**Explain any differences in the “Compare original vs. mitigated results” (Step 4) when applying the two different methods.**

The first mitigation algorithm I used for this dataset was the **reweighting** algorithm. Based on the **race** protected class, I saw that the accuracy only resulted in a 1% decrease and the bias against the unprivileged group was reduced in 1 of 2 previously biased metrics. For the **sex** protected class, I saw the accuracy only decreased by 2% and the bias against the unprivileged group was reduced in 2 of 4 of the previously biased metrics. With the expectation of one or two methods, most of the fairness methods were mitigated successfully for the unprivileged group for both classes, while not severely impacting the accuracy of both.

The second mitigation algorithm I used for this dataset was the **optimized pre-****processing** algorithm. Based on the **race** protected class, I saw that the accuracy resulted in a 9% decrease and the bias against the unprivileged group was reduced in 1 of 2 previously biased metrics. For the **sex** protected class, I saw the accuracy decreased by 12% and the bias against the unprivileged group was unchanged from the previously biased metrics. The race class showed slight improvement from the mitigation algorithm, while the sex class was completely unchanged, all while majorly impacting the accuracy of both.

**Which methods seems to be better?**

Based on the comparison above, it’s safe to say that the **reweighting** algorithm is drastically better than the **optimized pre- processing** algorithm. The reweighting algorithm was able to mitigate the data to make 4/5 fairness metrics for race and 3/5 metrics for sex, not indicate bias for the unprivileged group all while only reducing the accuracy 1% and 2% respectively. Obviously, this algorithm isn’t perfect. There are some metrics that still show bias outside of the optimal fairness range, specifically Disparate Impact, but the overall positive impact the reweighting algorithm had on both protected classes is noteworthy.