VERSION 1.2

DECEMBER 10, 2017

CONTROVERSY SURROUNDING SAMIR SINGH - THE FAITH RUNNER

DO ALLEGATIONS ABOUT HIS 10,000 KM RUN HAVE MERIT?

WRITTEN BY: SCAM WATCHEROO

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CHANGE LOG

- December 10, 2017, Version 1.2 – Fixed spelling mistakes

CONTROVERY SURROUNDING SAMIR SINGH – THE FAITH RUNNER

OVERVIEW

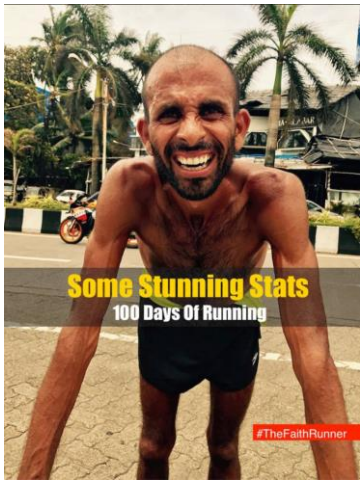

FIGURE 1 - PICTURE OF SAMIR SINGH FROM HIS FACEBOOK PAGE

There have been recent allegations in the running community about Samir Singh's 10,000 km run he attempted from April 29th to August 6th 2017. Samir goes by the nickname of the "Faith Runner" and impressed many people in India with his efforts that has earned him awards. He attempted to run on average 100 km a day for 100 days to complete 10,000 km.

Since that time, several groups in the running community have raised concern about whether all of these runs were done legitimately or whether there was outside assistance. This report looks into whether these allegations have any merit or if Samir's evidence can silence the critics.

A large portion of Samir's Garmin and Strava data files recording his runs have been obtained. This report will look at these files to provide an answer to the allegations.

MEDIA COVERAGE OF SAMIR SINGH

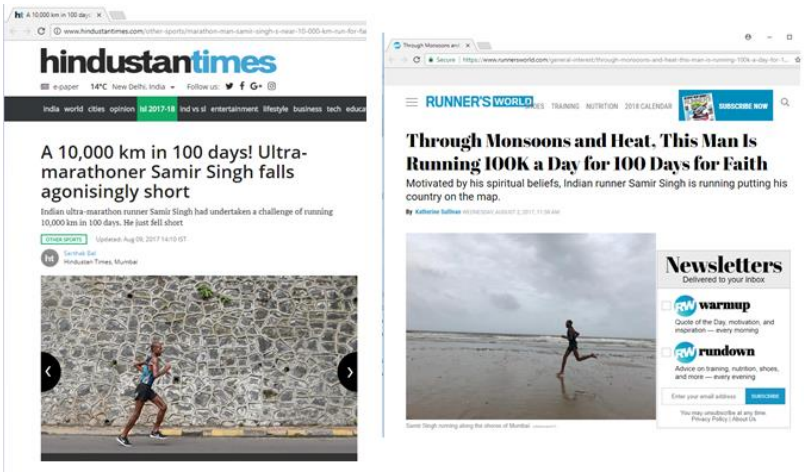

FIGURE 2 - MEDIA COVERAGE OF SAMIR SINGH ON HINDUSTAN TIMES AND RUNNER'S WORLD

Links:

http://www.hindustantimes.com/other-sports/marathon-man-samir-singh-s-near-10-000-km-run-for-faith/story-3S6ILG1l9r16EvqyKeTFWI.html

https://www.runnersworld.com/general-interest/through-monsoons-and-heat-this-man-is-running-100k-a-day-for-100-days-for-faith

FIGURE 3 - SAMIR SINGH RECEIVING AN AWARD AT INDIAN SPORTS HONOURS

Link: https://www.facebook.com/groups/757261394392607/permalink/1476582089127197/

Samir Singh received wide spread media coverage for his 10,000 km record run attempt. A few examples are shown in Figure 2 and Figure 3. You can also find many more news articles covering his attempt on Google.

Below is a link to Samir's official "The Faith Runner" Facebook page:

https://www.facebook.com/TheFaithRunner/

SUMMARY OF THE AVAILABLE DATA FILES

TABLE 1 - SUMMARY OF DISTANCES COVERED IN EACH RUN

File Name	URL	Run Duration (hours)	Run Distance (miles)	Average Speed (MPH)
2016-08-22T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/990098781	10.07	32.88	3.27
2017-04-04T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/990098588	2.19	14.12	6.44
2017-04-08T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/990098643	6.97	32.77	4.70
2017-04-12T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/990098672	6.36	28.25	4.44
2017-04-17T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/990098914	14.02	62.30	4.44
2017-04-21T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/990098925	15.85	62.56	3.95
2017-04-23T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/990098875	13.89	62.32	4.49
2017-04-25T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/990098795	14.48	62.45	4.31
2017-04-29T21_47_14Z - Samir Singh	N/A	16.47	63.29	3.84
2017-04-30T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/986954051	16.28	64.02	3.93
2017-05-01T22_11_39Z - Samir Singh	N/A	9.82	37.56	3.83
2017-05-02T10_20_40Z - Samir Singh	N/A	6.73	28.02	4.17
2017-05-02T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/986954027	17.19	62.19	3.62
2017-05-04T02_28_00Z - Samir Singh	N/A	14.44	57.96	4.01
2017-05-05T00_25_23Z - Samir Singh	N/A	16.56	51.26	3.10
2017-05-05T23_22_25Z - Samir Singh	N/A	17.27	56.83	3.29

2017-05-06T23_25_32Z - Samir Singh	N/A	16.47	45.44	2.76
2017-05-07T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/986954019	16.33	61.78	3.78
2017-05-08T23_22_09Z - Samir Singh	N/A	16.90	61.34	3.63
2017-05-09T23_02_39Z - Samir Singh	N/A	17.34	61.88	3.57
2017-05-10T23_49_35Z - Samir Singh	N/A	7.59	37.58	4.95
2017-05-11T10_52_06Z - Samir Singh	N/A	5.84	25.15	4.30
2017-05-11T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/986959840	15.68	62.77	4.00
2017-05-12T22_26_56Z - Samir Singh	N/A	8.94	33.12	3.70
2017-05-13T10_49_20Z - Samir Singh	N/A	5.45	28.50	5.23
2017-05-16T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/992511347	19.37	61.38	3.17
2017-05-17T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/994519748	18.66	61.22	3.28
2017-05-26T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/1008294196	15.83	60.52	3.82
2017-05-27T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/1009940907	15.30	62.11	4.06
2017-06-03T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/1021115492	16.29	60.66	3.72
2017-06-07T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/1026920333	15.95	61.89	3.88
2017-06-15T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/1039592305	16.66	59.93	3.60
2017-06-20T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/1047424818	16.31	61.53	3.77
2017-07-07T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/1073688639	16.97	59.92	3.53
2017-07-26T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/1104254489	15.92	59.07	3.71

2017-07-29T22_00_00Z - Samir Running Coach	https://www.strava.com/activities/1109040423	15.40	60.73	3.94

The above Table 1 summarizes the data files that have been obtained from Samir Singh's Garmin and Strava accounts. It lists 36 files with the first 8 files being recordings of Samir's runs from before his 10,000 km record attempt that started on 2017-04-29. These first 8 data files from 2016-08-22 to 2017-04-25 can be used as a benchmark of what to expect from Samir running. The remaining 28 files from 2017-04-29 to 2017-07-29 represent a sizable portion of his 10,000 km run and can be analyzed to see if they support or refute the allegations of Samir's critics.

From looking at the run duration, distance, and average speed columns of the summary table, there does not appear to be anything of concern. The durations, distances, and average speeds are all plausible for a very elite ultra-runner and would appear to not support the allegations of the critics against Samir.

Let's look at these data files in more detail and plot the speed, cadence, and stride length from them to see if they further support Samir's runs as being legitimate.

USING SAMIR'S OLD 2016-08-02 RUN AS A REFERENCE

Before we plot the speed and cadence data from Samir's 10,000 km run in 2017, let's plot his 32.88 mile run from 2016-08-02. This run was recorded well before the current year's event that has been questioned and provides us with a basis of what Samir's run data typically looks like. We can use it as a reference when looking at Samir's 10,000 km run to see if things look similar or if there are things that stand out.

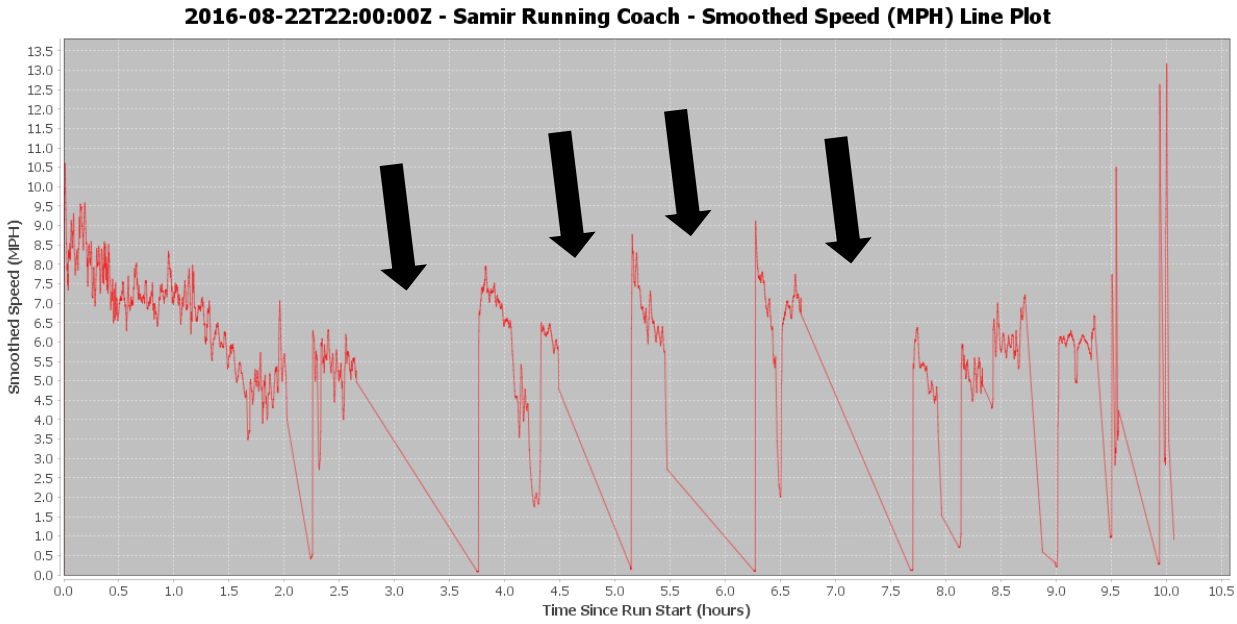

FIGURE 4 - SPEED LINE PLOT OF SAMIR'S 2016-08-22 REFERENCE RUN

In Figure 4, we have a line plot of Samir's speed. We can see that Samir generally runs at speeds below 10 mph except for the short spikes when finishing the run. We can also see Samir's speed drop when he takes breaks during as shown by the black arrows. This is a legitimate speed plot for a runner and there is nothing odd to point out.

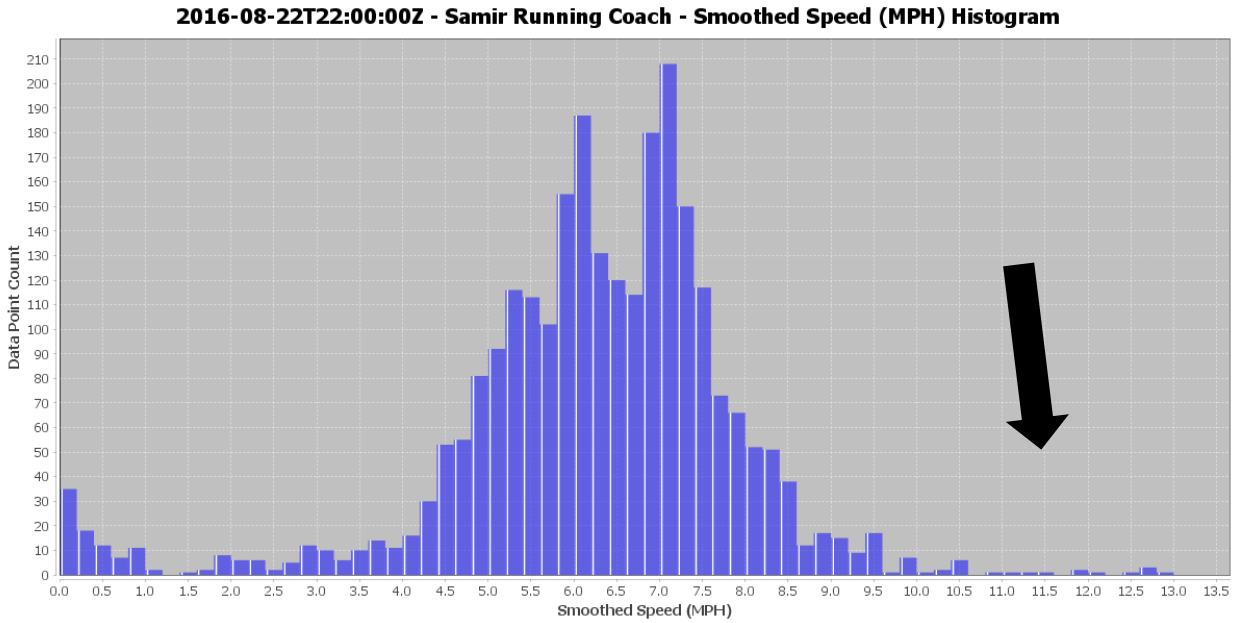

FIGURE 5 - SPEED HISTOGRAM OF SAMIR'S 2016-08-22 REFERENCE RUN

In Figure 5, we place Samir's speed data into a histogram so that we can count the number of points in the data files at each speed. This provides a very useful breakdown so that we can easily see how much time is spent at which speeds, relatively speaking. We can see that Samir spends most of his time running between 4-9 mph, which is realistic. Notice that there are very few data points above 10 mph as indicated by the black arrow. This is consistent with the efforts that one expects from an ultra-runner covering a long distance.

