

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,
```

```

      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) -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>   <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>   <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,

```

```

      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

```

```
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))
```

```
##   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>   <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>   <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>   <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
```