

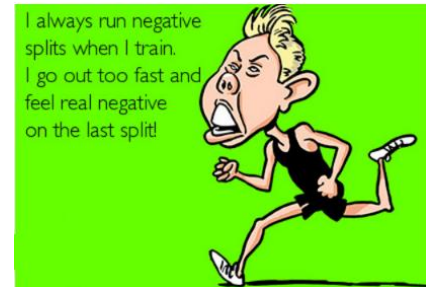
## Negative 100-mile Splits



In running, a negative race split is when the second half of a race is faster than the first half. Runners generally strive for negative splits in road races -- marathon or shorter. Most world records at these “shorter” distances have been achieved with negative splits. Galen Rupp set the American record in the indoor 5K of 13:01:26. His mile splits were 4:14, 4:12, and 4:04. Some coaches feel that negative splits should be achieved not only by elite runners, but also by the recreation runner.

Achieving a negative split doesn't mean that at the halfway point you need to speed up, but at some point in the second half of the race you do speed up.

A Runner's World article stated, “Anyone can and should run negative splits. Unfortunately, most runners don't. Instead they start in a near sprint, hang on through the middle and resort to a survivor's shuffle at the end.”

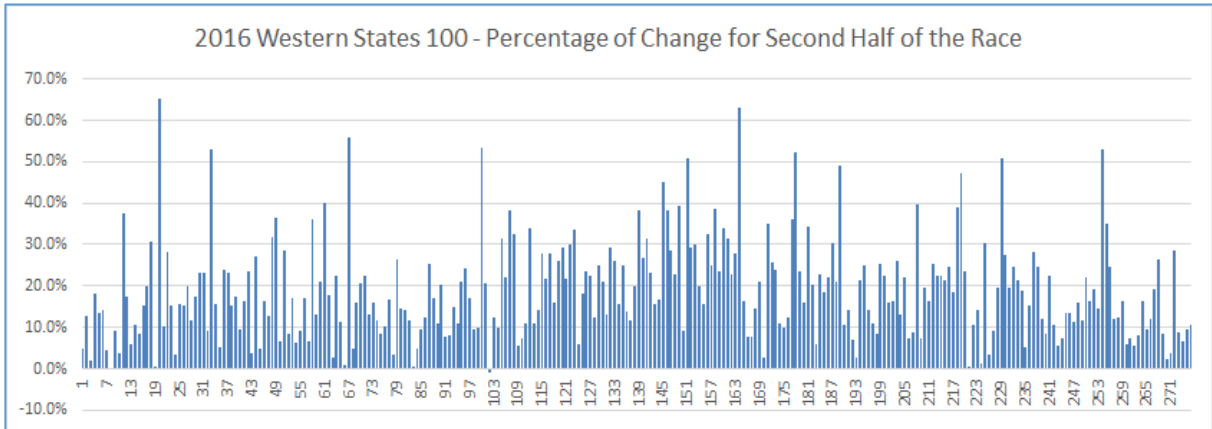


Should you try to achieve negative splits during a 100-miler? I've seen many do that survivor's shuffle at the end and in a few races I've done it too. Certainly it is possible to do a negative split 100, but I have never come very close to achieving it in all my 89 100-mile finishes. I believe I could do it if I purposely held back significantly during the first 50, but I believe my overall time would end up much slower.

