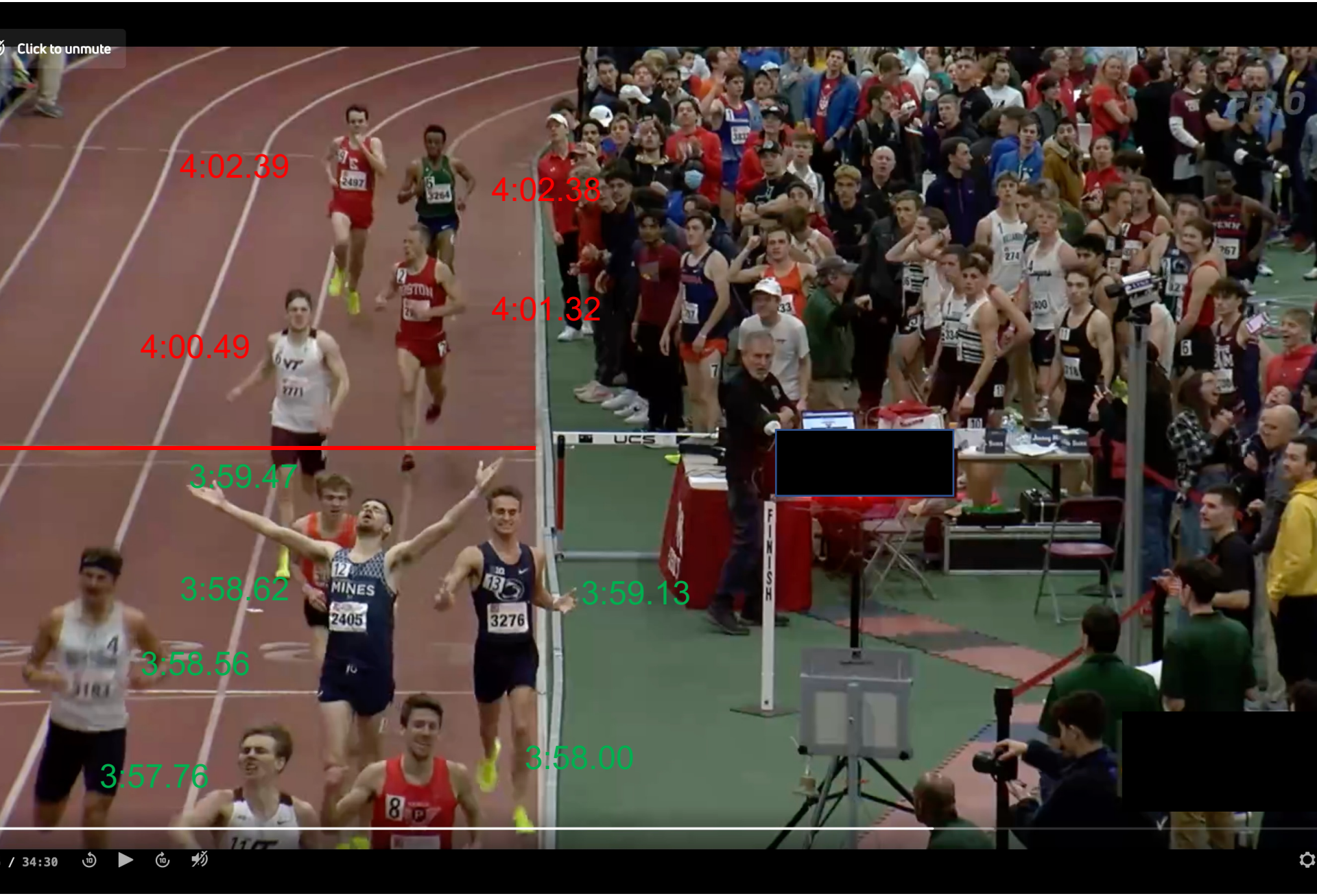
The Dynamics of Motivation in Goal Pursuit

Nicholas Owsley

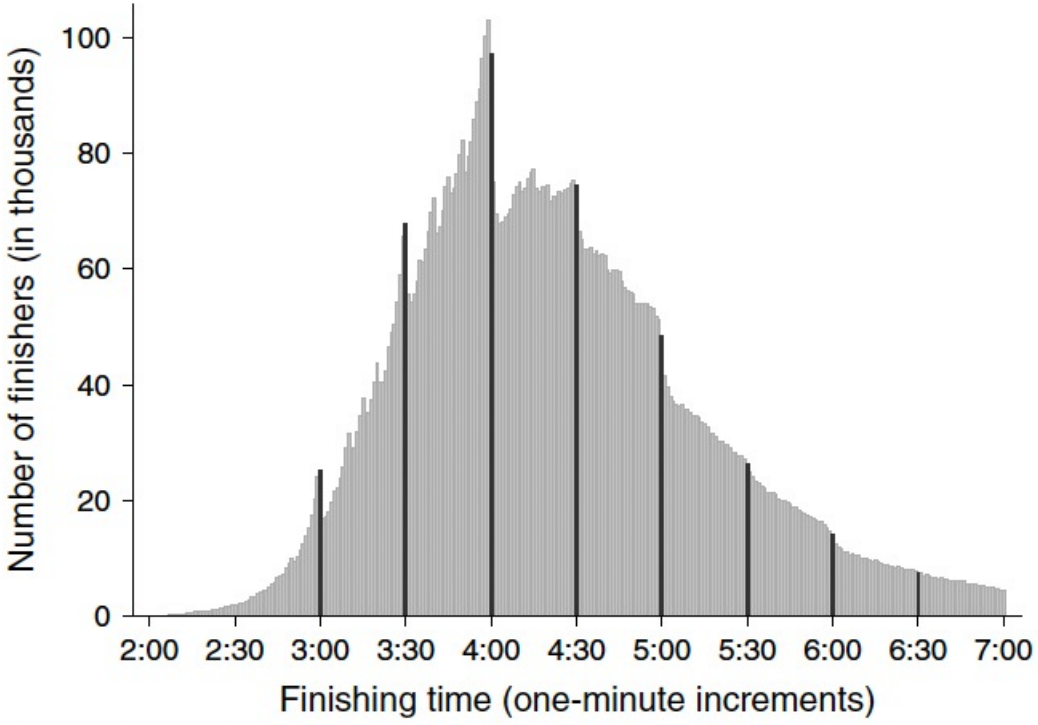
CHICAGO BOOTH
The University of Chicago Booth School of Business

With George Wu,
Donovan Rowsey


Click to unmute
4:02.39
4:02.38
4:01.32
4:00.49
3:59.47
3:58.62
3:59.13
3:58.56
3:58.00
3:57.76
FINISH
MINES
2405
3276
/ 34:30

Background

- Static: Round numbers and goals as reference points
  (Pope & Simonsohn, 2012; Pope & Schweitzer, 2012; Heath, Larrick & Wu, 1999; Anderson & Green, 2019).
- In running (Markle et al., 2018; Allen et al., 2017; Burdina & Hiller, 2022; Soetevent, 2021).

