

Cyclitics

cyclitics



By Seth Hendrickson

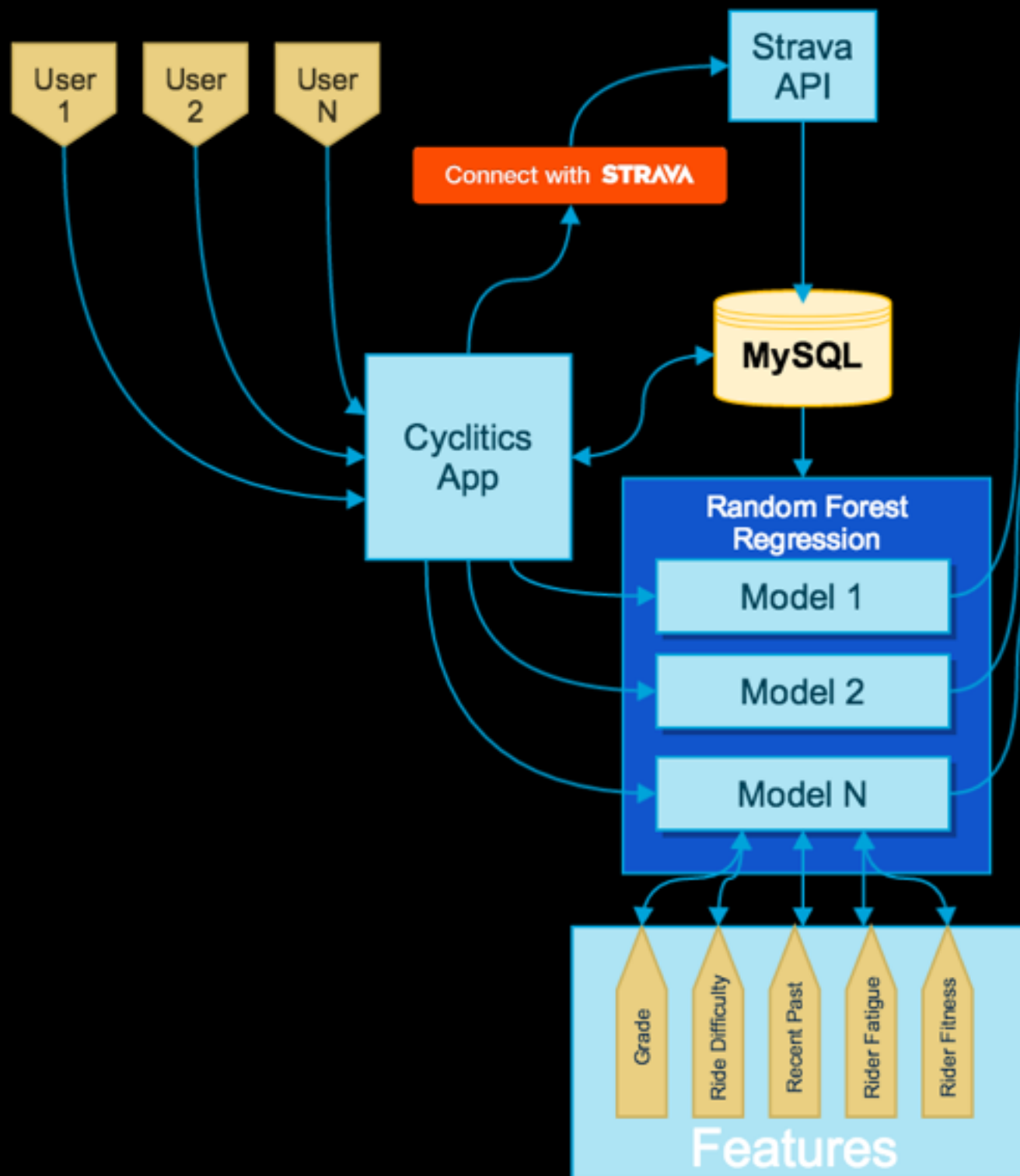
The Problem

You're a cyclist...