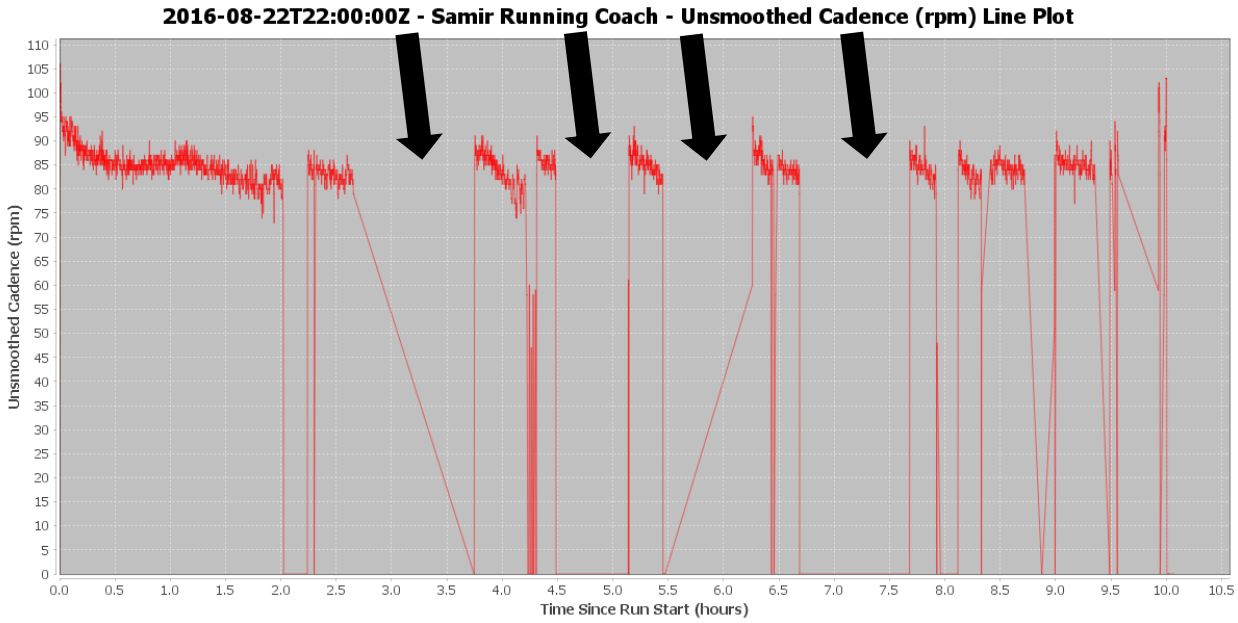

FIGURE 6 - CADENCE LINE PLOT OF SAMIR'S 2016-08-22 REFERENCE RUN

In Figure 6, we plot Samir's cadence in rpm (number of steps taken for one leg each minute). His cadence is generally between 80-95 rpm, which is entirely reasonable. We can also see that Samir's cadence drops to zero when he takes his rest breaks as indicated by the same black arrows that we saw in Figure 4 - Speed Line Plot of Samir's 2016-08-22 Reference Run. Samir's cadence data matches up with his speed data here.

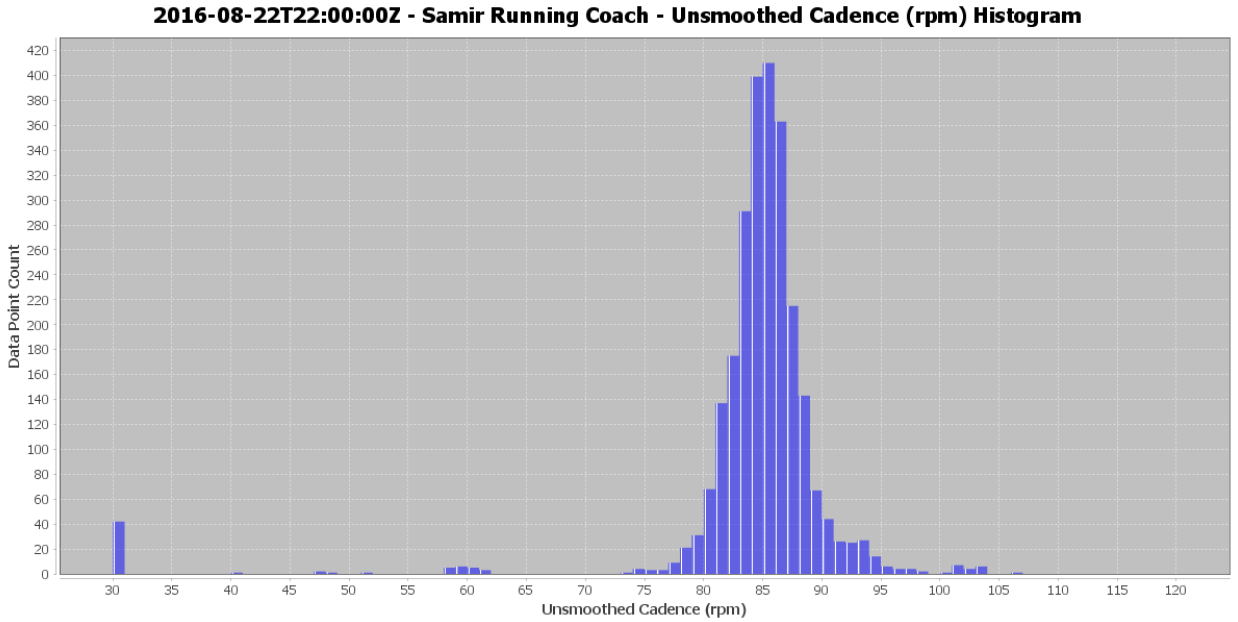

FIGURE 7 - CADENCE HISTOGRAM OF SAMIR'S 2016-08-22 REFERENCE RUN

In Figure 7 we have Samir's cadence data placed into a histogram to count the number of data points and it confirms that he did indeed spent most of the run with a cadence of 80-95 rpm and did very little walking.

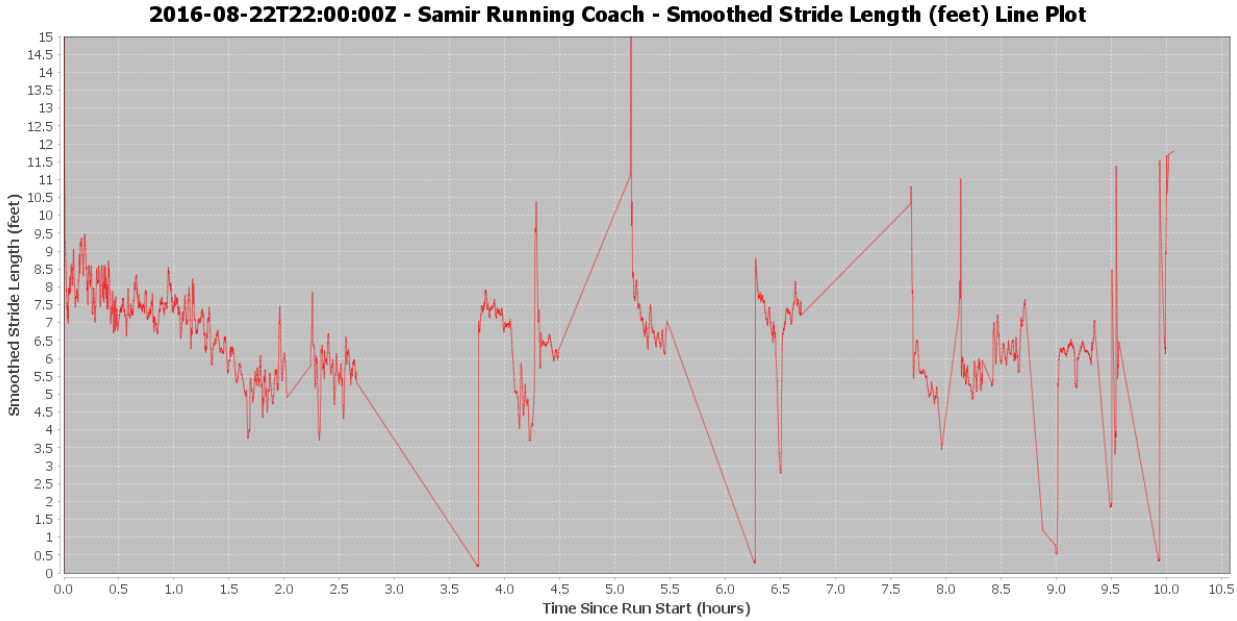

FIGURE 8 - STRIDE LENGTH LINE PLOT OF SAMIR'S 2016-08-22 REFERENCE RUN

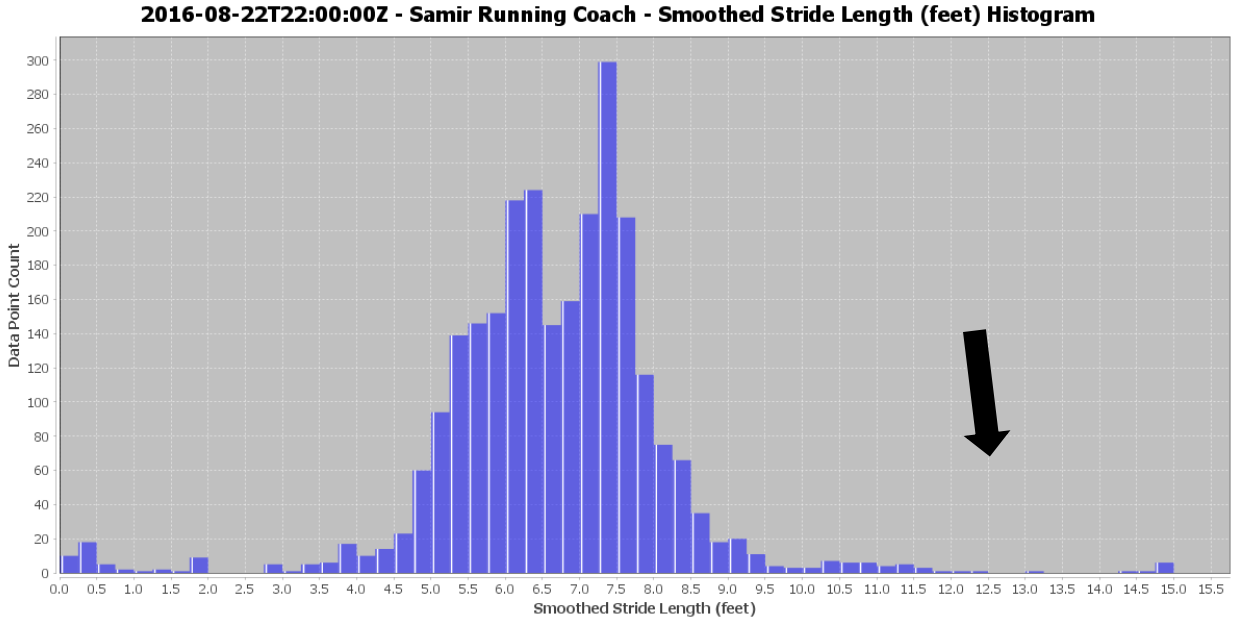

FIGURE 9 - STRIDE LENGTH HISTOGRAM OF SAMIR'S 2016-08-22 REFERENCE RUN

By combining the speed and cadence plots we can find Samir's stride lengths, the distance from foot to foot striking the ground, when he is running. Figure 8 and Figure 9 show the stride length data. We can Samir's stride lengths are typically between 4.5 – 9.5 feet, which are realistic figures for an endurance

runner. We see that there is a small amount of stride lengths above that range, which is expected due to either very short bursts of speed or from noise in the data. There are very few data points above a stride length of 12 feet (indicated by the black arrow) that would indicate the use of outside assistance. It is a typical set of stride length data for a legitimate long run.

Now that we have analyzed Samir's older 2016-08-22 data and see that it is a legitimate recording of a long run, we can use it as reference of what to expect when we review Samir's 2017 data for his 10,000 km run attempt. There other 7 data files from 2017-04-04 to 2017-04-25 of Samir running before the main event. Let's also analyze his 2017-04-25 run to establish another point of reference of what to expect when reviewing the main data.

USING SAMIR'S PRE-EVENT 2017-04-25 RUN AS A REFERENCE

From the data we have, it is readily apparent that Samir was carrying out very long runs even before his 10,000 km record attempt. The 2017-04-25 run data we have is the last one available before Samir began his record attempt a few days later on 2017-04-29 (April 29th, 2017). The 2017-04-25 run covered 62.45 miles over 14.48 hours. The same types of graphs we did for his previous reference run have been created below:

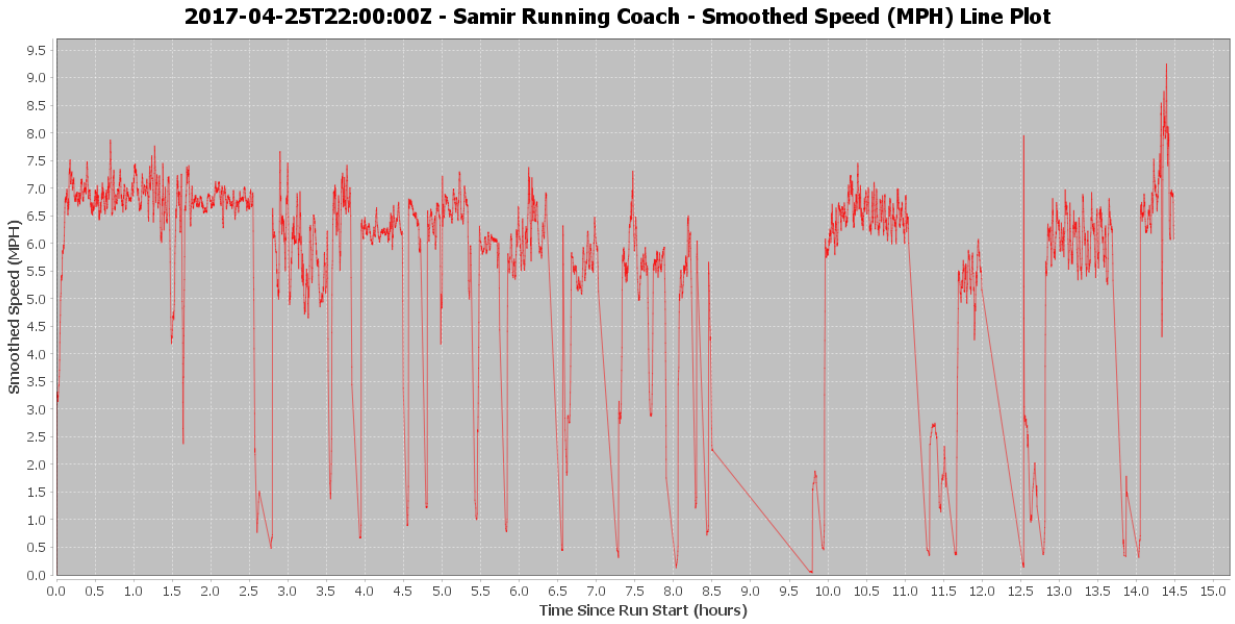

FIGURE 10 - SPEED LINE PLOT FOR SAMIR'S 2017-04-25 REFERENCE RUN

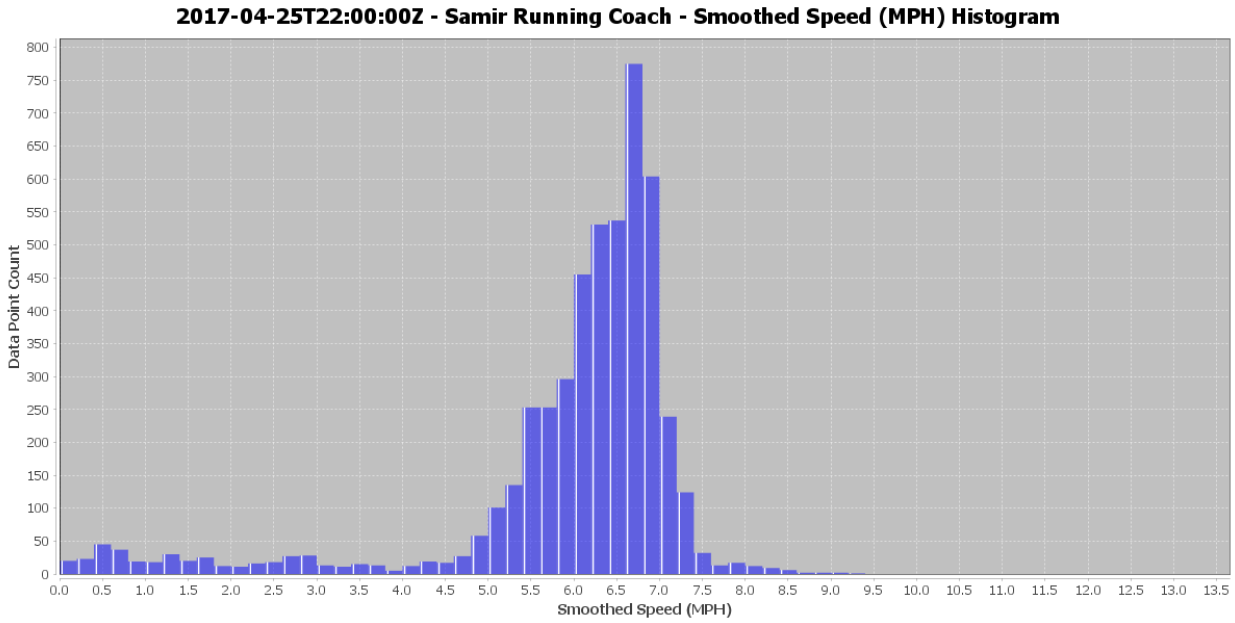

FIGURE 11 - SPEED HISTOGRAM FOR SAMIR'S 2017-04-25 REFERENCE RUN

Figure 10 and Figure 11 show Samir's speed plot and histogram. We can see that his speed is generally below 7.5 mph and that he took a fair number of rest/walk periods during this long run where his speed dropped significantly and then went back up. Nothing unusual, many ultra-runners alternate between running and walking.

