April 27, 2022

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Comparing Means Between Groups (t-tests)

Agenda

- Check in
- Last week's lab
- Overview of t-test
- Computer lab

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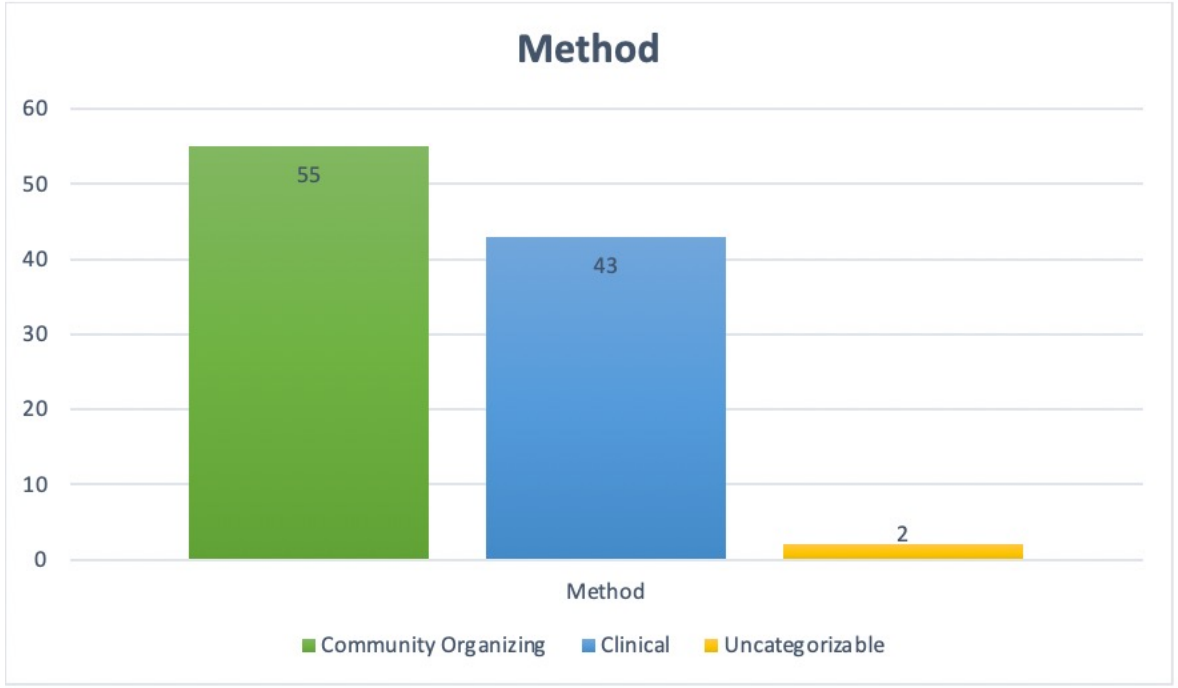
Basic and Descriptive Statistics

"Descriptive statistics provide us with a useful strategy for summarizing data and providing a description of the sample but cannot provide information for causal analysis" (Fisher & Marshall, 2009, p. 97)



Lessons Learned from Last Week

```
> stat.desc(cbind(ssw752$IMPACT_1, ssw752$IMPACT_2, ssw752$IMPACT_3, ssw752$IMPACT_4, ssw752$IMPACT_5))
                      V1          V2          V3          V4          V5
nbr.val       53.0000000  53.0000000  53.0000000  53.0000000  53.0000000
nbr.null       0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
nbr.na         0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
min            1.0000000   1.0000000   1.0000000   1.0000000   1.0000000
max            4.0000000   4.0000000   4.0000000   5.0000000   4.0000000
range          3.0000000   3.0000000   3.0000000   4.0000000   3.0000000
sum          115.0000000 129.0000000 136.0000000 139.0000000 129.0000000
median         2.0000000   2.0000000   3.0000000   2.0000000   2.0000000
mean           2.1698113   2.4339623   2.5660377   2.6226415   2.4339623
SE.mean        0.1068613   0.1463376   0.1094565   0.1576000   0.1127227
CI.mean.0.95   0.2144329   0.2936478   0.2196405   0.3162475   0.2261947
var            0.6052250   1.1349782   0.6349782   1.3164006   0.6734398
std.dev        0.7779621   1.0653536   0.7968552   1.1473450   0.8206338
coef.var       0.3585390   0.4377034   0.3105392   0.4374769   0.3371596
```

