct, color = factor(OR_bc))) +
```

```
  facet_wrap(~tau) + labs(title = "Indirect Evi: k_ab = k_ac = 6, pi_a = 0.1", color = "True OR_bc", x = "k_ac", y = "rank_correct")
```

```
,
df_indirect_new %>% filter(k_ab == 12, pi_a == 0.1) %>%
```

```
  ggplot(aes(x = k_ac, y = rank_correct, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = rank_correct, color = factor(OR_bc))) +
```

```
  facet_wrap(~tau) + labs(title = "Indirect Evi: k_ab = k_ac = 12, pi_a = 0.1", color = "True OR_bc", x = "k_ac", y = "rank_correct")
```

```
,
```

```
df_indirect_new %>% filter(k_ab == 6, pi_a == 0.5) %>%
```

```
  ggplot(aes(x = k_ac, y = rank_correct, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = rank_correct, color = factor(OR_bc))) +
```

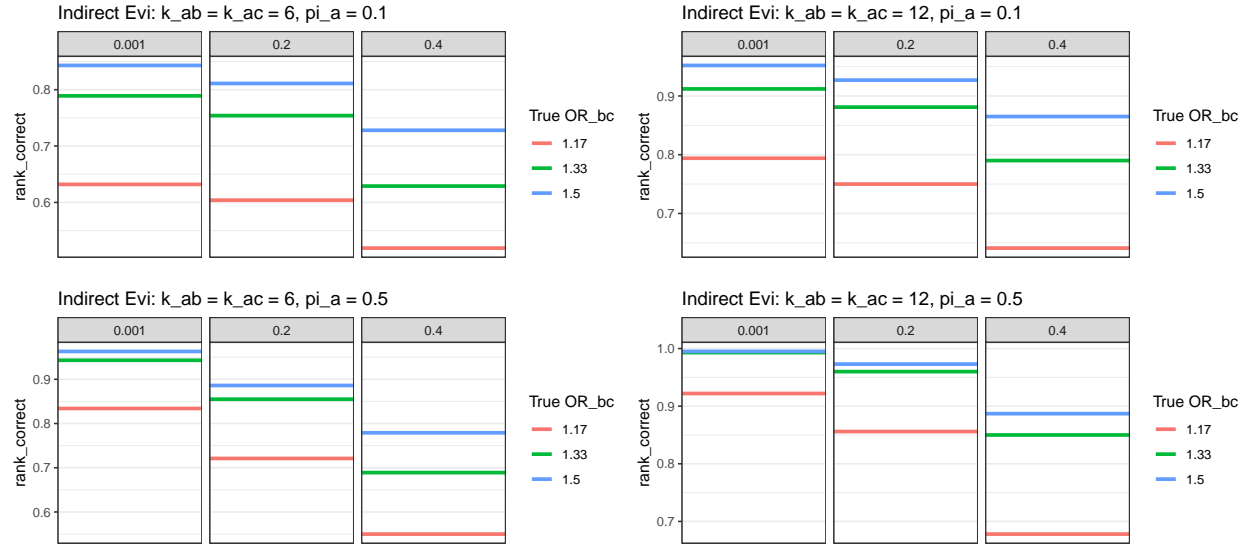
```
  facet_wrap(~tau) + labs(title = "Indirect Evi: k_ab = k_ac = 6, pi_a = 0.5", color = "True OR_bc", x = "k_ac", y = "rank_correct")
```

```
,
df_indirect_new %>% filter(k_ab == 12, pi_a == 0.5) %>%
```

```
  ggplot(aes(x = k_ac, y = rank_correct, color = factor(OR_bc))) + geom_hline(size = 1.2, aes(yintercept = rank_correct, color = factor(OR_bc))) +
```