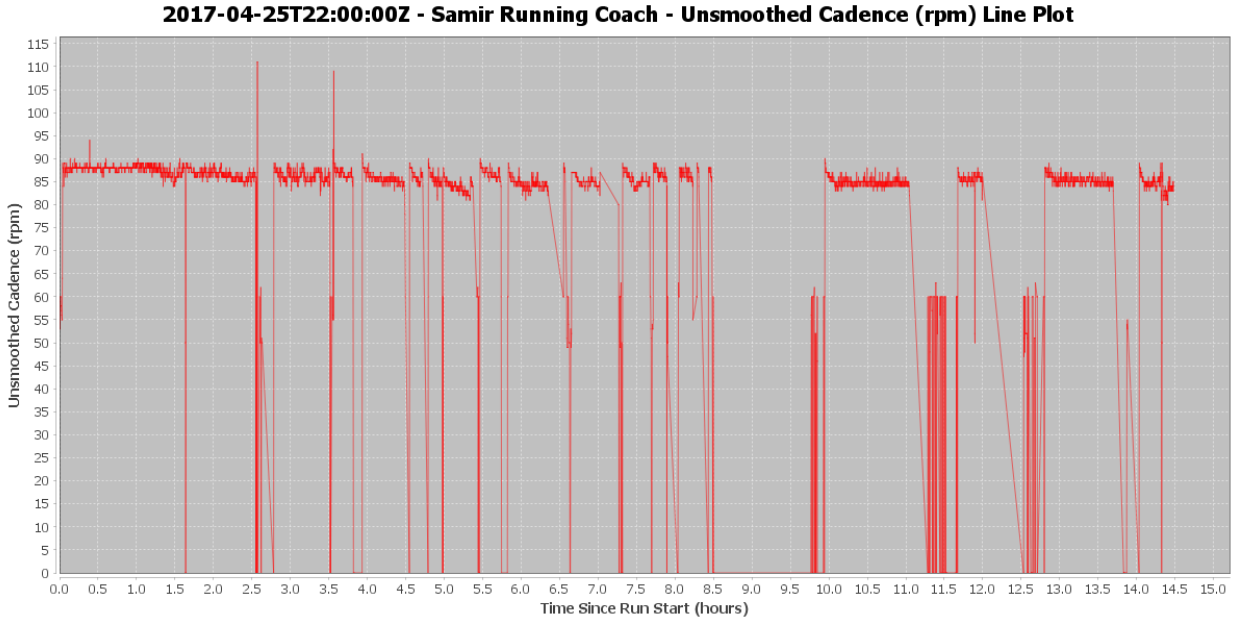

FIGURE 12 - CADENCE LINE PLOT FOR SAMIR'S 2017-04-25 REFERENCE RUN

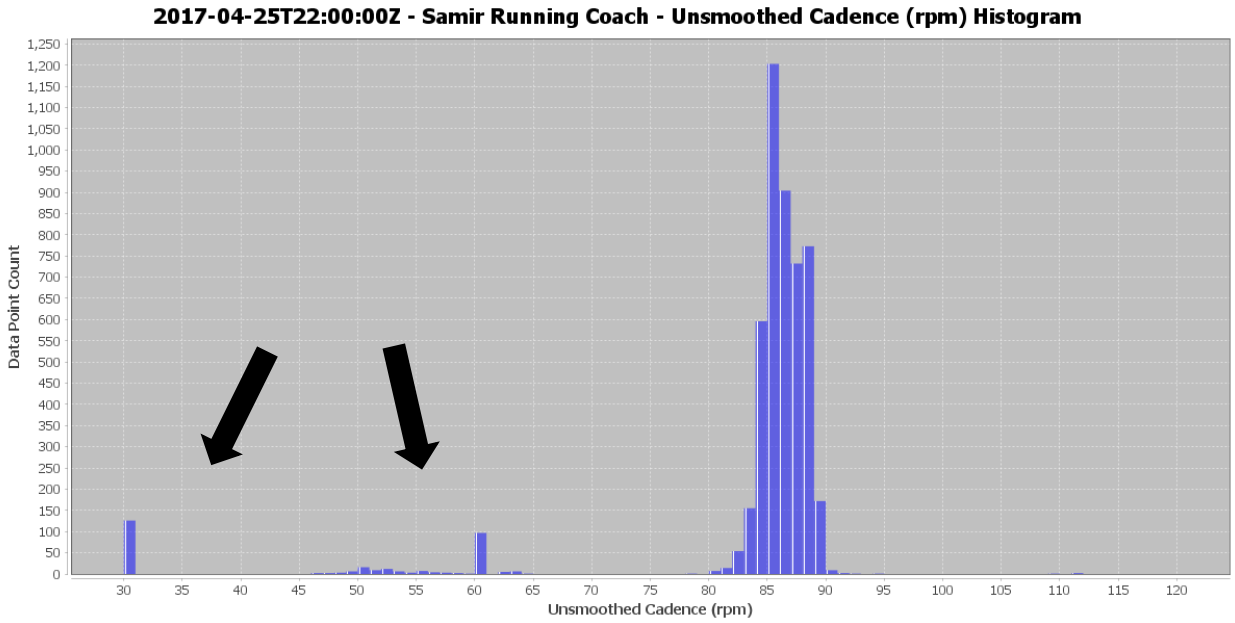

FIGURE 13 - CADENCE HISTOGRAM FOR SAMIR'S 2017-04-25 REFERENCE RUN

In Figure 12 and Figure 13 we can see that Samir's cadence for this run is generally between 80-90 rpm. The black arrows in Figure 13 point to the cadences representing his rest and walking cadences. The left most bar above 30 rpm represents all those cadences that are from 0-30 rpm. The drops in cadence in Figure 12 line up with the drops in speed in the speed line plot and there is nothing unusual.

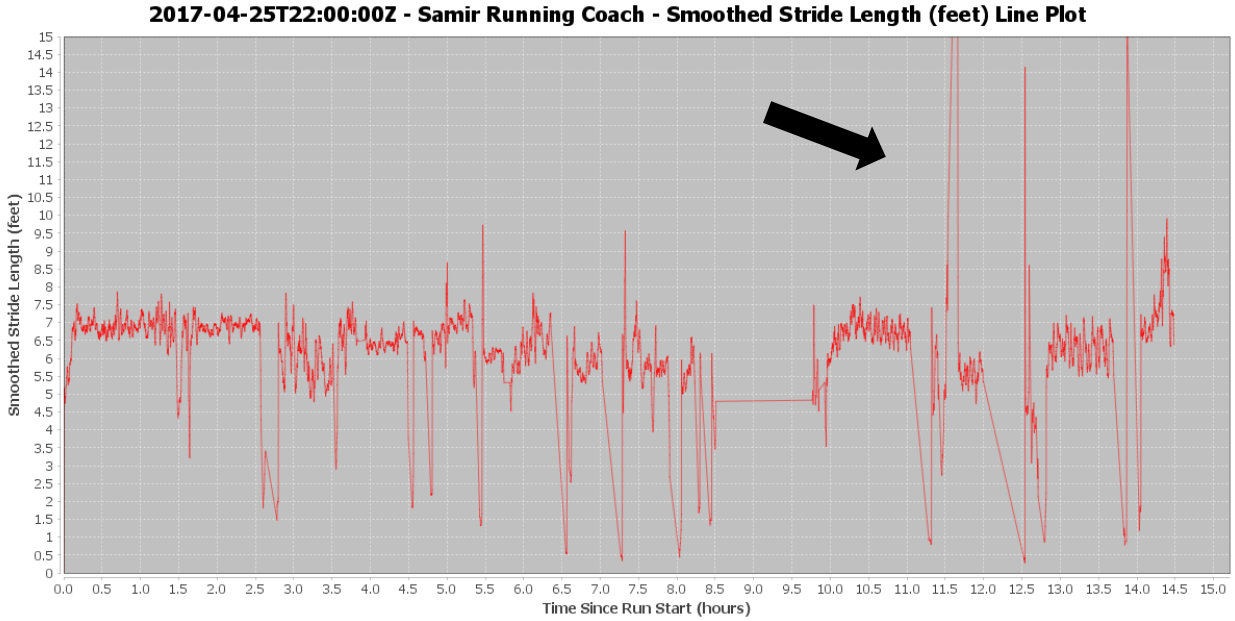

FIGURE 14 - STRIDE LENGTH LINE PLOT FOR SAMIR'S 2017-04-25 REFERENCE RUN

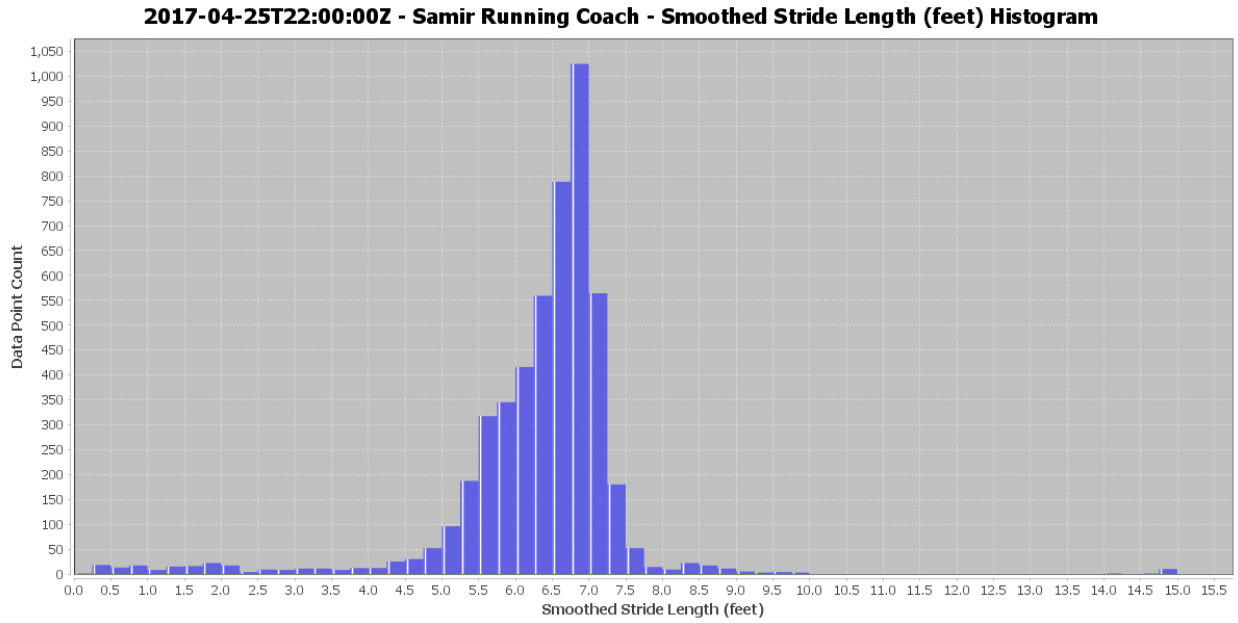

FIGURE 15 - STRIDE LENGTH HISTOGRAM FOR SAMIR'S 2017-04-25 REFERENCE RUN

In the stride length line plot in Figure 14, there are 3 momentary spikes indicated by the black arrow. This is not unusual. Very short spikes like this that occur for only 1 or 2 data points at a time can happen when a runner starts off after resting and the running watch briefly starts recording speed before starting to record cadence. In the stride length histogram of Figure 15 we can see that most of Samir's steps are between 4.5-8.0 feet for this run. The largest stride lengths are shorter here than his 2016-08-22 run but that is to be expected because this run is much longer in duration.

From these graphs of Samir's speed, cadence, and stride length for his 2017-04-25 pre-event run, we can see that there is nothing out of the ordinary that we would not expect to see and all the data looks legitimate. For brevity, the graphs from Samir's other pre-event runs from 2016-08-22 to 2017-04-25 are not shown here but they are all available on the Google Drive folder accompanying this document and contain more detail:

https://drive.google.com/drive/folders/1gHxLMTenHPsYXajiTTKwXFmCVsNKqgre

Now that we have established what Samir's run data typically looks like, let's begin analyzing his 10,000 km run event data by performing the same analysis.

ANALYSIS OF SAMIR'S FIRST DAY OF HIS 10,000 KM RECORD ATTEMPT: 2017-04-29

We will begin by looking Samir's first day of his 10,000 km record attempt on 2017-04-29. This run covered 63.29 miles over 16.47 hours. Does this run data support or refute the allegations of Samir's critics? Let's take a look at the speed plots:

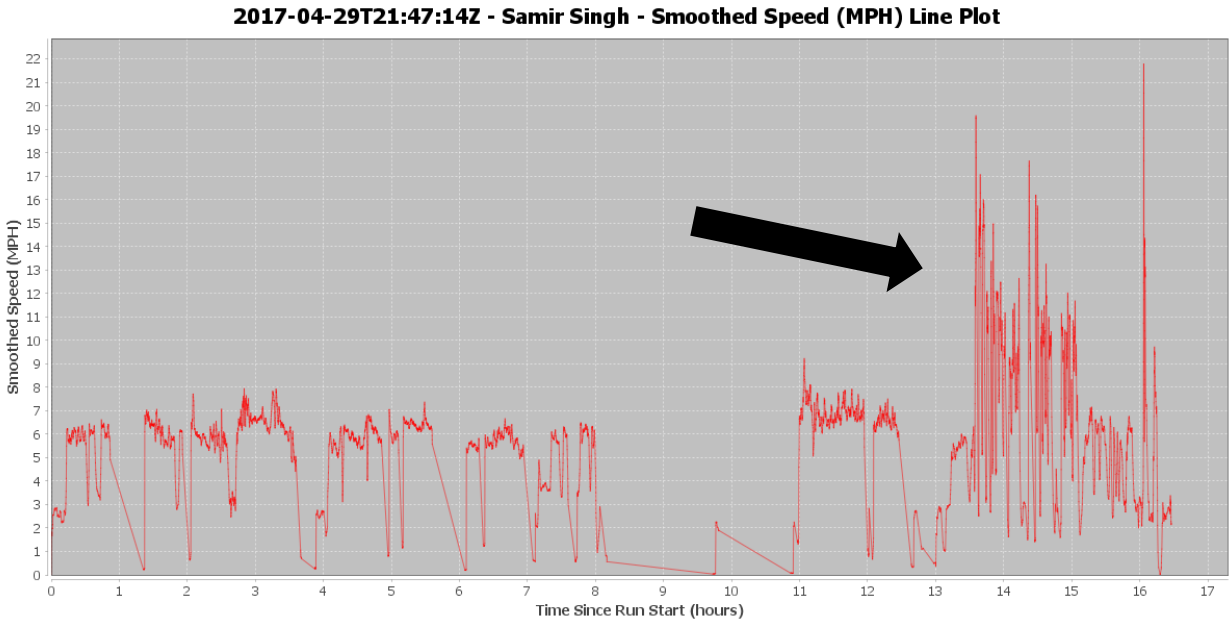

FIGURE 16 – SPEED LINE PLOT OF SAMIR'S 2017-04-29 RUN (RECORD ATTEMPT)

In Figure 16, we can see that Samir's running speeds look normal from the start up to hour 13. His speeds during this time are generally below 8 mph and show him at running speed and walking/resting every so often. This is consistent with what we saw in Samir's pre-event reference runs.

