

Establishing a Relative Baseline Race Strategy for Female 25-Yard Swim Races

Select Competitions from 2010-2014

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the**swim**scout

Agenda

- I. Introduction
- II. Analysis: 100-Yard Female Strokes
- III. Analysis: 200-Yard Female Strokes
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- V. Comparisons

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Introduction

Section I

Home Page

The Subject

- An analysis of the top five female finishers in each of the 100-yard and 200-yard stroke finals from 2010-2014 NCAA Division I Championships

The Objective

- To determine the most commonly used race strategy amongst the nations best swimmers as a baseline for developing more detailed training plans

The Approach

- Separate and analyze each lap of the race to develop an average split delta, in percentage terms, for the second (and third and fourth, when applicable) 50 of when baselining from the first 50 of the race

The Advantage

- A tailored list of recommended splits for a range of times in order to give swimmers a factual approach to specific goal times
- Comparing percentages, rather than absolute times, does not disfavor any swimmers

Variables

Sex

- Female

Session

- A-Final

Distance

- 100 yards
- 200 Yards

Place

- 1st – 5th

Stroke

- Butterfly
- Backstroke
- Breaststroke
- Freestyle

Competitions

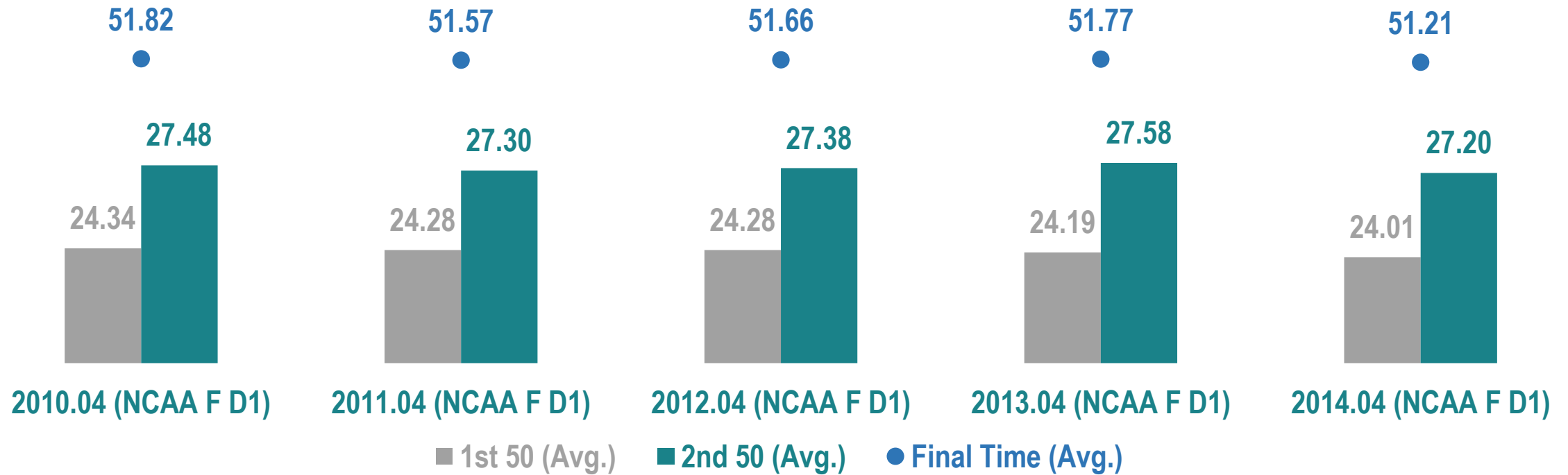
- Division 1 NCAA Championships
 - 2010 – 2014 (five meets total)

Analysis: 100-Yard Female Strokes

Section II

SCY Female 100 Butterfly: Race Averages

Average Time – 51.61



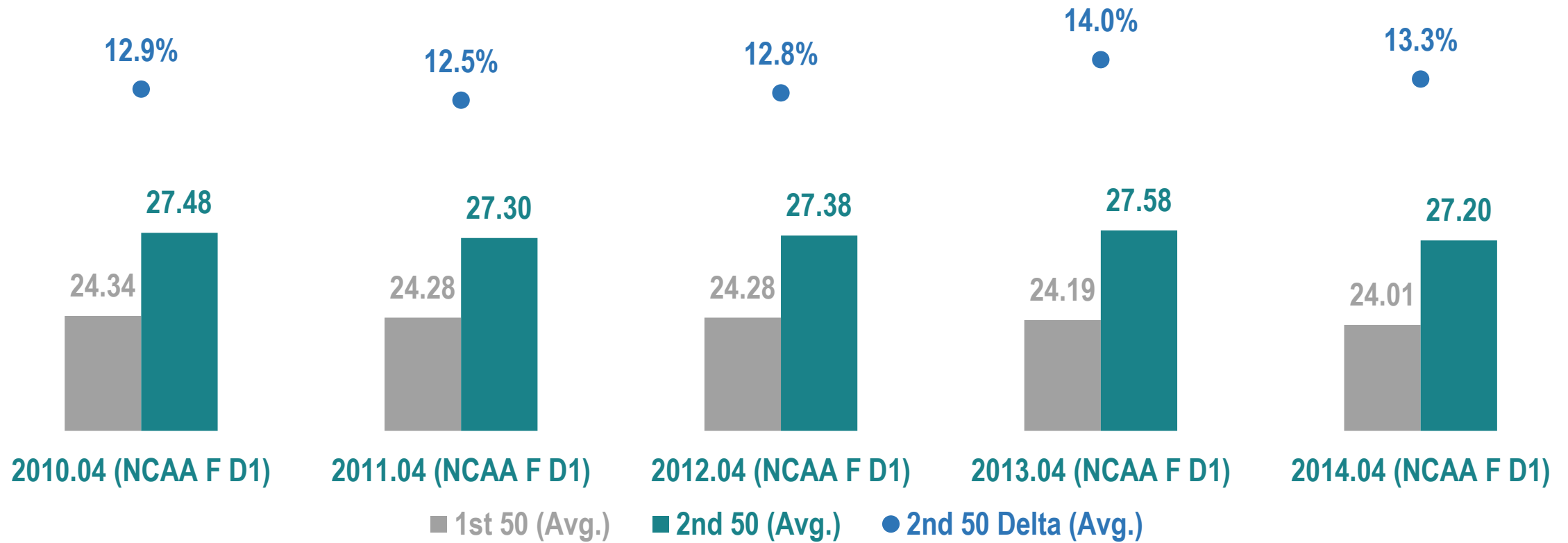
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 100 Butterfly: 1st → 2nd 50