```
  facet_wrap(~tau) + labs(title = "Indirect Evi: k_ab = k_ac = 12, pi_a = 0.5", color = "True OR_bc", x = "k_ac", y = "rank_correct")
```

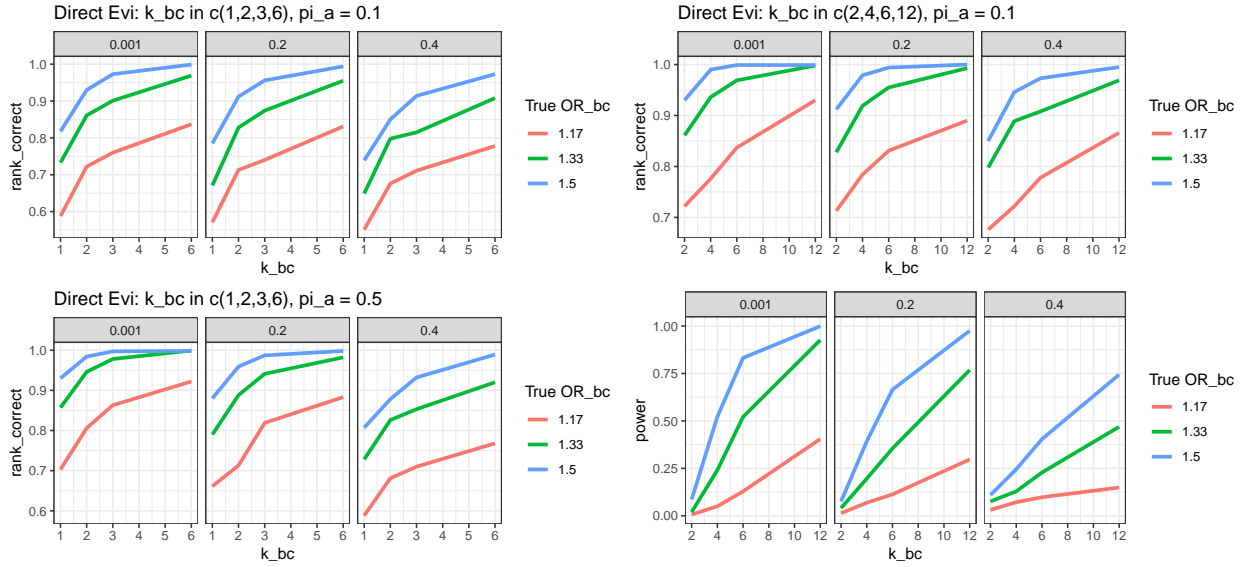
```
)
```



Power

```
gridExtra::grid.arrange(

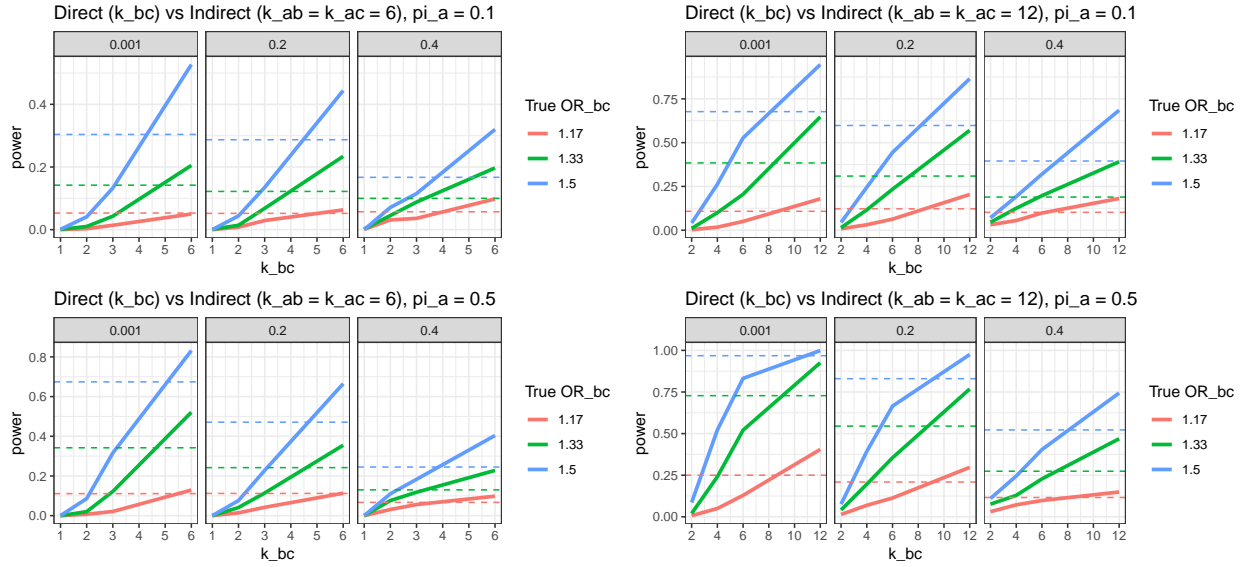
df_direct_new %>% filter(k_bc %in% c(1,2,3,6), pi_a == 0.1) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct Evi: k_bc in c(1,2,3,6), pi_a = 0.1", color = "True OR_bc") +
  ,
df_direct_new %>% filter(k_bc %in% c(2,4,6,12), pi_a == 0.1) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct Evi: k_bc in c(2,4,6,12), pi_a = 0.1", color = "True OR_bc") +
  ,
df_direct_new %>% filter(k_bc %in% c(1,2,3,6), pi_a == 0.5) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct Evi: k_bc in c(1,2,3,6), pi_a = 0.5", color = "True OR_bc") +
  ,
df_direct_new %>% filter(k_bc %in% c(2,4,6,12), pi_a == 0.5) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct Evi: k_bc in c(2,4,6,12), pi_a = 0.5", color = "True OR_bc")
)
```

Compare direct and indirect evidence powers

