

Regression tables with

`{gtsummary}`

On to Table 2!

Univariate regressions

Fit a series of univariate regressions of income on other variables.

```
1 tbl_uvregression(  
2   nlsy,  
3   y = income,  
4   include = c(sex_cat,  
5               eyesight_cat),  
6   method = lm)
```

| Characteristic | N | Beta | 95% CI ¹ | p-value |
|----------------------------|--------|--------|---------------------|---------|
| sex_cat | 10,195 | | | |
| Male | | — | — | |
| Female | | -358 | -844, 128 | 0.15 |
| race_eth_cat | 10,195 | | | |
| Hispanic | | — | — | |
| Black | | -1,747 | -2,507, -988 | <0.001 |
| Non-Black, Non-Hispanic | | 3,863 | 3,195, 4,530 | <0.001 |
| eyesight_cat | 6,789 | | | |
| Excellent | | — | — | |
| Very good | | -578 | -1,319, 162 | 0.13 |

¹

CI = Confidence Interval

| Characteristic | N | Beta | 95% CI ¹ | p-value |
|--|-------|--------|---------------------|---------|
| Good | | -1,863 | -2,719, -1,006 | <0.001 |
| Fair | | -4,674 | -5,910, -3,439 | <0.001 |
| Poor | | -6,647 | -9,154, -4,140 | <0.001 |
| age_bir | 4,773 | 595 | 538, 652 | <0.001 |
| ¹ CI = Confidence Interval | | | | |

Can also do logistic regression

```
1 tbl_uvregression(  
2   nlsy,  
3   y = glasses,  
4   include = c(sex_cat,  
5               eyesight_cat),  
6   method = glm,  
7   method.args = list(family = "binomial"),  
8   exponentiate = TRUE)
```

| Characteristic | N | OR ₁ | 95% CI ₁ | p-value |
|----------------------------|-------|-----------------|---------------------|---------|
| sex_cat | 8,450 | | | |
| Male | | — | — | |
| Female | | 1.97 | 1.81, 2.15 | <0.001 |
| race_eth_cat | 8,450 | | | |
| Hispanic | | — | — | |
| Black | | 0.76 | 0.67, 0.86 | <0.001 |
| Non-Black, Non-Hispanic | | 1.34 | 1.19, 1.50 | <0.001 |
| eyesight_cat | 8,444 | | | |
| Excellent | | — | — | |
| Very good | | 0.93 | 0.84, 1.03 | 0.2 |
| Good | | 0.95 | 0.84, 1.07 | 0.4 |
| Fair | | 0.81 | 0.68, 0.96 | 0.016 |
| Poor | | 1.15 | 0.81, 1.63 | 0.4 |
| age_bir | 5,813 | 1.02 | 1.01, 1.03 | <0.001 |

¹

OR = Odds Ratio, CI = Confidence Interval

We probably want to do some multivariable regressions

```
1 linear_model <- lm(income ~ sex_cat + age_bir + race_eth_c  
2                   data = nlsy)
```

```
1 linear_model_int <- lm(income ~ sex_cat*age_bir + race_eth  
2                   data = nlsy)
```

```
1 logistic_model <- glm(glasses ~ eyesight_cat + sex_cat + i  
2                   data = nlsy, family = binomial())
```

gtsummary::tbl_regression()

```
1 tbl_regression(  
2   linear_model,  
3   intercept = TRUE,  
4   label = list(  
5     sex_cat ~ "Sex",  
6     race_eth_cat ~ "Race/ethnicity",  
7     age_bir ~ "Age at first birth"  
8   ))
```

| Characteristic | Beta | 95% CI ¹ | p-value |
|----------------------------|-------|---------------------|---------|
| (Intercept) | 2,147 | 493, 3,802 | 0.011 |
| Sex | | | |
| Male | — | — | |
| Female | 25 | -654, 705 | >0.9 |
| Age at first birth | 438 | 381, 495 | <0.001 |
| Race/ethnicity | | | |
| Hispanic | — | — | |
| Black | -772 | -1,714, 171 | 0.11 |
| Non-Black, Non-Hispanic | 7,559 | 6,676, 8,442 | <0.001 |