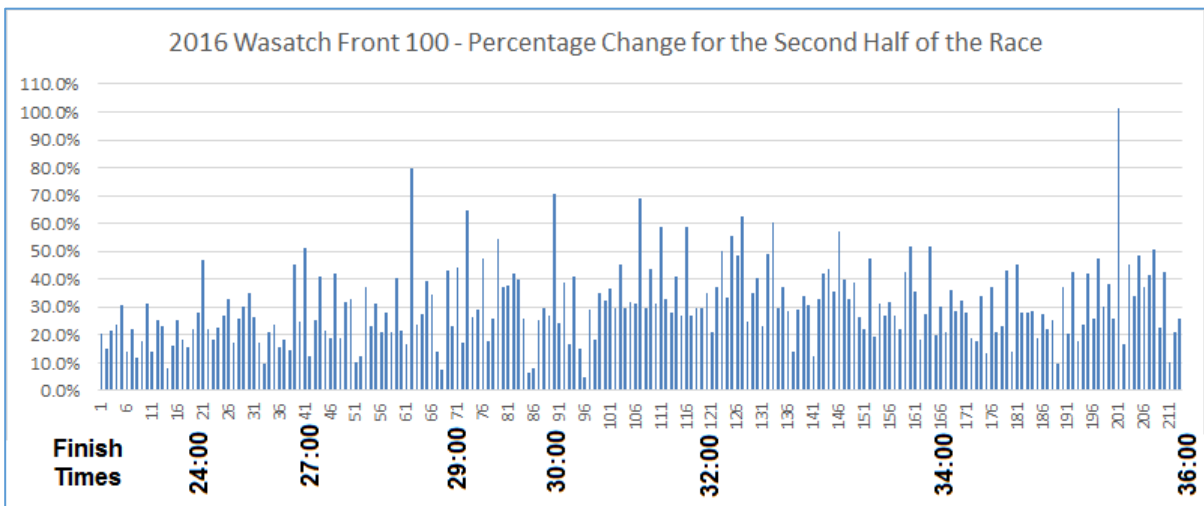
Some factors that make negative splits hard or unrealistic for me in 100-milers:

- Inconsistent difficulty throughout the course. (Second half harder than the first half). Certainly this can be true for mountain 100-milers, but not for loop courses.
- Running at night vs running during the day. Despite all the thousands of miles that I have run at night, my speed at night always decreases vs. running in the day even with great lighting. Most 100-milers have the night hours in the second 50. I have run a couple 100s that started near evening and my first 50s were surprisingly slow. Something about the daylight gives me increased energy.
- Changing weather. Heat during the day, cold at night. That can hurt or help making that second half faster.
- Length of time in the elements. I find that my body can withstand heat, cold and rain very well for about 12-14 hours, but after that I'm more affected by it and things can go wrong. It usually involves the stomach.
- Sleep deprivation. The second half of a 100 nearly always involves fighting to stay awake and alert. As drowsiness arrives I slow significantly until I can make it go away. I never have this problem during the first 50 miles.
- Altitude. On the higher altitude courses, during the second 50 miles, I usually develop some sort of sports asthma causing congestion in my lungs. With the decreased oxygen getting into my system, my stomach starts rebelling. For me this only happens in the second 50 miles.
- Mental. If I purposely hold back significantly during the first half of a 100-miler, I eventually trick myself mentally into thinking I'm going at a good fast pace because I am matching the pace of the runners around me. Before I know it, I get too far behind to compete.

**Negative Splits for 100-mile races?**

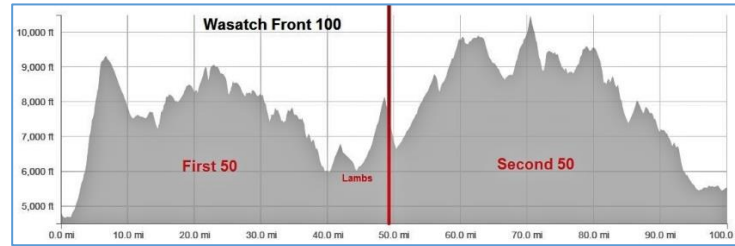


Do elite runners usually run negative splits in 100-milers? The answer seem to be that they can run close to even splits. At 2016 Western States 100, a net-downhill course, just one of the top runners had a negative split, Kyle Pietari, who came in 8<sup>th</sup>, but his second half beat his first half by only about one minute. One other finisher also had a negative split. The winner, Andrew Miller came close, but had a slowdown for his second half of only 4.8%. He ran 7:39 for his half and 8:01 for his second half. Jim Walmsley who came in 20<sup>th</sup> was on course record time but in the later stages of the race took a wrong turn and got lost. He eventually finished, but had a slowdown of 65%, the largest percentage of slowdown in the entire field. The average slowdown for all finishers was 19%.