Average 1st 50: 24.22

Average 2nd 50: 27.39

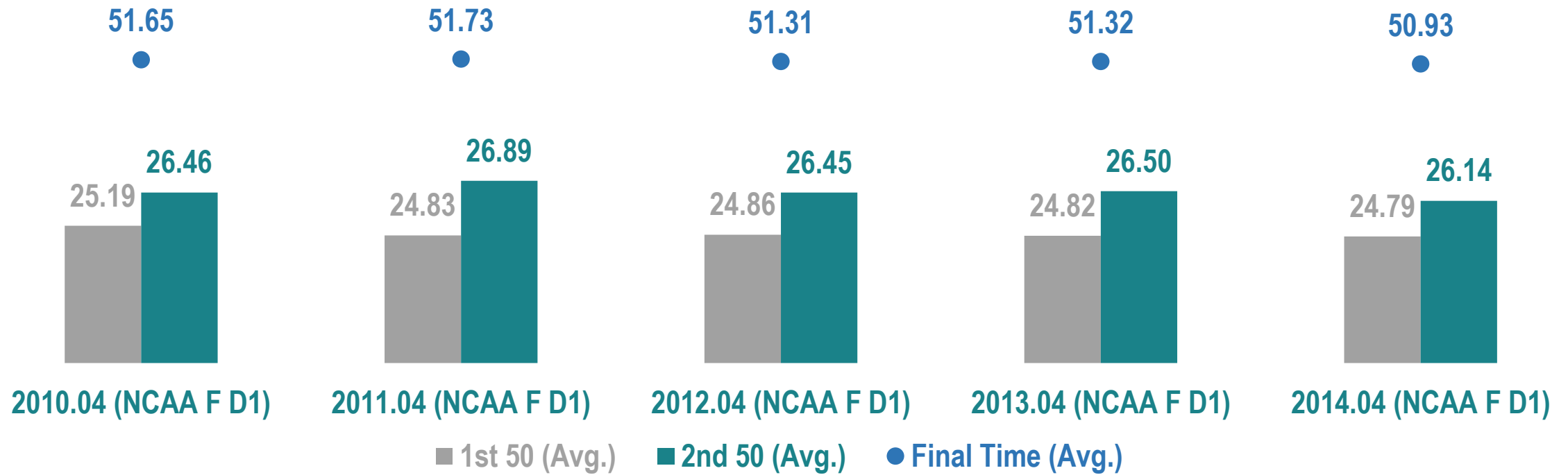
Average Split Delta: 13.1%



Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 100 Backstroke: Race Averages

Average Time – 51.39



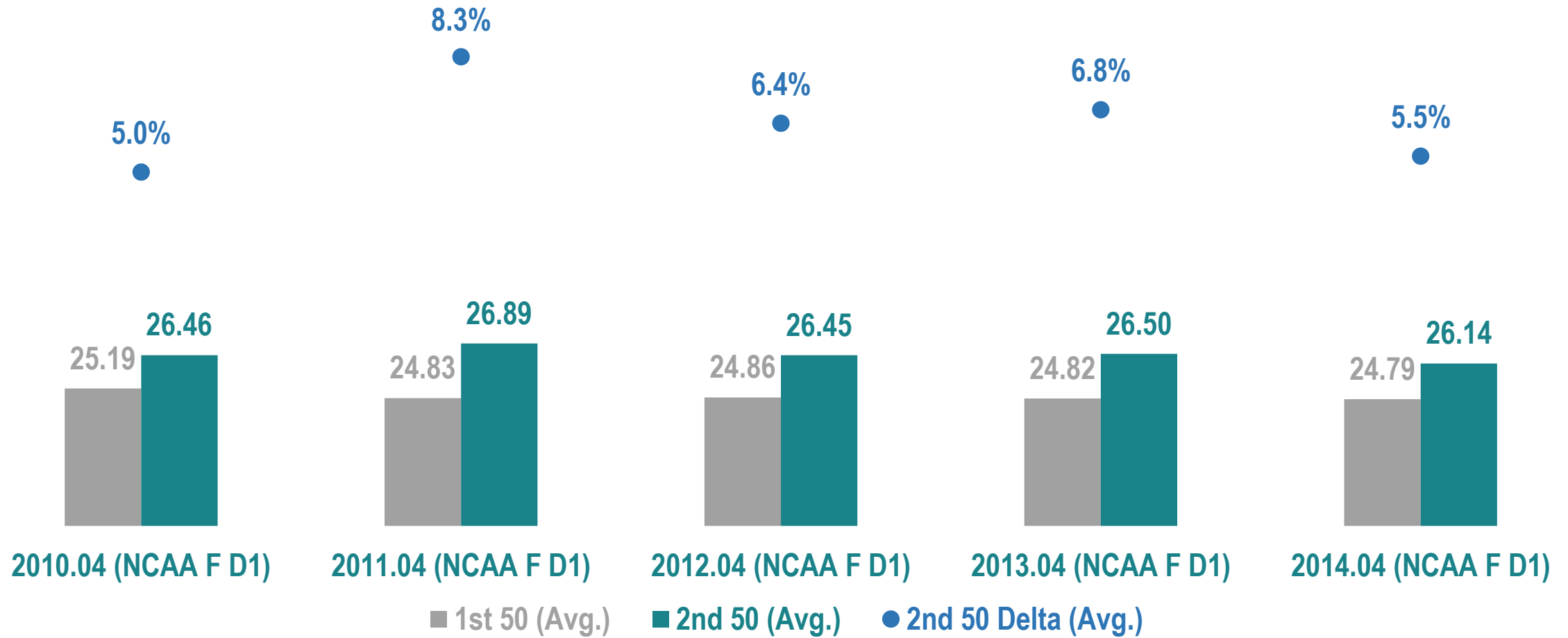
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 100 Backstroke: 1st → 2nd 50