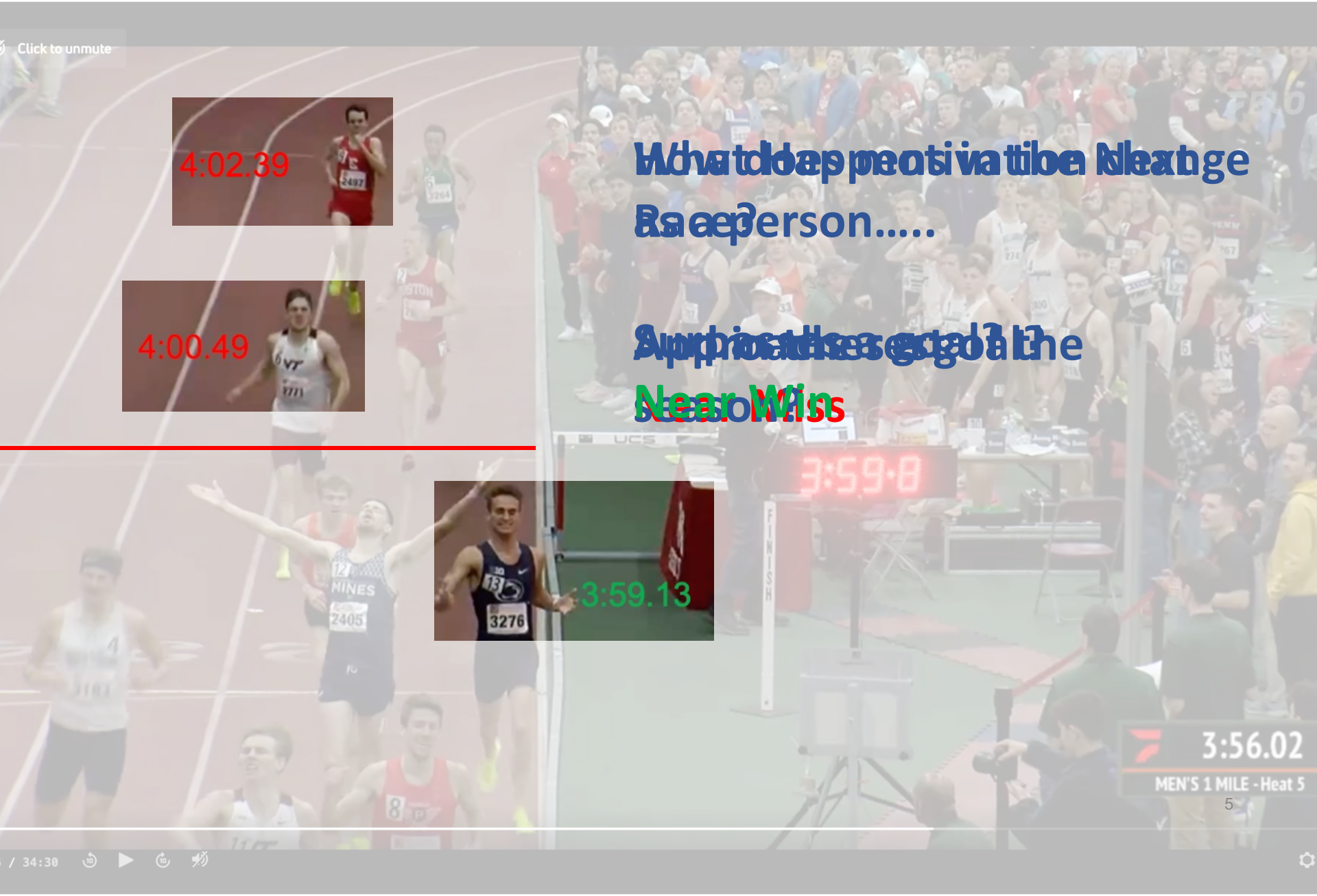


Allen, Dechow, Pope, and Wu, 2017

Background

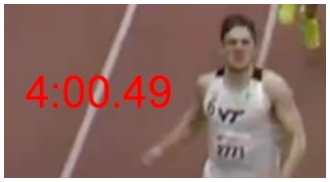
- Static: Round numbers and goals as reference points
  (Pope & Simonsohn, 2012; Pope & Schweitzer, 2012; Heath, Larrick & Wu, 1999; Anderson & Green, 2019).
- In running (Markle et al., 2018; Allen et al., 2017; Burdina & Hiller, 2022; Soetevent, 2021).

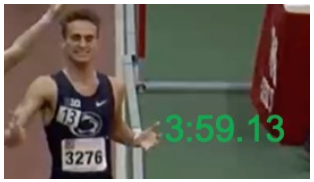
- Dynamic: ?


Click to unmute
4:02.39
4:00.49
3:59.13
3276
MINES
2405
3:59·8
3:56.02
MEN'S 1 MILE - Heat 5
5
/ 34:30

Motivation over time

What do different theories predict?





	Near Misses	Narrow Wins
Goals as reference points Heath, Larrick, Wu, 1999; Kahneman & Tversky, 1979	↑	↓
Goal gradient Kivetz, Urminsky, Zheng, 2006	↑	↓
Self-efficacy Bandura, 1982	↓	↑
Stress/Choking Mesagno & Beckmann, 2017	↓	

Some Research Questions

- How does motivation change as a person …
  - Approaches a goal?
  - Surpasses a goal?

- Which behaviors are affected?
- How persistent are these effects?
- Which models can explain this?

Data

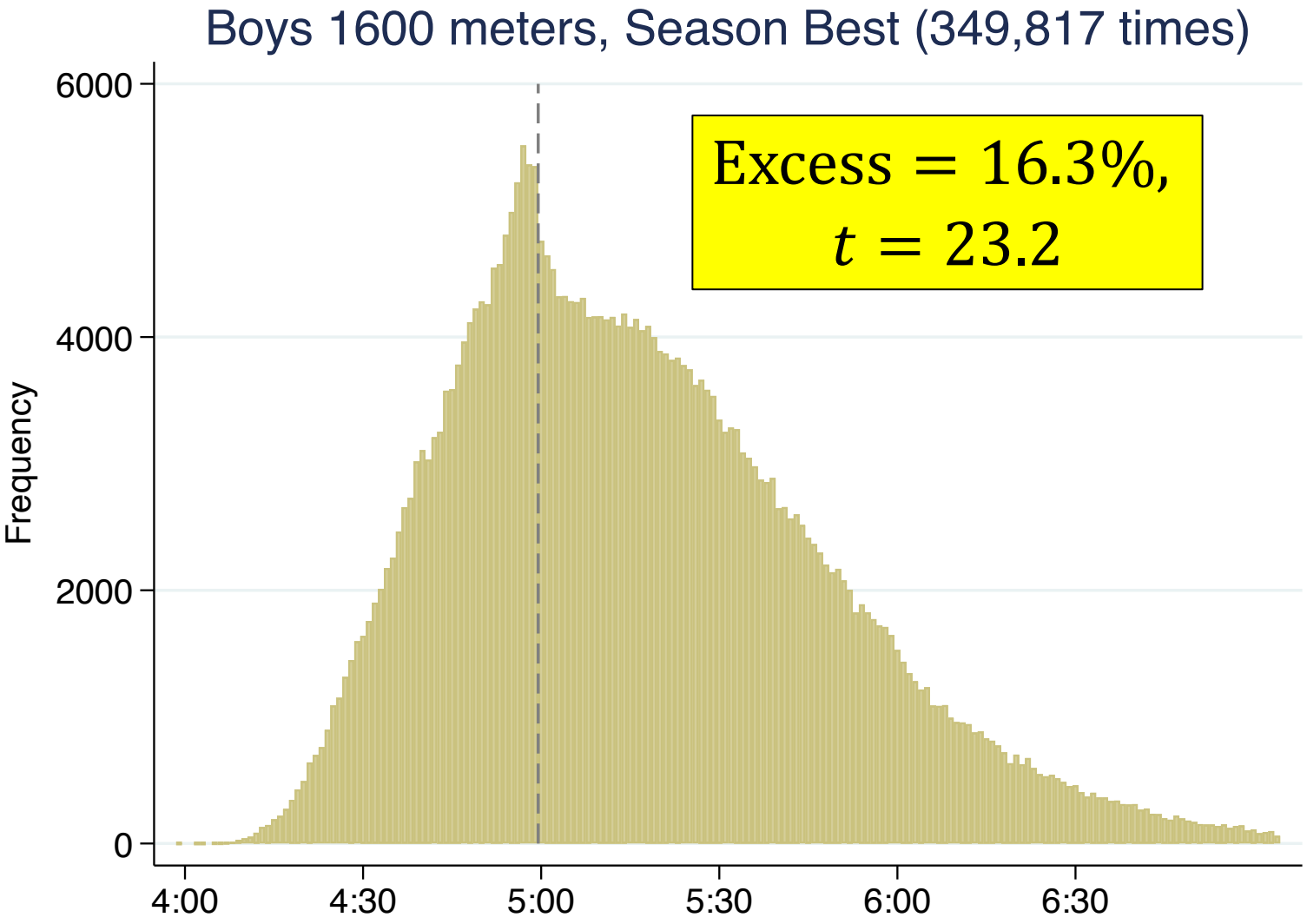
- High school track performances, 2009-2019
- Boys and Girls
- 3 middle-, long-distance events: 800, 1600, 3200 meters
  - 9.1 million times
  - 1.4 million athletes
- Boys 1600 meter race
  - 2.4 million times
  - 600K athletes
- 5 minutes as a reference point

Analysis Approach and Strategy

- Identify “Bunching” at Round Numbers (Chetty et al., 2011; Allen et al., 2017)

- Investigate Future Performance and Participation, Conditional on Personal Best (PB) Times
  - Near Misses vs. Narrow Wins

