

table2_part1_20251110.R

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```
options(scipen = 8)

library(tidyverse)

## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.2
## v ggplot2   4.0.0     v tibble    3.3.0
## v lubridate 1.9.4     v tidyr    1.3.1
## v purrr    1.1.0

## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()   masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors

library(broom)

# Hypothetical a)
crossing(trt = c("A", "B"),
         guess = c("A", "B", "DK")) %>%
  mutate(n = c(0, 0, 100,
            0, 0, 100)) %>%
  mutate(w = case_when(guess == "DK" ~ 0,
                       trt == guess ~ 1,
                       trt != guess ~ -1)) %>%
  uncount(n) %>%
  lm(w ~ 1, data = .) %>%
  tidy(., conf.int = TRUE)

## # A tibble: 1 x 7
##   term      estimate std.error statistic p.value conf.low conf.high
##   <chr>        <dbl>     <dbl>     <dbl>     <dbl>     <dbl>     <dbl>
## 1 (Intercept)     0       0       NaN      NaN       0       0

# Hypothetical b)
crossing(trt = c("A", "B"),
         guess = c("A", "B", "DK")) %>%
  mutate(n = c(0, 100, 0,
            100, 0, 0)) %>%
  mutate(w = case_when(guess == "DK" ~ 0,
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            trt == guess ~ 1,
            trt != guess ~ -1)) %>%
uncount(n) %>%
lm(w ~ 1, data = .) %>%
tidy(., conf.int = TRUE)

## # A tibble: 1 x 7
##   term      estimate std.error statistic p.value conf.low conf.high
##   <chr>      <dbl>     <dbl>     <dbl>     <dbl>     <dbl>
## 1 (Intercept) -1.000  1.26e-16  -7.96e15      0    -1.000    -1.000

# Hypothetical c)
crossing(trt = c("A", "B"),
         guess = c("A", "B", "DK")) %>%
mutate(n = c(50, 50, 0,
           50, 50, 0)) %>%
mutate(w = case_when(guess == "DK" ~ 0,
                     trt == guess ~ 1,
                     trt != guess ~ -1)) %>%
uncount(n) %>%
lm(w ~ 1, data = .) %>%
tidy(., conf.int = TRUE)

## # A tibble: 1 x 7
##   term      estimate std.error statistic p.value conf.low conf.high
##   <chr>      <dbl>     <dbl>     <dbl>     <dbl>     <dbl>
## 1 (Intercept) 3.14e-17    0.0709  4.43e-16      1    -0.140     0.140

# Hypothetical d)
crossing(trt = c("A", "B"),
         guess = c("A", "B", "DK")) %>%
mutate(n = c(50, 0, 50,
           0, 50, 50)) %>%
mutate(w = case_when(guess == "DK" ~ 0,
                     trt == guess ~ 1,
                     trt != guess ~ -1)) %>%
uncount(n) %>%
lm(w ~ 1, data = .) %>%
tidy(., conf.int = TRUE)

## # A tibble: 1 x 7
##   term      estimate std.error statistic p.value conf.low conf.high
##   <chr>      <dbl>     <dbl>     <dbl>     <dbl>     <dbl>
## 1 (Intercept)  0.500    0.0354    14.1  8.87e-32    0.430     0.570

# Hypothetical e)
crossing(trt = c("A", "B"),
         guess = c("A", "B", "DK")) %>%
mutate(n = c(15, 0, 85,
           0, 15, 85)) %>%
mutate(w = case_when(guess == "DK" ~ 0,

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            trt == guess ~ 1,
            trt != guess ~ -1)) %>%
uncount(n) %>%
lm(w ~ 1, data = .) %>%
tidy(., conf.int = TRUE)

## # A tibble: 1 x 7
##   term      estimate std.error statistic    p.value conf.low conf.high
##   <chr>        <dbl>     <dbl>     <dbl>      <dbl>     <dbl>      <dbl>
## 1 (Intercept)  0.150     0.0253     5.93 0.0000000135   0.100     0.200