However, after hour 13, something really odd happens. Samir speed suddenly starts to oscillate between 9 – 19 mph for a period spanning over an hour and then a sudden spike to over 20 mph near the end of his run (see black arrow). These are not plausible running speeds that can occur for such a long run and for such a long time. Do the allegations of his critics have some merit? Let's take a look at the rest of Samir's graphs for this run before coming to a conclusion. Perhaps there is something in the remaining data that could provide an explanation.

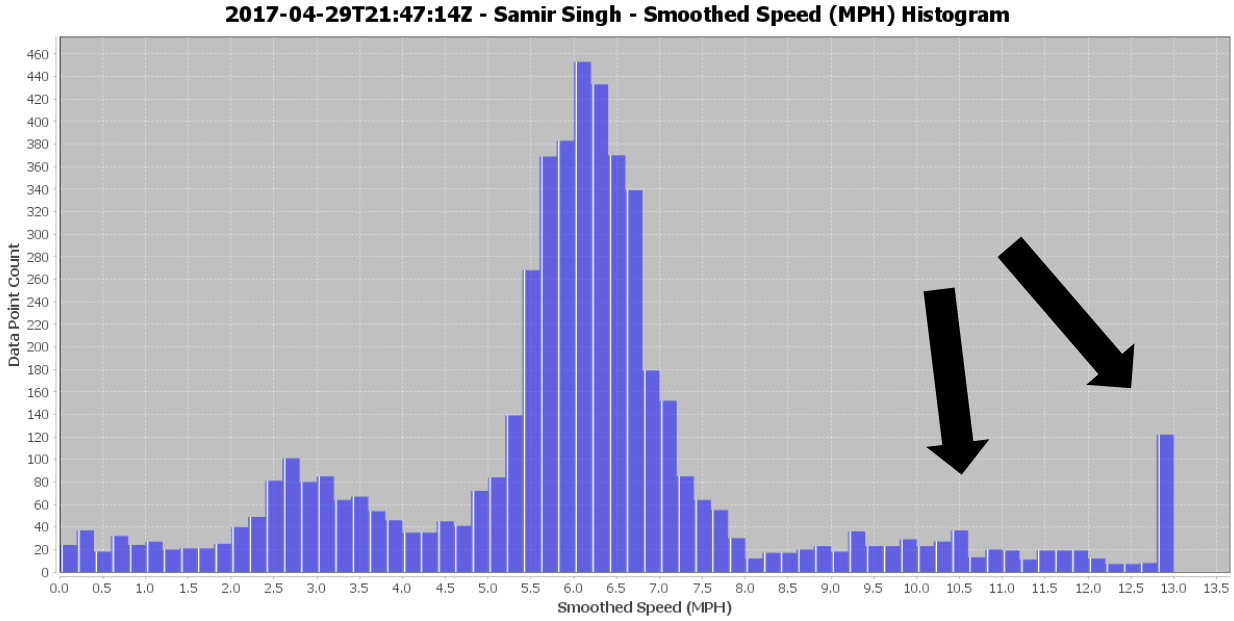

FIGURE 17 – SPEED HISTOGRAM OF SAMIR'S 2017-04-29 RUN (RECORD ATTEMPT)

In Figure 17, we plot Samir's speed data in a histogram like we did for his pre-event reference runs so we can count the number of data points for each speed. The black arrows point to the speed counts above 10.5 mph that are suspicious because they should either not exist or have very few values, such as what we saw in Samir's reference runs.

Samir's speed histogram for his first day is also extremely suspicious because I have previously analyzed run data from Pete Kostelnick's successful Run Across America record and using that as a reference, we can see that there should be very few data points above a speed of 10.5 mph for an ultra-runner running such long distances:

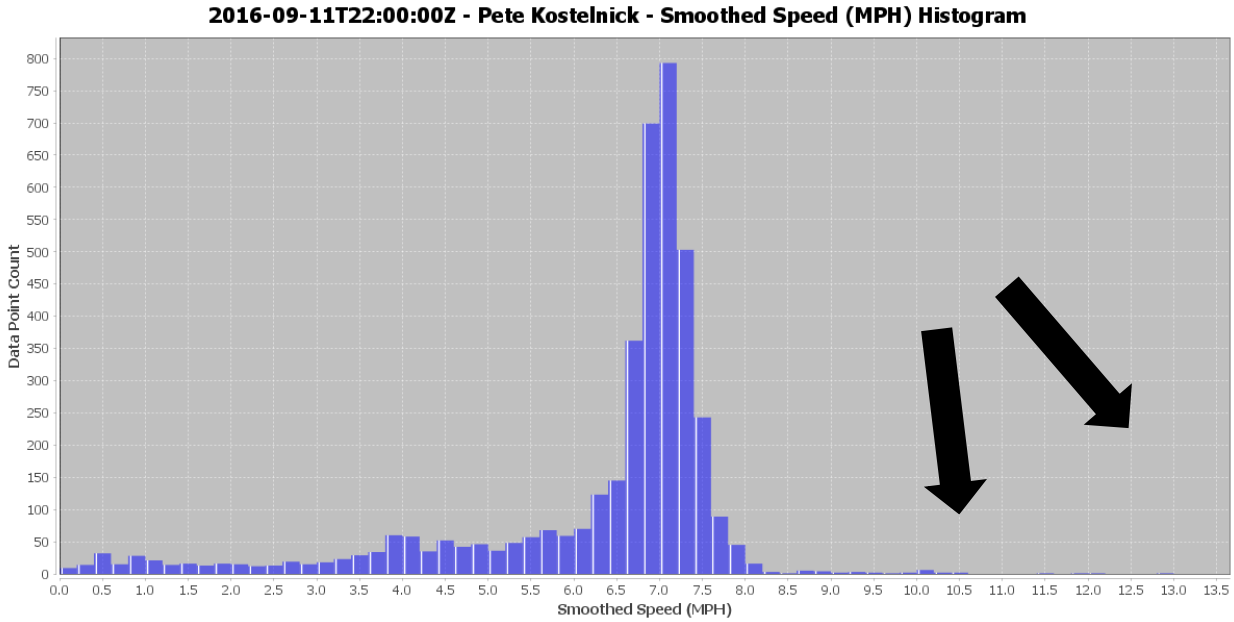

FIGURE 18 - EXAMPLE SPEED HISTOGRAM 1 FROM PETE KOSTELNICK'S RUN ACROSS AMERICA

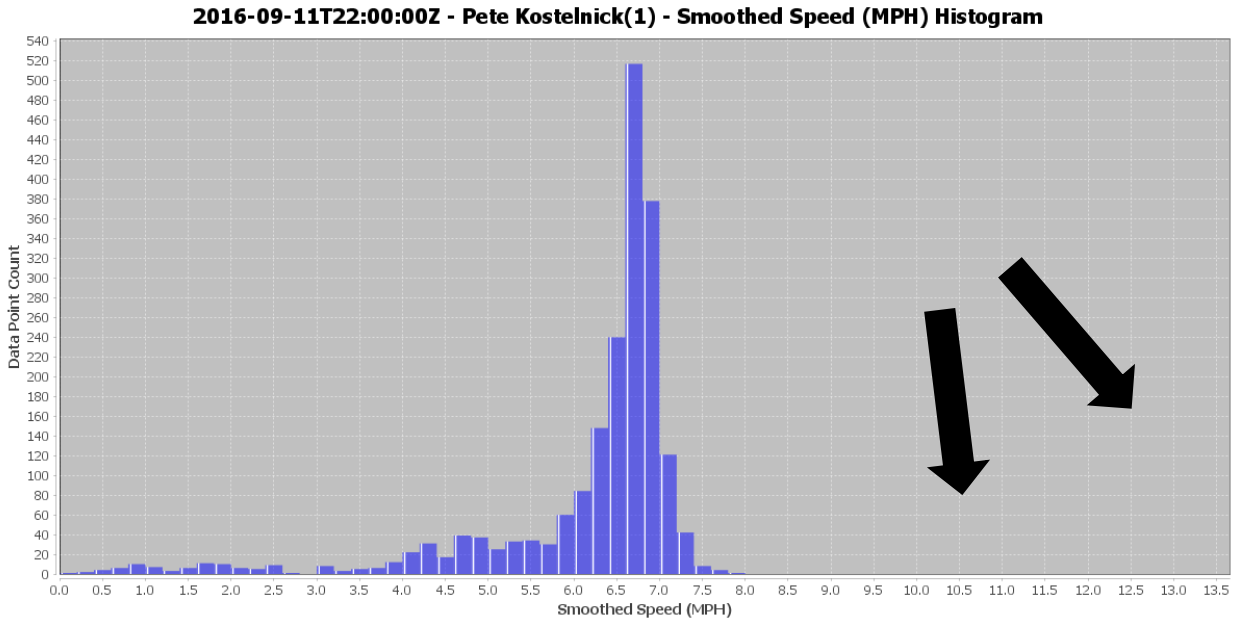

FIGURE 19 - EXAMPLE SPEED HISTOGRAM 2 FROM PETE KOSTELNICK'S RUN ACROSS AMERICA

The above two example speed histograms from Pete Kostelnick's run across America shows what you would typically expect from someone running very long distances. The black arrows point to speed counts that should be empty or have very little data associated with them.

There are many more examples of data from other runners to compare with at this Google Drive location: https://drive.google.com/drive/folders/0B1F3plcU7fEmT2VPcWlEQnNtUVk

Could Samir's cadence and stride length data help to show that perhaps something went wrong capturing his speed data? Below, we see his cadence line plot:

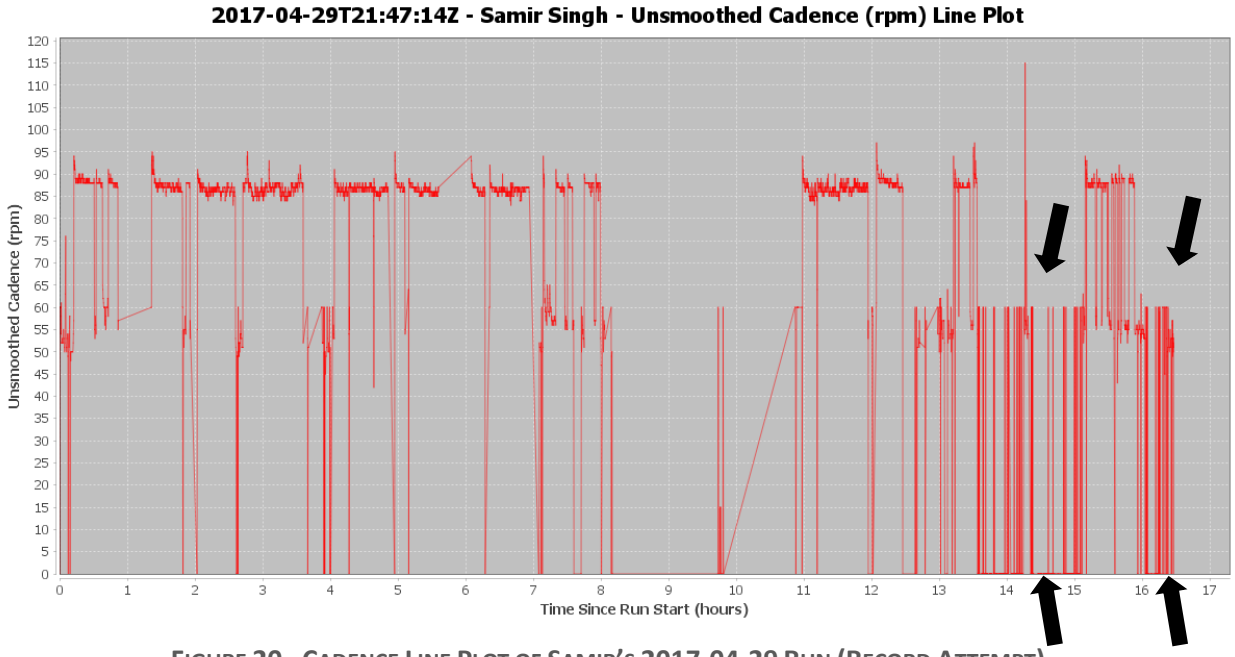

FIGURE 20 - CADENCE LINE PLOT OF SAMIR'S 2017-04-29 RUN (RECORD ATTEMPT)

From Figure 20, Samir's cadence data looks normal up to hour 13 with values that oscillate from 85-95 rpm when running and dropping down to near zero when resting. However, above hour 13 we see something extremely odd, there are many oscillations from 0 to 60 rpm as indicated by the black arrows. The cadence data shows Samir spent much of that time at a resting cadence near zero but frequently spiked back up to 60 rpm before dropping down to a near zero cadence again. This is unusual and I have not previously seen a cadence signature like this before.