Average 1st 50: 24.90

Average 2nd 50: 26.49

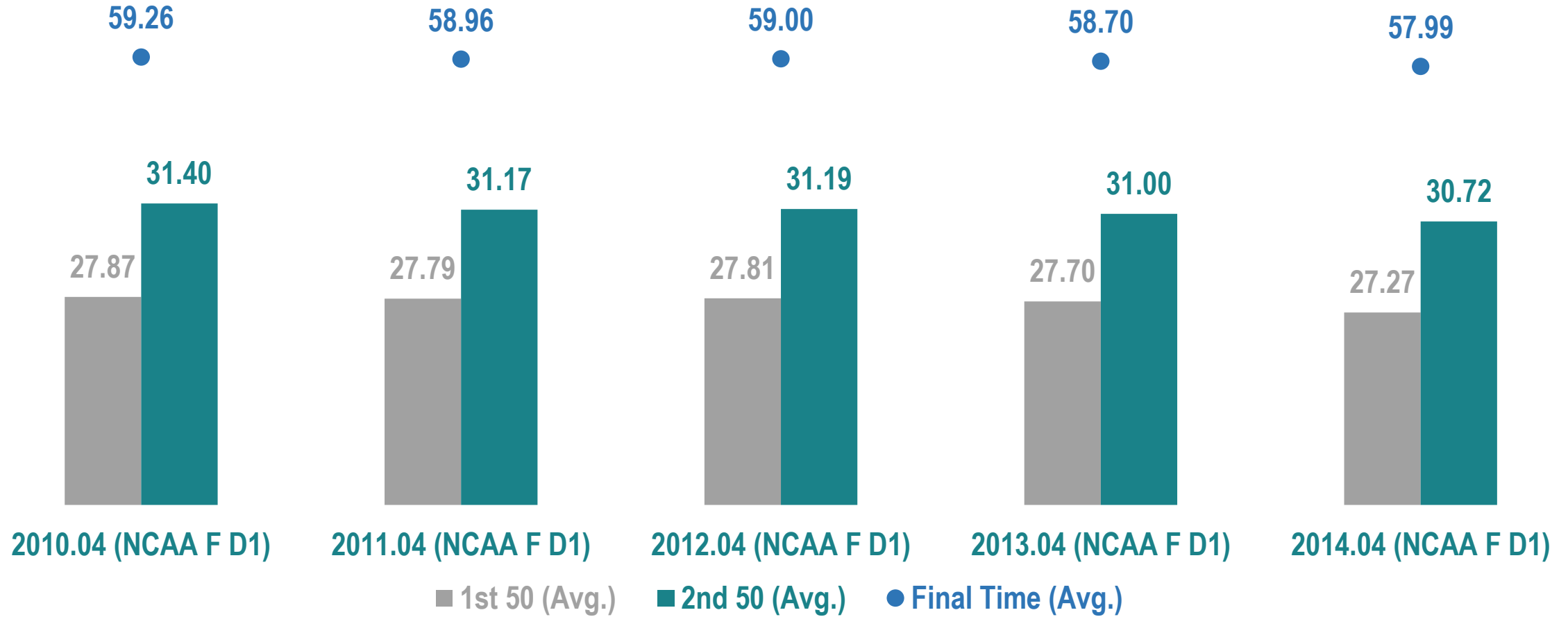
Average Split Delta: 6.4%



Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 100 Breaststroke: Race Averages

Average Time – 58.78



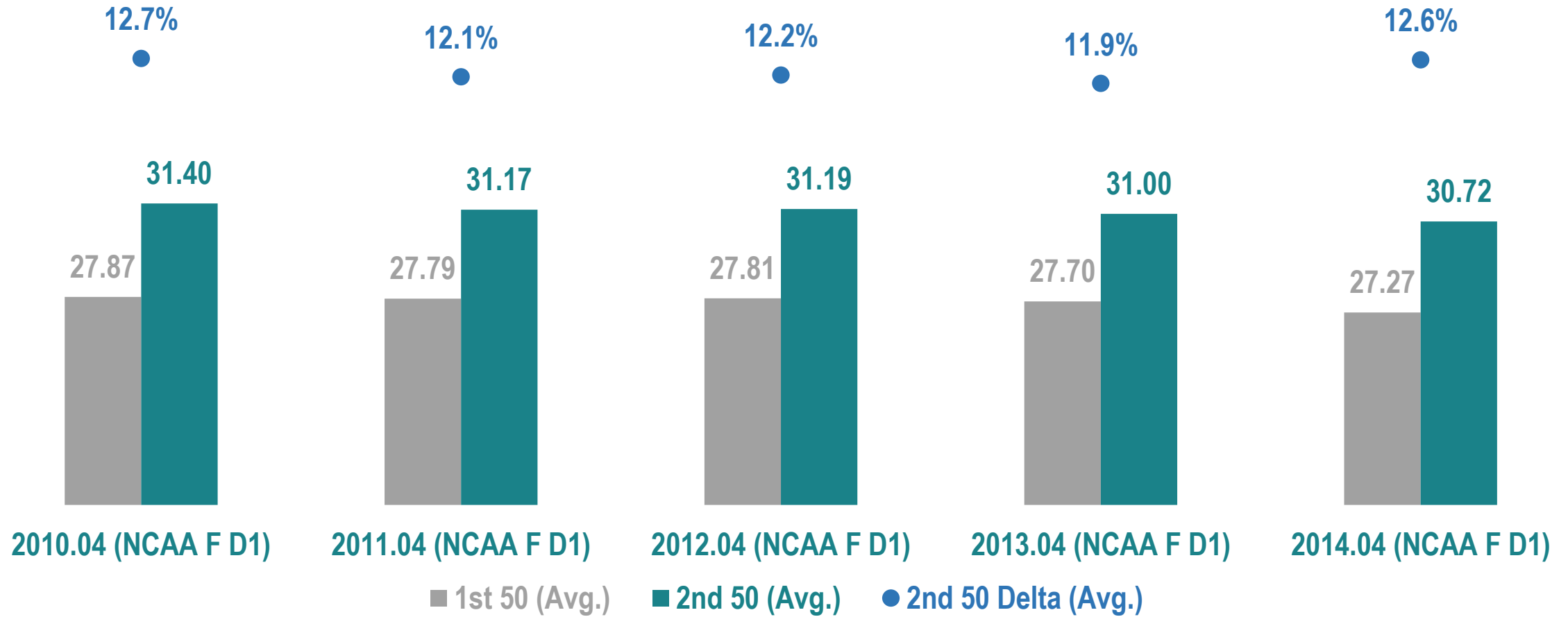
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 100 Breaststroke: 1st → 2nd 50

