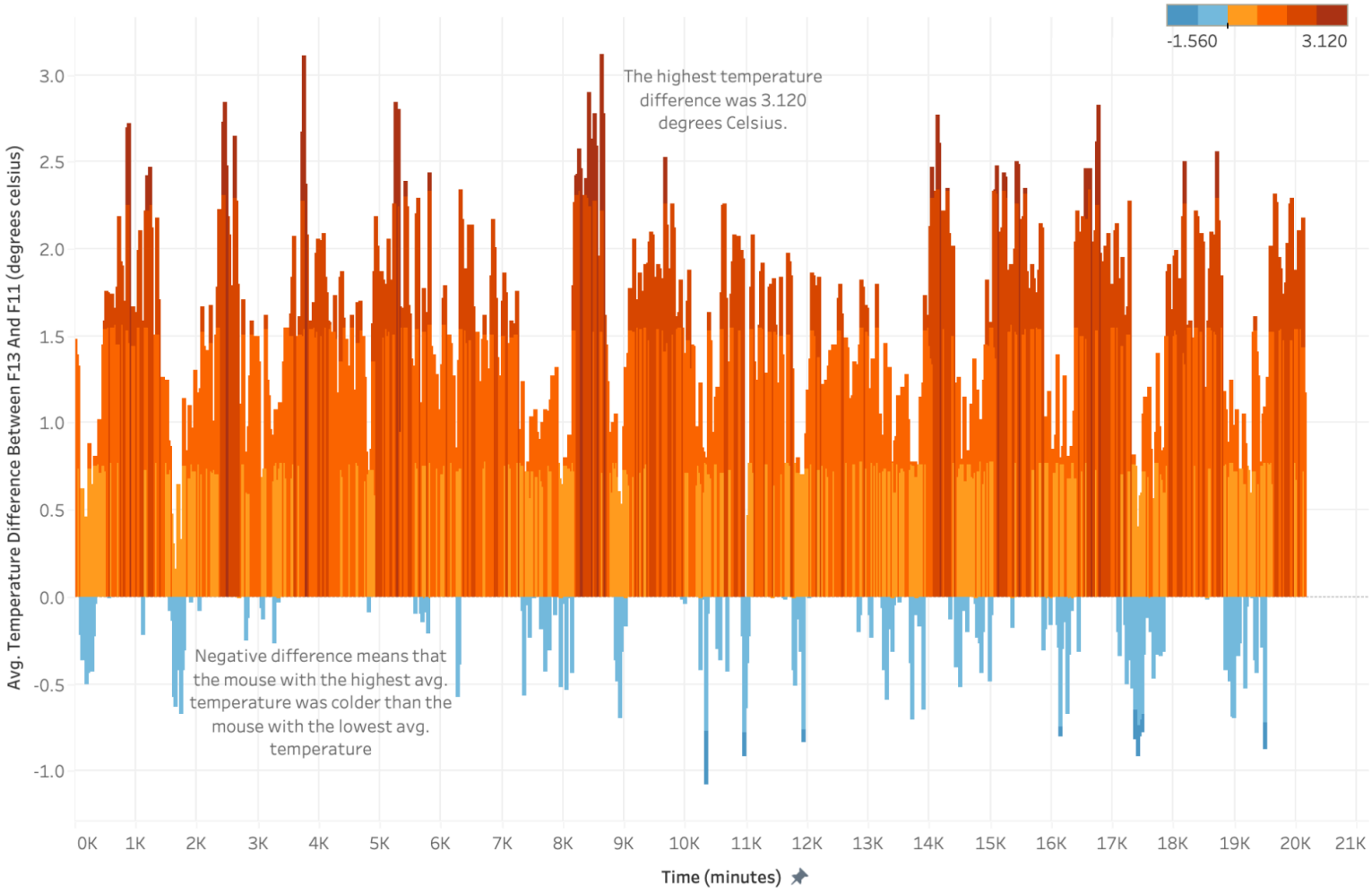
How Greatly Do The Temperatures of Female Mice Vary?

Looking at the difference in temperature between the female mouse with the highest average temperature and the female mouse with the lowest average temperature