Is There Bunching? **Yes**

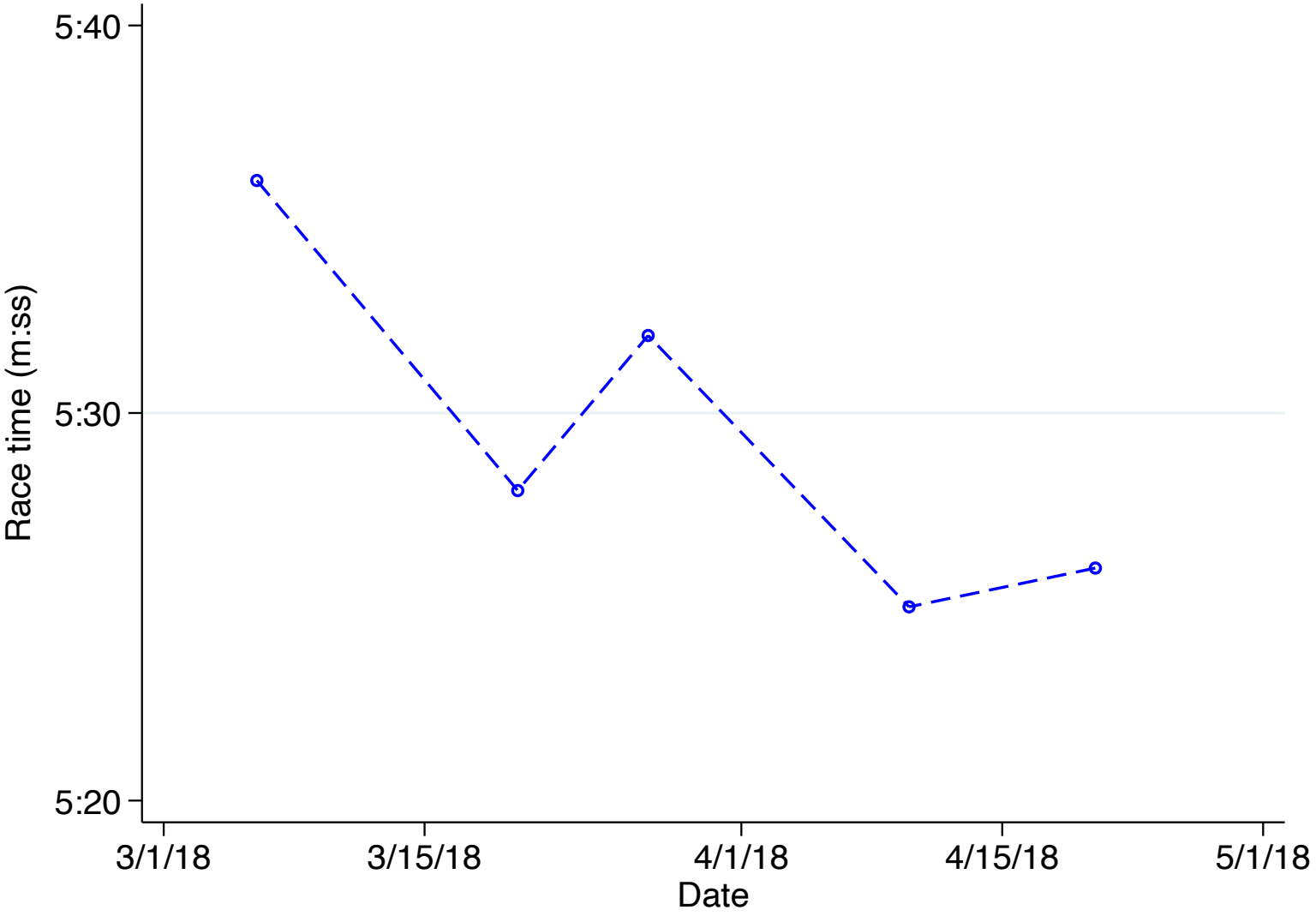


Analysis Approach and Strategy

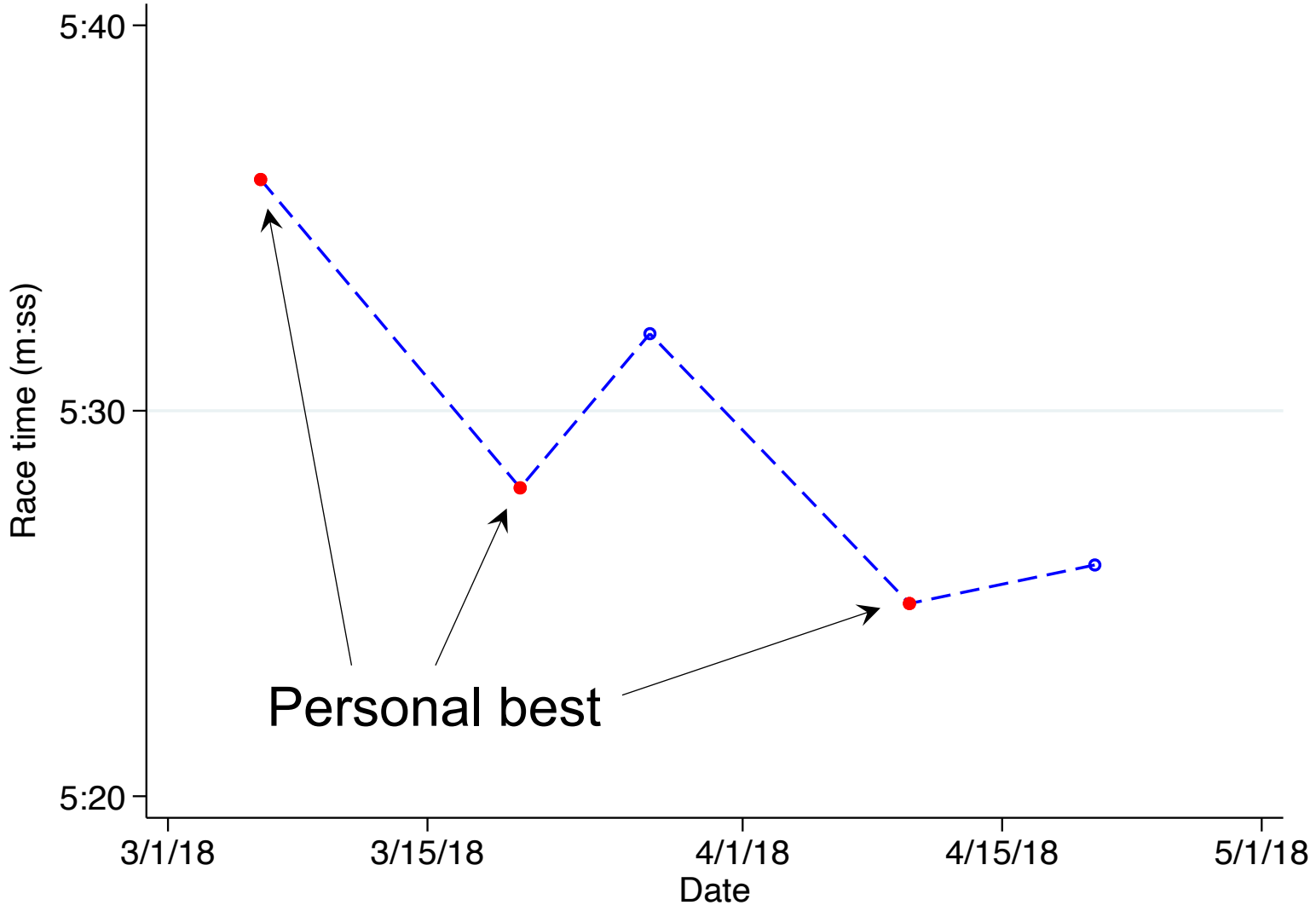
- Identify Bunching at Round Numbers (Chetty et al., 2011; Allen et al., 2017)

- Investigate Future Performance and Participation, Conditional on Personal Best (PB) Times
  - Near Misses vs. Narrow Wins

