Short Track Speed Skating

Short Track Speed Skating is a race conducted on a 111m circuit with 4-6 racers competing for the win. There are several high-profile races at the World Championships, World Cup, European Championships, and Olympic Games. This data set looks at 500m races where athletes try to complete 4.5 laps ahead of their competitors. Athletes tend to be crowded together competing for space on the track on every turn leading for chaotic situations and dangerous crashes.

The data set we will be investigating has 5125 rows where each row is a race performance from an athlete at a high profile race. In addition to event and personal information, each row contains the splits and placing of the athlete for each lap of the race. We will be looking at the race as a whole as well as the splits from particular laps. The full data set can be found at short\_track.csv.

Answer the following questions based on the histogram and table found below



|  |  |
| --- | --- |
| Min | 39.94s |
| Q1 | 41.56s |
| Median | 42.19s |
| Mean | 43.63s |
| Q3 | 43.14s |
| Max | 101.82s |
| SD | 5.76s |

1. Characterize the shape of the histogram and approximate where the median would fall?
2. What are the boundaries of where outliers begin?
3. Are there any outliers that fall below the median time?

|  |  |  |  |
| --- | --- | --- | --- |
| Lap | 1 | 3 | 5 |
| Min | 6.52s | 8.00s | 8.24s |
| Q1 | 6.93s | 8.39s | 8.73s |
| Median | 7.09s | 8.52s | 8.90s |
| Mean | 7.15s | 8.95s | 9.55s |
| Q3 | 7.27s | 8.72s | 9.18s |
| Max | 23.87s | 51.87s | 50.68s |
| SD | 0.729s | 2.536s | 3.157s |

1. Watch the video below and think about why the max times might be so large. <https://www.youtube.com/watch?v=fAADWfJO2qM&t=109s>
2. Why might the standard deviation increase in later laps?

Notable Performances:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Time | Lap 1 | Lap 3 | Lap 5 |
| JR Celski  (Former WR) | 39.937s | 6.72s | 8.10s | 8.44s |
| Victor AN  (Olympic Gold) | 41.312s | 7.00s | 8.51s | 8.52s |
| Shaolin Sandor Liu (Fastest Lap 3) | 40.523s | 7.21s | 8.00s | 8.46s |
| Wu Dajing  (2014 World Champ) | 40.526s | 6.72s | 8.23s | 8.64s |

Pick a Notable performance or 2 from above for the following questions:

1. Using z-score, what is the relatively strongest lap of your selected athlete?
2. Where does your selected athlete fall using z-score for their overall time?