One of the impact variables was incorrectly formatted causing an error

```
> stat.desc(cbind(ssw752$HRS_EMPLOY, ssw752$HRS_SCHOOL, ssw752$HRS_INTERN, ssw752$HRS_CARE, ssw752$CARE, ssw752$SERVE))
                      V1          V2          V3          V4          V5          V6
nbr.val       53.000000   51.0000000   52.0000000   53.0000000   53.0000000   53.0000000
nbr.null      19.000000    0.0000000    1.0000000   36.0000000    0.0000000    0.0000000
nbr.na         0.000000    2.0000000    1.0000000    0.0000000    0.0000000    0.0000000
min            0.000000    4.0000000    0.0000000    0.0000000    1.0000000    1.0000000
max           55.000000   42.0000000   30.0000000   36.0000000   25.0000000   10.0000000
range         55.000000   38.0000000   30.0000000   36.0000000   24.0000000    9.0000000
sum          704.000000  736.0000000 1117.0000000  162.0000000  600.0000000  235.0000000
median         8.000000   14.0000000   21.0000000    0.0000000   11.0000000    5.0000000
mean          13.283019   14.4313725   21.4807692    3.0566038   11.3207547    4.4339623
SE.mean        1.977445    1.2297792    0.6928260    0.9818436    0.8707360    0.3434114
CI.mean.0.95   3.968034    2.4700841    1.3909062    1.9702132    1.7472595    0.6891053
var          207.245283   77.1301961   24.9604072   51.0928882   40.1835994    6.2503628
std.dev       14.396016    8.7823799    4.9960392    7.1479289    6.3390535    2.5000726
coef.var       1.083791    0.6085616    0.2325819    2.3385200    0.5599497    0.5638462
```

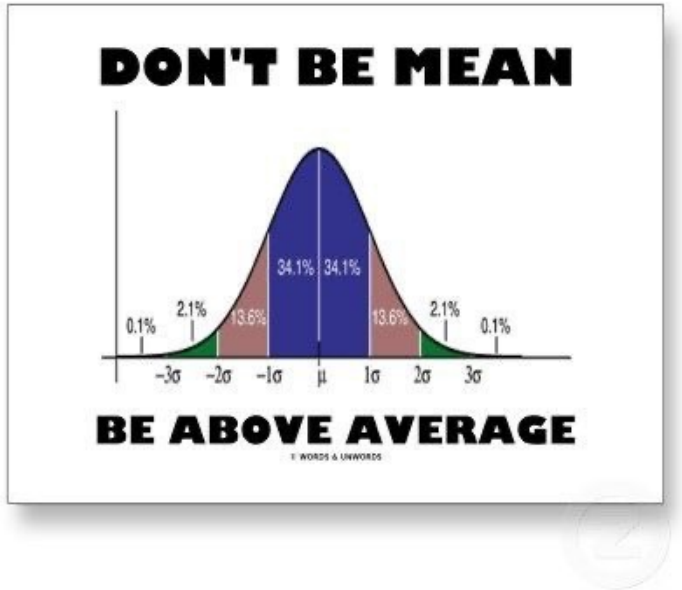
The power of "null" & text formatting

T – Test Explained

A statistic used to compare the **means** of two groups to determine whether a process influences the population, or whether two groups are different.

Assumptions:

- Independence
- Normal distribution
  - Central Limit Theorem
- Homogeneity of variances



Class Activity

Is the subjective experience of being an MSW intern different for community organizing and clinical students regarding perceived level of support and overall experience?

Independent Variable

- Practice Method
  - Clinical=1
  - CO=2

Dependent Variable(s)

- SUP_PROF; SUP_SUPER; SUP_ADMIN; SUP_FIELD
- EXP_INT_; SAT_INT

Working in RStudio

Check out results from t-tests from our class project last year