```
gridExtra::grid.arrange(
```

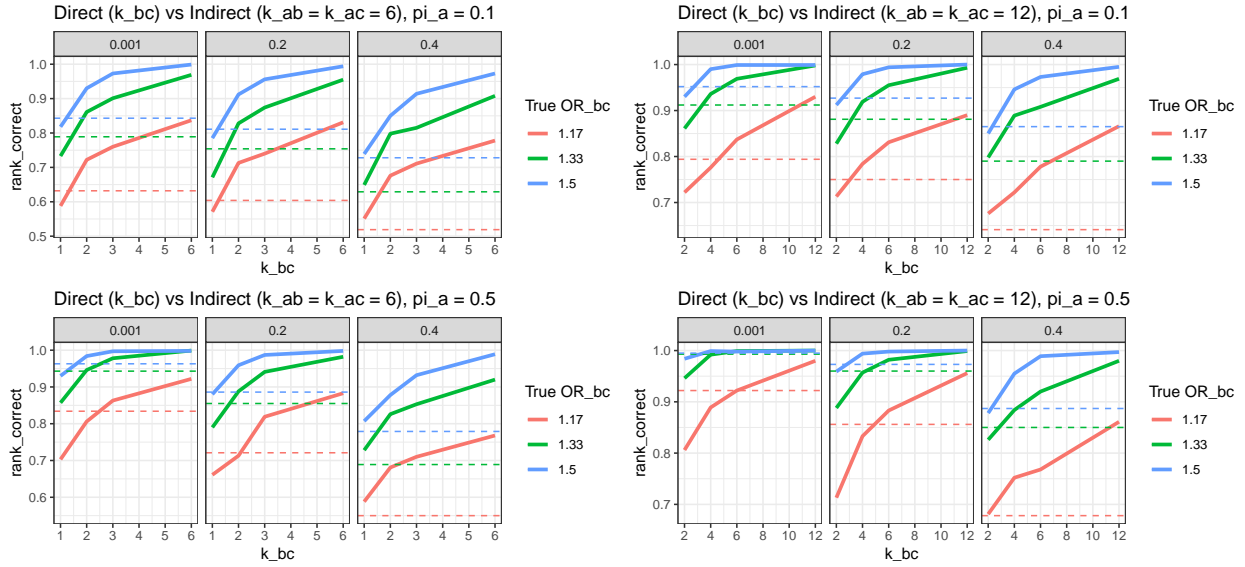
```
df_direct_new %>% filter(k_bc %in% c(1,2,3,6), pi_a == 0.1) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct (k_bc) vs Indirect (k_ab = k_ac = 6), pi_a = 0.1", color = "T",
,
df_direct_new %>% filter(k_bc %in% c(2,4,6,12), pi_a == 0.1) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct (k_bc) vs Indirect (k_ab = k_ac = 12), pi_a = 0.1", color = "T",
,
df_direct_new %>% filter(k_bc %in% c(1,2,3,6), pi_a == 0.5) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct (k_bc) vs Indirect (k_ab = k_ac = 6), pi_a = 0.5", color = "T",
,
df_direct_new %>% filter(k_bc %in% c(2,4,6,12), pi_a == 0.5) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct (k_bc) vs Indirect (k_ab = k_ac = 12), pi_a = 0.5", color = "T",
)
```



Compare direct and indirect evidence rank

