# Descriptive tables with `{gtsummary}`

Make an easy Table 1

# What is `{gtsummary}`?

- Create tables that are publication-ready
- Highly customizable
- Descriptive tables, regression tables, etc.

# gtsummary::tbl_summary()

```
1 library(gtsummary)
2
3 tbl_summary(
4   nlsy,
5   by = sex_cat,
6   include = c(sex_cat,
7               eyesight
```

| Characteristic | **Male** N = 6,403 [1] | **Female** N = 6,283 [1] |
|---|---|---|
| race_eth_cat | | |
| Hispanic | 1,000 (16%) | 1,002 (16%) |
| Black | 1,613 (25%) | 1,561 (25%) |
| Non-Black, Non-Hispanic | 3,790 (59%) | 3,720 (59%) |
| region_cat | | |
| Northeast | 1,296 (21%) | 1,254 (20%) |
| North Central | 1,488 (24%) | 1,446 (23%) |
| South | 2,251 (36%) | 2,317 (38%) |
| West | 1,253 (20%) | 1,142 (19%) |
| Unknown | 115 | 124 |
| eyesight_cat | | |
| Excellent | 1,582 (38%) | 1,334 (31%) |
| Very good | 1,470 (35%) | 1,500 (35%) |
| Good | 792 (19%) | 1,002 (23%) |

[1] n (%); Median (Q1, Q3)

| Characteristic | Male N = 6,403 [1] | Female N = 6,283 [1] |
|---|---|---|
| Fair | 267 (6.4%) | 365 (8.5%) |
| Poor | 47 (1.1%) | 85 (2.0%) |
| Unknown | 2,245 | 1,997 |
| glasses | 1,566 (38%) | 2,328 (54%) |
| Unknown | 2,241 | 1,995 |
| age_bir | 25 (21, 29) | 22 (19, 27) |
| Unknown | 3,652 | 3,091 |

[1] n (%); Median (Q1, Q3)

# You can also refer to variables using helper functions

```
1 library(gtsummary)
2
3 tbl_summary(
4   nlsy,
5   by = sex_cat,
6   include = c(ends_wit
```

| Characteristic | Male N = 6,403 [1] | Female N = 6,283 [1] |
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| age_bir | 25 (21, 29) | 22 (19, 27) |
| Unknown | 3,652 | 3,091 |

[1] n (%); Median (Q1, Q3)

# We probably want to name the variables

```r
tbl_summary(
  nlsy,
  by = sex_cat,
  include = c(sex_cat, race_eth_cat,
              eyesight_cat, glasses,
  label = list(
    race_eth_cat ~ "Race/ethnicity",
    region_cat ~ "Region",
    eyesight_cat ~ "Eyesight",
    glasses ~ "Wears glasses",
    age_bir ~ "Age at first birth"
  ),
  missing_text = "Missing")
```

| Characteristic | **Male** N = 6,403 [1] | **Female** N = 6,283 [1] |
|---|---|---|
| Race/ethnicity | | |
| Hispanic | 1,000 (16%) | 1,002 (16%) |
| Black | 1,613 (25%) | 1,561 (25%) |
| Non-Black, Non-Hispanic | 3,790 (59%) | 3,720 (59%) |
| Region | | |
| Northeast | 1,296 (21%) | 1,254 (20%) |
| North Central | 1,488 (24%) | 1,446 (23%) |
| South | 2,251 (36%) | 2,317 (38%) |
| West | 1,253 (20%) | 1,142 (19%) |
| Missing | 115 | 124 |
| Eyesight | | |
| Excellent | 1,582 (38%) | 1,334 (31%) |
| Very good | 1,470 (35%) | 1,500 (35%) |
| Good | 792 (19%) | 1,002 (23%) |

[1] n (%); Median (Q1, Q3)

| Characteristic | Male N = 6,403 [1] | Female N = 6,283 [1] |
|---|---|---|
| Fair | 267 (6.4%) | 365 (8.5%) |
| Poor | 47 (1.1%) | 85 (2.0%) |
| Missing | 2,245 | 1,997 |
| Wears glasses | 1,566 (38%) | 2,328 (54%) |
| Missing | 2,241 | 1,995 |
| Age at first birth | 25 (21, 29) | 22 (19, 27) |
| Missing | 3,652 | 3,091 |

[1] n (%); Median (Q1, Q3)

# And do a million other things

```r
tbl_summary(
  nlsy,
  by = sex_cat,
  include = c(sex_cat, race_eth_cat,
              eyesight_cat, glasses,
  label = list(
    race_eth_cat ~ "Race/ethnicity",
    eyesight_cat ~ "Eyesight",
    glasses ~ "Wears glasses",
    age_bir ~ "Age at first birth"
  ),
  missing_text = "Missing") |>
  add_p(test = list(all_continuous()
                    all_categorical(
  add_overall(col_label = "**Total**
  bold_labels() |>
  modify_footnote(update = everythin
  modify_header(label = "**Variable*
```

| Variable | Total | Male N = 6,403 | Female N = 6,283 | P |
|---|---|---|---|---|
| **Race/ethnicity** | | | | |
| Hispanic | 2,002 (16%) | 1,000 (16%) | 1,002 (16%) | |
| Black | 3,174 (25%) | 1,613 (25%) | 1,561 (25%) | |
| Non-Black, Non-Hispanic | 7,510 (59%) | 3,790 (59%) | 3,720 (59%) | |
| **Eyesight** | | | | |
| Excellent | 2,916 (35%) | 1,582 (38%) | 1,334 (31%) | |
| Very good | 2,970 (35%) | 1,470 (35%) | 1,500 (35%) | |
| Good | 1,794 (21%) | 792 (19%) | 1,002 (23%) | |
| Fair | 632 (7.5%) | 267 (6.4%) | 365 (8.5%) | |
| Poor | 132 (1.6%) | 47 (1.1%) | 85 (2.0%) | |
| Missing | 4,242 | 2,245 | 1,997 | |
| **Wears glasses** | 3,894 (46%) | 1,566 (38%) | 2,328 (54%) | |
| Missing | 4,236 | 2,241 | 1,995 | |