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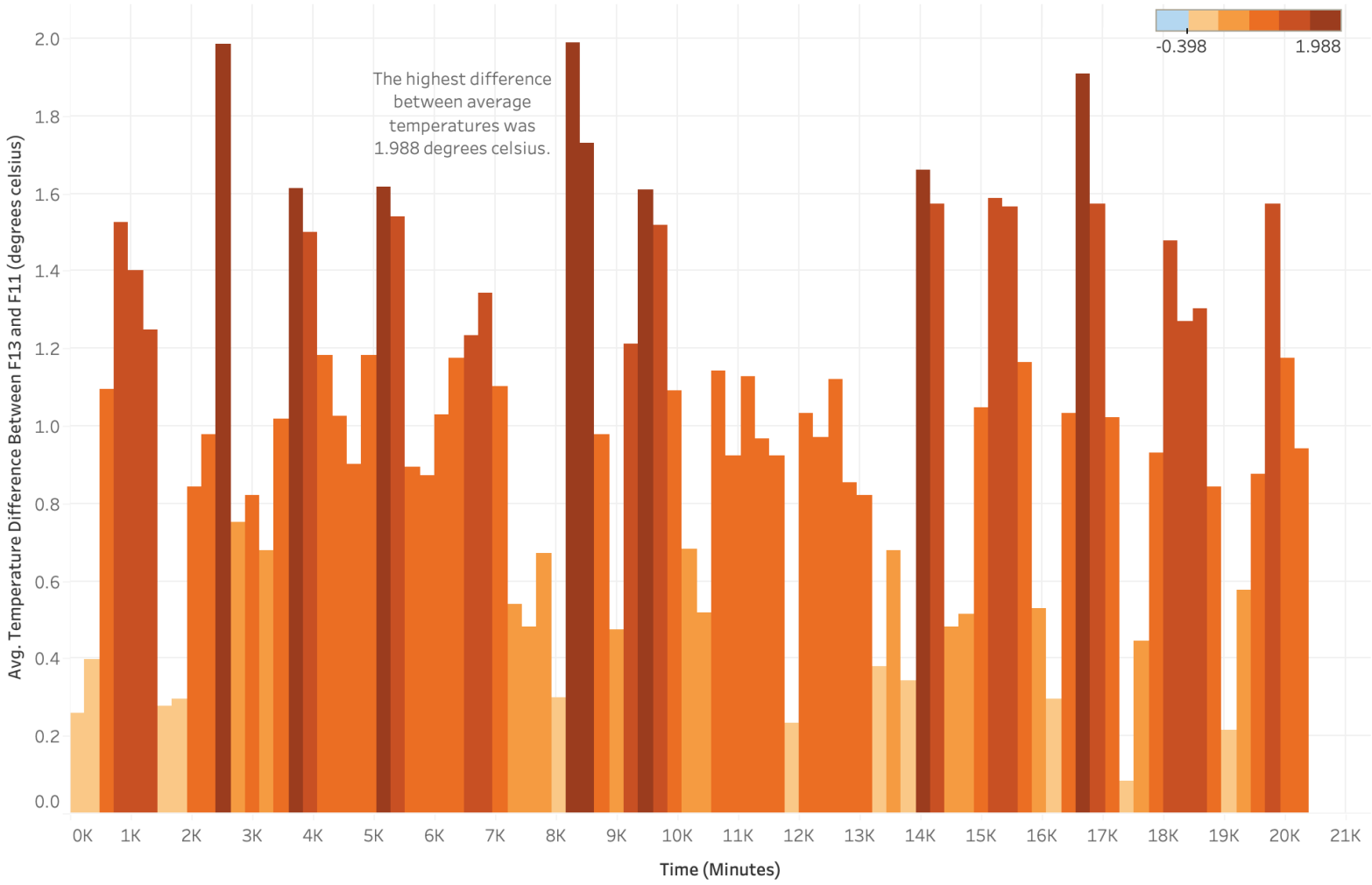

The question that I wanted to answer with my visualization was how greatly do the temperatures of female mice vary. To answer this question, I took the female mice with the lowest and highest average temperatures and saw how their temperatures compared across time. The female mouse with the highest average temperature is f11 and the female mouse with the lowest average temperature is f13. I chose to analyze the difference between the hottest and coldest mice because that would illustrate the variance well.

I chose to use a bar chart to show the trends because it is easy to compare differences across time visually. It is perceptual work because each line is on the same scale. I decided to add color to the visualization to enhance the difference between the negative and positive values. Seeing orange will help the viewer recognize that the hotter mouse was hotter, and seeing blue will help them recognize a lower temperature. When choosing color on the deceptive graph, I chose the same color scale but set the white point to be at 0 so that all of the positive values would have an orange hue. I binned the colors into 6 bins so that the differences would be recognizable. I added commentary on the earnest graph explaining that negative values meant that the hottest mouse was colder than the coldest mouse to help the viewer understand the meaning of the negative values. I also included the greatest temperature differences on both graphs to help readers understand the scale of degrees.

The deceptive visualization is the one on the second page of this paper. The method of deception that I chose to use was binning. In the earnest visualization it shows the temperature difference between the two mice at each minute, and in the deceptive visualization it shows the difference between the average temperatures of the two mice every four hours. Two hours is 240 minutes so instead of comparing minute to minute I compared average values across 240 minutes which greatly decreased the variance. In the deceptive visualization, you can see not only that the hot mouse always has a hotter average temperature than the cold mouse, but also that the highest temperature difference, 1.988 degrees celsius is less than the earnest highest temperature difference of 3.12 degrees celsius.

The deceptive visualization has multiple ethical implications. One of them is on analyzing the health of the mice. If we were trying to tell if the hotter mouse had a disease knowing that the coldest one didn't and we analyzed the deceptive graph, we would find that the hot mouse was always hotter than the cold one and could come to the wrong conclusion that the mouse had a disease. Alternatively, if we came to the conclusion that diseased mice always have a higher average temperature than normal mice by looking at the deceptive graph then analyzed a different mouse using the methods of the earnest graph and saw that a new mouse wasn't always hotter than the colder mouse we could say that the mouse wasn't diseased even if it was.