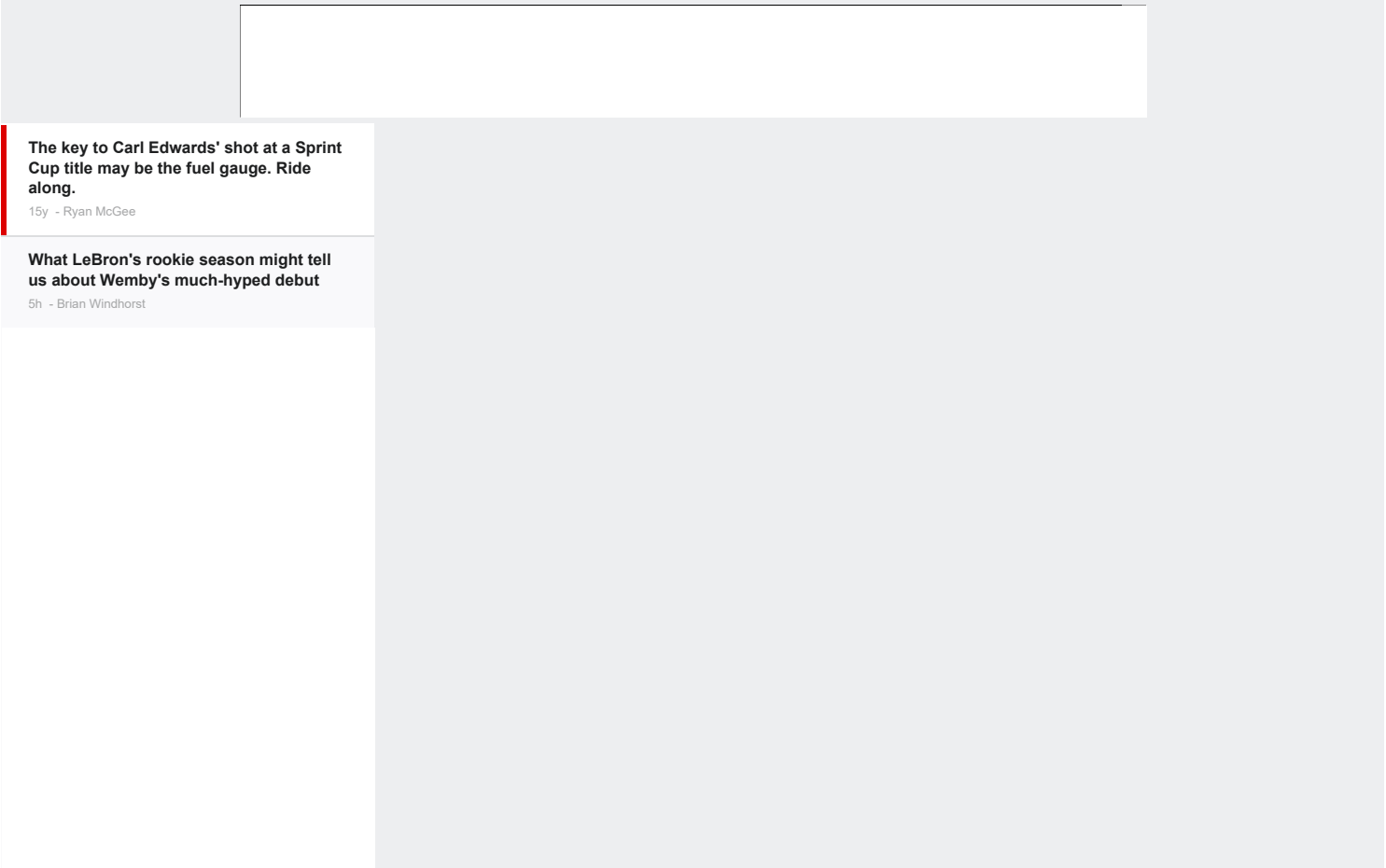




The key to Carl Edwards' shot at a Sprint Cup title may be the fuel gauge. Ride along.
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Carl Edwards grips the steering wheel of his Ford Fusion and suddenly feels the pressure of the moment. Here, on the grounds of Lowe's Motor Speedway, his driving skills are being scrutinized like never before in his five-year Sprint Cup career. All eyes are on him: an onboard TV camera, the lens of a still photographer, the constant gaze of crew chief Bob Osborne. As Edwards leans into the throttle, an Obi Wan-like voice whispers into his ear, hoping to help the 2008 Cup runner-up find a way to maximize his performance.

"Okay, Carl ... that's too fast."

"I'm doing 20 ... "

"Trust me, that's too fast at this point."

Edwards rolls his eyes and lifts his right foot. Jack Martin can't suppress a cackle.

"I love telling a race car driver to slow down," says Martin, who holds a doctorate in technology education and resource management. "Don't worry, buddy, when you win the championship this year, I plan on taking all the credit. Deal?"

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"Yeah, deal," Edwards says with a smile ... then mashes the gas pedal and launches the Ford into a left-hand turn that throws his passenger against the door frame.

