Mini Module – Confidence Intervals

This is a dataset pulled from usaswimming.org. Here we see some of the top ranked collegiate individuals in the country from various tournaments in the last few years. We can see the event, the individual’s year in school, gender, swim-time, as well as the school they represent. Below is a table of different events, their average swim time, the standard deviation, and sample size.

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| --- | --- | --- | --- | --- |
| Event | Sex | Average Swim Time (in seconds) | Standard Deviation | Sample Size |
| 100M Backstroke | Female | 52.24 | 0.96 | 100 |
| 100M Freestyle | Female | 48.32 | 0.67 | 100 |
| 100M Freestyle | Male | 42.40 | 0.57 | 100 |
| 200M Freestyle | Male | 93.47 | 1.16 | 101 |
| 200M Butterfly | Female | 115.93 | 1.91 | 100 |
| 200M Butterfly | Male | 102.82 | 1.68 | 100 |

Finding and Interpreting Confidence Intervals

1. Find and interpret a 95% confidence interval for the difference in means of the Female 100M Backstroke and the Female 100M Freestyle.
2. Find and interpret a 95% confidence interval for the difference in means of the Male 100M Freestyle and the Male 200M Freestyle.
3. Find and interpret a 90% confidence interval for the difference in means of the Female 200M Butterfly and the Male 200M Butterfly.

Discussion

1. Do the confidence intervals you calculated above make sense? Discuss for each.
2. Notice the sample size for the Male 200M Freestyle is 101, while every other event was 100. Do you think this affects your answer to number 2?