```
gridExtra::grid.arrange(

df_direct_new %>% filter(k_bc %in% c(1,2,3,6), pi_a == 0.1) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct (k_bc) vs Indirect (k_ab = k_ac = 6), pi_a = 0.1", color = "T",
,
df_direct_new %>% filter(k_bc %in% c(2,4,6,12), pi_a == 0.1) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct (k_bc) vs Indirect (k_ab = k_ac = 12), pi_a = 0.1", color = "T",
,
df_direct_new %>% filter(k_bc %in% c(1,2,3,6), pi_a == 0.5) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct (k_bc) vs Indirect (k_ab = k_ac = 6), pi_a = 0.5", color = "T",
,
df_direct_new %>% filter(k_bc %in% c(2,4,6,12), pi_a == 0.5) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Direct (k_bc) vs Indirect (k_ab = k_ac = 12), pi_a = 0.5", color = "T",
)
```



```

load("df_indirect_BNMA.RData")
load("df_direct_BNMA.RData")
load("df_overall_BNMA.RData")

df_indirect_new = df_indirect_new[which(df_indirect_new$pi_a==0.1),]
df_direct_new = df_direct_new[which(df_direct_new$pi_a==0.1),]
df_BNMA_new = df_BNMA_new[which(df_BNMA_new$pi_a==0.1),]

a <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Indirect (k_ab = k_ac = 6)", color = "True OR_bc") +

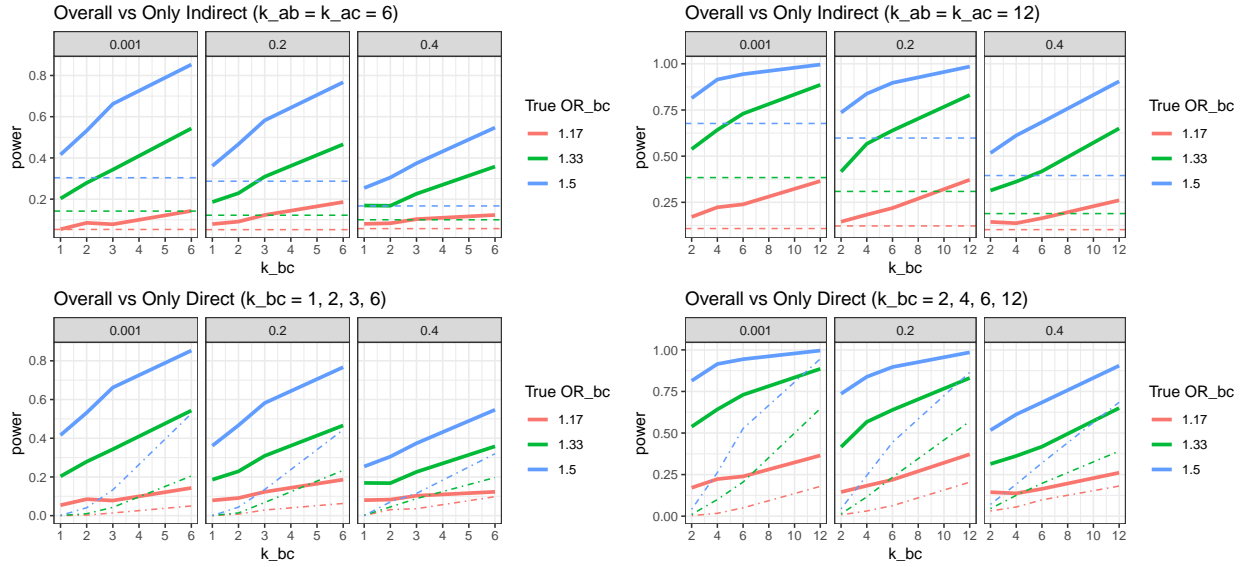
b <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Indirect (k_ab = k_ac = 12)", color = "True OR_bc") +