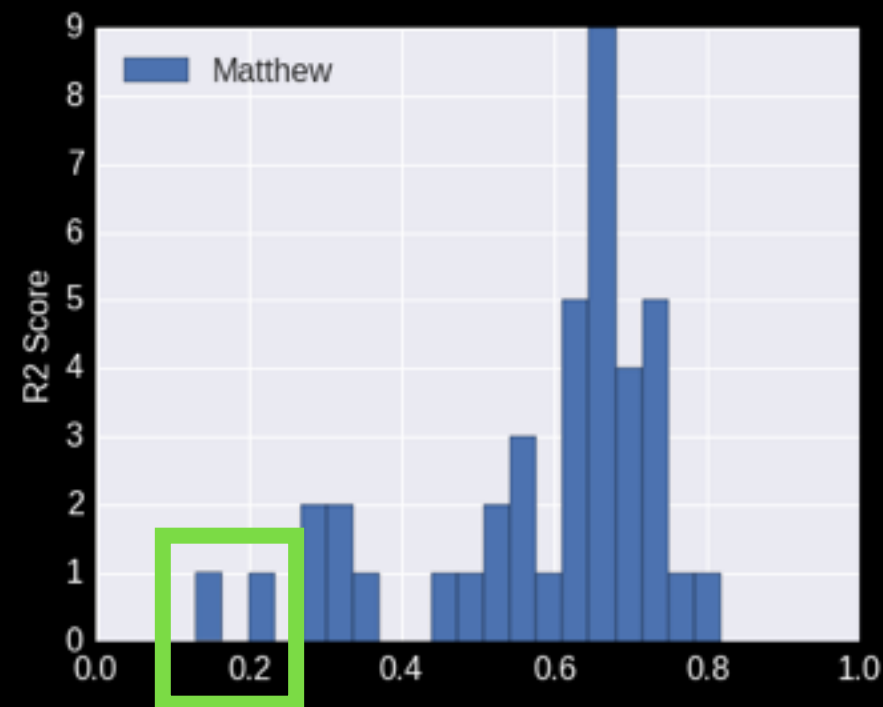
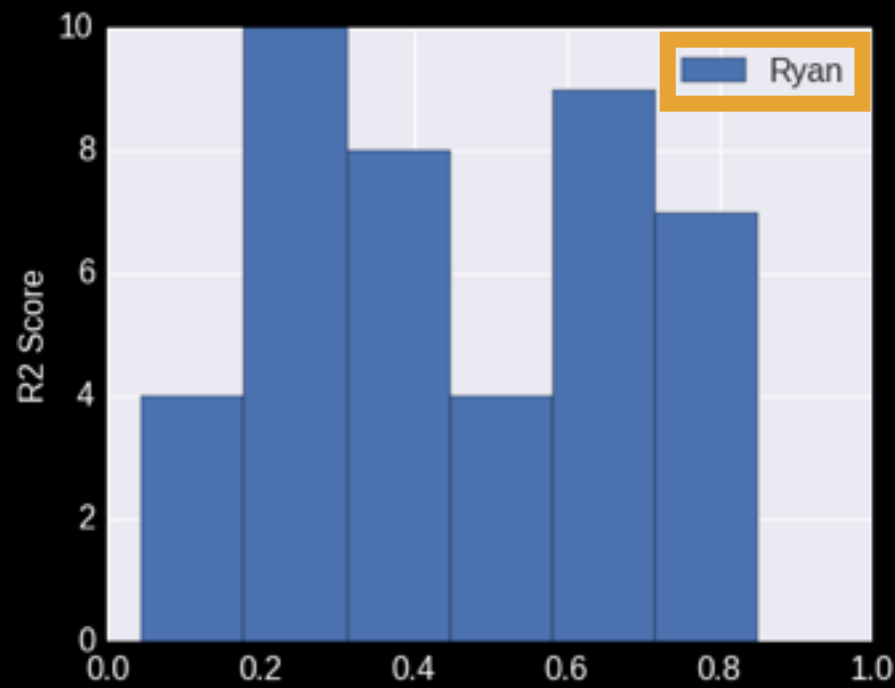
- How long will a ride take you?
- How should you set your pace?
- How do you know if you did well?
- How do you compare to your friends?