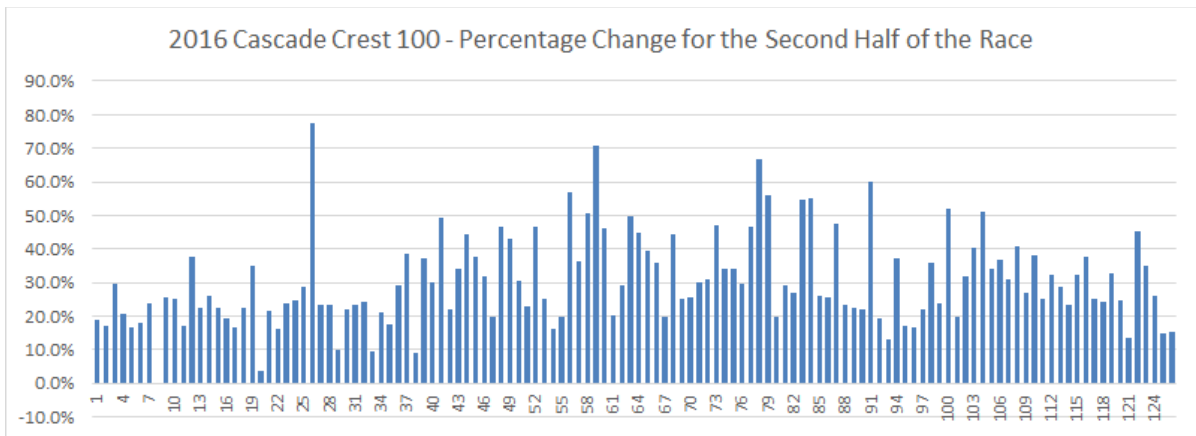


What about a much tougher 100-miler? I took a look at all of the finishers for 2016 Wasatch Front 100. No runner had a negative split. The runners who went sub-24-hours averaged a slowdown for the second half of the race of 20%. The entire field averaged a 30% slowdown. One runner even managed a slowdown of more than 100% and still finished. That was Dan Ruch who was on pace to finish in about 25.5 hours, but after Pole Line Pass slowed down significantly and finished in nearly 35 hours. That is determination!

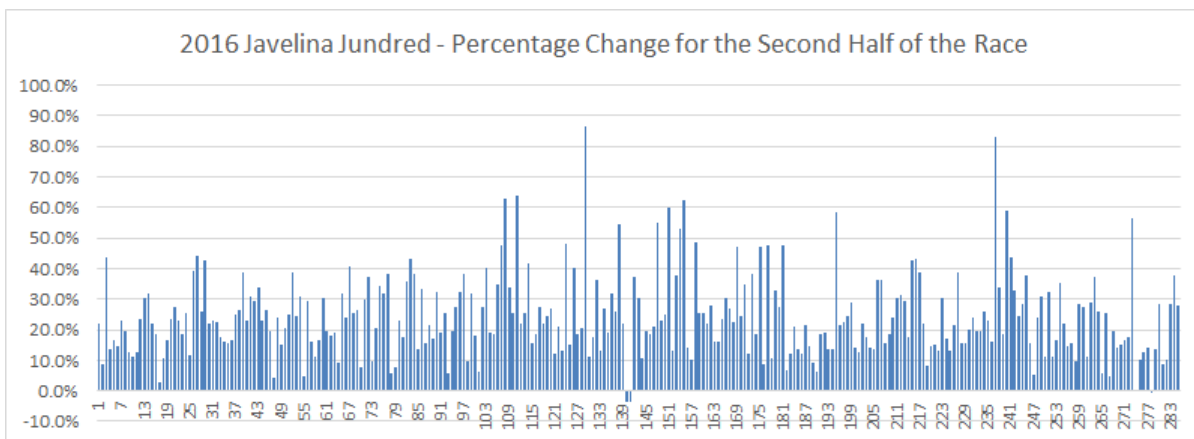
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A key reason why the top runners don't come close to negative splits at Wasatch is because the second half of the course is quite a bit harder and higher than the first half, and even the elite runners run a good portion of the second 50 in the dark.



There was just one runner who finished 2016 Cascade Crest that had a negative split and just barely. The 8th place runner, Ihara Tomokazu ran 10:49 for the first half and 10:47 for the second half. You can see a spike for the runner in 26<sup>th</sup> place who went out fast and later slowed down significantly. The average slowdown for the entire finishing field was 30%. I slowed down 25%.



For the 2016 Javelina Jundred, a few runners ran the second half faster than the first half including two runners who probably ran together. 2016 was a hot year that slowed many runners during the first 50 miles.