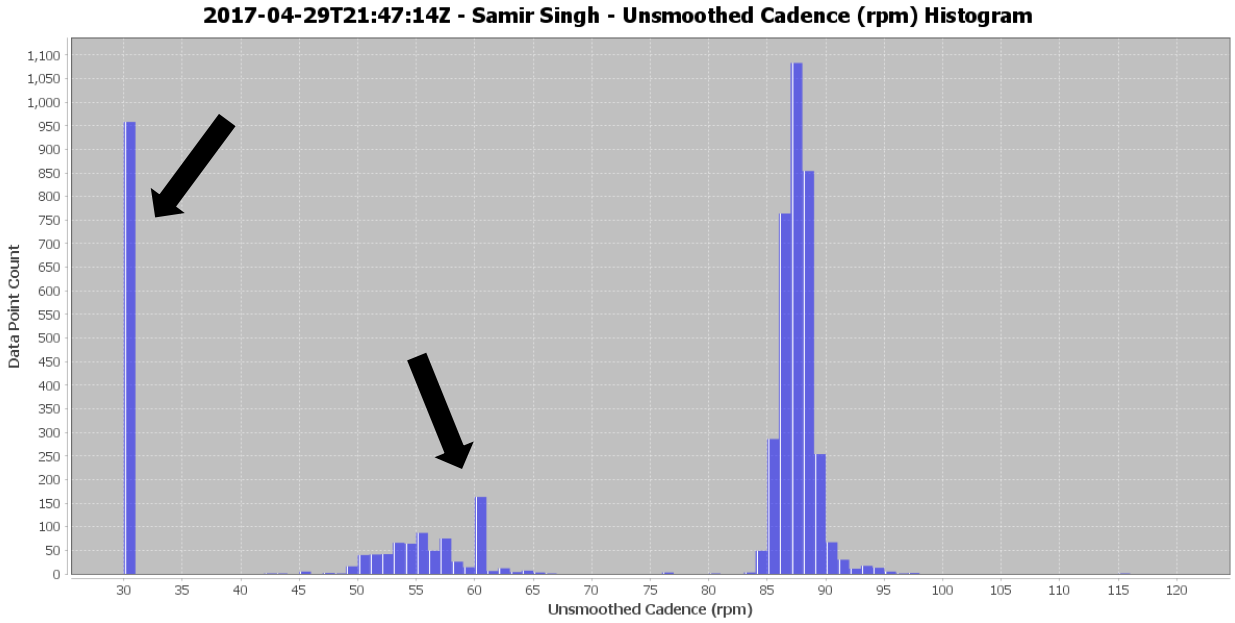

FIGURE 21 - CADENCE HISTOGRAM OF SAMIR'S 2017-04-29 RUN (RECORD ATTEMPT)

In Figure 21, we place Samir's cadence data into a histogram and we can see his typical run cadences in the 85-95 rpm cluster. However, we also have a large bar of data above the 30 rpm mark (left arrow) that represents all the cadences from 0-30 rpm. This is unusual because Samir's reference runs don't have such a large bar of data from 0-30 rpm indicating a very large amount of time spent resting. The right arrow in the histogram points to the unusual 60 rpm cadences we saw in Samir's line plot.

Let's plot the stride length graphs for Samir's run to try to make sense of what is going on:

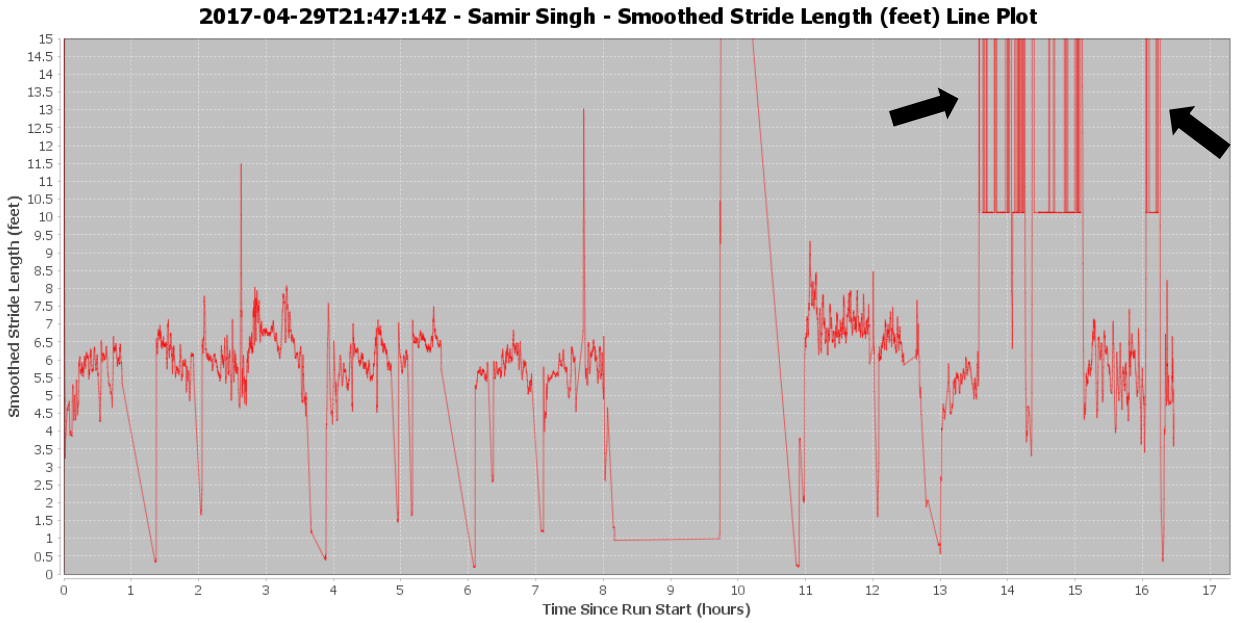

FIGURE 22 - STRIDE LENGTH LINE PLOT OF SAMIR'S 2017-04-29 RUN (RECORD ATTEMPT)

In Figure 22 we have Samir's stride length line plot and things look normal up to hour 13 with the odd momentary spike in stride length at hour 2.6, 7.7, and at hour 10. These 3 spikes are nothing unusual because they only occur for single data points and likely came from noise or starting to run again from a stop.

However, the stride lengths between the two black arrows are very unusual. They actually represent infinite stride length because Samir was travelling at speed while the cadence data show his legs were not moving. This can further be seen in the stride length histogram:

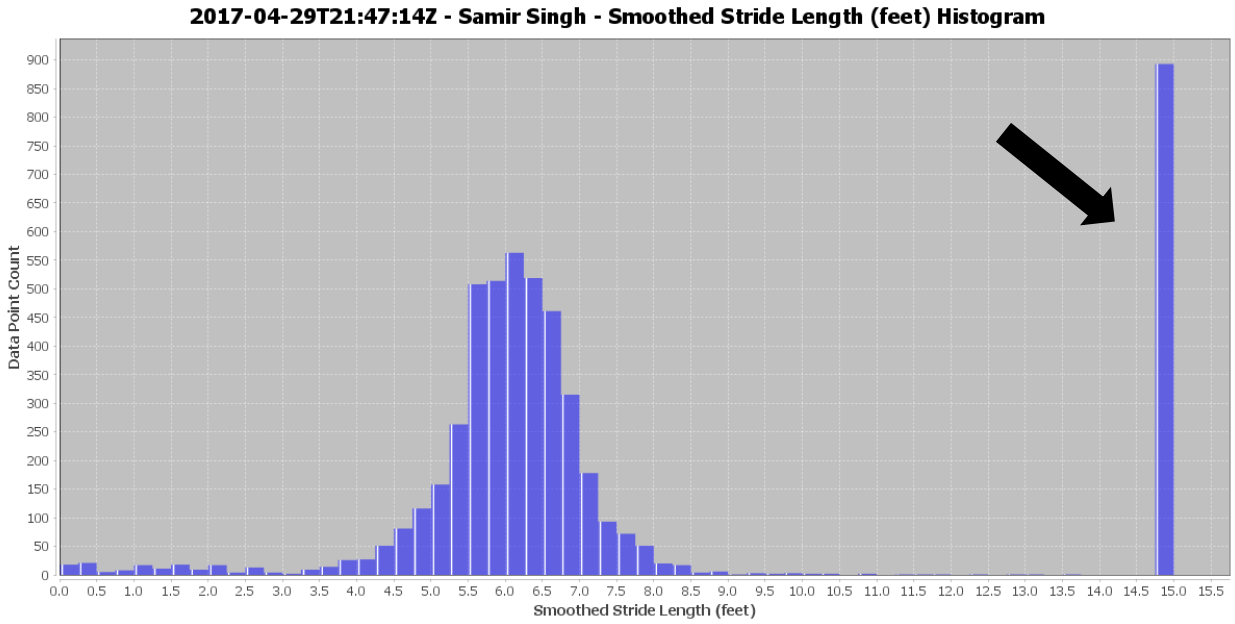

FIGURE 23 - STRIDE LENGTH HISTOGRAM OF SAMIR'S 2017-04-29 RUN (RECORD ATTEMPT)

In Figure 23, we see Samir's normal stride lengths clustered between 4 – 8.5 feet. However, we also have the very large bar of data on the right side above the 15 feet mark (see black arrow). This large bar of data represents all the stride lengths from 15 feet to infinity, which should either not exist at all or have very few data points. It is not plausible for an ultra-runner to have such a huge number of super-human steps.

What can we conclude from looking at Samir's first day of data from his 10,000 km record attempt compared with his reference runs? It would appear that the allegations of his critics do indeed have some merit. But can we rule out the possibility that this was a one-day fluke? After all, this was a run over 100 days. Let's look at another of Samir's run from his record attempt to see if we can rule out that possibility.

ANALYSIS OF SAMIR'S FIRST RUN ON 2017-05-02 (RECORD ATTEMPT)

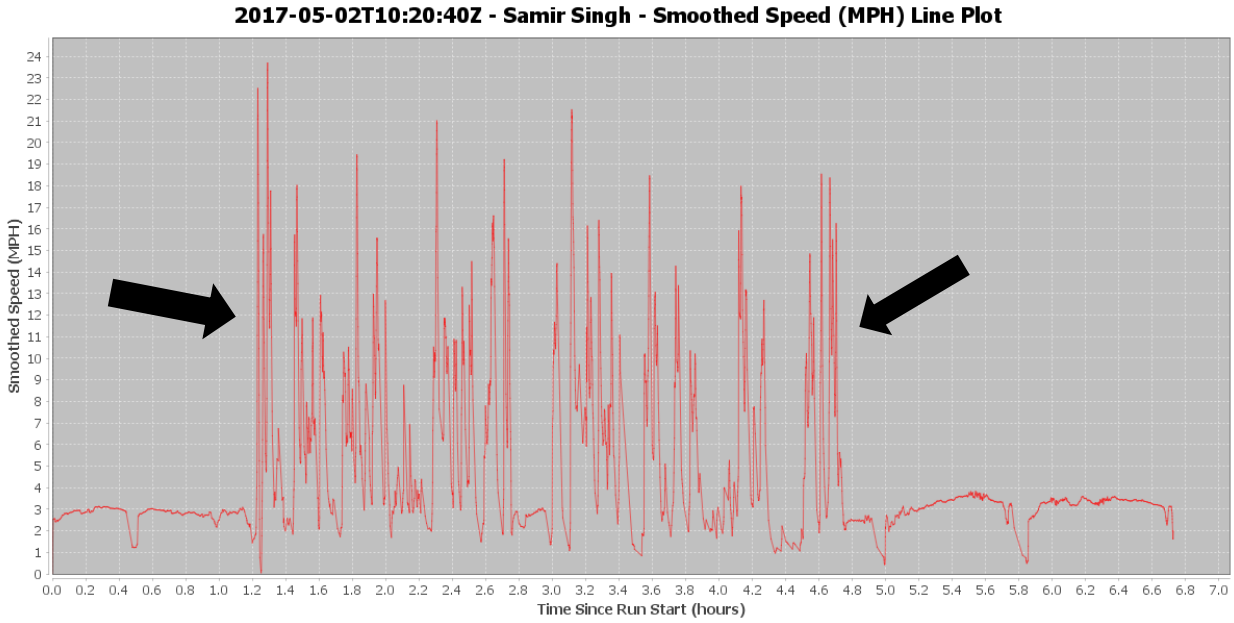

FIGURE 24 - SPEED LINE PLOT OF SAMIR'S 2017-05-02 RUN (RECORD ATTEMPT)

Looking at the speed line plot for Samir's first 2017-05-02 run, we once again notice something very unusual with his data. The 3+ hour section in between the black arrows highlight very high speeds for a runner on an endurance run that are not plausible. There is a large amount of time where Samir's speed oscillates between 10 – 20 mph.

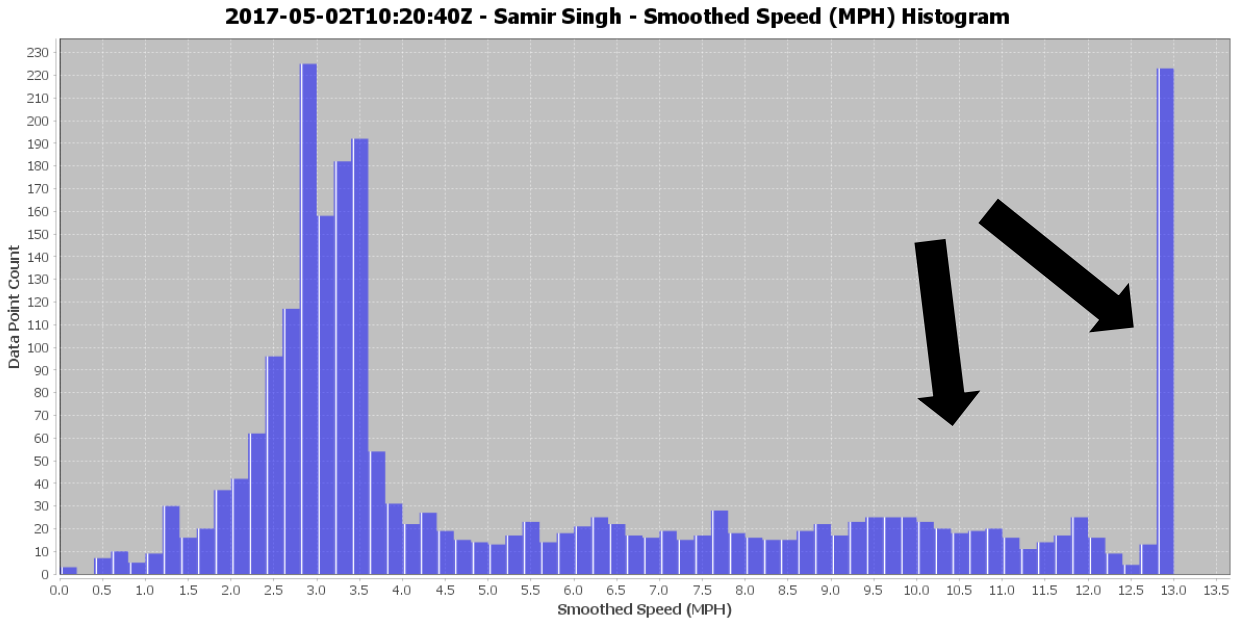

FIGURE 25 - SPEED HISTOGRAM OF SAMIR'S 2017-05-02 RUN (RECORD ATTEMPT)

In the speed histogram, it makes it very clear that there is once again a great number of data points above 10.5 mph that should either not exist at all or have very few associated points. Even more unusual this time is the extremely large number of counts of speed at 13 mph and greater. This is not plausible for an ultra-runner running a many-day event to obtain.