Solution: Predict rider's performance on any course

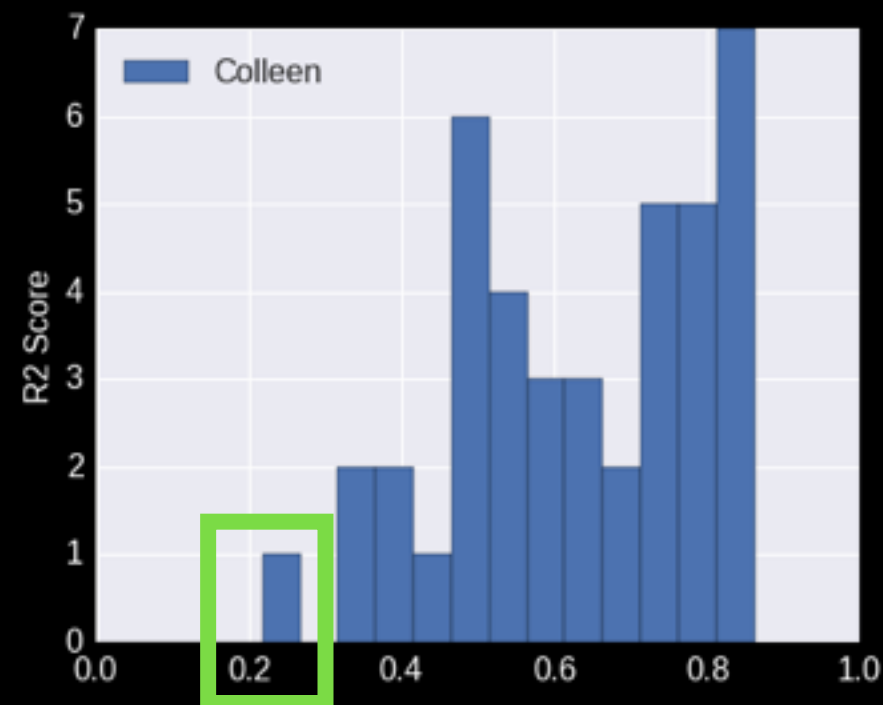
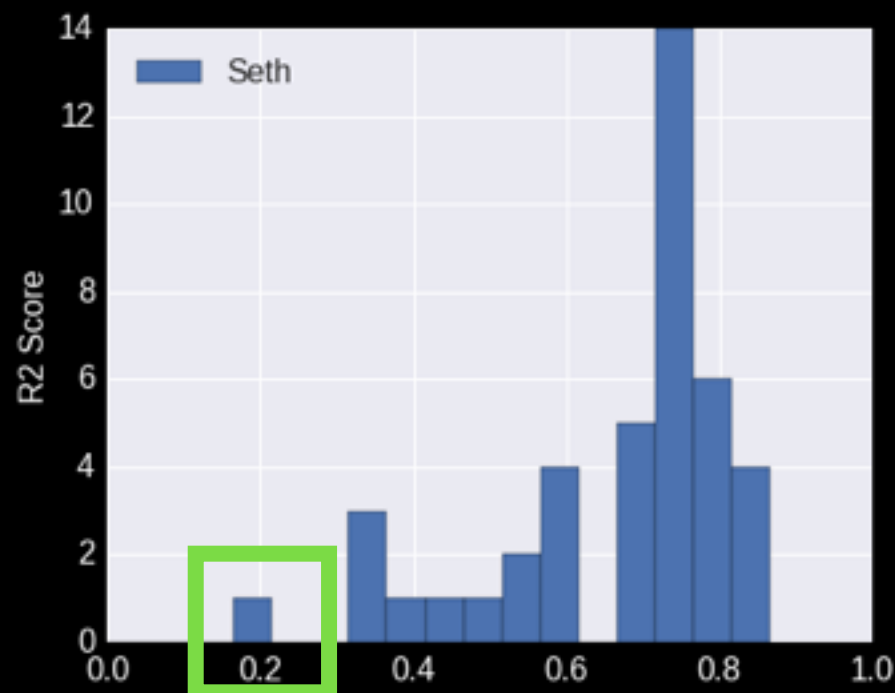
Process