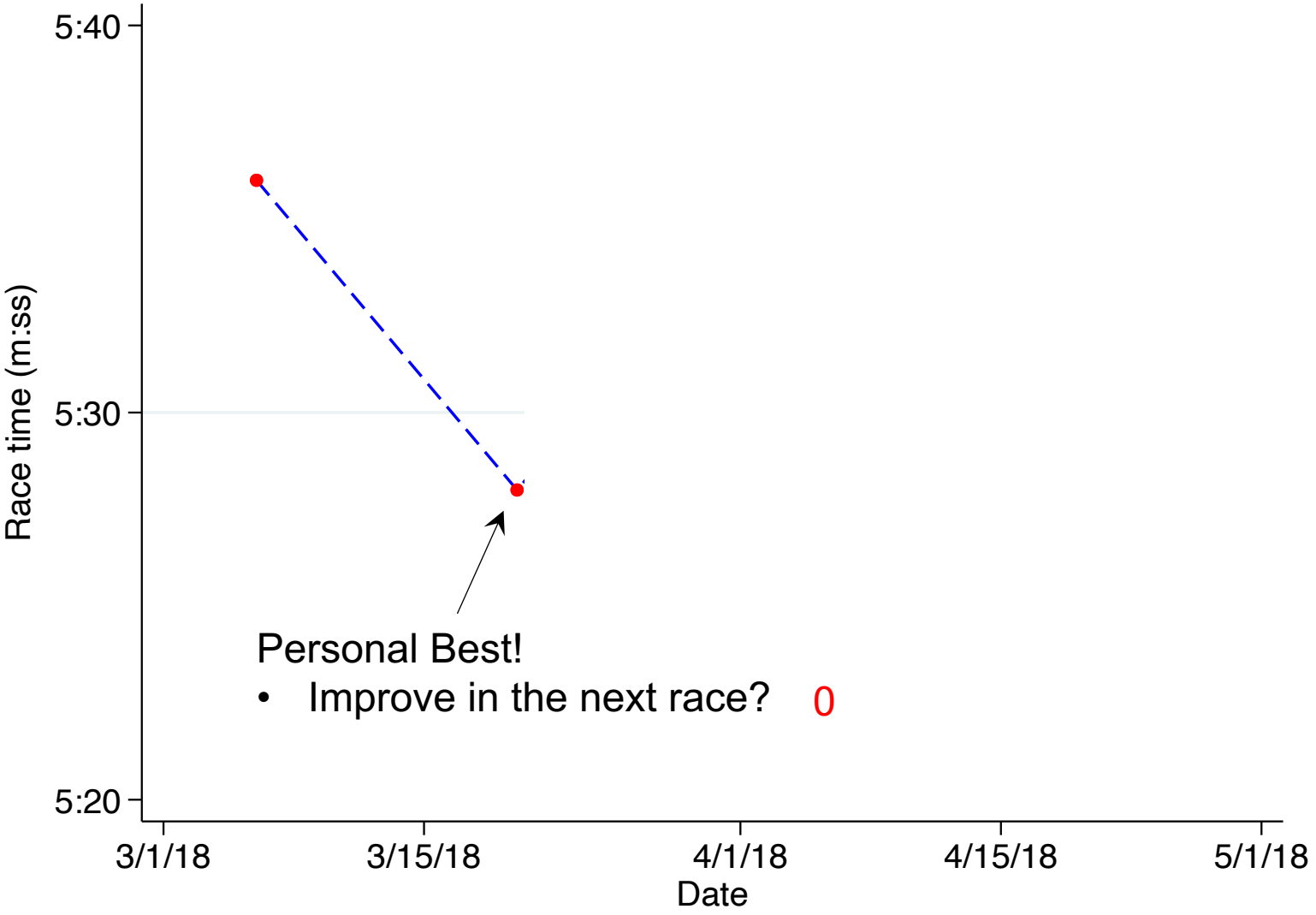
A Runner: 1600 Meter Time Series



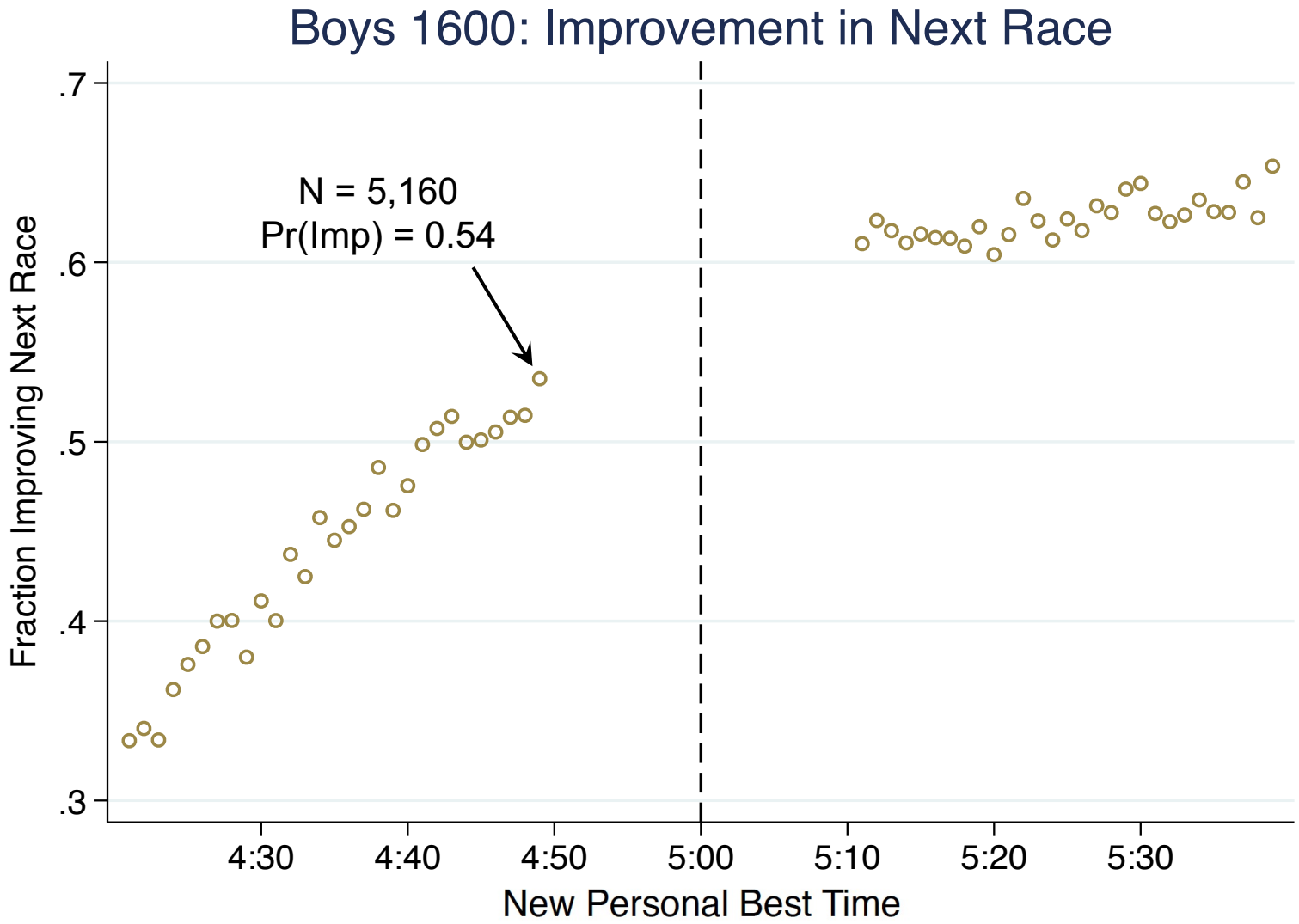
A Runner: 1600 Meter Time Series



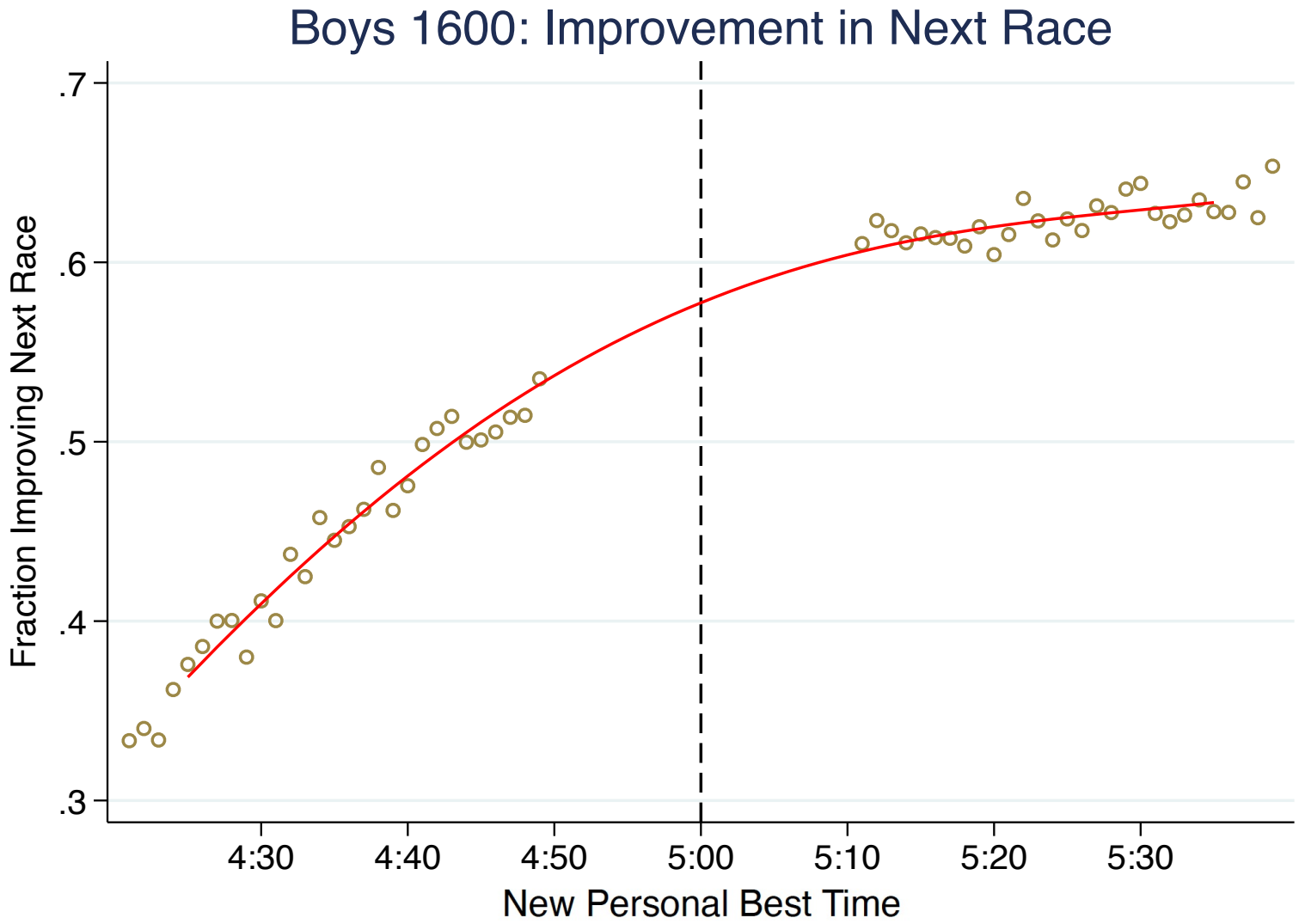
A Runner: 1600 Meter Time Series