Average 1st 50: 27.69

Average 2nd 50: 31.09

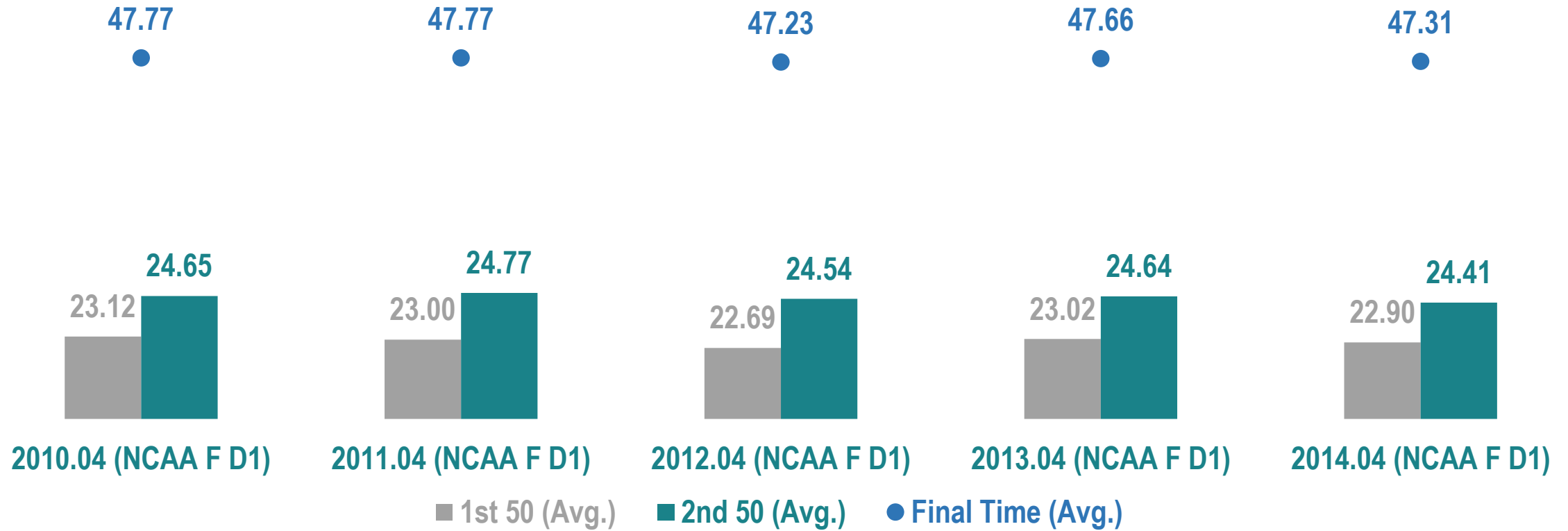
Average Split Delta: 12.3%



Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 100 Freestyle: Race Averages

Average Time – 47.55



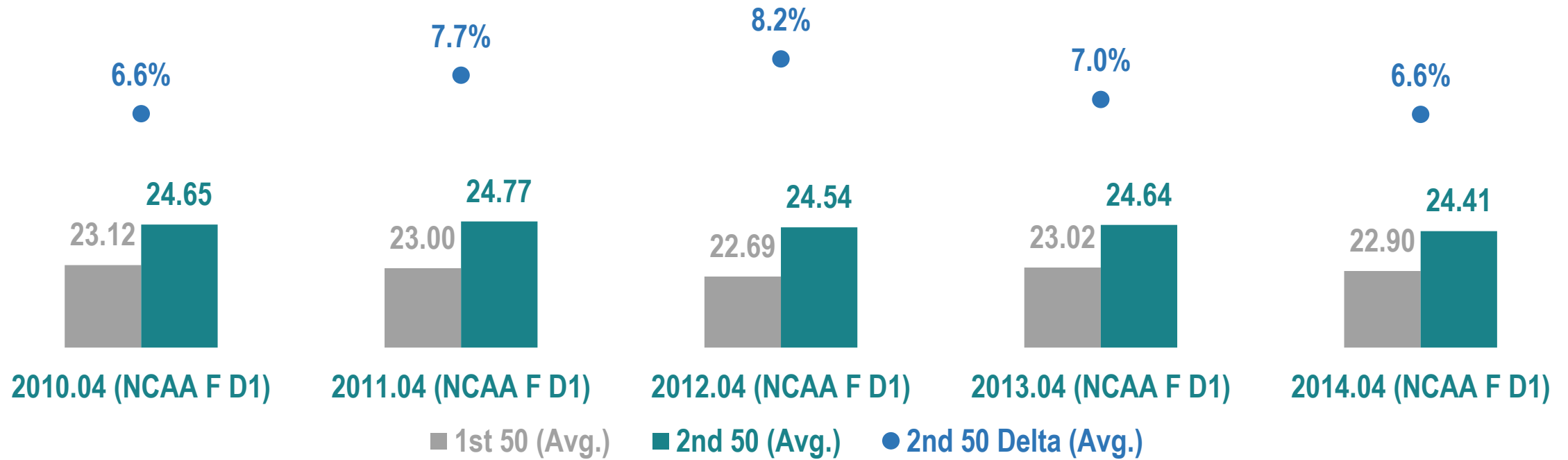
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 100 Freestyle: 1st → 2nd 50