Validation Results



Some users are more predictable than others

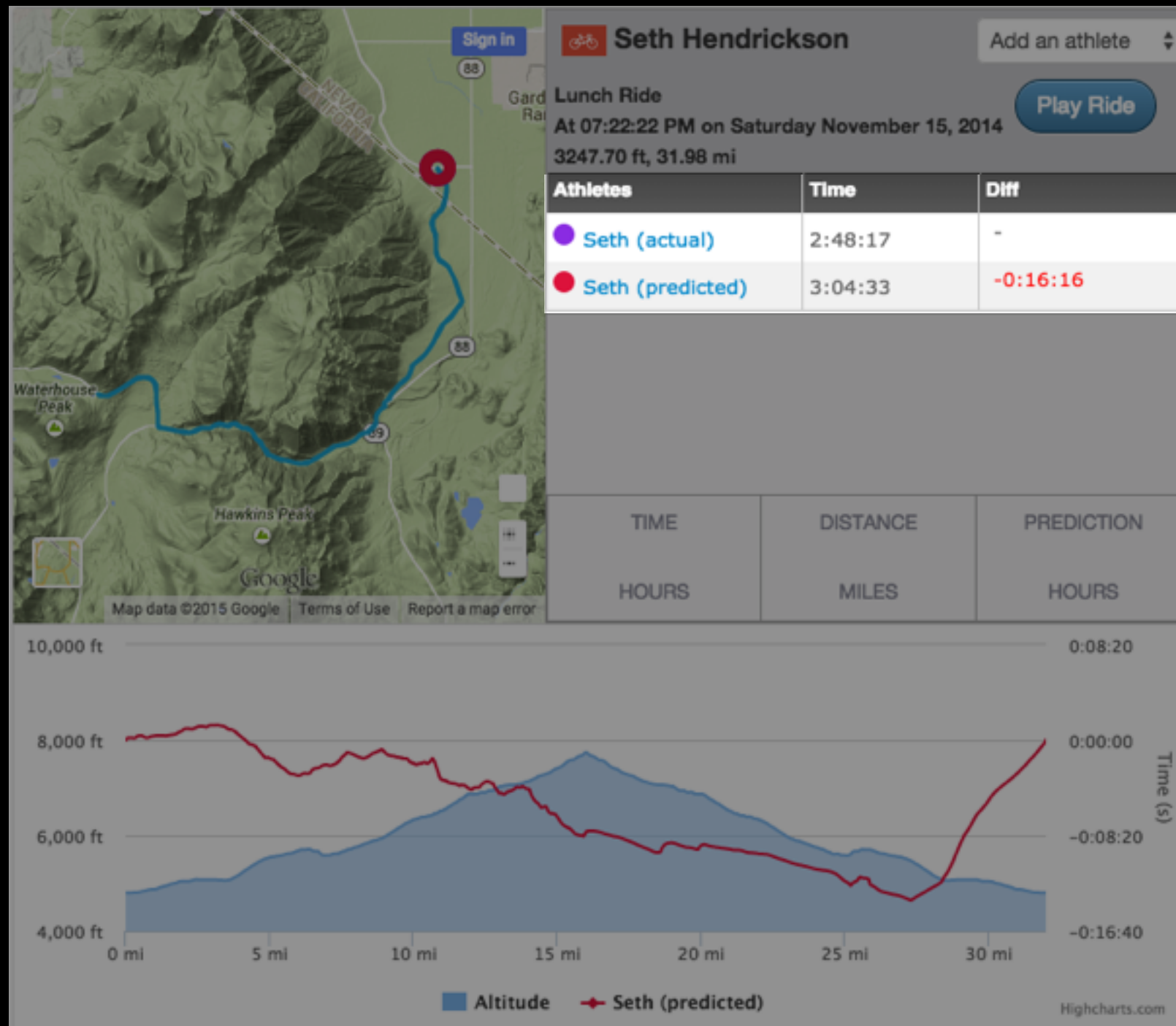


Outliers: what's going on?