# Hypothetical f)
tmp <- crossing(trt = c("A", "B"),
                 guess = c("A", "B", "DK")) %>%
  mutate(n = c(36, 12, 19,
             18, 6, 9)) %>%
  mutate(w = case_when(guess == "DK" ~ 0,
                       trt == guess ~ 1,
                       trt != guess ~ -1)) %>%
  uncount(n)
with(tmp, table(trt, guess))

##      guess
## trt  A  B DK
##   A 36 12 19
##   B 18  6  9

with(tmp, table(trt))

## trt
##  A  B
## 67 33

tmp %>%
  lm(w ~ 1, data = .) %>%
  tidy(., conf.int = TRUE)

## # A tibble: 1 x 7
##   term      estimate std.error statistic    p.value conf.low conf.high
##   <chr>        <dbl>     <dbl>     <dbl>      <dbl>     <dbl>      <dbl>
## 1 (Intercept)  0.120     0.0844     1.42     0.158  -0.0475     0.288

tmp %>%
  filter(trt == "A") %>%
  lm(w ~ 1, data = .) %>%
  tidy(., conf.int = TRUE)

## # A tibble: 1 x 7
##   term      estimate std.error statistic    p.value conf.low conf.high
##   <chr>        <dbl>     <dbl>     <dbl>      <dbl>     <dbl>      <dbl>
## 1 (Intercept)  0.358     0.0944     3.79 0.000324   0.170     0.547

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tmp %>%
  filter(trt == "B") %>%
  lm(w ~ 1, data = .) %>%
  tidy(., conf.int = TRUE)

## # A tibble: 1 x 7
##   term      estimate std.error statistic p.value conf.low conf.high
##   <chr>      <dbl>     <dbl>     <dbl>     <dbl>     <dbl>     <dbl>
## 1 (Intercept) -0.364     0.136    -2.67    0.0119   -0.641    -0.0859

```

```

# Hypothetical f
tmp <- crossing(trt = c("A", "B"),
                 guess = c("A", "B", "DK")) %>%
  mutate(n = c(50, 17, 0,
             25, 8, 0)) %>%
  mutate(w = case_when(guess == "DK" ~ 0,
                       trt == guess ~ 1,
                       trt != guess ~ -1)) %>%
  uncount(n)
with(tmp, table(trt, guess))

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##   guess
## trt  A  B
##   A 50 17
##   B 25  8

```

```

tmp %>%
  lm(w ~ 1, data = .) %>%
  tidy(., conf.int = TRUE)

## # A tibble: 1 x 7
##   term      estimate std.error statistic p.value conf.low conf.high
##   <chr>      <dbl>     <dbl>     <dbl>     <dbl>     <dbl>
## 1 (Intercept)  0.160     0.0992     1.61     0.110   -0.0369    0.357

```

```

tmp %>%
  filter(trt == "A") %>%
  lm(w ~ 1, data = .) %>%
  tidy(., conf.int = TRUE)

```

```

## # A tibble: 1 x 7
##   term      estimate std.error statistic  p.value conf.low conf.high
##   <chr>      <dbl>     <dbl>     <dbl>     <dbl>     <dbl>
## 1 (Intercept)  0.493     0.107     4.60  0.0000199    0.279     0.706

```

```

tmp %>%
  filter(trt == "B") %>%
  lm(w ~ 1, data = .) %>%
  tidy(., conf.int = TRUE)

```

```
## # A tibble: 1 x 7
##   term      estimate std.error statistic p.value conf.low conf.high
##   <chr>     <dbl>     <dbl>     <dbl>     <dbl>     <dbl>
## 1 (Intercept) -0.515     0.152    -3.4  0.00182   -0.824    -0.207
```

```
(0.493 * 67 + -0.515 * 33)/100
```

```
## [1] 0.16036
```

```
(0.493 + -0.515)/2
```

```
## [1] -0.011
```