Later Life Sex Differences in Sexual Behavior (T-Tests)

2024-01-04

After loading our dataset, we can perform an independent samples t-test to determine whether the men and women in our elderly (60+) sample report significantly different answers when asked how many different sexual partners they would like to have over the next month.

```
t_test_difsx1m <- t.test(difsx1m ~ sex, var.equal = TRUE, data = data1)
```

```
t_test_difsx1m
```

```
##
##  Two Sample t-test
##
## data:  difsx1m by sex
## t = 1.3571, df = 164, p-value = 0.1766
## alternative hypothesis: true difference in means between group 1 and group 2 is not equal to 0
## 95 percent confidence interval:
##  -0.4499868  2.4281289
## sample estimates:
## mean in group 1 mean in group 2
##       1.6557377       0.6666667
```

It looks like men and women in this sample did not differ significantly- at least for this particular outcome variable. However, if our results were significant, we might want to calculate cohen's d to determine the size of the effect.

```
cohen_difsx1m <- effsize::cohen.d(difsx1m ~ sex, data = data1)
```

```
cohen_difsx1m
```

```
##
## Cohen's d
##
## d estimate: 0.2184784 (small)
## 95 percent confidence interval:
##      lower      upper
## -0.1002792  0.5372359
```

The cohen's d value (predictably) indicated a small effect size. However, men and women were asked the same question for several different time periods (e.g., "I would like to have sexual intercourse with _____ different partners in the next... 6 months, 2 years, 10 years, etc.). As we will want to perform t-tests and calculate cohen's d for each of these outcome variables (11, in total), I've written a function that will store the results of the t-tests and corresponding cohen's d values in a table.

```
outcome_variables <- c("difsx1m", "difsx6m", "difsx1y", "difsx2y", "difsx3y", "difsx4y", "difsx5y", "di
```

```
# Function to perform t-test, calculate Cohen's d, and aggregate results
perform_analysis <- function(data1, outcome_variable, sex) {
  # Extract relevant subsets for groups
  group1 <- data1[[outcome_variable]][data1[[sex]] == 1]
  group2 <- data1[[outcome_variable]][data1[[sex]] == 2]
```

```r
  # Remove missing values
  group1 <- group1[!is.na(group1)]
  group2 <- group2[!is.na(group2)]

  # Perform t-test
  t_test_result <- t.test(group1, group2, var.equal = TRUE)

  # Calculate Cohen's d
  cohen_d_result <- effsize::cohen.d(group1, group2)

  # Calculate group means
  group_means_result <- dplyr::group_by(data1, !!rlang::sym(sex)) %>%
    dplyr::summarise(mean = mean(!!as.symbol(outcome_variable), na.rm = TRUE))

  # Aggregate results into a data frame
  result_row <- data.frame(
    outcome_variable = outcome_variable,
    men_mean = group_means_result$mean[group_means_result[[sex]] == 1],
    women_mean = group_means_result$mean[group_means_result[[sex]] == 2],
    t_statistic = t_test_result$statistic,
    p_value = t_test_result$p.value,
    cohen_d = cohen_d_result$estimate
  )

  colnames(result_row) <- c("outcome_variable", "men_mean", "women_mean", "t_statistic", "p_value", "co

  return(result_row)
}
```

```r
all_results <- lapply(outcome_variables, function(outcome_variable) {
  perform_analysis(data1, outcome_variable, "sex")
})
```

```r
all_results_df <- do.call(rbind, all_results)
```

```r
all_results_df$outcome_variable <- c("1 month", "6 months", "1 year", "2 years", "3 years", "4 years",
```

```r
all_results_df
```

```
##     outcome_variable  men_mean women_mean t_statistic   p_value    cohen_d
## t            1 month  1.655738  0.6666667   1.3571066 0.1766122 0.21847837
## t1          6 months  2.183333  1.3942308   0.5498765 0.5831614 0.08914455
## t2            1 year  2.966102  1.4326923   0.9814881 0.3278247 0.15996912
## t3           2 years  4.152542  2.4285714   0.5918635 0.5547670 0.09629924
## t4           3 years  5.440678  3.4466019   0.4574193 0.6479902 0.07468397
## t5           4 years  6.789474  4.5049505   0.3842491 0.7013171 0.06365659
## t6           5 years  7.793103  5.5247525   0.3084240 0.7581686 0.05081268
## t7          10 years 12.206897  5.5148515   0.7231062 0.4706905 0.11913133
## t8          20 years 21.396552  5.5700000   1.0805679 0.2815571 0.17834733
## t9          30 years 30.206897  5.6464646   1.1808229 0.2394819 0.19525537
## t10         lifetime 32.218182  6.0638298   1.1936864 0.2345235 0.20264604
```