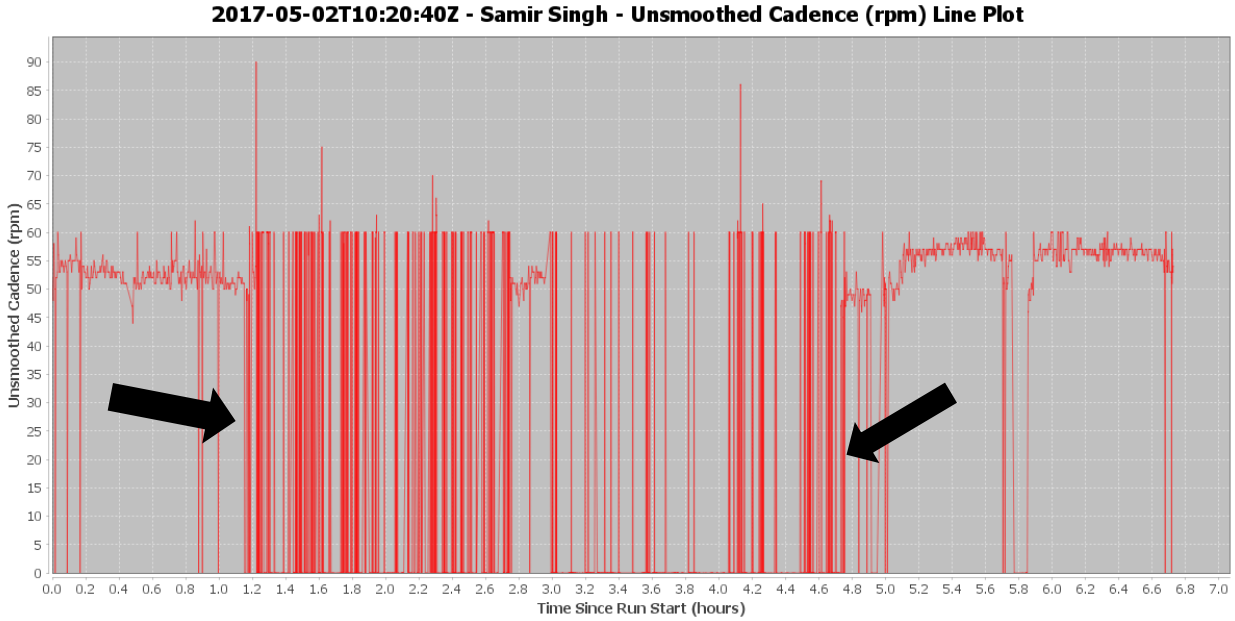

FIGURE 26 - CADENCE LINE PLOT OF SAMIR'S 2017-05-02 RUN (RECORD ATTEMPT)

In Samir's cadence line plot, we once again see the very unusual pattern of cadences that oscillate between 0 and 60 rpm exactly as indicated by the black arrows. This is not the usual cadence of Samir where he runs at 80-95 rpm.

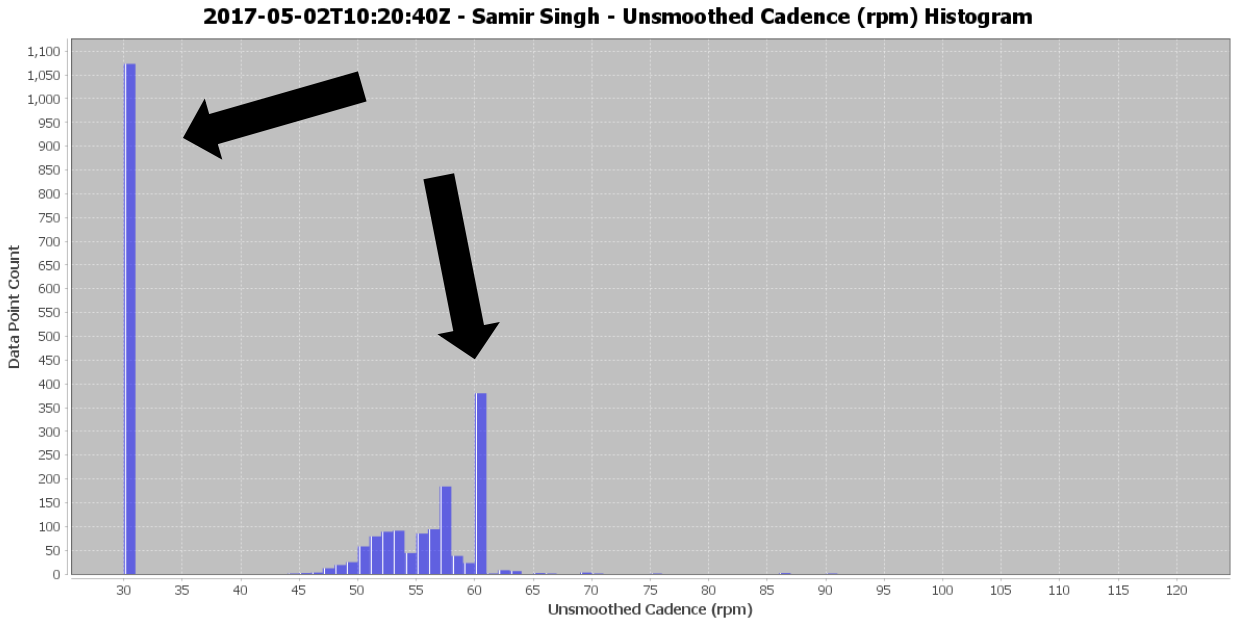

FIGURE 27 - CADENCE HISTOGRAM OF SAMIR'S 2017-05-02 RUN (RECORD ATTEMPT)

The cadence histogram and line plots make it clear that Samir spent most of this run without recording leg movement as indicated by the large bar of data above the 30 rpm mark that represents cadence from 0 – 30 rpm. There is also a lack of cadence recordings above the 70 rpm mark where you would expect most of the data to be.

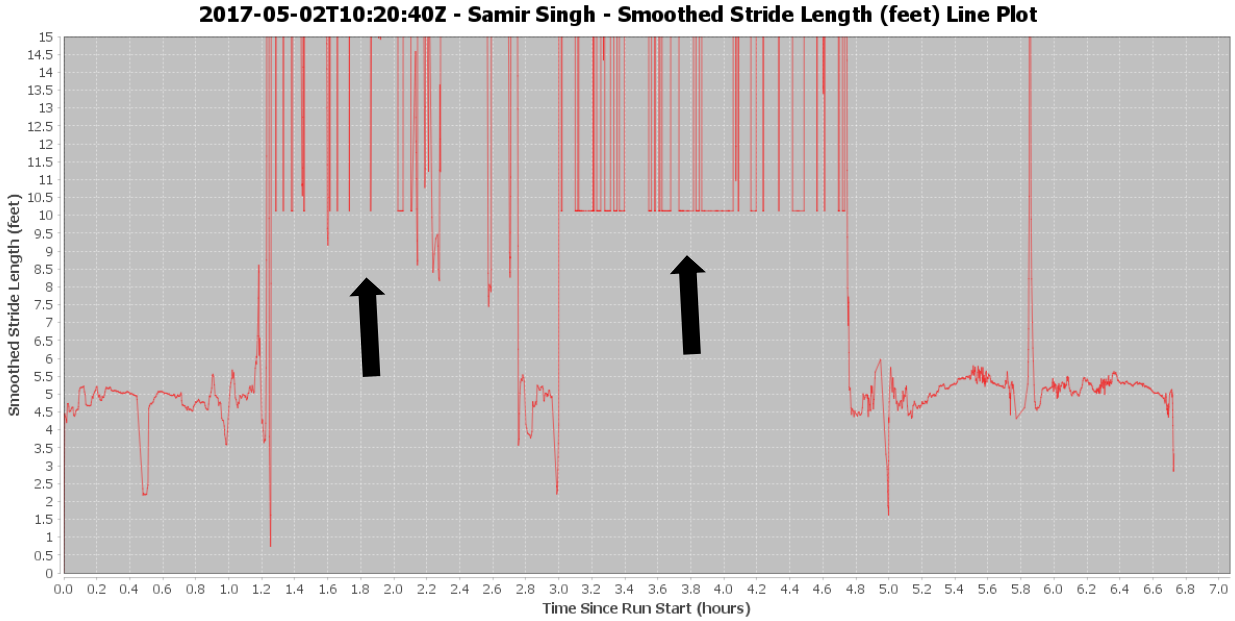

FIGURE 28 - STRIDE LENGTH LINE PLOT OF SAMIR'S 2017-05-02 RUN (RECORD ATTEMPT)

In the stride length line plot, we can once again see the unusual infinite stride lengths as indicated by the black arrows. These correspond to the times when Samir is recorded as travelling at speed but his legs were not recorded as moving.

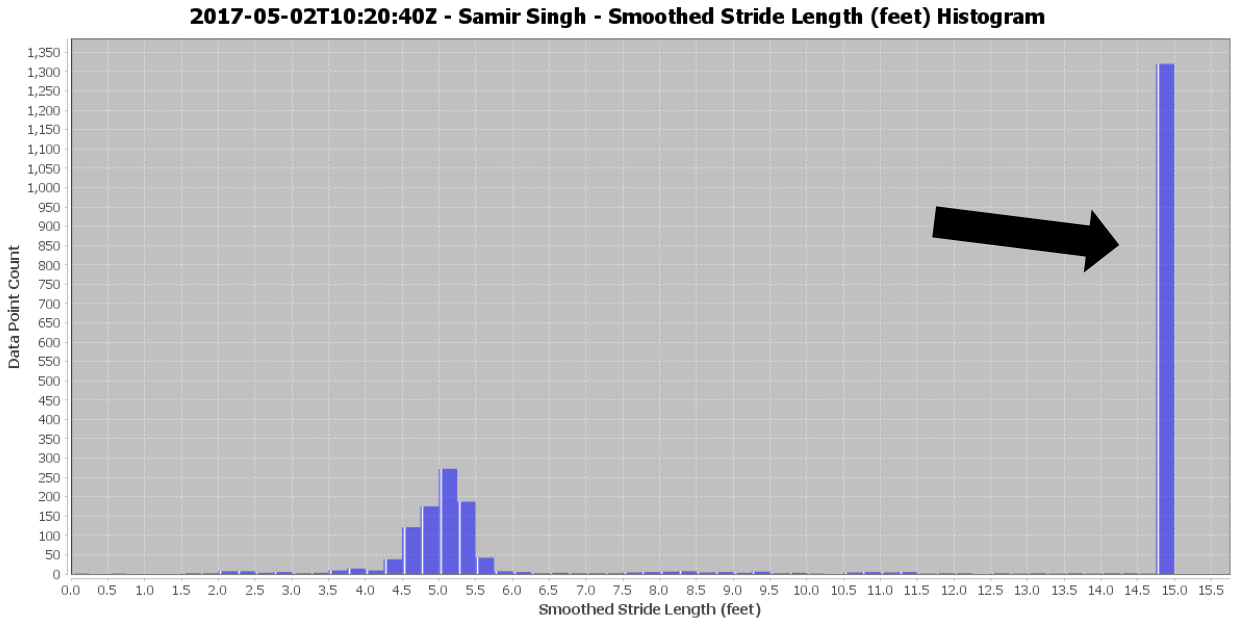

FIGURE 29 - STRIDE LENGTH HISTOGRAM OF SAMIR'S 2017-05-02 RUN (RECORD ATTEMPT)

The stride length histogram makes it very clear with the large bar of data above the 15 feet mark that this is not a normal run. That bar of data represents stride lengths from 15 feet to infinity and should have very little data associated with it. Instead, it dominates the point count for Samir's data.

We have now seen that the analysis of a second run from Samir's record attempt backs up the suspicious findings we saw in Samir's first run and this second run analysis shows even more unusual data than in our first analysis.

ANALYSIS OF SAMIR'S RUN ON 2017-05-10 (RECORD ATTEMPT)

To be thorough, let's analyze a third run from Samir's record attempt and see if it is consistent with what we saw in the other two runs we analyzed in detail.

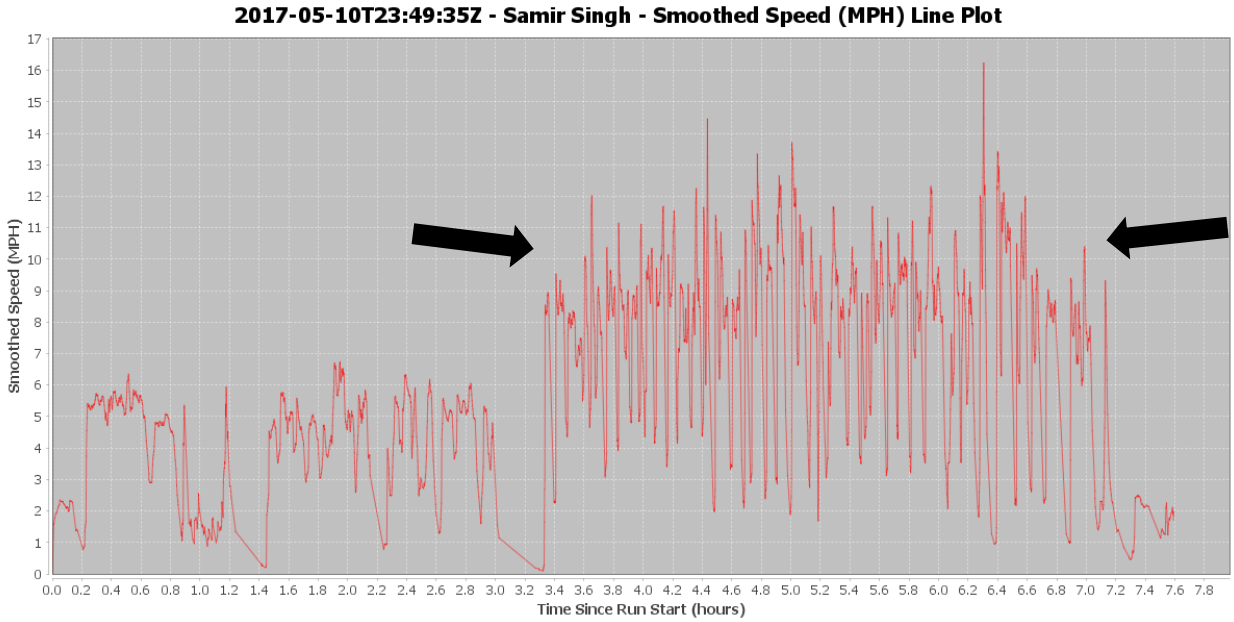

FIGURE 30 - SPEED LINE PLOT OF SAMIR'S 2017-05-10 RUN (RECORD ATTEMPT)

In the speed line plot, we once again see unusual speeds for a runner above 10 mph as indicated in the 4-hour section between the black arrows.

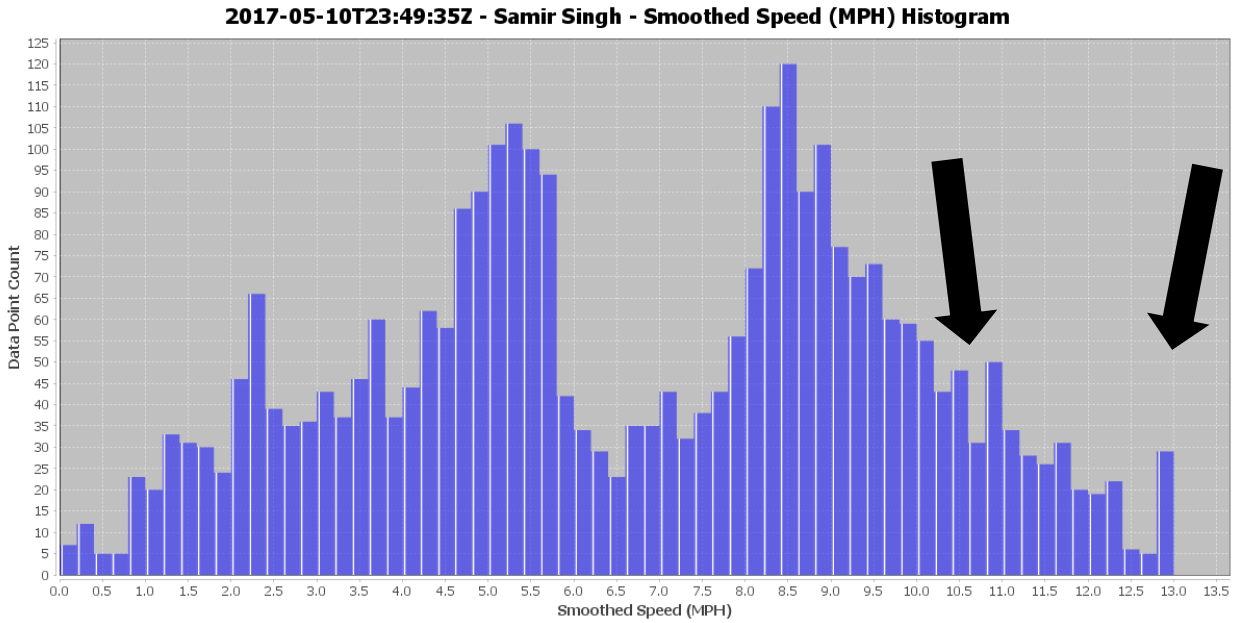

FIGURE 31 - SPEED HISTOGRAM OF SAMIR'S 2017-05-10 RUN (RECORD ATTEMPT)

In the speed histogram, the black arrows once again point to the speeds above 10.5 mph that should not exist or should only have a very small amount of data associated with them. Instead, there is a large amount of data points there.

