

What a Bike Nerd Does For Fun

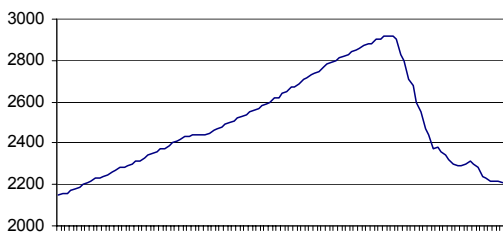
Bob Geyer

My name is Bob and I'm a bike nerd. I like gizmos and I like figuring things out. (Anyone who's seen my mountain bike will concur.) Since I started road riding with the Bike Club a few years ago, I've thought about our route categorizations of flat, rolling, hilly and mountainous. These categories are assigned on the basis of... well, the seat of the bike shorts, you might say. I thought there must be a more objective way of doing this. There must also be other objective information to help characterize a route.

My cyclocomputer is a Polar X-Trainer Plus. It does all the normal cyclocomputer functions, all the normal heart rate monitor functions, and it reads absolute altitude and altitude gained. But most importantly, it records heart rate, speed and altitude at preset intervals (either 5 or 15 seconds). That information can be uploaded to a computer and viewed in the Polar software or imported into a spreadsheet program such as Microsoft Excel.

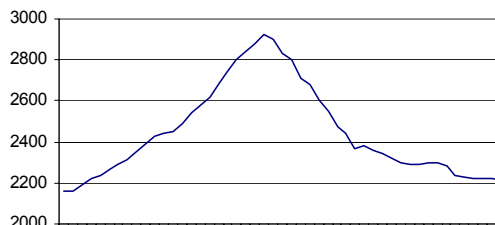
I bought this cyclocomputer not so I could embark on a techno-training program (though I did use it last year in preparing for the Hilly), but rather so I could create altitude profiles of bike routes.

Either the Polar software or Excel can display a graph of heart rate, speed and/or altitude over time. However, because it takes much longer to go up a hill than down, a time-based profile characterizes the *ride* more than the *geography*. Below is a time-based graph of my ride over Hookers Gap, where it is clear that I went down quite a bit faster than up!



In order to show the shape of the mountain, what I want is a distance-based graph, so the question is how to convert time-based information to distance-based. With time and speed information in Excel, I could interpolate distance at each time reference. Deciding that 0.1-mile

intervals would serve my purpose, I made Excel list altitude readings for every 0.1 mile, ignoring all other readings. From this data I could easily produce a graph of the mountain. Hookers Gap is shown below:



Ok. Now I can produce a route profile. What other information might be useful? Total elevation gain is important. The Newfound-Hookers Gap route gains 2710 feet. Knowing the length of a route and the total elevation gained, I can easily calculate the average feet climbed per mile. Newfound-Hookers Gap averages 85 feet per mile. For comparison, the Butter Ride averages 62 and Ledges-Marshall-Ledges averages 27.

The Tour de France rates major climbs in five categories. I got to wondering if any of our climbs would rate using their system. Over the course of several months, I scoured the Internet for a formula for these categorizations. I finally came upon a site where someone had 'reverse-engineered' the formulas by studying rated climbs. With these calculations added to my Excel spreadsheet, I can now tell you that Hookers Gap is a category-four climb (the lowest rating). The Hilly century has five category-four climbs.

Ignoring descents, I worked out some definitions for 'flat', 'rolling', 'hilly' and 'mountainous' sections of a route. (For example, "rolling" climbs have either a continuous ascent of less than 20 feet or are no longer than 0.5 mile long and have less than a 3.7% grade). With all this added to my spreadsheet, I could list the miles on each ride that fit these categories. Add a pie chart showing the distribution of the different categories (including flat and descending), and we've got a pretty good route profile.

I created profiles for half a dozen or so regular BRBC routes, but I was working on a route in the Canton area for which I wanted to see the statistics. The thing about this method is that

I've got to ride the route in order to see the statistics from it. But I wanted to see the statistics before riding this new route—that circumnavigates Cold Mountain.

A call to Liberty Bikes produced an old, heavy mountain bike fork. A drill, some wood and a few other items lying around the basement, along with the front wheel off my mountain bike, and I had a device I could tow behind my car with the cyclocomputer attached. Voila!

A short test around the neighborhood suggested a few modifications, then it was off to Canton for the field test. Laura and Tigger came along to make it a family adventure. As we approached Canton, a light rain began falling.

The first few miles were uneventful, but then the road straightened out and I put on a little speed. A vibration began around 30 miles per hour. I couldn't see the device, so I couldn't tell whether the vibration was serious or not. I slowed down. I sped up a bit. Whenever I got over 30, the vibration would begin again. I wanted to sit in the back of the car and watch through the rear window, but my bike was back there, and I didn't want to put it on the roof in the rain, which was increasing in intensity. The route I was measuring is 45 miles long, so I didn't want to have to drive the whole thing under 30 miles per hour. I was frustrated in my inability to see what was happening.

Tigger's very sensitive to emotion, so he sensed my frustration. Being the warm and caring soul that he is, he wanted to comfort me, so he tried to climb onto my lap and lick my face. (For those of you who haven't met him, Tigger's a 95-pound golden retriever.)

At the side of the road to sort out driver and four-legged passenger, I determined that I had to watch the device to see what was going on. I opened the trunk lid and squeezed in behind the bike, holding seatbelt straps to keep from falling out. Laura drove. Tigger behaved. (Luckily.) We got to vibration speed, which from my precarious perch seemed like about 60, and the device began bouncing. I mean really bouncing! On even a moderate turn, the wheel would jump with the centrifugal force, skipping around the turn. Vertical hops were four or five inches. I

put my foot on the device to settle it down. Very little pressure was necessary to stabilize the thing. At a stream crossing we stopped so I could fill a couple of water bottles which I then lashed to the device. That added weight proved to be sufficient to calm the thing down, and the rest of the trip went smoothly.

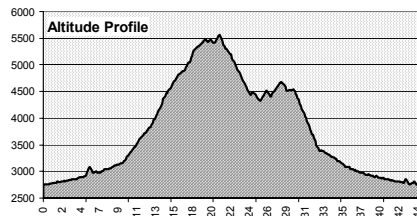
Back home, I uploaded the information to the computer and made a route profile. The continuous 7-mile climb on this route is a category-3, but the ride looks doable to me. Good thing. It's the Tour de Ralph ride for August 15 and 28 (sandwiching the Hilly).

So now I've got the ability to profile a route and produce all sorts of interesting statistics on it. There are some routes where this sort of

information wouldn't really add anything valuable, like Ledges-Marshall-Ledges, which is flat-flat-flat, or Bat Cave-Old Fort, which is mountainous throughout (with five category-four climbs). But for those routes that defy simple categorization, such as Newfound-Hookers Gap, which is pretty much rolling hills, but with one category-four climb in the middle, additional information may prove useful.

Cold Mountain Loop

| | |
|----------------|---------|
| Distance | 45 mi |
| Elevation Gain | 4360 ft |
| Ave Climb/Mi | 98 ft |
| Longest Climb | 7.1 mi |



You probably were not wondering what I do in my spare time, but now you know. If any fellow bike nerds reading this want additional information on any of my toys or conclusions, write me at in2it@iname.com.

See ya out there!