c <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Direct (k_bc = 1, 2, 3, 6)", color = "True OR_bc") +

d <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Direct (k_bc = 2, 4, 6, 12)", color = "True OR_bc") +

gridExtra::grid.arrange(a,b,c,d,ncol = 2)

```



```

load("df_indirect_BNMA.RData")
load("df_direct_BNMA.RData")
load("df_overall_BNMA.RData")

df_indirect_new = df_indirect_new[which(df_indirect_new$pi_a==0.5),]
df_direct_new = df_direct_new[which(df_direct_new$pi_a==0.5),]
df_BNMA_new = df_BNMA_new[which(df_BNMA_new$pi_a==0.5),]

a <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Indirect (k_ab = k_ac = 6)", color = "True OR_bc") +

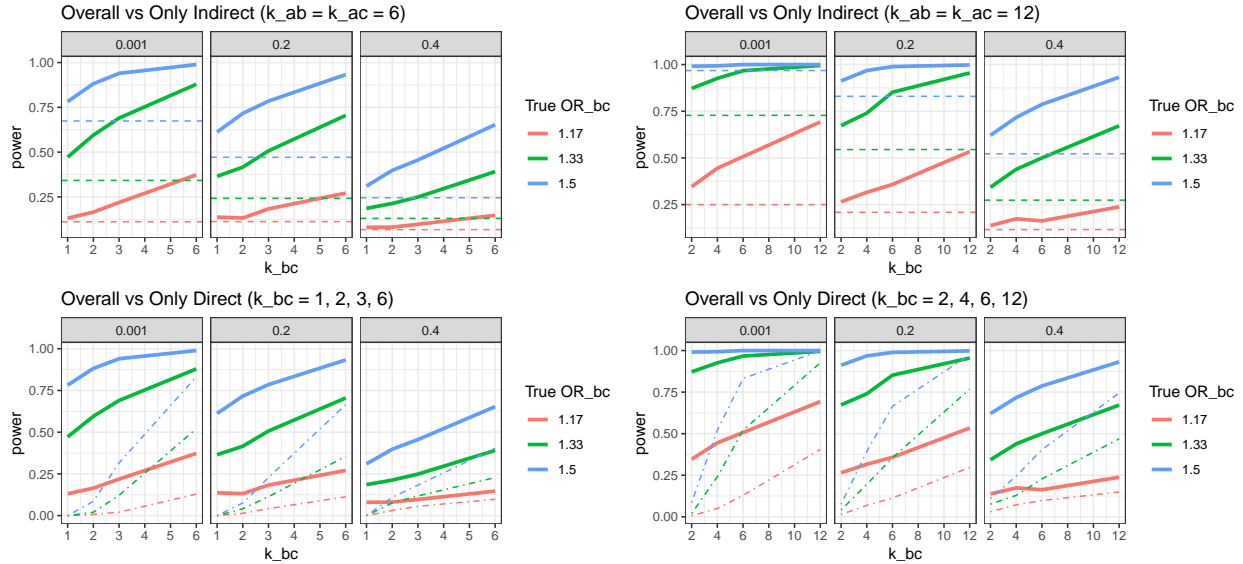
b <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Indirect (k_ab = k_ac = 12)", color = "True OR_bc") +

c <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Direct (k_bc = 1, 2, 3, 6)", color = "True OR_bc") +

d <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = power, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Direct (k_bc = 2, 4, 6, 12)", color = "True OR_bc") +

gridExtra::grid.arrange(a,b,c,d,ncol = 2)

```



```

load("df_indirect_BNMA.RData")
load("df_direct_BNMA.RData")
load("df_overall_BNMA.RData")

df_indirect_new = df_indirect_new[which(df_indirect_new$pi_a==0.1),]
df_direct_new = df_direct_new[which(df_direct_new$pi_a==0.1),]
df_BNMA_new = df_BNMA_new[which(df_BNMA_new$pi_a==0.1),]

a <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Indirect (k_ab = k_ac = 6)", color = "True OR_bc") +