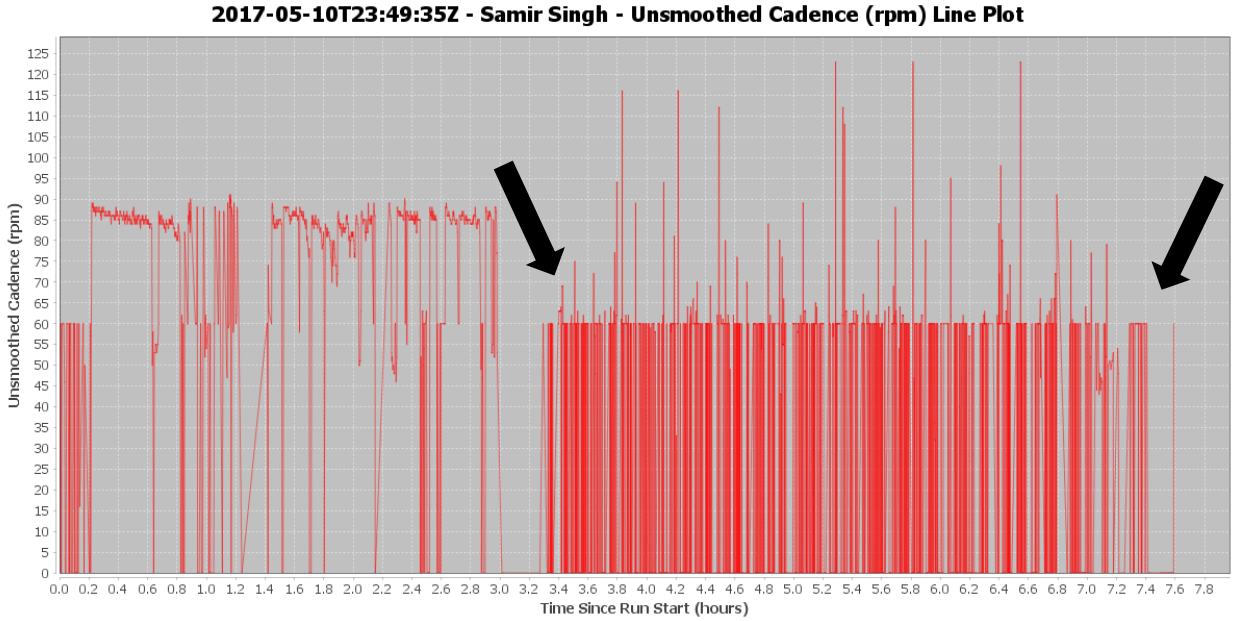

FIGURE 32 - CADENCE LINE PLOT OF SAMIR'S 2017-05-10 RUN (RECORD ATTEMPT)

In the cadence line plot, we once again see the very odd cadence oscillations between 0 – 60 rpm that is so far unexplained since Samir's normal running cadence is from 80 – 95 rpm.

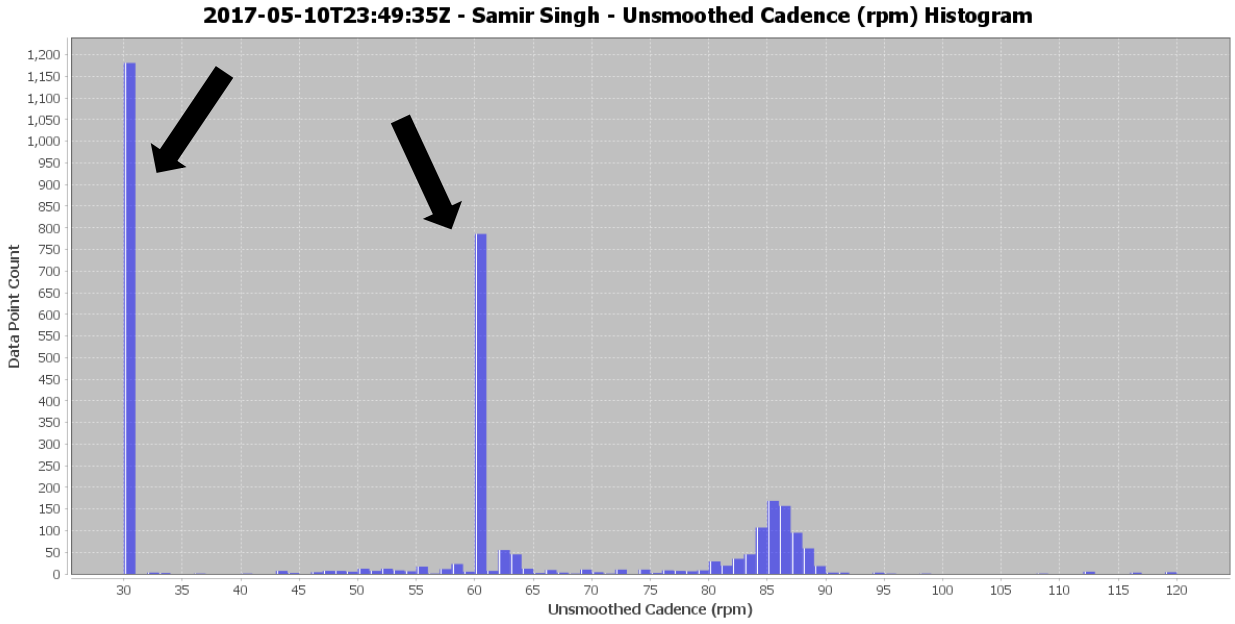

FIGURE 33 - CADENCE HISTOGRAM OF SAMIR'S 2017-05-10 RUN (RECORD ATTEMPT)

The cadence histogram once again shows the highly unusual amount of data points spent at 30 rpm and below along with a very unusual amount of cadence at the 60 rpm mark when we expect most of the cadences to be between 80 – 95 rpm.

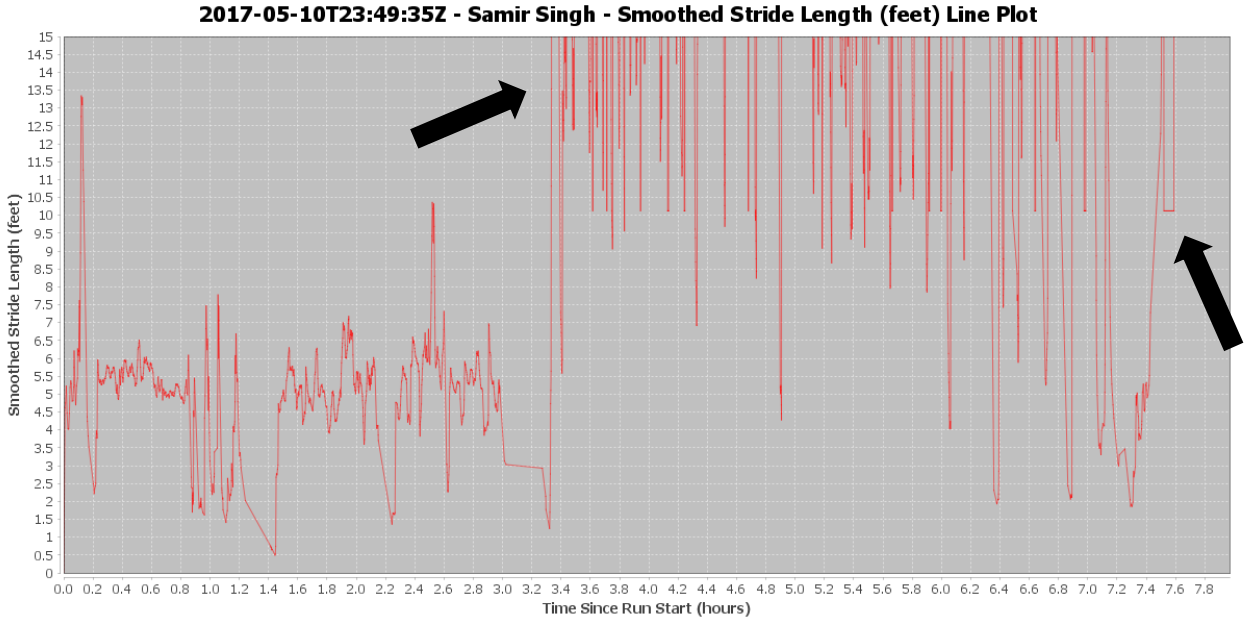

FIGURE 34 - STRIDE LENGTH LINE PLOT OF SAMIR'S 2017-05-10 RUN (RECORD ATTEMPT)

In the stride length line plot, we once again see the large number of infinite stride lengths between the black arrows.

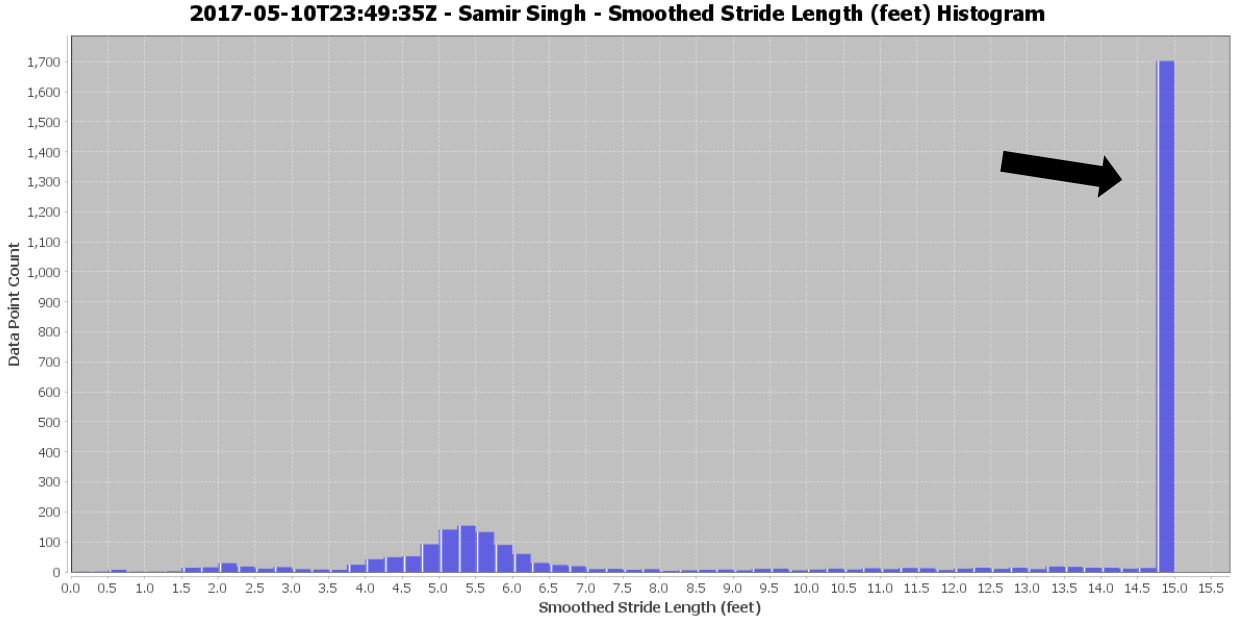

FIGURE 35 - STRIDE LENGTH HISTOGRAM OF SAMIR'S 2017-05-10 RUN (RECORD ATTEMPT)

In the stride length histogram, we once again see that most of Samir's stride lengths are from 15 feet to infinity since his run data shows him travelling at speed without his legs moving.

ANALYSIS OF SAMIR'S OTHER RUNS FROM HIS 10,000 KM RECORD ATTEMPT

For the sake of brevity and space constraints, the graphs for all the other runs will not be include in this report. I encourage the readers of this report to browse through the other run data for Samir that I have been able to gather. The data files are available on the Google Drive folder accompanying this report along with the detailed analysis files in Excel format that shows the graphs seen here along with the detailed data break down:

https://drive.google.com/drive/folders/1gHxLMTenHPsYXajiTTKwXFmCVsNKqgre

From looking at the analysis results of Samir's other runs in his 10,000 km record attempt, they are largely similar to the ones that have been discussed in detail in the above sections. Some are missing cadence data so it is not possible to create the stride length graphs for all of them.

DO THE UNUSUAL PORTIONS OF SAMIR'S RUN DATA START AND STOP AT THE SAME PLACE?

One of the questions that can be asked about the unusual portions of Samir's run data is whether they start and stop at the same place on the map. If the unusual portions tend to start and stop at the same location, then that lends credence to the theory that there is something suspicious happening with Samir's runs.

Below, we take a look at Samir's 2017-05-26 run that has an unusual portion of cadence and speed data in the second half. The screenshots below come from Samir's Strava data at https://www.strava.com/activities/1021115492.