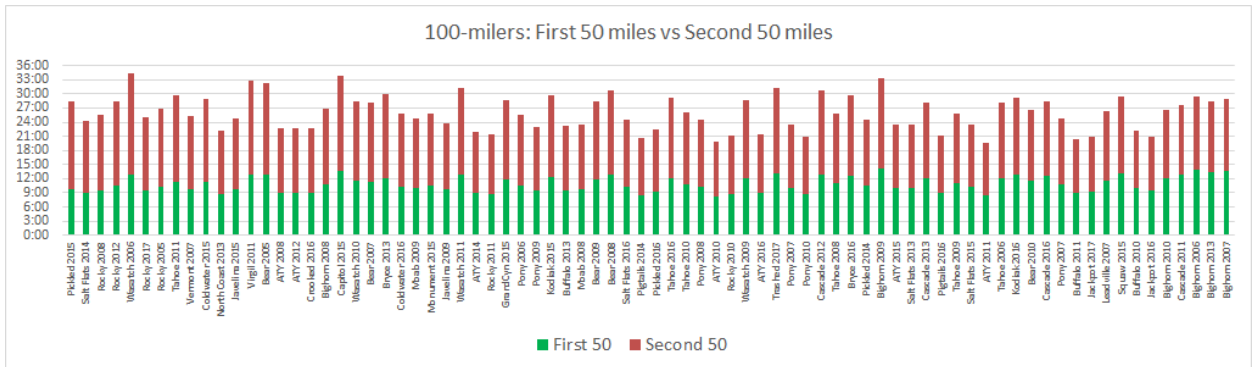
Some races impose cutoffs that force the very slowest runners to have a positive split. For example, Leadville 100 imposes a 14-hour cutoff to reach the 50-mile turnaround at Winfield. In reality, few runners who reach Winfield after 13 hours go on to finish. For Wasatch the cutoffs around the 50-mile mark are

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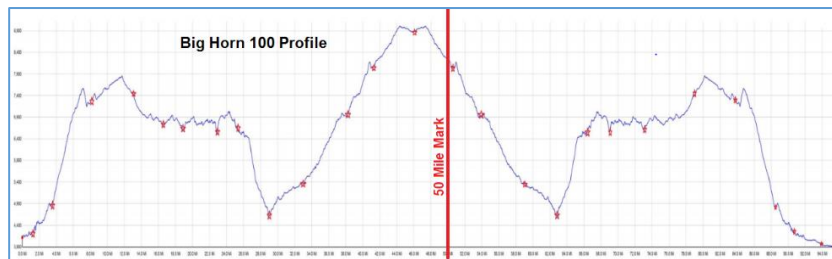
more forgiving and does allow a runner being chased by cutoffs to run a negative split, but few running that slowly can pull it off.

Taking a look at the four races that are part of the Grand Slam of Ultrarunning, if you run right at cutoffs around the 50-mile mark, Western States lets you run about 50%/50%. Leadville requires the first 50 to be faster, 46.7%/53.3%. Vermont and Wasatch allow you to do the first 50 slower, but then you will need to do a negative split in order to finish. Vermont: 53.4%/46.6%, and Wasatch: 52.8%/47.2%.