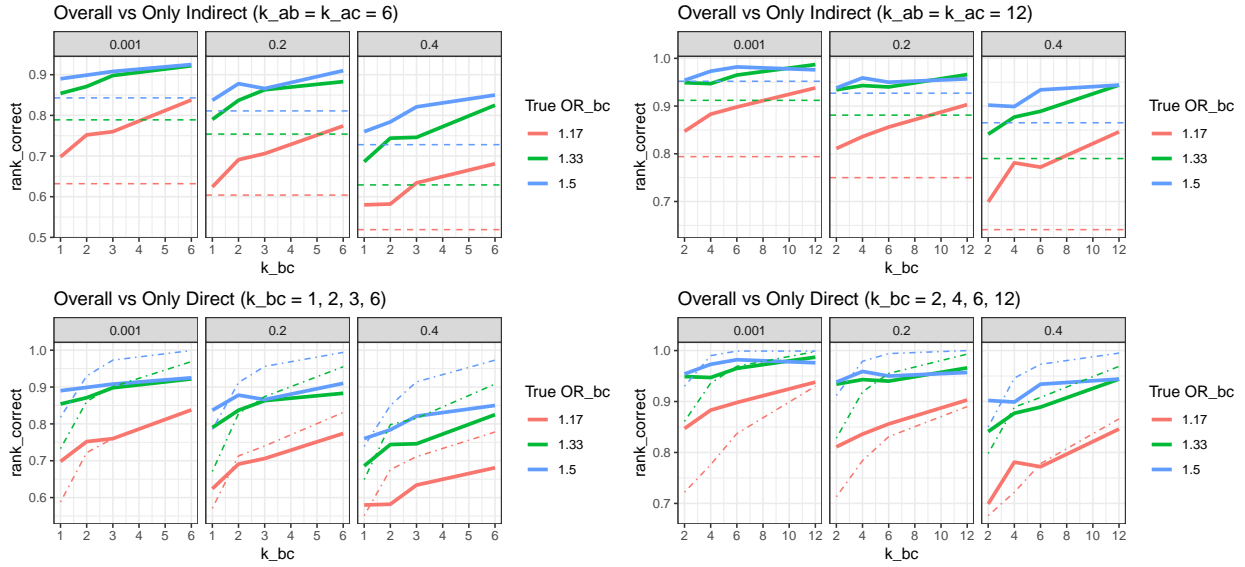
b <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Indirect (k_ab = k_ac = 12)", color = "True OR_bc") +

c <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Direct (k_bc = 1, 2, 3, 6)", color = "True OR_bc") +

d <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Direct (k_bc = 2, 4, 6, 12)", color = "True OR_bc") +

gridExtra::grid.arrange(a,b,c,d,ncol = 2)

```



```
load("df_indirect_BNMA.RData")
load("df_direct_BNMA.RData")
load("df_overall_BNMA.RData")

df_indirect_new = df_indirect_new[which(df_indirect_new$pi_a==0.5),]
df_direct_new = df_direct_new[which(df_direct_new$pi_a==0.5),]
df_BNMA_new = df_BNMA_new[which(df_BNMA_new$pi_a==0.5),]

a <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Indirect (k_ab = k_ac = 6)", color = "True OR_bc") +

b <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Indirect (k_ab = k_ac = 12)", color = "True OR_bc") +

c <- df_BNMA_new %>% filter(k_ab == 6) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Direct (k_bc = 1, 2, 3, 6)", color = "True OR_bc") +

d <- df_BNMA_new %>% filter(k_ab == 12) %>%
  ggplot(aes(x = k_bc, y = rank_correct, color = factor(OR_bc))) + geom_line(size = 1.2) +
  facet_wrap(~tau) + labs(title = "Overall vs Only Direct (k_bc = 2, 4, 6, 12)", color = "True OR_bc") +

gridExtra::grid.arrange(a,b,c,d,ncol = 2)
```