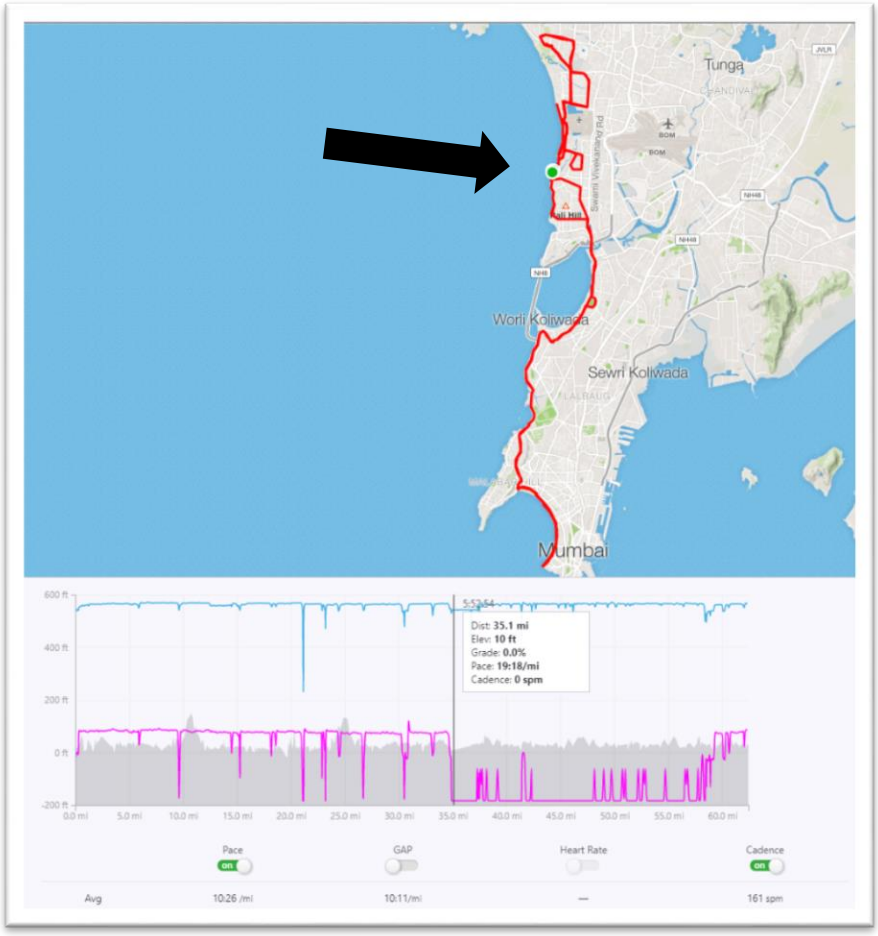

FIGURE 36 - STARTING POINT OF UNUSUAL RUN DATA - 2017-05-26

In Figure 36, the pink line represents Samir's cadence data as plotted by Strava. I have placed the cursor at the starting point of the unusual section of cadence data where it drops to zero or very lower values while Samir is still moving at high speeds. On the map, this starting point is indicated by the green dot. Note that this location separates the route in the top part of the map from the bottom part.

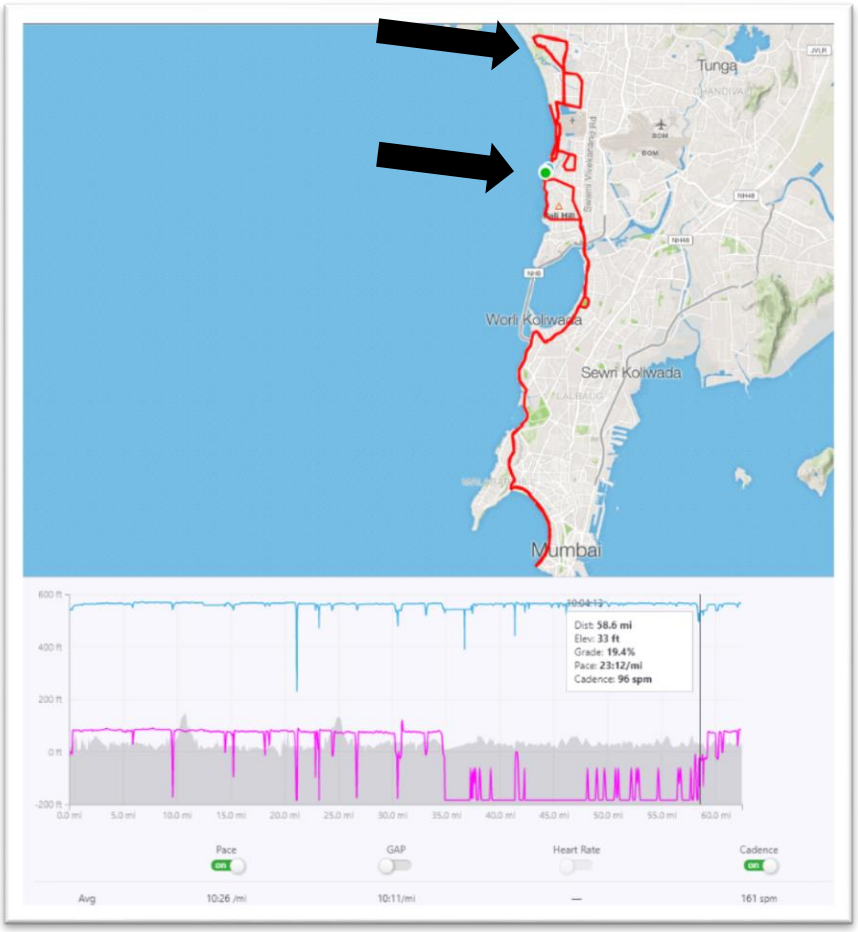

FIGURE 37 - ENDING POINT OF UNUSUAL RUN DATA - 2017-05-26

In Figure 36, I have placed the cursor at the point in the cadence data where it stops being abnormally low values. The ending location on the map is also at the green dot where our starting location was! During the section of unusual cadence data, Samir traveled in a loop in the top route indicated by the black arrows. The bottom route in map was only used in the first half of Samir's run when his data appears normal.

The oddity of the abnormal data starting and stopping at the exact same location on the map indicates there is something suspicious going on in Samir's runs. It lends credence that assistance was provided starting and also ending at this point.

WHY DOES SAMIR'S CADENCE OSCILLATE BETWEEN 0 AND 60 RPM SO MUCH?

One of the most unusual aspects of Samir's data for his record run attempt is that much of his cadence data oscillates between 0 and 60 rpm exactly. Why does this occur? Is it some systematic malfunction of his Garmin running watch that didn't occur in his pre-event reference runs? Could that explain why his run data is so unusual and suspect?

Can we find other Garmin watch users that have this same pattern of unusual cadence data? Did Samir's watch simply malfunction for the duration of his 100-day run?

After a lot of searching on Strava, I was able to find that Samir's unusual cadence data can easily be seen in other Garmin watch users. However, these other Garmin watch users are all duathletes doing run-bike-run events and the unusual cadence oscillations between 0 to 60 rpm happen only when they are riding their bikes while wearing their running watch:

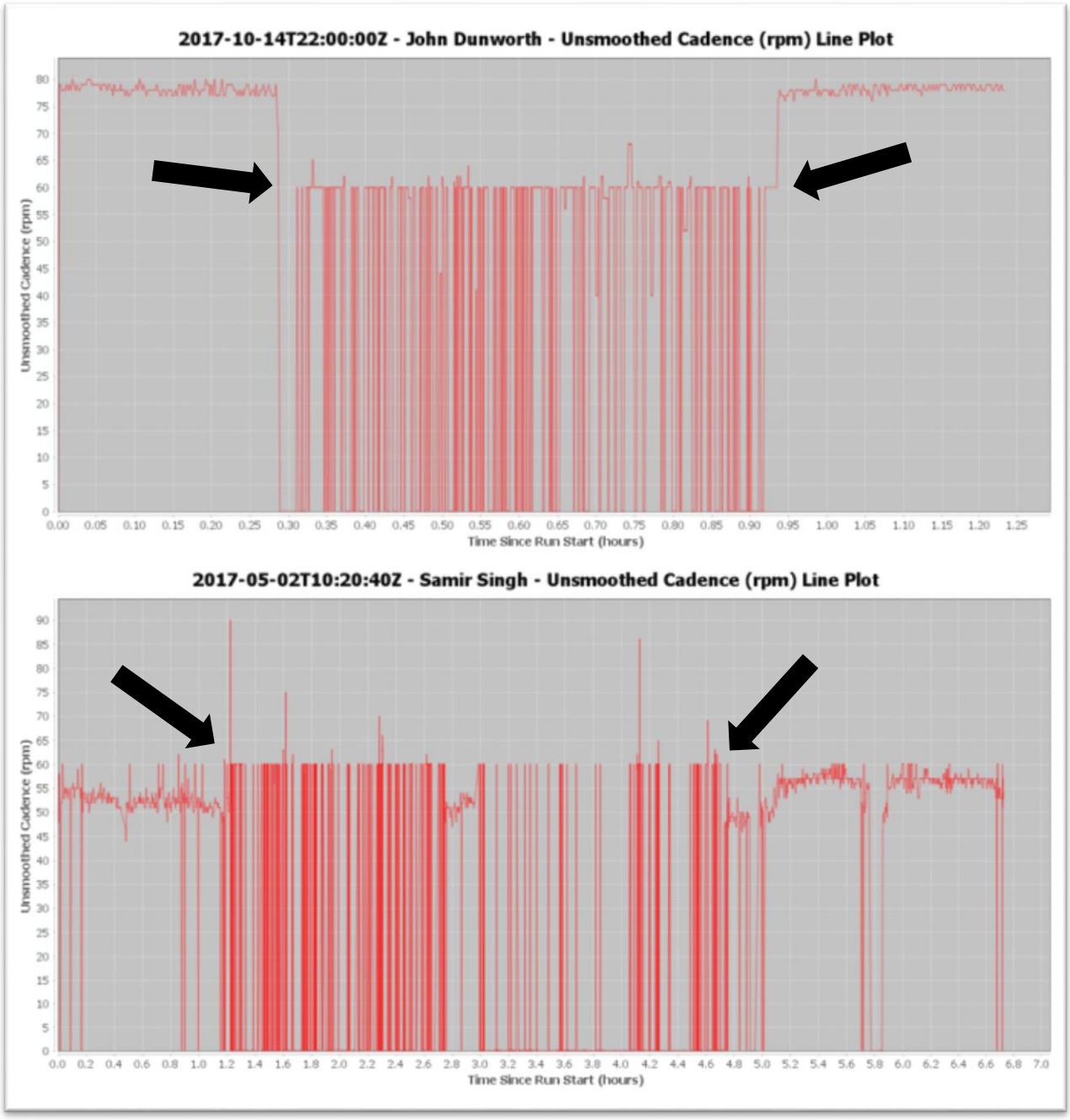

FIGURE 38 - COMPARISON OF SAMIR'S CADENCE DATA WITH A DUATHLETE

In Figure 38, we have the cadence data from a random duathlete named "John Dunworth" at the top and Samir's cadence data from his 2017-05-02 run at the bottom. The black arrows on the duathlete's cadence data highlights where he was riding his bike between the runs at the beginning and at the end. Notice that when the duathlete is riding his bike, his data oscillates between 0 to 60 rpm exactly. This is

the same pattern we see in Samir's cadence data between the black arrows. Samir's data show that he rode a bike or similar vehicle for large portions of his runs and that he was not legitimately running the distances he claimed to have done.

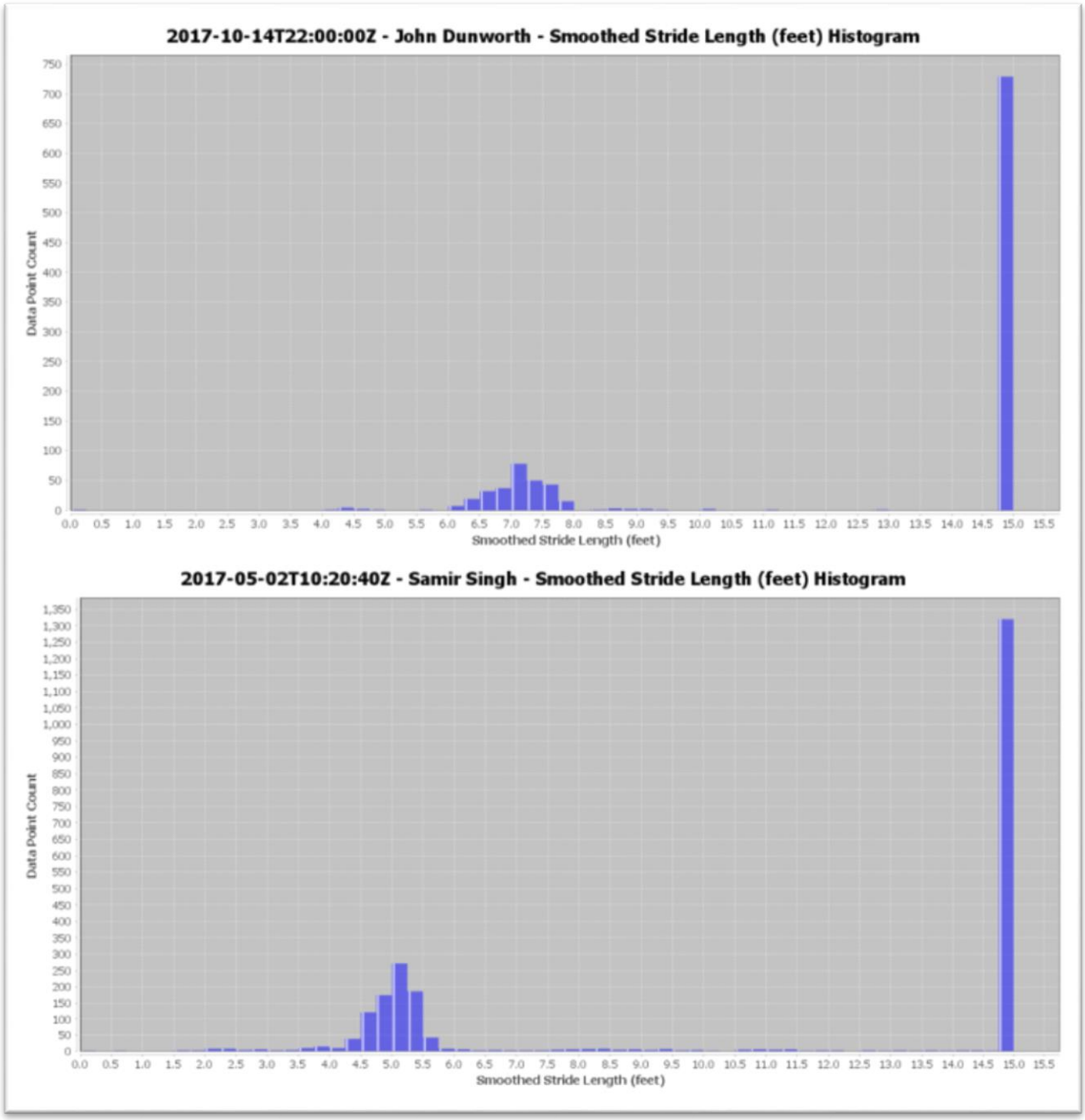

FIGURE 39 - COMPARISON OF SAMIR'S STRIDE LENGTHS WITH A DUATHLETE

In Figure 39, we have the stride length histogram of the example duathlete on top and Samir's 2017-05-02 data on the bottom. The similarities between the duathlete's stride length data with Samir's is striking with both of them having the vast majority of their data points in the 15 feet to infinity bar on the far right. This further lends very strong credence that Samir was using outside assistance (like a bicycle) instead of running all the distances he claimed to have.

CONCLUDING REMARKS

The detailed analysis of Samir Singh's own GPS watch data shows that the allegations of his critics have very high merit and that Samir did very large portions of his "runs" on a bicycle or similar vehicle instead of running all the distances he claimed to have done. Samir's run data for his 10,000 km record attempt show implausibly high speeds for a runner, cadence patterns that exactly match those of duathletes riding bicycles while wearing a running watch, and infinite stride lengths when Samir is moving but his legs are not. We have reference runs from Samir before the record attempt that show none of these attributes and we see that Samir started using outside assistance on the very first day of the record attempt on April 29th, 2017.

At the time of the writing of this report, Samir Singh is in the middle of carrying out another record attempt. This time, he is claiming to be attempting a 15,000 km run spread out over 150 days of 100 km each on average. Instead of running loops of routes in one city, Samir is running between many different communities in India. Will we be able to obtain run data for his current record attempt? With what I have seen in his data for his 10,000 km run, I don't believe his 15,000 km run is legitimate either and great caution needs to be exercised before believing anything Samir is claiming.