Average 1st 50: 22.95

Average 2nd 50: 24.60

Average Split Delta: 7.2%



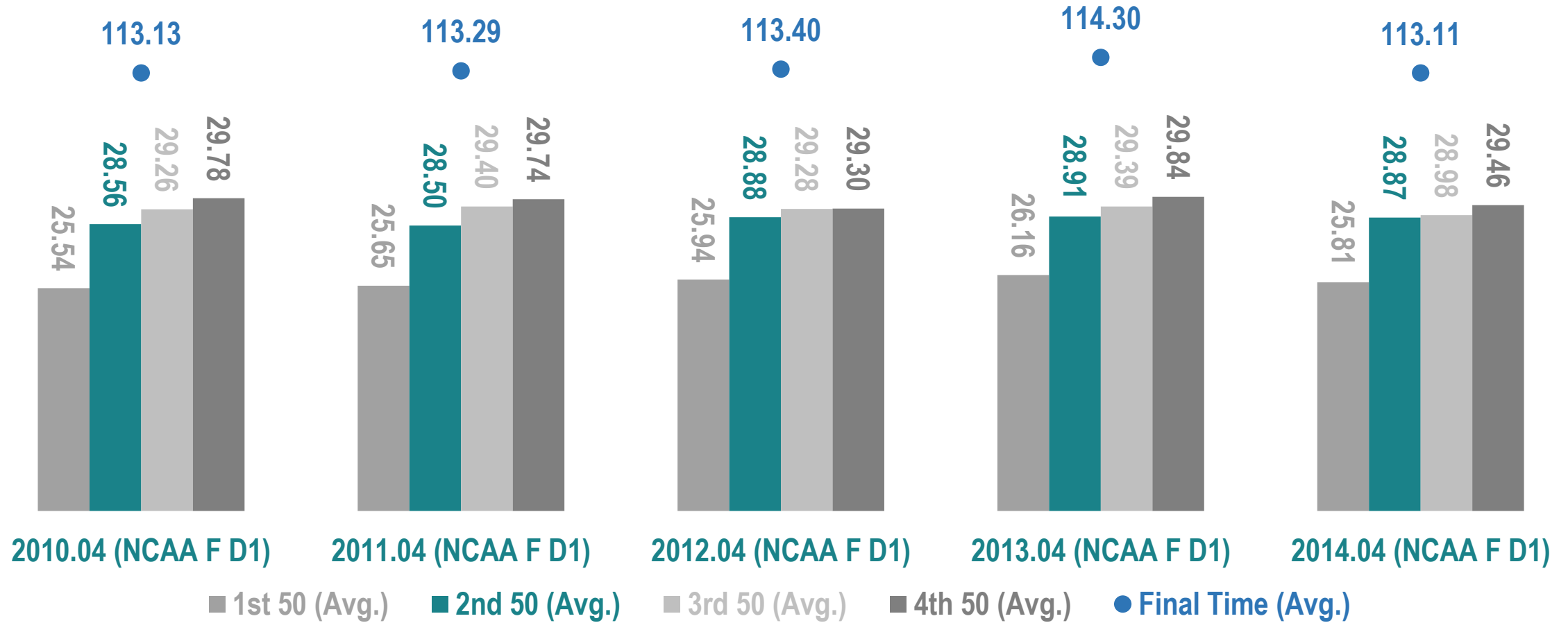
Note: Chart not drawn to scale
Source: NCAA.org

Analysis: 200-Yard Female Strokes

Section III

SCY Female 200 Butterfly: Race Averages

Average Time – 1:53.13



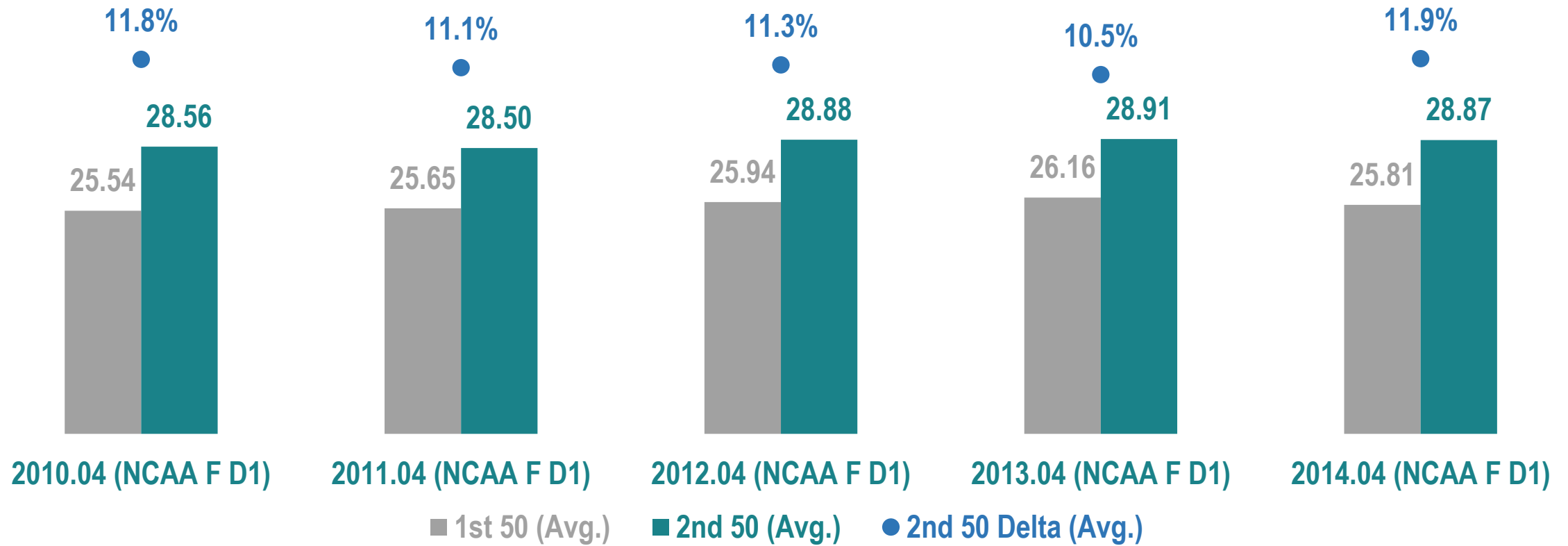
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Butterfly: 1st → 2nd 50