# Additional arguments

We saw `include =`, `by =`, `label =`, `missing_text =` in the example

`statistic =`:

- The default is `list(all_continuous() ~ "{median} ({p25}, {p75})", all_categorical() ~ "{n} ({p}%)")`
- For categorical variables, you can use `{n}` (frequency), `{N}` (denominator), `{p}` formatted percentage
- For continuous variables, you can use `{median}`, `{mean}`, `{sd}`, `{var}`, `{min}`, `{max}`, `{sum}`, `{p##}` (any percentile), or any function `{foo}`
- You can refer to individual variables with their names: `list(age ~ "min = {min}; max = {max}")`

# Additional arguments

`digits =`:

- It will do its best to guess the appropriate number of digits
- Otherwise, you can pass a function:
  - `digits = everything() ~ style_sigfig`
- Or a value for each statistic shown
  - `statistic = list(age ~ "min = {min}; max = {max}", year_of_birth = "{median} ({p25}, {p75})")`:
  - `digits = list(age ~ c(1, 1) year_of_birth ~ c(0, 0, 0))`

# Additional arguments

`type =`:

- One of “continuous”, “continuous2”, “categorical”, “dichotomous”
  - If a variable only has 0/1, TRUE/FALSE, or yes/no values, it will be treated as dichotomous
    - You can override this with `type = list(``varname``~ "categorical")`
    - Dichotomous variables only show one row (i.e., the percentage of 1’s) unless you change to categorical
      - You can change which level to show with `value = list(varname ~ "level to show")`
  - “continuous2” variables can have multiple rows of statistics

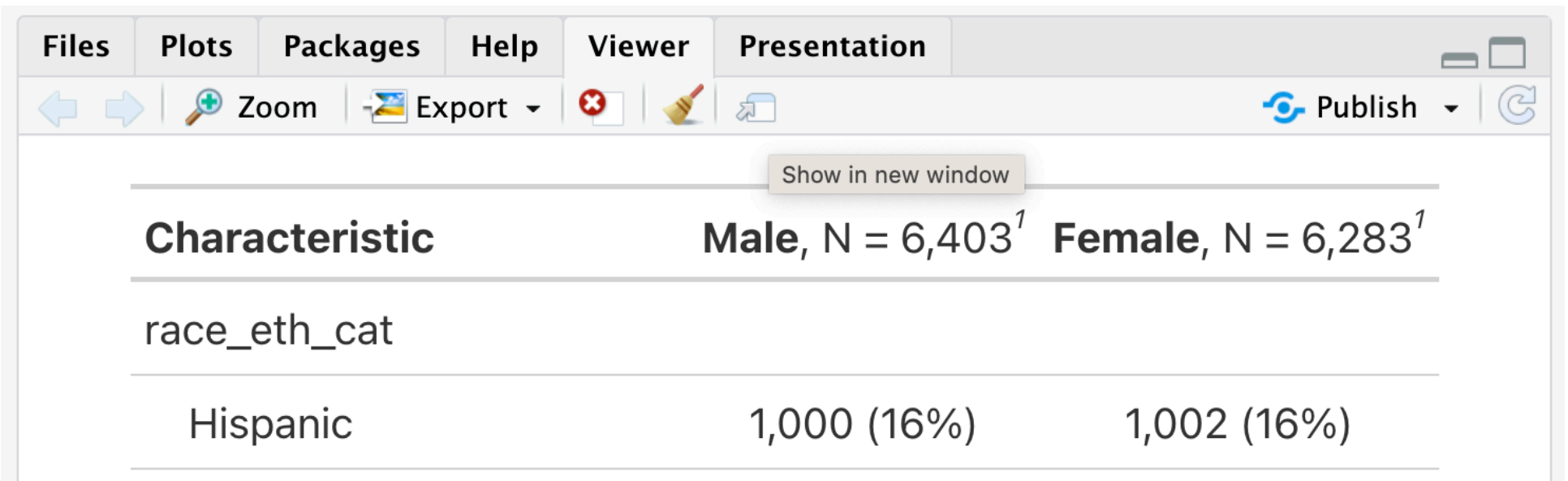
`missing =`:

# Additional functions

- `add_overall()`: In a stratified table, add a column for all strata combined
- `bold_labels()`: Bold the variable names (also `bold_levels()`)
- `add_p()`: Add a p-value (required by some journals 🤷‍♀️)
- `modify_footnote(update = everything() ~ NA)`: Remove the footnotes (can also add footnotes!)
- `modify_header()`: Change the header column

```
tbl_summary()
```

- Incredibly customizeable
  - So many options can be overwhelming
  - The FAQ/gallery is an incredible resource
- To save, I often just view in the web browser and copy and paste into a Word document
  - Can also be used within quarto/R Markdown



# Exercises

1. Open the script with some examples.
2. Install `{gtsummary}` and run the examples.

3-7. You're on your own! Work with your neighbors, and we'll come back together to go over these.

Extra time? Start a table using the data you downloaded for your final project! Make sure you switch to that R project!

15:00