### My 100-mile splits

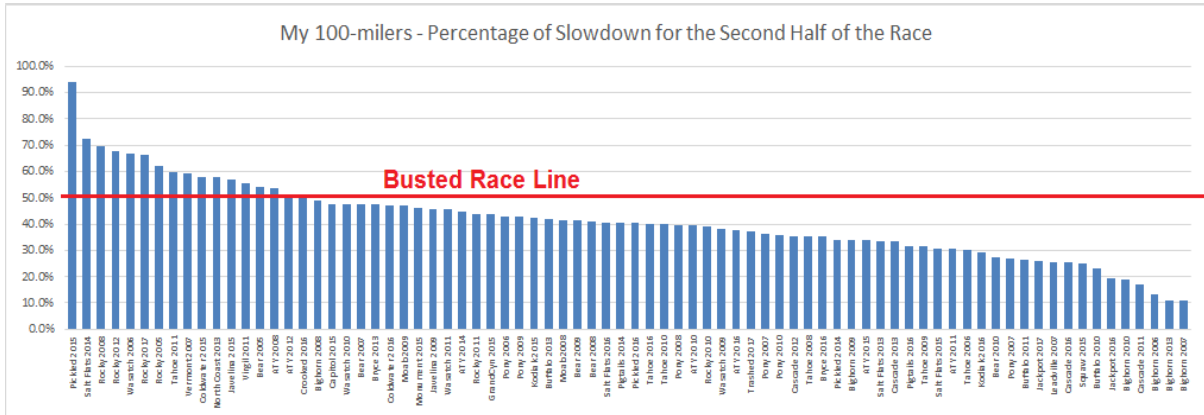


In all my 100-mile finishes, how close have I come to a negative split, or just an even split? I did the analysis and was surprised to find out that the closest race to even splits was Bighorn 100. Why? The first half of the course is significantly more difficult than the second half. This race also starts in the late morning so most reach the night section sooner, in the first 50 when they are still moving well. The last 12 miles for that race are fast downhill and I usually can push them hard. I think it is an ideal course for doing negative splits. At Bighorn 2007, my first 50 was 13:45, and my second 50 was 15:15. That is the closest I have ever come to an even split in a 100-miler, but my overall time was slow for me at this race, 29:00.



In fact four of my top five closest races to even-splits were all at Bighorn: 2006, 2007, 2010, and 2013. 2010 was a good race for me, with 12:10 for the first 50, 14:28 for the second 50, for a finish of 26:38.

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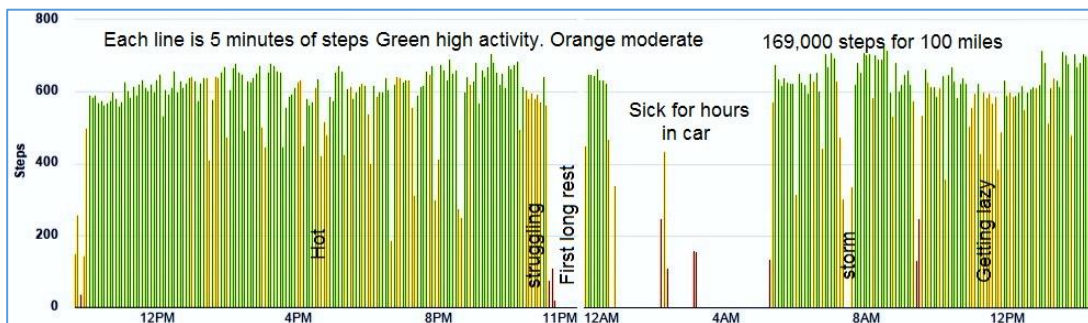


This chart shows the percentage of slowdown for each of my 100-milers that I have good statistics for. A higher percentage is a greater slowdown for the second half. The races at about 50% slowdown were all “busted” races that somehow I still pushed to the finish. These are the races near or above the red line. The lower percentages are closer to even splits. You can see the Bighorn is usually the closest to 10% because of the nature of its course. The course forced me into a more even pace.

### My Worst Slowdowns

What races for me had the worst slowdown? The worst were a group of about 15 races where things just went wrong because of poor fueling, sickness, injury, or weather. Once things went wrong, the second half of these races were a bust, but I still finished. In all these races I slowed down more than 50%. I had significant issues in these races including: High winds, chilling cold, grueling heat, a terrible sick stomach, chafing, and even a broken leg. But somehow I pushed to the finish. Nine other 100s were truly busted, DNFs, all after 75 miles.

My worst slowdown was at a 2-mile loop course, Pickled Feet 100 in 2015. I ran the first 50 strong in 9:40. But my last 50 took 18:46 for 94% slowdown. The heat during the day made me terribly sick at night and I stopped for about six hours total to rest and nap until I finally got over it.



The next worst slowdown race was 2014 Salt Flats 100. At mile 26, I found myself leading the race. This pushed me to run even harder and I held on to the overall lead until the grueling mud flats at about mile 44. I ran the first 50 in 8:54. But during the entire night, a cold rain fell and I got drenched because of poor rain gear. I had to stop multiple times just to get my body warmed up again. The second 50 took 15:21. I still finished in a respectable 24:15 so it wasn't a bad race, but it could have finished so much faster if I was better prepared for the rain.