Average 1st 50: 25.82

Average 2nd 50: 28.74

Average Split Delta: 11.3%



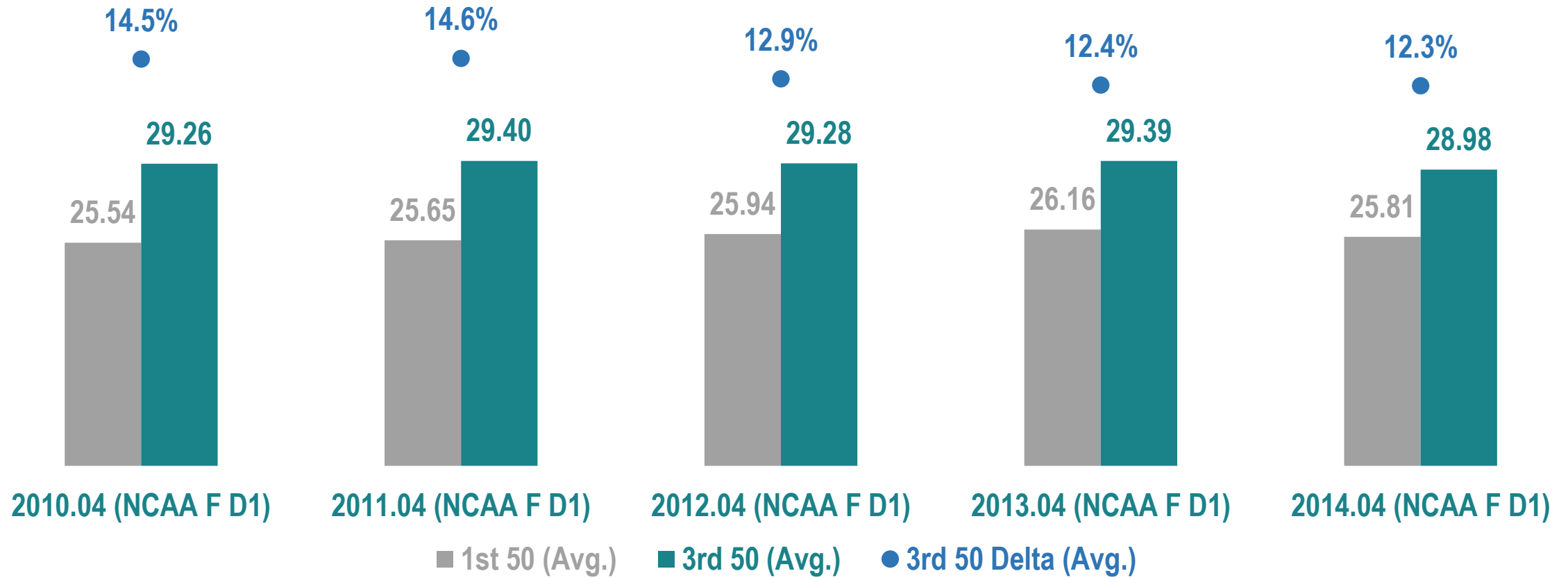
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Butterfly: 1st → 3rd 50

Average 1st 50: 25.82

Average 3rd 50: 29.26

Average Split Delta: 13.3%



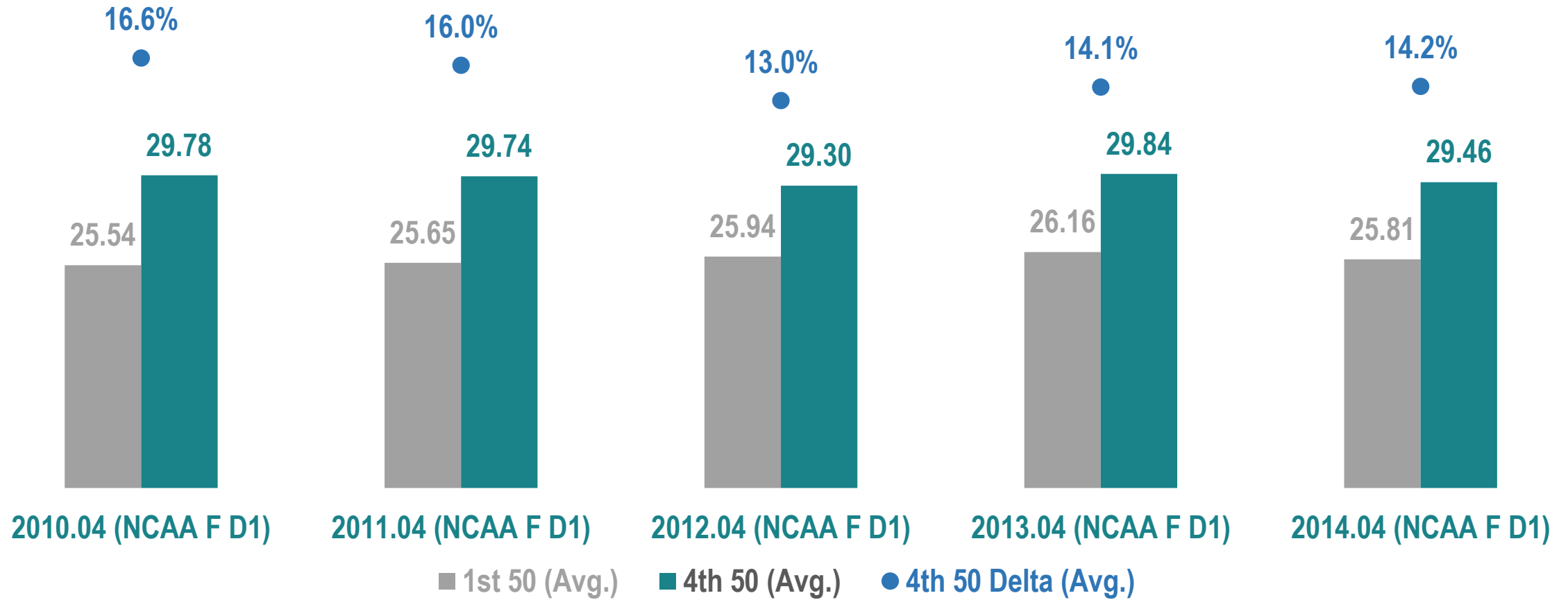
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Butterfly: 1st → 4th 50