Both of these men have won championships behind the wheel. Edwards took the 2007 NASCAR Busch Series title and finished second last year in both of NASCAR's top two series. This season, he aims to become the first racer to win simultaneous titles in both divisions and is the near-unanimous choice to derail Jimmie Johnson's drive to a Sprint Cup four-peat. Martin is also a rising motorsports star—in hypermiling. His goal is to squeeze the best fuel efficiency out of his automobile during timed, rally-style road races. Martin, who teaches sustainable transportation classes at Appalachian State, won the 150-mile Tour to the Shore competition last June by extracting a mind-bending 124.6 mpg from his Honda Insight Hybrid on New Jersey's highways. The previous record was 75 mpg. (Edwards' Sprint Cup ride is slightly less efficient, at 4.5 mpg.)



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between Lowe's and Roush Fenway Racing and handing the keys to "the slowest dude I have ever ridden with in my life." Edwards pulls over and switches seats with Martin. "In our defense, efficiency isn't typically our job," the star says, watching the in-dash mpg indicator climb higher and higher as Martin preaches about the realities of drafting behind 18-wheelers (side drafts are better—and safer—than tucking in directly behind).

"Our job is to go as fast as possible. And that means whatever Jack does is usually the total opposite of what we do."

He's not exaggerating. Martin begs drivers to keep tires pumped to the highest recommended psi, while Cup cars leave Pit Road on tires that are nearly flat to maximize the size of the "contact patch" that grips the track. Hypermilers keep speeds down, accelerate and brake gently, coast on straights and use the throttle entering turns to maximize the coasts that follow. "Do that on the track, and watch everyone fly past you," Edwards says.

A delivery van blows by with a honk of the horn. "There it is, our first bird-flip of the afternoon," Martin says. "He thinks we're holding him up by going the speed limit. But we'll be right next to him at the next red light, and if we were both headed to the same destination 100 miles from here, I guarantee we'd arrive at the same time and I would have spent zero dollars on fuel and he would have filled up."

"Racing is no different sometimes," Edwards says. "Race smart, and the guy who took off and left you but is sliding around all over the place will end up coming back to you. Of course, that's a hard pill to swallow when it's happening."

Over his 157 Cup starts, Edwards has earned a reputation for fearless, edge-of-the-envelope driving. It's a distinction epitomized by his final-lap banzai move at Kansas last September, when he intentionally went into Turn 4 too fast, hoping that a carom off the outside wall would adjust his line and propel him to a win. (It didn't.) But his bull-rush rep belies an even more impressive ability to produce mpg when needed. "We won three races last year on fuel mileage, two of them in the Chase," Osborne says. "Pocono, Texas, Homestead—all three times, we asked Carl to squeeze more mileage out of his race car than he should be able to. And he did it."

That kind of race is when Martin's mantras come into play, when a driver has to rewire his mind to do the opposite of what his instincts demand. The one that still has the competition shaking their heads was the victory at Texas, when Osborne decided to forgo the last pit stop to gain track position. Edwards inherited the lead and, going easy on the pedals, somehow held off the cars that had chosen to pit. The 99 Ford went 103.5 miles on an 18.5-gallon tank. That's 5.6 mpg, a 24% increase in efficiency.

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Bob Donnan

"One of the things I love about hypermiling is how it's judged: your mileage divided by the EPA's fuel-economy rating for your vehicle," Martin explains. "A guy in a Hummer might beat you because he found a way to increase his efficiency by 80%. Sounds like Carl should be competing with us."

Then the professor turns to Edwards and Osborne and asks what seems like a logical question: "What kind of computer do you use to monitor efficiency?"

Osborne points to Edwards.

"Him."

Dr. Jack says his hyperinstincts developed when he was young; Edwards gives a knowing nod. During childhood fishing trips, Martin used to see how few strokes he could use to get his canoe from one side of the lake to the other. As a teenage school-bus driver, he was accused by his supervisor of cutting short his routes because he consistently used less gas than everyone else. "That's so weird," Edwards says to Martin. "When I was first trying to get a job in NASCAR, I used to drive my little piece-of-junk Mazda from Missouri to Charlotte all the time. It became a game to see how few stops I had to make. Eventually I could do the whole 900 miles on one stop."

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Bob Donnan

Like Martin, Edwards learned about the benefit of being smooth—easing into the brake and delaying the moments when he finally allowed himself to lean into the throttle. Both men are also avid cyclists who say experience on two wheels improves their performance on four. "Cycling is all about momentum," Martin says, his voice rising with excitement. "When you start pedaling, you want to know you're getting the maximum result for your effort. You use hills and banking, and you know where the air resistance is and where it isn't."

"He's right," Edwards says, nodding his head at how much sense this is all starting to make. He even suggests they give a call to his personal trainer, who happens to be Lance Armstrong's personal trainer. "The idea is the same."

Although these strategies aren't likely to help much when the season kicks off in high gear, at Daytona on Feb. 15, Edwards and Osborne will employ them on tracks where long green-flag runs mean playing chicken with the fuel gauge on the final laps. "There are things that we can do in the pits to stretch fuel," Osborne says, reluctant to become too specific about engineering. "A loose race car is easier to drive smoothly, and the gas man has to make sure he gets every drop possible into the car and doesn't spill too much. But in the end, it's all about Carl's feel and his feet."

Martin pulls into the parking lot at Roush Fenway, and the two champions laugh about the fact that Martin's turn behind the wheel kept the Ford's mpg gauge pegged at its limit of 60 mpg, while Edwards kept it hovering somewhere around 10. No wonder Edwards is