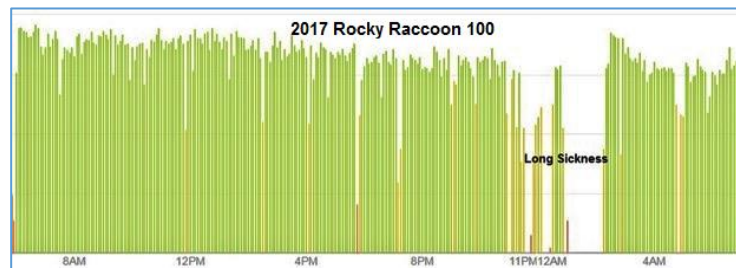
My first Wasatch 100 in 2006 is listed as one of the worst slowdowns. I did pretty well for the first 50, getting close to Lambs Canyon in 12:50. But late at night I was sick and stopped at Brighton (about mile

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75) for multiple hours. I was low in electrolytes. Eventually I pulled out of my problems and finished the last 50 miles in a staggering slow 21:25 (including my stop), the only race I ever went over 20 hours for the second 50. I finished in 34:15.

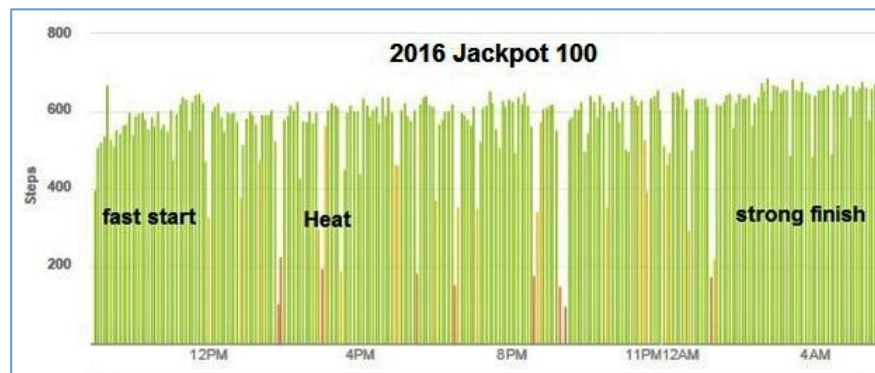
Three of my “busted” races were on the easy course, Rocky Raccoon. In 2012, I didn’t realize that I had a terrible stress fracture in my tibia and it kept breaking more, the further I went. I finished, but ran the first 50 in 10:36 and the second 50 limping all the way in 17:47. I didn’t run another 100 until nearly seven months later.

Most recently, 2017 Rocky Raccoon was another “bust.” I had a very good race going, but the stomach shut down hard, again because of low electrolytes, and I had to stop for nearly three hours. The first 50 was 9:25 and the second 50 was 15:39. I finished in 25:04. Again the Fitbit report really shows what happened:



If I exclude the clearly “busted” races, the worst positive splits for me tend to be on tougher mountain courses including Wasatch, Bear, Bryce, and Capitol Reef. The course and higher altitude all wore me down.

### My Best 100-mile splits



For the flat loop courses, 2016 Jackpot came out on top with a 54.4% rate. It was a good steady race for me and I pushed the last 20 miles hard. I ran the first 50 in 9:30 and the second 50 in 11:21, for a finish time of 20:51. In 2017 I again ran well there, beating my 2016 time.

For my top 11 finish times, all faster than 22 hours, the average slowdown was 34% or average time of 11:50 after a speedy first 50. All of those were on easier, forgiving courses. My best time for a second 50 has been 11:08. For all my 100-milers, my average slowdown has been 41%.

Most of my races that were closest to even splits were all great experiences with good fueling, good cool weather, and no sickness. For many of them my first 50 miles were quite fast: 9:30, 9:12, 9:02, 8:32, and

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9:06. In those cases going out fast went well for me and I was lucky to have a pretty good second 50 time too.

This analysis has convinced me that striving more toward even splits is a worthy goal to finish a good 100, even if it means holding back a little more during the first 50 miles. I am always very careful to hold back enough so I can always run mild uphill the entire 100 miles. At age 58, my age now holds me back during the early stages of a race whether I like it or not. Holding back more can also decrease the number of “busted” races and DNFs by fueling better and resting more.

I think the trick to feeling more comfortable about negative splits is to practice it on long training runs. Monitoring heart rate is certainly a great approach to gravitate toward even or negative splits.