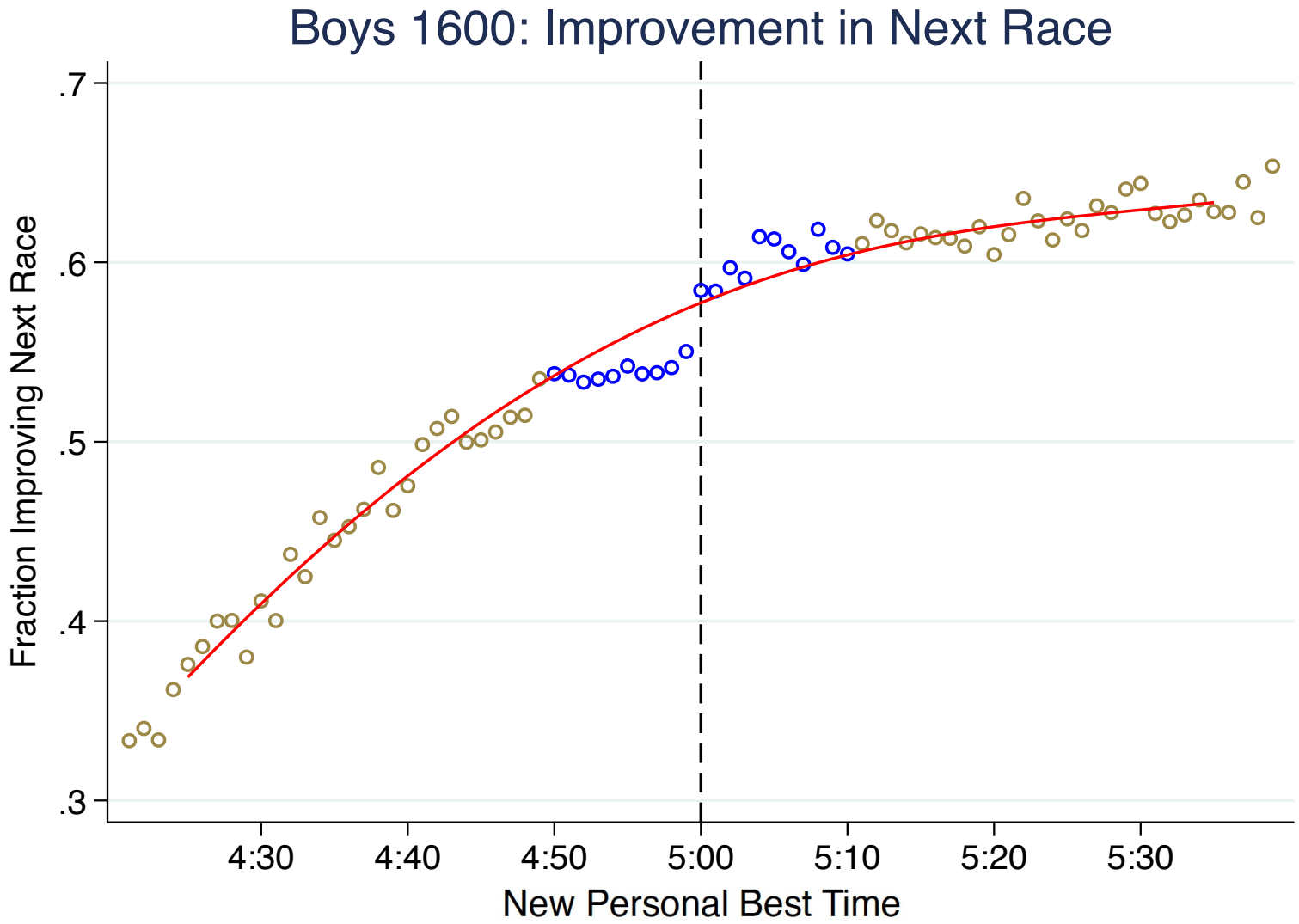
Improvement Near Round Number?



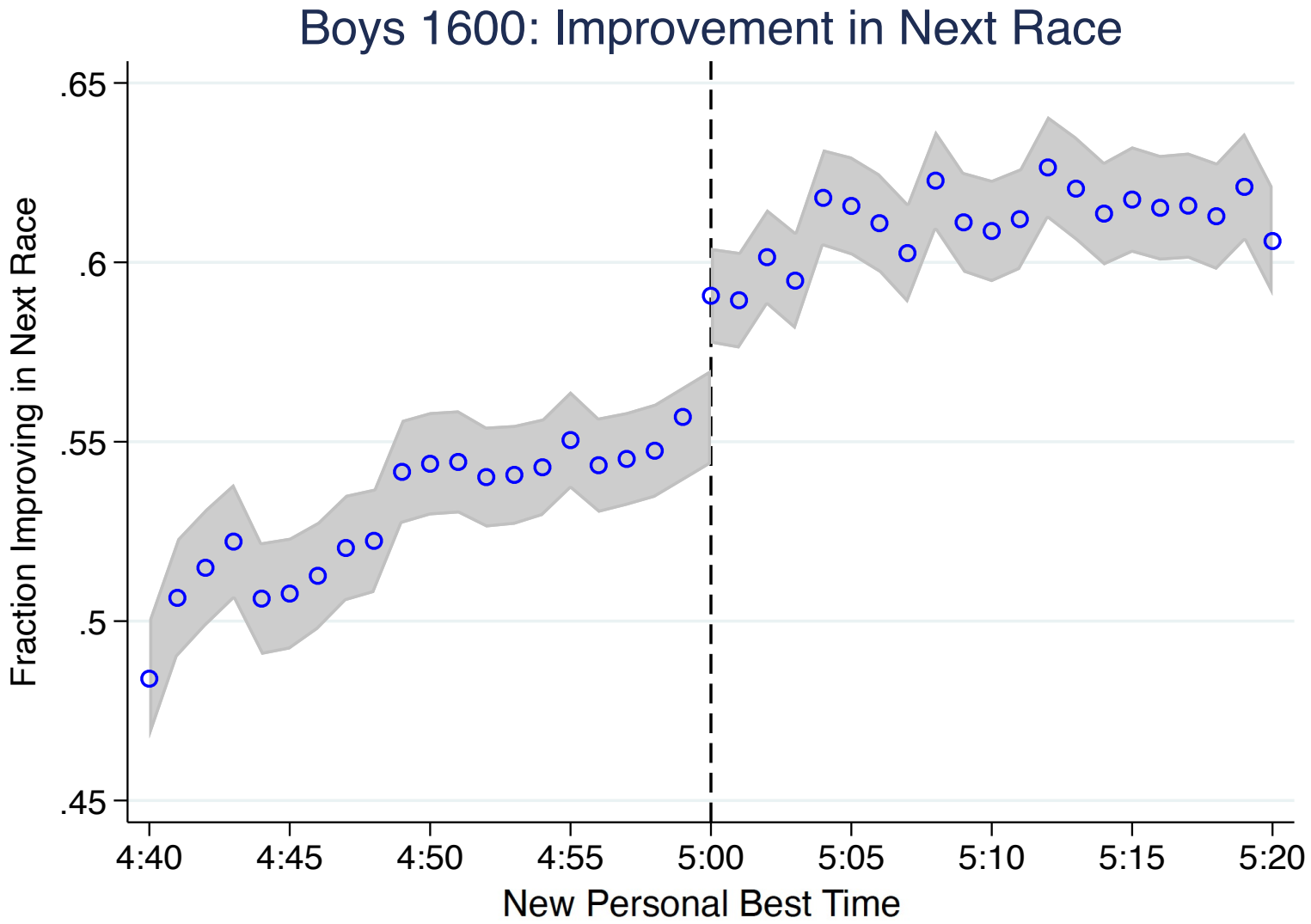
Improvement Near Round Number?



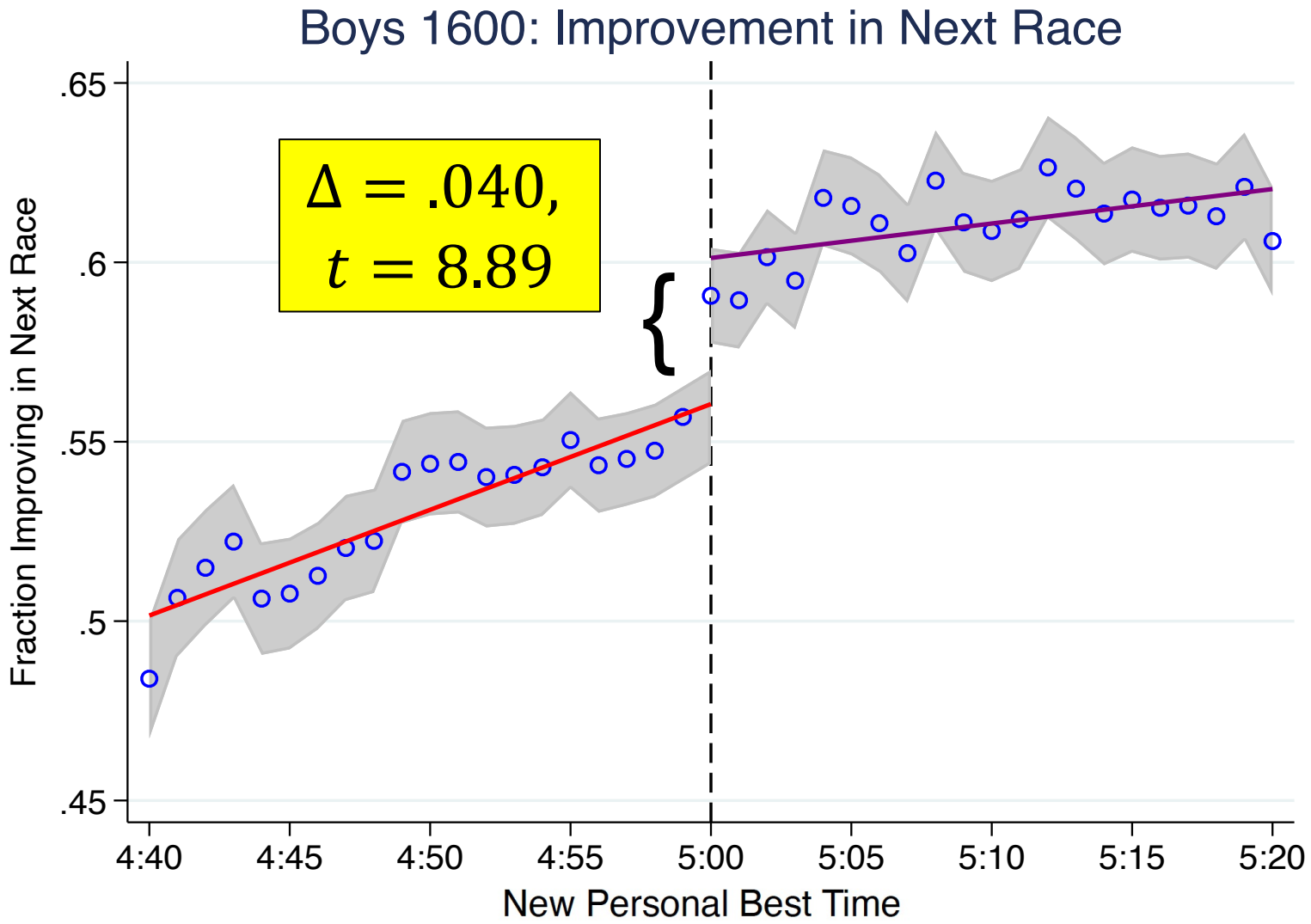
Improvement Near Round Number?