- Dirty data
- Uncaptured features

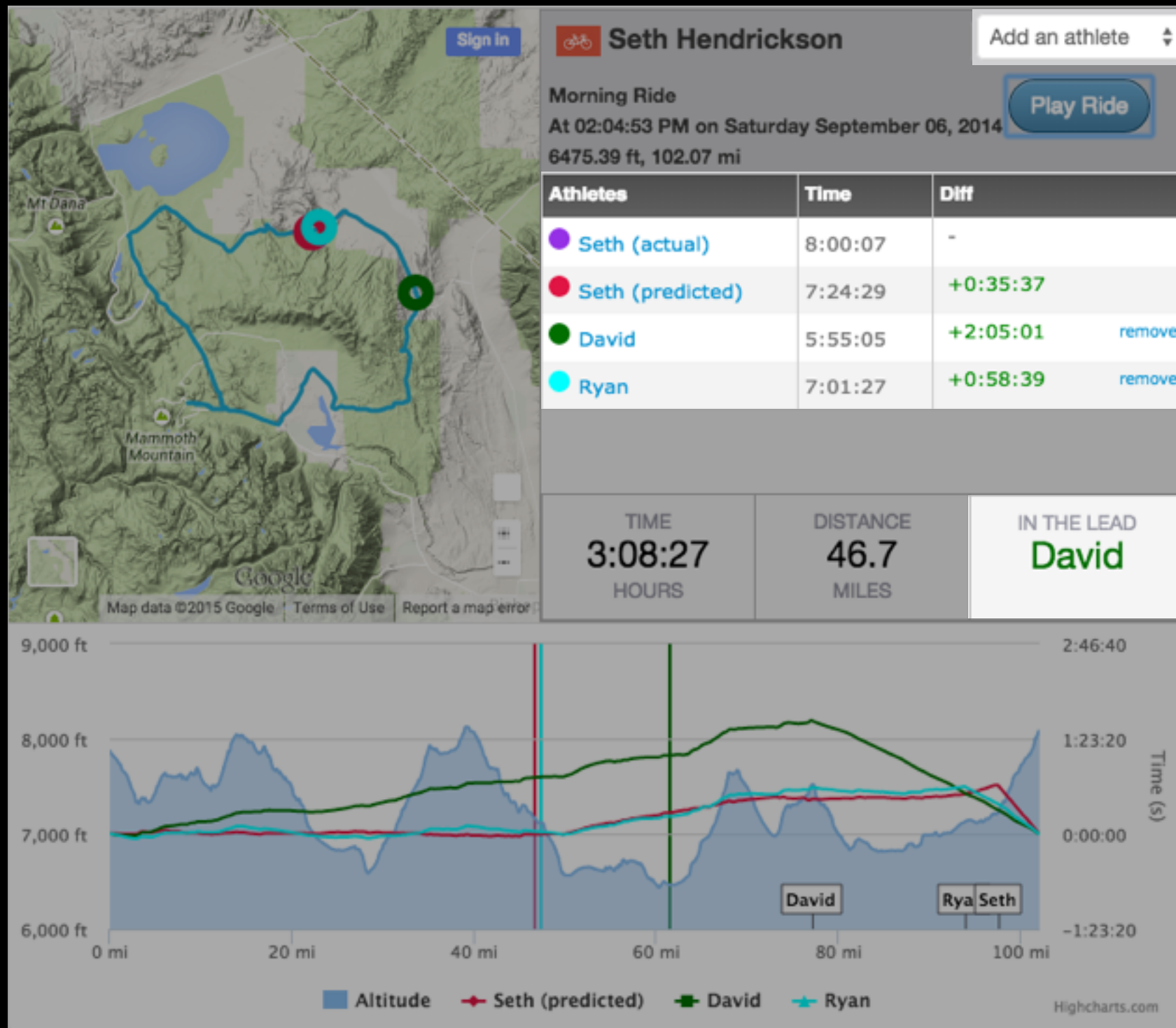
The Results

- A prediction for every course



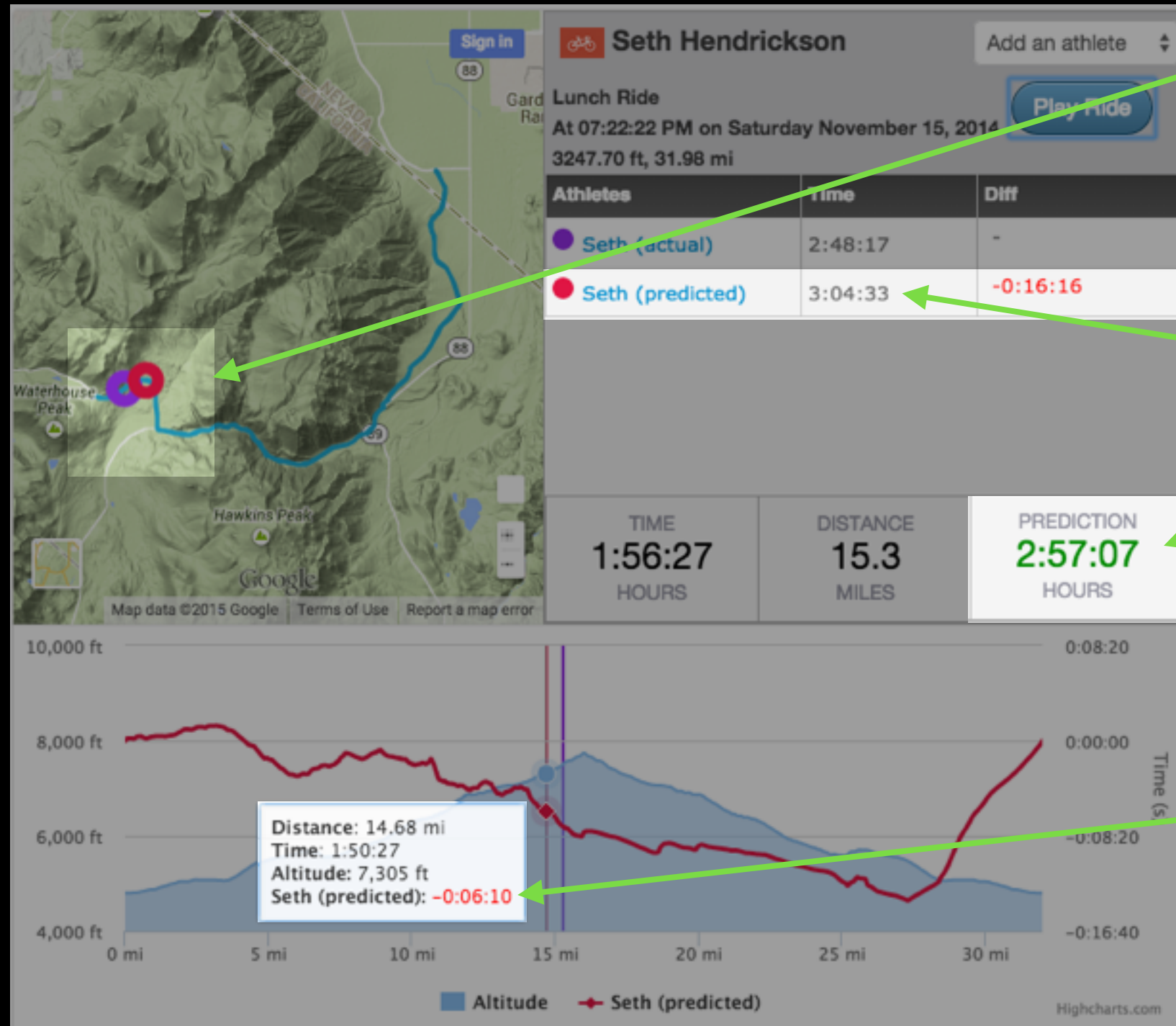
The Results

- Comparisons to any rider, any course, any time



The Results

- Live, in-ride feedback



A ghost to set your pace

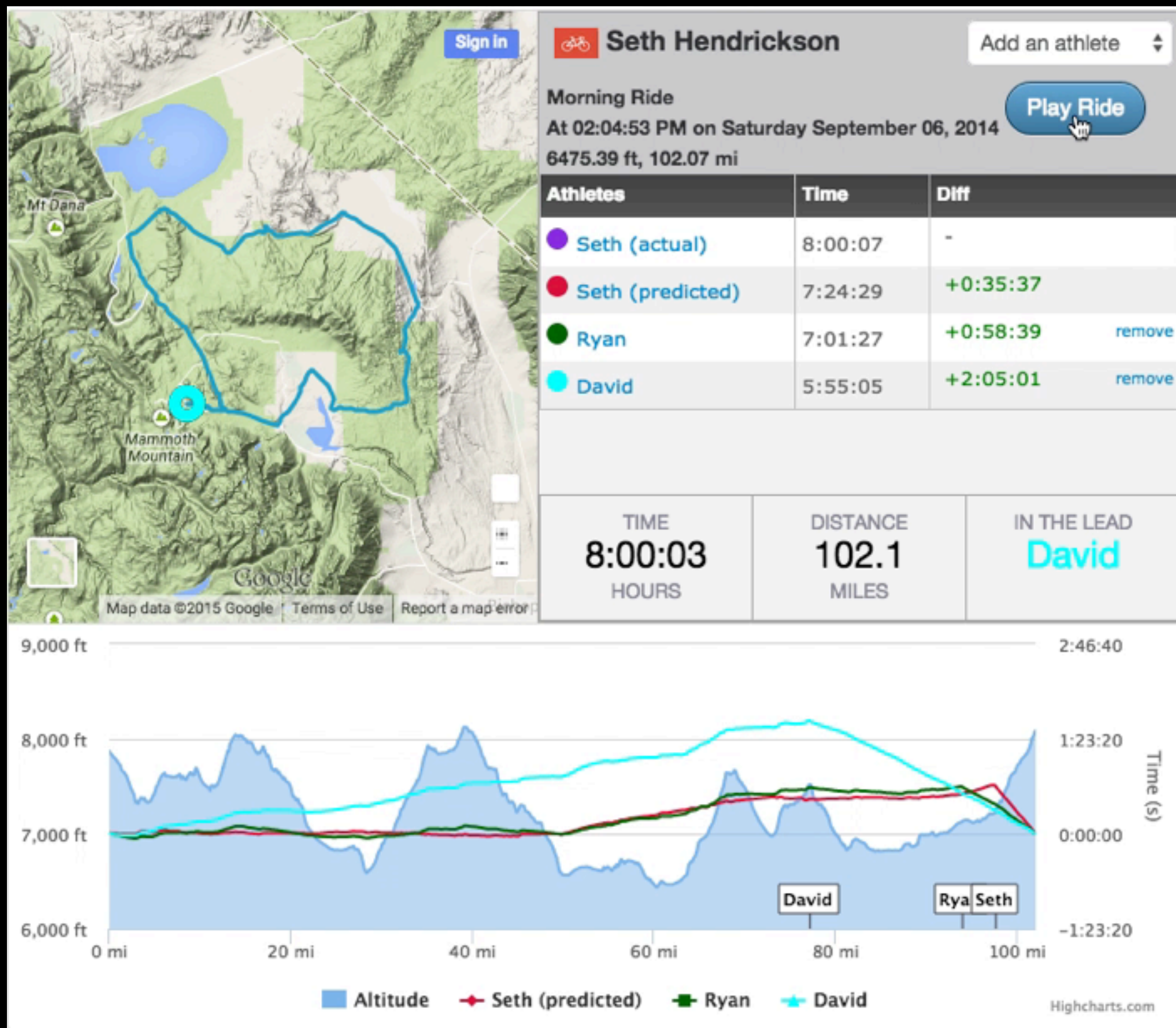
Compare:
original prediction
vs.
updated prediction

Know how much ground
you've gained or lost

Next Steps

- More features
 - Weather
 - Rider demographics
 - Traffic
 - Power and heart rate
- Intelligent pacing - you know you're behind, but where to make up time?
- Automated analysis - highlight highs and lows of ride

