**Should Pato O’Ward Have 2-Stopped at Mid-Ohio?**

After Pato O'Ward’s poor qualifying effort which had him starting 25th on Sunday, the broadcasters in the NBC booth stressed that he had to “do something different”.

And sure enough, the McLaren driver’s pit wall opted for a 3-stopper instead of the favored and race-winning 2-stop strategy.

Despite these setbacks, O’Ward still finished with the 3rd fastest total time in the field, covering 80 laps just 14 seconds slower than race winner Palou despite finishing 28.5s behind on the track.

Of course, qualifying better could have eaten into that chunk of time a bit, but could one-less pitstop and the ~30s saved have made up for his poor qualifying and seen O’Ward actually come from 25th to win?

To analyze this, we need to consider two things:

1. How much time would O’Ward have saved by pitting one less time? (This is the easy question to answer because it’s just the pit delta).
2. How much time did O’Ward gain from having fresh tires on his extra stint, or how much time would he have lost being on older tires for longer?

The net of these two things ends up being the delta between a 2-stopper and a 3-stopper. For example, if O’Ward lost 30s pitting, but gained .5 seconds per lap over 80 laps compared to the 2-stoppers, then he would net out to 10 seconds faster overall, making the 3-stopper the better strategy. However, if he only gained .2 seconds per lap over 80 laps, then he would net out to 14 seconds slower than the 2-stopper.

The second question is harder to answer because we don’t know how his tires would have held up, what traffic he would have hit, and all the other unknowns that may have occurred.

The best we can do is see how the drivers around him were affected and extrapolate out to O’Ward’s race.

**Pit Delta**

The pit delta for O’Ward specifically can be found by looking at his pit in and pit out laps on the laps he pitted, and then comparing that to his normal non-pit green flag laps.

The Pit Delta also changes as the race progresses, and particularly the 3rd stop delta was quicker for O’Ward because he needed less fuel, so we will use that delta instead of the overall average. His 3rd stop was 2s quicker than his 2nd stop and 6.5s quicker than his first.

So his 3rd stop added 26.769 seconds to his race time vs. staying out and doing average-paced laps.

**Tire Difference**

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O’Ward’s green flag non-pit lap times on average were 69.8 seconds. The drivers on the 2-stop strategy were averaging 70.6 seconds per lap, but we care more about the fastest of the 2-stoppers, Palou and Dixon. They were both averaging 69.95. So on a typical green-flag non-pit lap, of which there were 69 for O’Ward, he was only 0.15s faster than Palou. So that equates to about 10.4s gained over those green flag laps on pace alone.

So he gained 10.4s by choosing a 3-stop over a 2-stop, but lost 26.8s in pit-road time, for a net loss of 16.2s with a 3-stop strategy.

Compared to the field, the 3-stopper made sense as he was almost a full second quicker per lap than the average 2-stopper, meaning he made up 55s on the field to counteract his 27s stop. But the fastest of the 2-stoppers were able to keep a similar pace to him even on longer stints.

**Navigating Traffic**

What likely hurt O’Ward was all the extra passes he had to make thanks to an extra stop. O’Ward started in 25th, so he had a bigger gap to make up and 24 cars to get by. He was already 6.6s behind Palou at the end of the first full green flag lap.

O’Ward had to overtake 43 cars for position in the race, 14 more than the next-closest driver. Palou and Dixon were among the lowest in the field, with just 10 and 13 overtakes, respectively. This number doesn’t cover the backmarkers, although all drivers would have to deal with them eventually.

You can see this take effect in the data too. While O’Ward had the fastest green-flag pace of anyone, he also had one of the highest standard deviations in lap time, meaning he was not able to be consistent. The difference may seem slight, but it is enough to make a difference, and accounts for the significant amount of extra time he spent behind and navigating around his competitors.