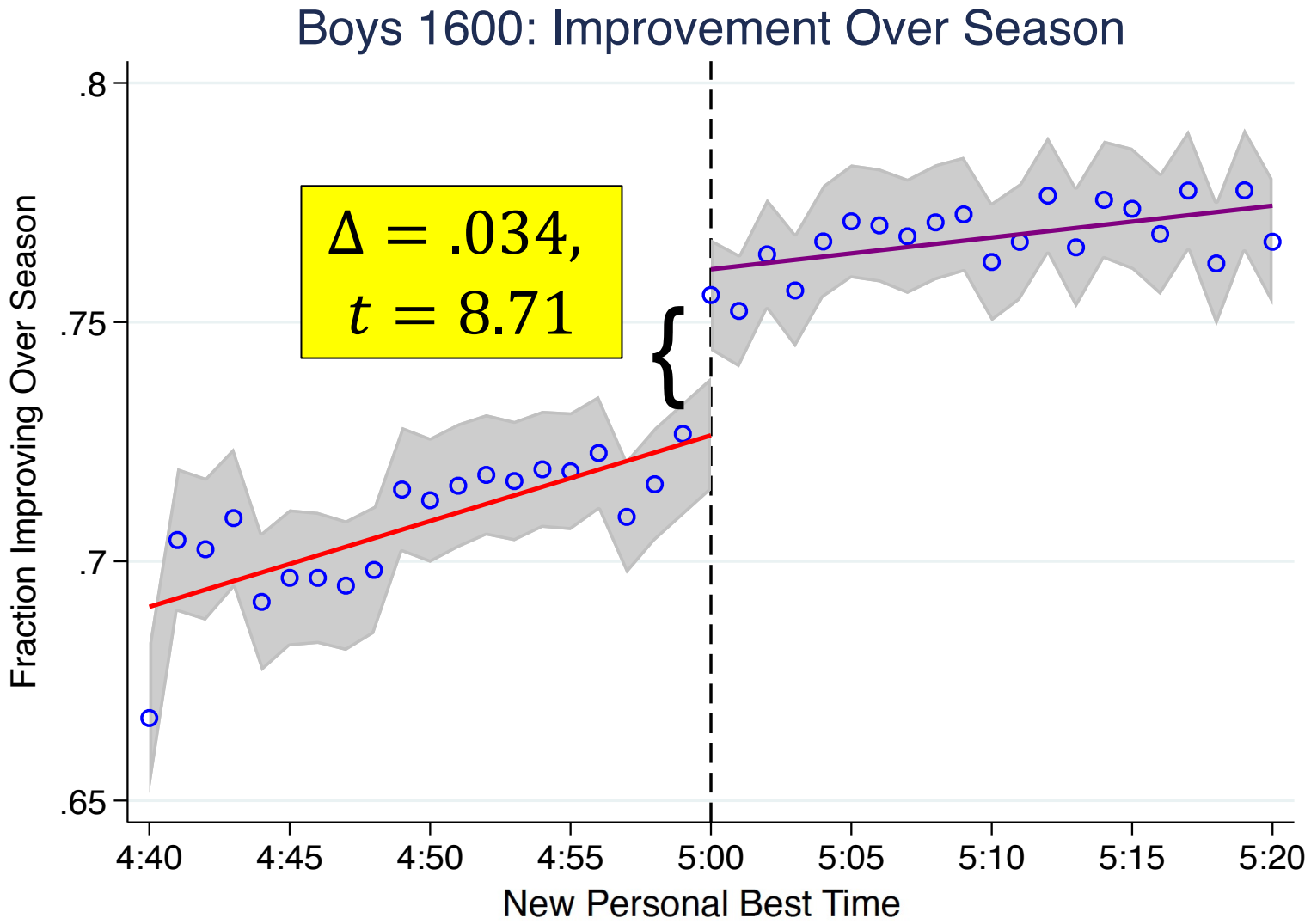
Improvement: Zoomed In



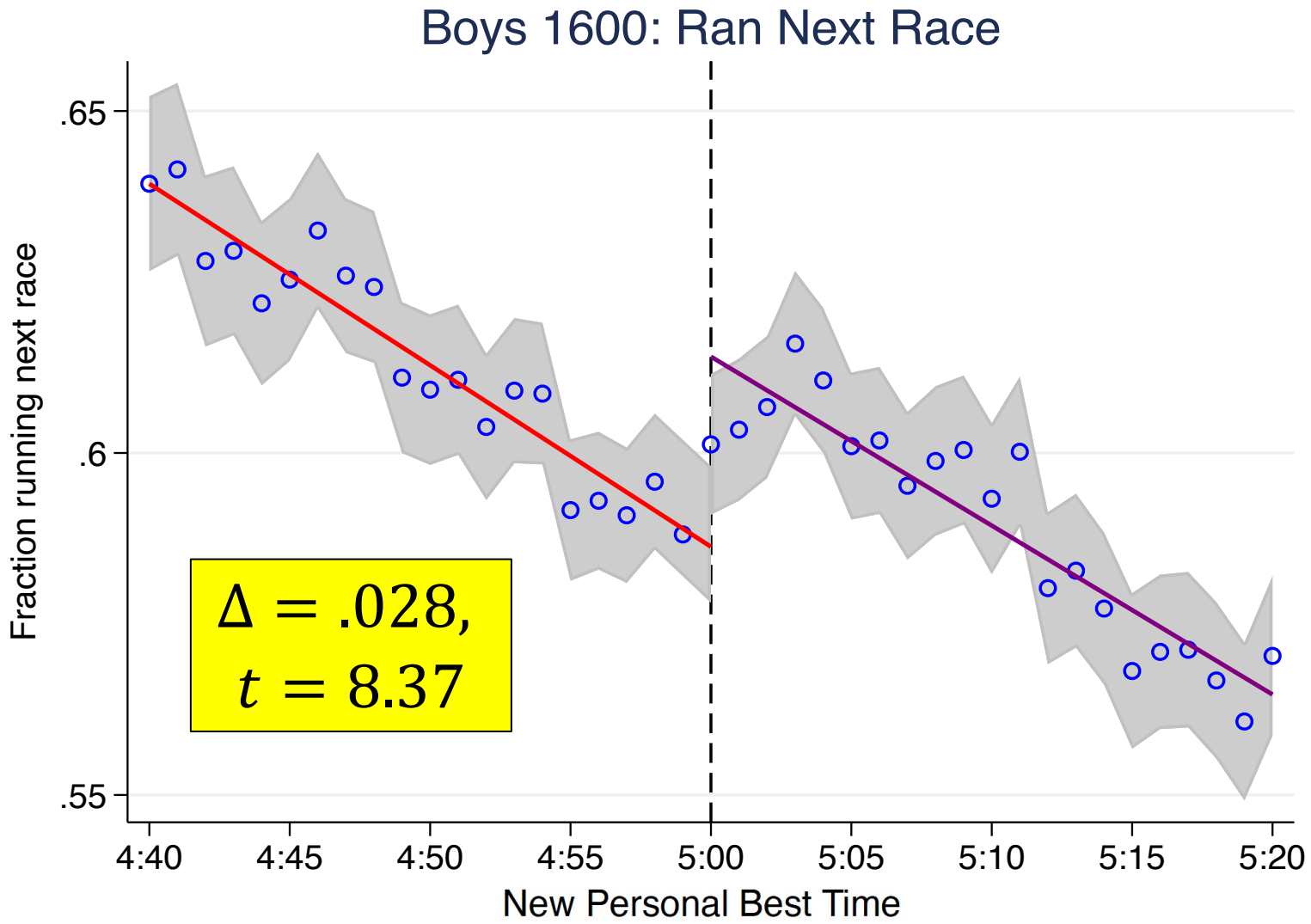
Improvement: Regression Discontinuity



Does it Affect the Rest of the Season?



Does it Affect Participation?