¹

CI = Confidence Interval

gtsummary::tbl_regression()

```
1 tbl_regression(  
2   logistic_model,  
3   exponentiate = TRUE,  
4   label = list(  
5     sex_cat ~ "Sex",  
6     eyesight_cat ~ "Eyesight",  
7     income ~ "Income"  
8   ))
```

| Characteristic | OR ¹ | 95% CI ¹ | p-value |
|----------------|-----------------|---------------------|---------|
| Eyesight | | | |
| Excellent | — | — | |
| Very good | 0.92 | 0.82, 1.03 | 0.2 |
| Good | 0.92 | 0.80, 1.05 | 0.2 |
| Fair | 0.80 | 0.66, 0.98 | 0.028 |
| Poor | 1.03 | 0.69, 1.53 | 0.9 |
| Sex | | | |
| Male | — | — | |
| Female | 2.04 | 1.85, 2.25 | <0.001 |
| Income | 1.00 | 1.00, 1.00 | <0.001 |

¹
OR = Odds Ratio, CI = Confidence Interval

Arguments

| Argument | Description |
|-------------------------------|---|
| <code>label=</code> | modify variable labels in table |
| <code>exponentiate=</code> | exponentiate model coefficients |
| <code>include=</code> | names of variables to include in output. Default is all variables |
| <code>show_single_row=</code> | By default, categorical variables are printed on multiple rows. If a variable is dichotomous and you wish to print the regression coefficient on a single row, include the variable name(s) here. |
| <code>conf.level=</code> | confidence level of confidence interval |
| <code>intercept=</code> | indicates whether to include the intercept |
| <code>estimate_fun=</code> | function to round and format coefficient estimates |
| <code>pvalue_fun=</code> | function to round and format p-values |
| <code>tidy_fun=</code> | function to specify/customize tidier function |

You could put several together

```
1 tbl_no_int <- tbl_regression(  
2   linear_model,  
3   intercept = TRUE,  
4   label = list(  
5     sex_cat ~ "Sex",  
6     race_eth_cat ~ "Race/ethnicity",  
7     age_bir ~ "Age at first birth"  
8   ))  
9  
10 tbl_int <- tbl_regression(  
11   linear_model_int,  
12   intercept = TRUE,  
13   label = list(  
14     sex_cat ~ "Sex"
```

You could put several together

```
1 tbl_merge(list(tbl_no_int, tbl_int),
2           tab_spanner = c("**Model 1**", "**Model 2**"))
```

| Characteristic | Model 1 | | | Model 2 | | |
|-------------------------|---------|---------------------|---------|---------|---------------------|---------|
| | Beta | 95% CI ¹ | p-value | Beta | 95% CI ¹ | p-value |
| (Intercept) | 2,147 | 493, 3,802 | 0.011 | 4,064 | 1,884, 6,245 | <0.001 |
| Sex | | | | | | |
| Male | — | — | | — | — | |
| Female | 25 | -654, 705 | >0.9 | -3,635 | -6,432, -838 | 0.011 |
| Age at first birth | 438 | 381, 495 | <0.001 | 364 | 285, 443 | <0.001 |
| Race/ethnicity | | | | | | |
| Hispanic | — | — | | — | — | |
| Black | -772 | -1,714, 171 | 0.11 | -759 | -1,701, 183 | 0.11 |
| Non-Black, Non-Hispanic | 7,559 | 6,676, 8,442 | <0.001 | 7,550 | 6,668, 8,433 | <0.001 |
| Sex/age interaction | | | | | | |

¹
CI = Confidence Interval

| Characteristic | Model 1 | | | Model 2 | | |
|--|---------|---------------------|---------|---------|---------------------|---------|
| | Beta | 95% CI ¹ | p-value | Beta | 95% CI ¹ | p-value |
| Female * Age at first birth | | | | 149 | 39, 260 | 0.008 |
| ¹ CI = Confidence Interval | | | | | | |

Exercises

1. Open the script with some examples.
2. Run the examples.
- 3-6. You're on your own again!

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

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