Average 1st 50: 25.82

Average 4th 50: 29.62

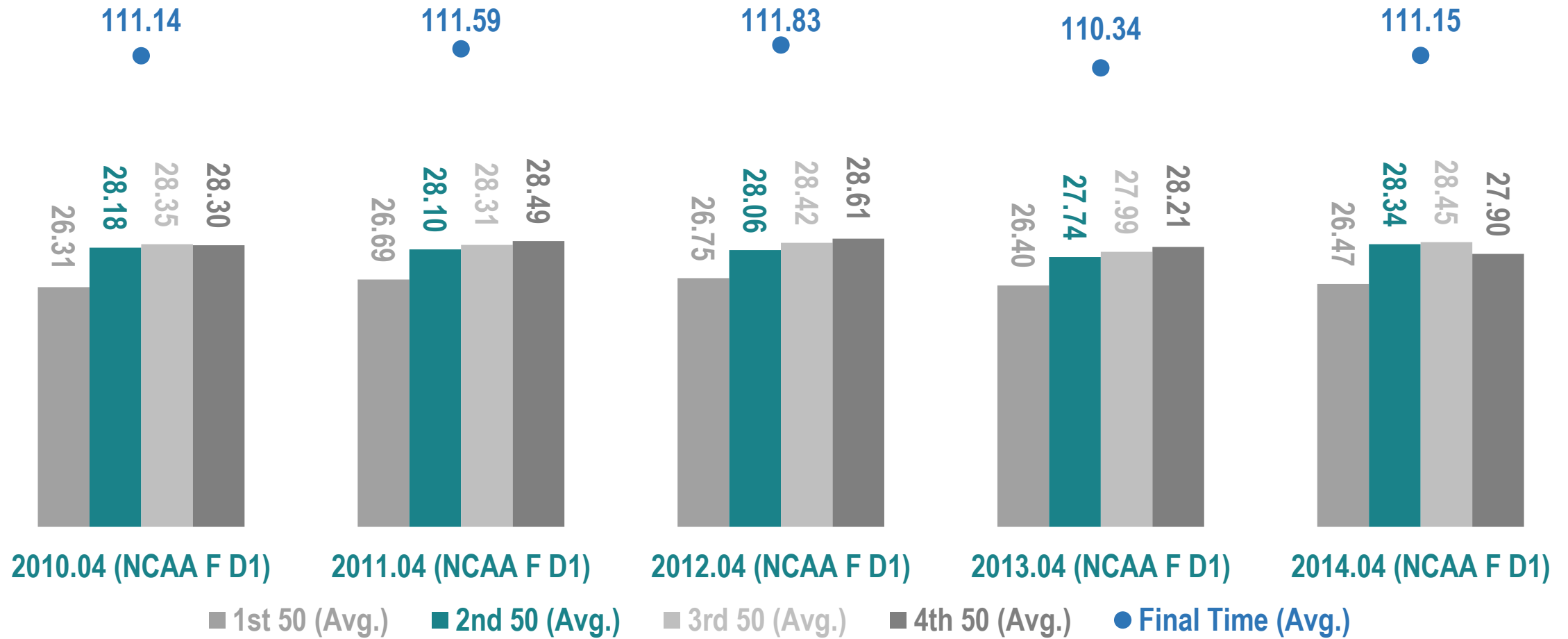
Average Split Delta: 14.7%



Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Backstroke: Race Averages

Average Time – 1:51.21



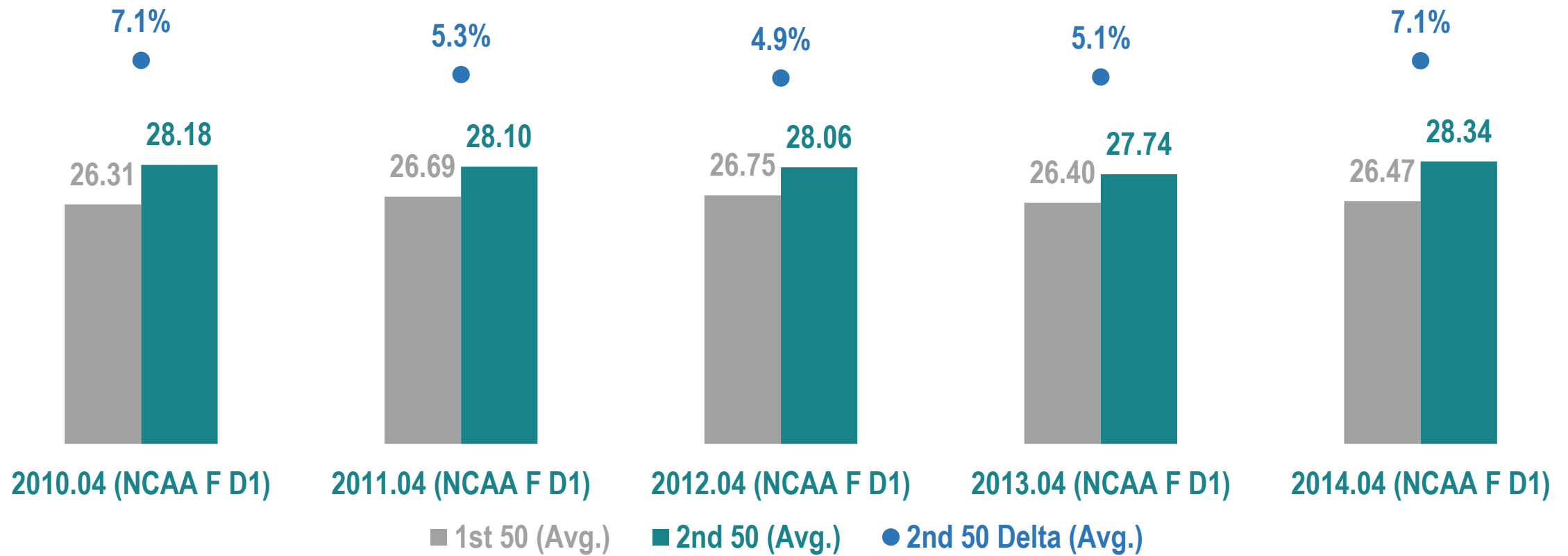
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Backstroke: 1st → 2nd 50