Summary of Main Results

			Jump at 5:00	T-stat
Improvement	Next Race	Fraction	.040	8.89
Improvement	Season	Fraction	.034	8.71
Participation	Next Race	Fraction	.028	8.37

Summary of Main Results

			Jump at 5:00	T-stat
Improvement	Next Race	Fraction	.040	8.89
Improvement	Season	Fraction	.034	8.71
Participation	Next Race	Fraction	.028	8.37
Improvement	Next Race	Seconds	.394	4.44
Improvement	Season	Seconds	.353	7.04
Participation	Season	Number of races	.100	7.30

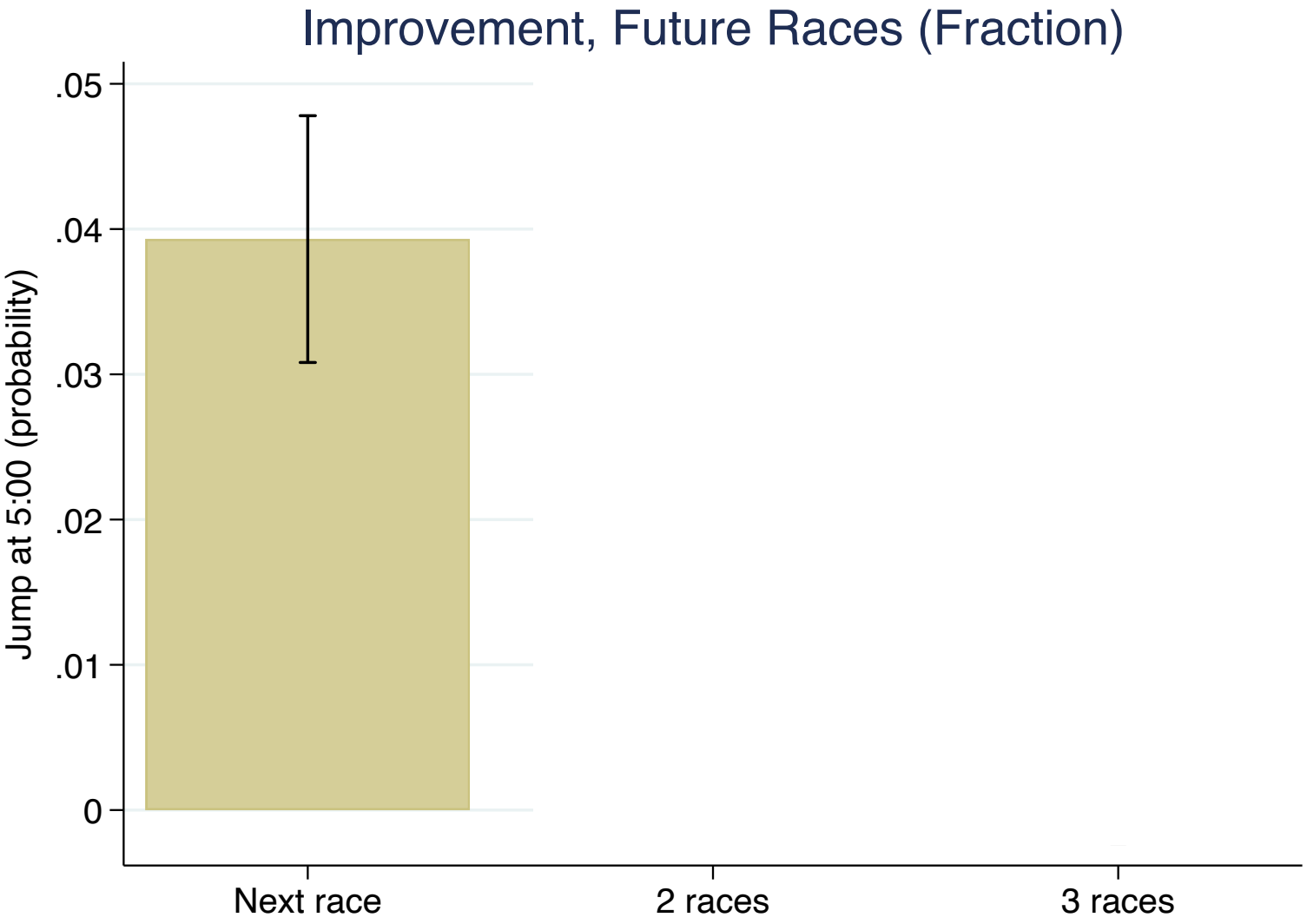
Robustness

- Do the exclusion criteria matter? 
- Does the RD specification matter? 
- Including controls? 
- Placebo Test: is the effect specific? 
- Does it replicate to other races? 

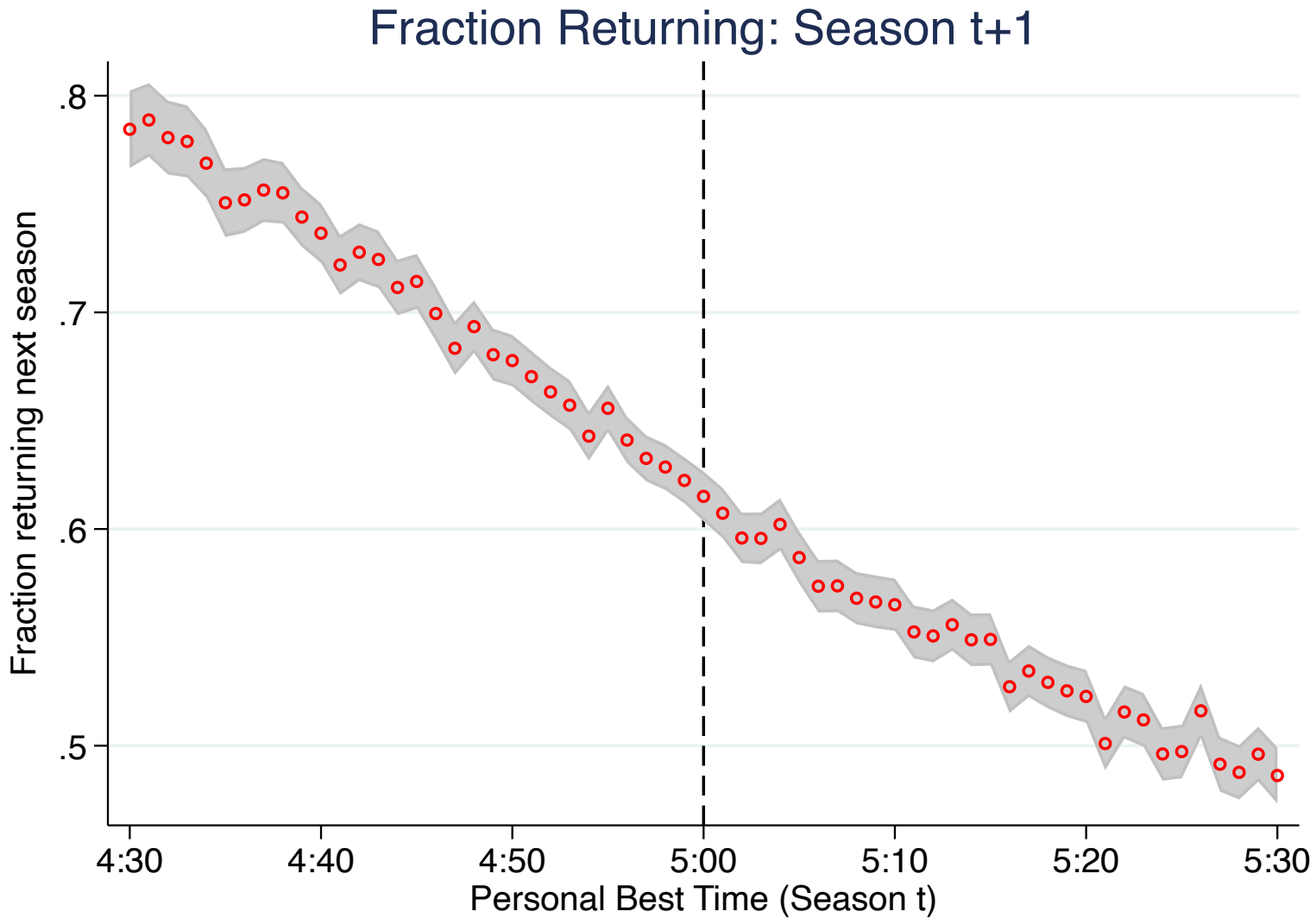
Does the Effect Persist?

- After 2 races etc.,?
- Into the *next* season?