Demo



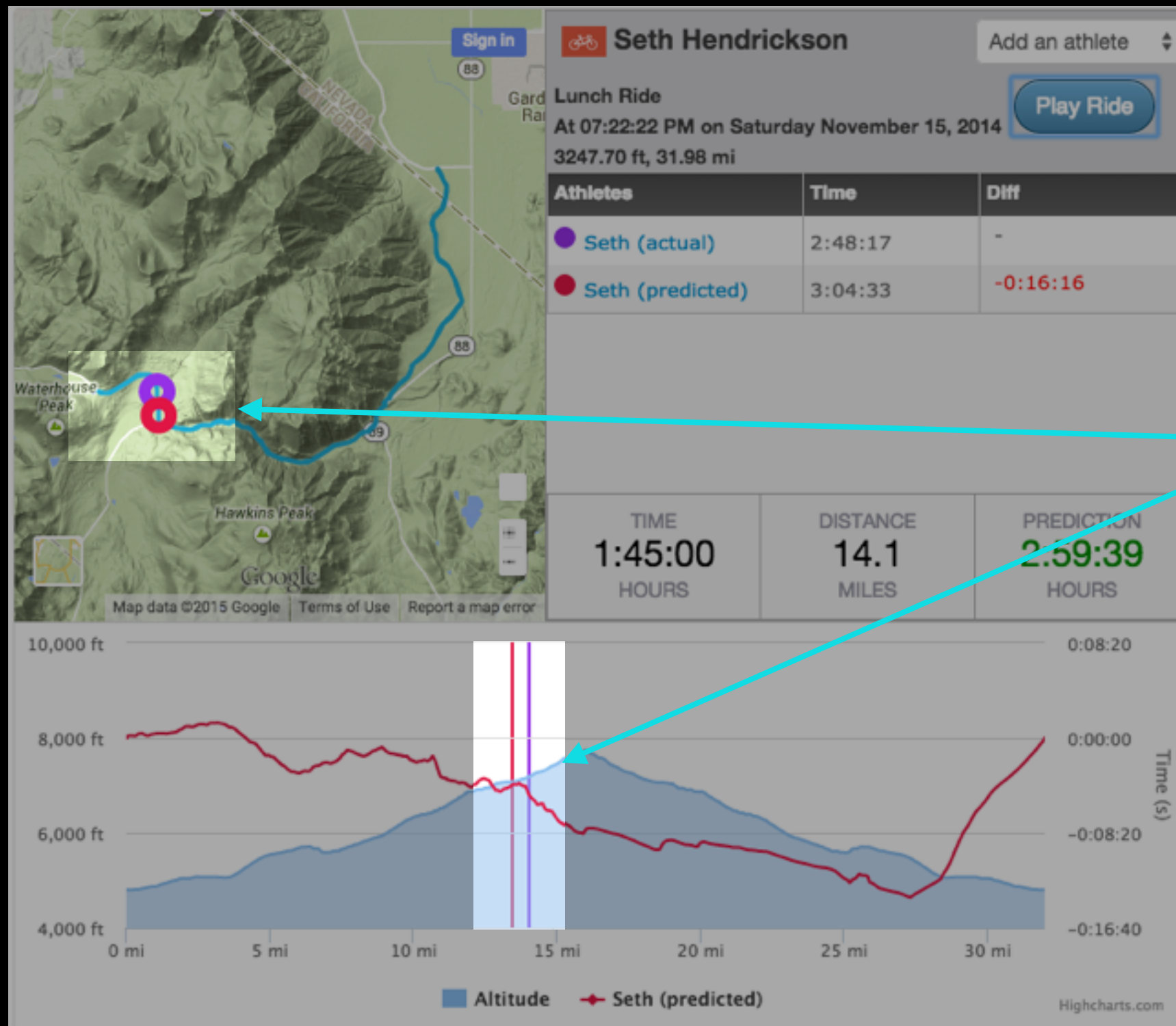
Questions?

Model details

- Predict the cyclist's velocity at every point (a regression problem)
- A personalized Random Forest Regression model for each user
- Important features
 - Grade
 - Ride difficulty
 - The recent past - window of last n miles of ride
 - Current state - how tired is the rider?
 - Seasonal state - how fit was the rider to begin?

