**Analyzing Difference in Run Times in Women’s World Cup GS KEY**

1. Find the mean and standard deviation of the difference between *Run1\_Time* and *Run2\_Time*.

Mean = -0.9003704

Standard deviation = 0.7064455

```{r}

diff <- slalom\_df |> mutate(time\_diff = Run1\_Time-Run2\_Time) |> filter(!is.na(time\_diff))

mean(diff$time\_diff)

sd(diff$time\_diff)

```

1. Find a 95% CI for difference in mean run times and give an interpretation of this interval. (If computing by hand, use n = 27 as three racers DNF Run 2).

By hand:

ME = 2.052 x () = .2789807

Upper bound: -0.9003704 + .2789807 = -0.621

Lower bound: -0.9003704 - .2789807 = -1.179

With technology:

95% CI: (-1.1798309, -0.6209098)

Interpretation:

We are 95% confident that the run time for Run 2 is somewhere between 1.18 seconds and 0.62 seconds faster than the run time for Run 1.

1. Perform a test for difference in means. State hypotheses, test statistic, degrees of freedom, p-value, and an informative conclusion.

Hypotheses:

:

:

t = -6.6225

df = 26

p-value = 5.04 x

Decision: Reject

Conclusion: We have convincing evidence to show that the mean run time for Run 2 is significantly faster than the mean run time for Run 1.

1. How do your findings in questions 3 and 4 relate?

The 95% CI does not include 0, and the t-test provided evidence to reject .