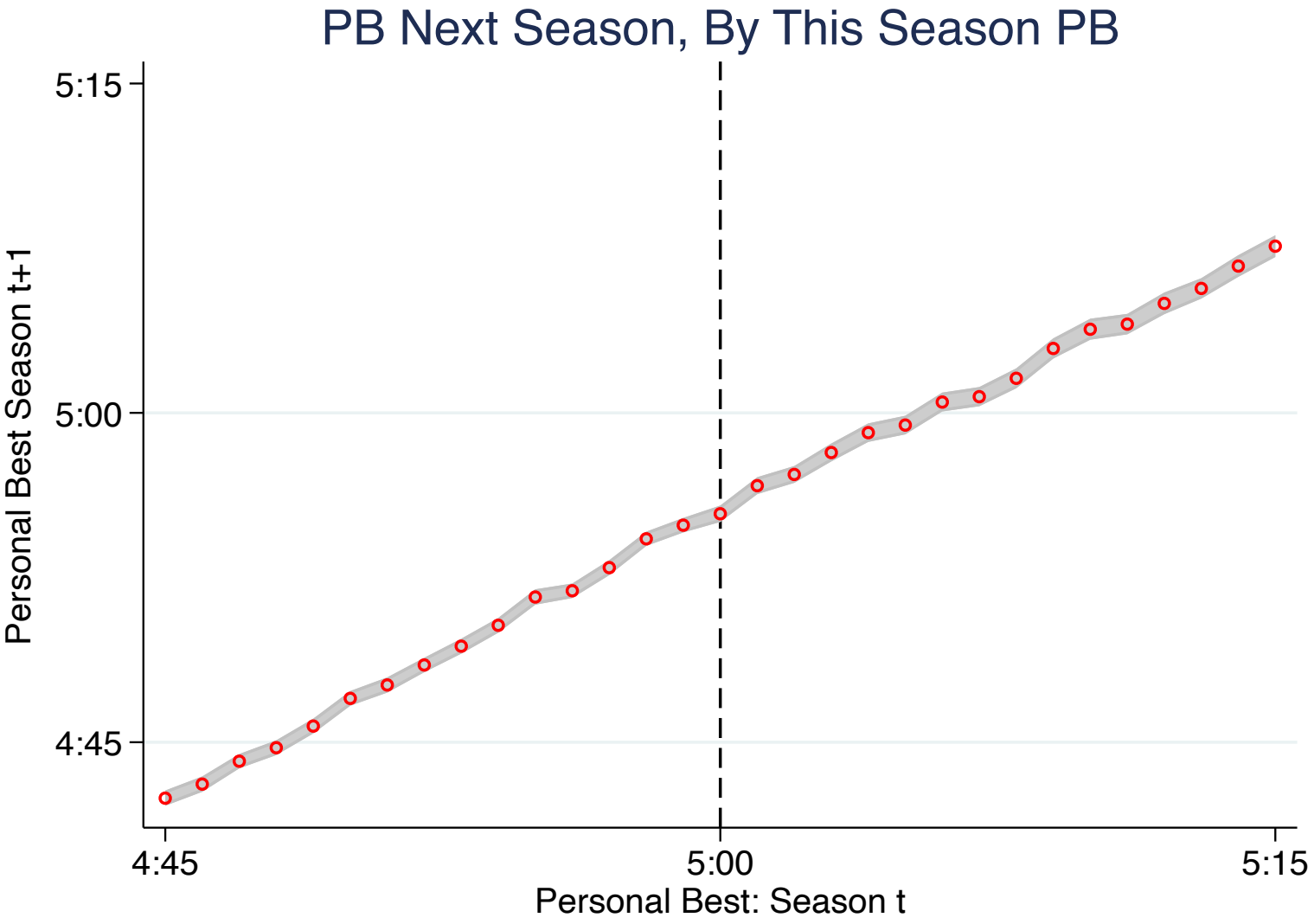
2 or 3 Races in the Future?



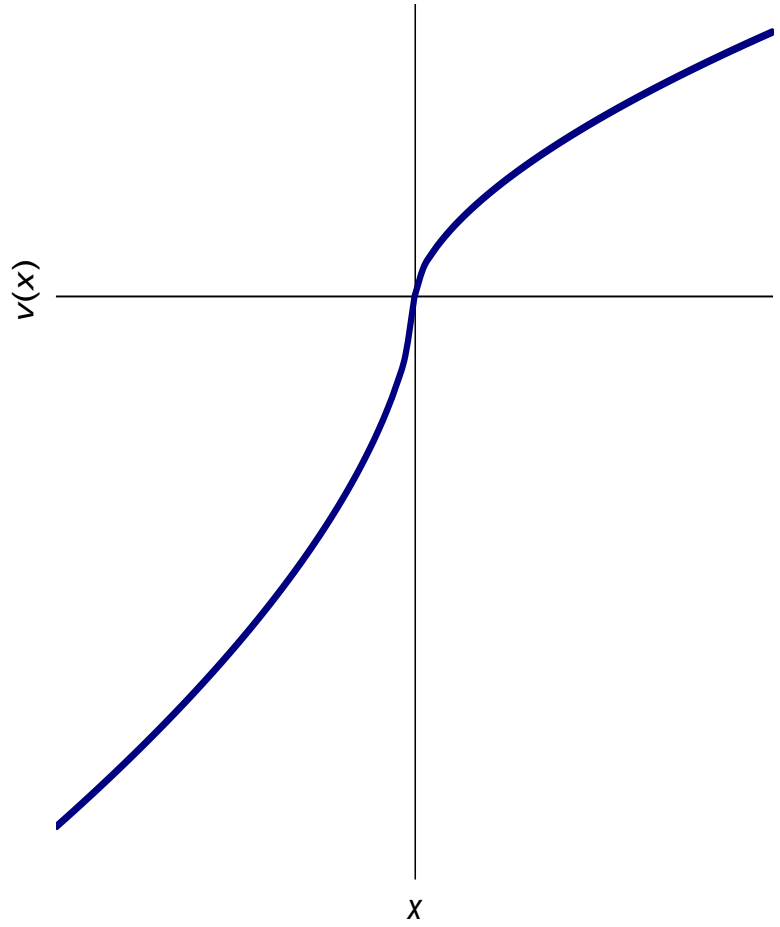
Next Season's Participation?



Next Season's Performance?



Can Models of Reference Dependence Explain these Results?



Can Models of Reference Dependence Explain these Results?

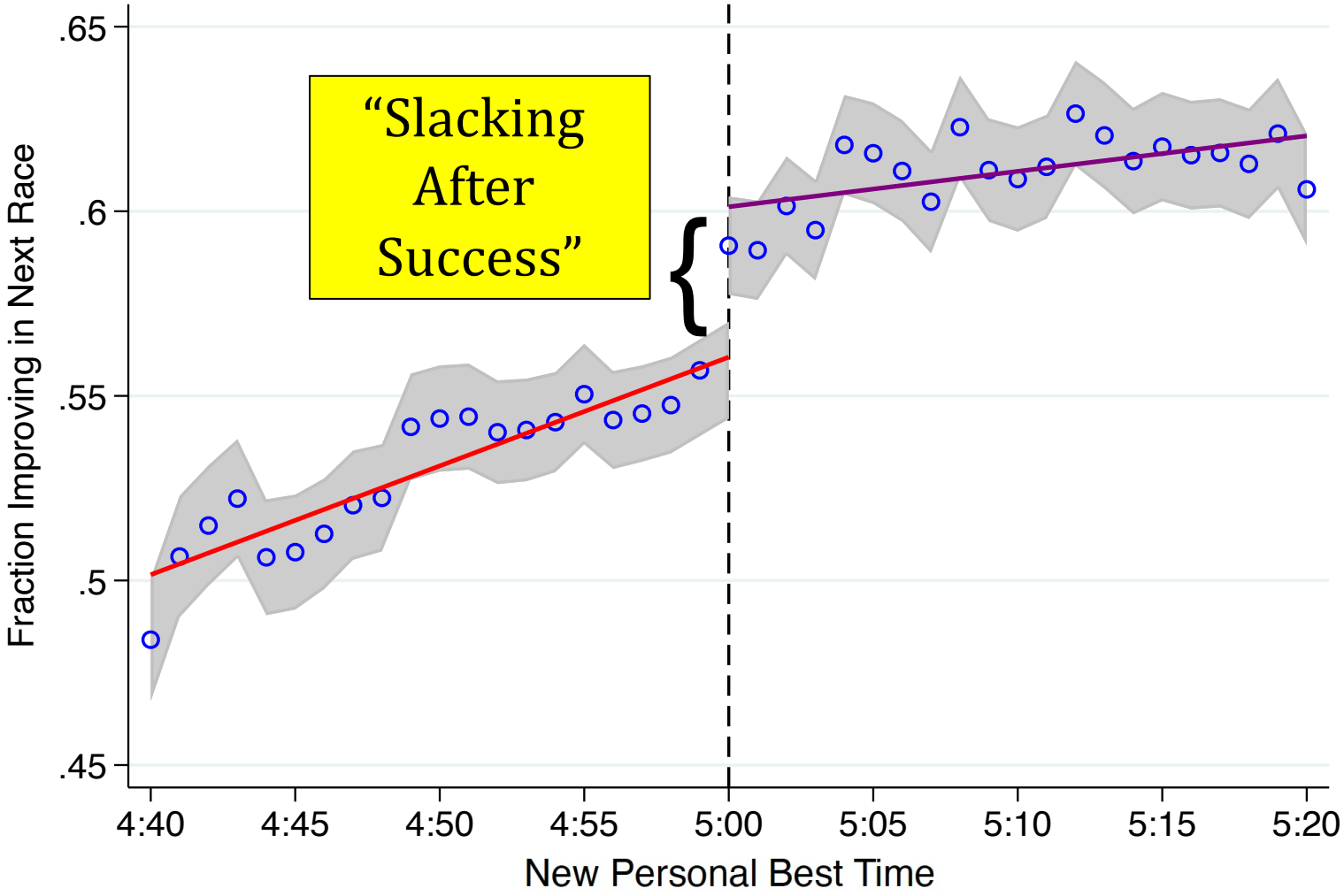
1. "Static" Model (Allen et al., 2017; Koszegi & Rabin, 2007; Kahneman & Tversky, 1979)
   - Bunching ✅
   - Discontinuity ❌

2. "Dynamic" Model
   - Bunching ✅
   - Discontinuity ✅

Summary

- We look at motivation as people approach and surpass goals
- Dataset of ~9 million high school race times
- Static results: bunching below round numbers
- Dynamic results: Surpassing a goal leads to significant reductions in….
  - Performance and participation
  - But this does not persist

"Slacking after success"


"Slacking After Success"
Fraction Improving in Next Race
.65
.6
.55
.5
.45
4:40
4:45
4:50
4:55
5:00
5:05
5:10
5:15
5:20
New Personal Best Time