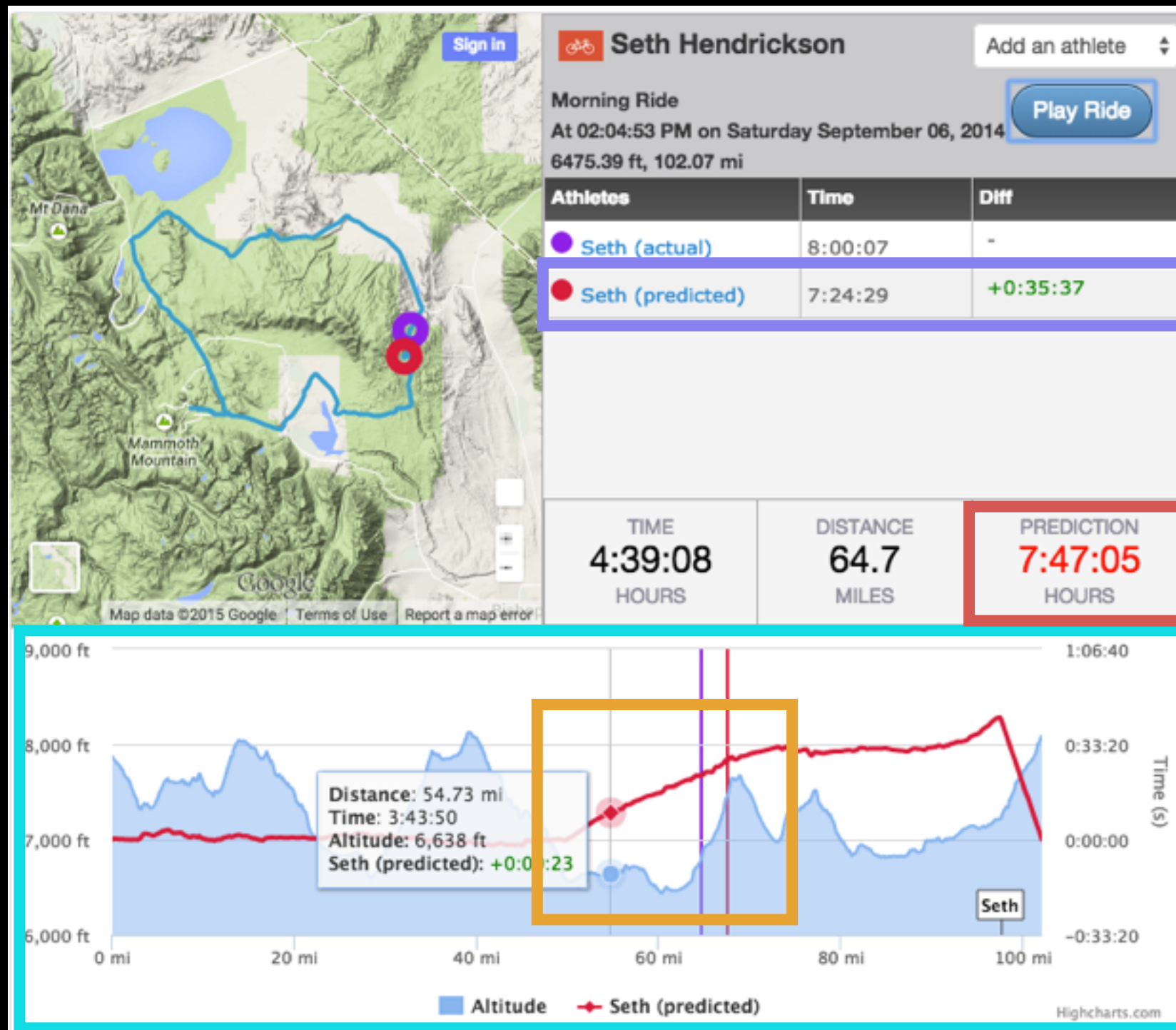
The Results

- A ghost to set your pace



Take the guesswork out of pacing.

Streaming Prediction



Original prediction helps cyclists plan their rides.

Updated prediction allows riders to intelligently adjust their pace

A continuous prediction lets riders see where they will be at every point during the ride

Find out where you lost ground on your rides

The Dashboard

Seth Hendrickson

Morning Ride
At 02:04:53 PM on Saturday September 06, 2014
6475.39 ft, 102.07 mi

Athletes	Time	Diff
Seth (actual)	8:00:07	-
Seth (predicted)	7:24:29	+0:35:37

☒ Add an athlete
David Bangor
Matthew Fabiano
Seth Hendrickson
Colleen Hendrickson
Ryan Taylor

Add a rider

Seth Hendrickson Add an athlete Play Ride

Morning Ride
At 02:04:53 PM on Saturday September 06, 2014
6475.39 ft, 102.07 mi

Athletes	Time	Diff
Seth (actual)	8:00:07	-
Seth (predicted)	7:24:29	+0:35:37
David	5:47:53	+2:12:13 remove

TIME
4:40:55
HOURS

DISTANCE
64.8
MILES

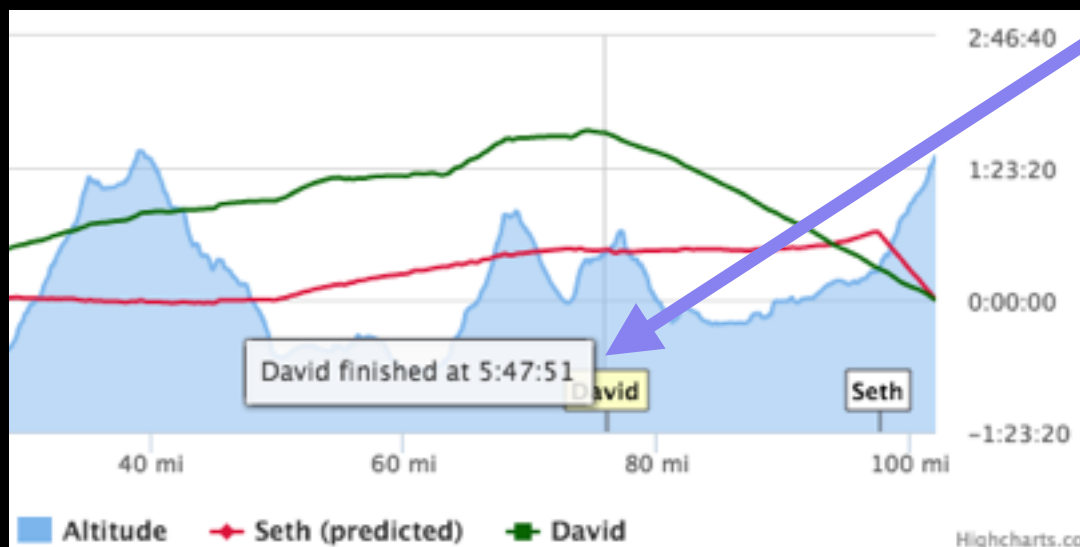
IN THE LEAD
David

Map data ©2015 Google

Distance: 59.62 mi
Time: 4:08:28
Altitude: 6,517 ft
Seth (predicted): +0:15:57
David: +1:18:14

Altitude Seth (predicted) David

Then compare



Upload new route

Your routes

Ride Name	Date	Distance	Climb
No routes to display			

Your completed activities

Ride Name	Date	Distance	Climb
Lunch Ride	August 28, 2014	16 mi	7
Lunch Ride	September 02, 2014	13 mi	2
Lunch Ride	September 03, 2014	16 mi	7
Morning Ride	September 06, 2014	102 mi	6
Lunch Ride	November 15, 2014	31 mi	3

Upload a Route

Upload any route and get a prediction

Before you start,

- **Know** how long it will take you
- **Know** where you will be, and when
- **Know** what your pace should be
- **Get feedback** on your performance as you do it