Average 1st 50: 26.52

Average 2nd 50: 28.08

Average Split Delta: 5.9%



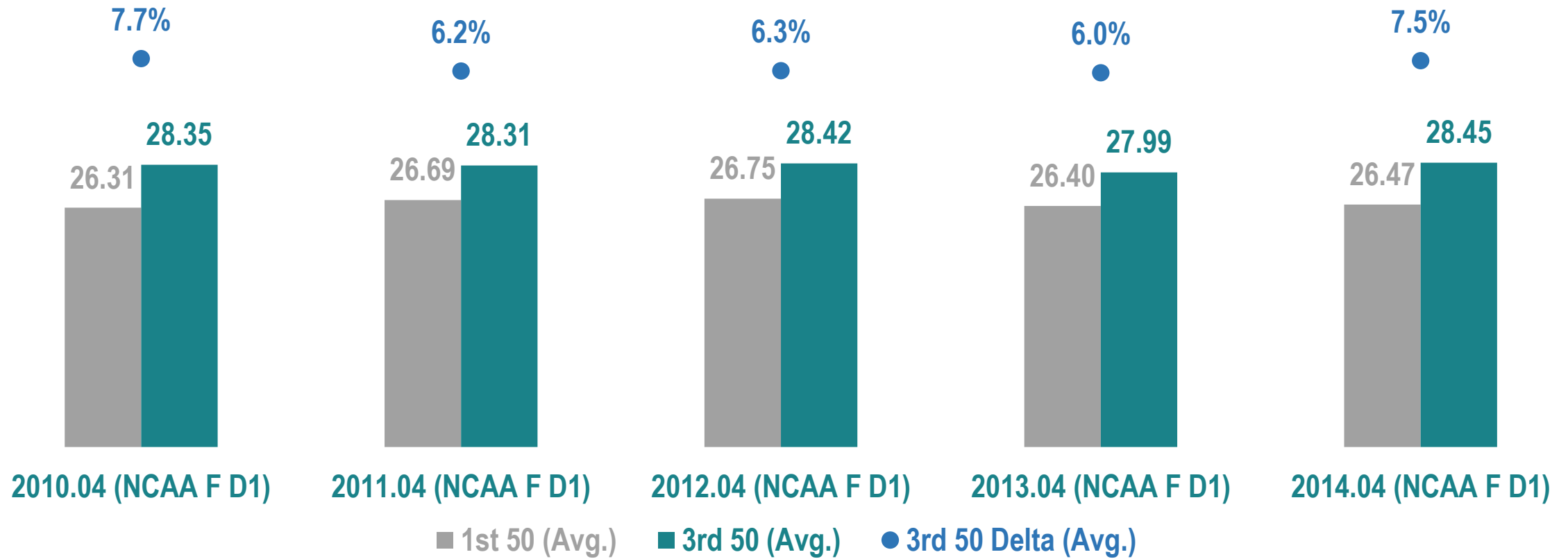
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Backstroke: 1st → 3rd 50

Average 1st 50: 26.52

Average 3rd 50: 28.30

Average Split Delta: 6.7%



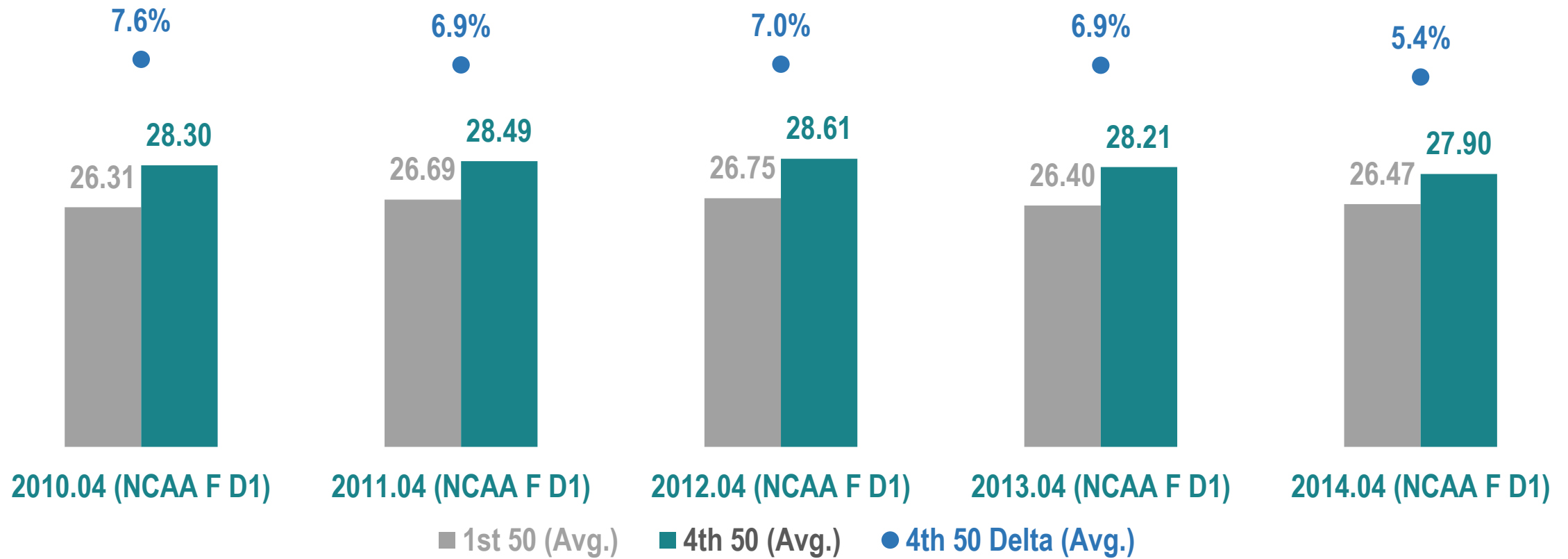
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Backstroke: 1st → 4th 50

Average 1st 50: 26.52

Average 4th 50: 28.30

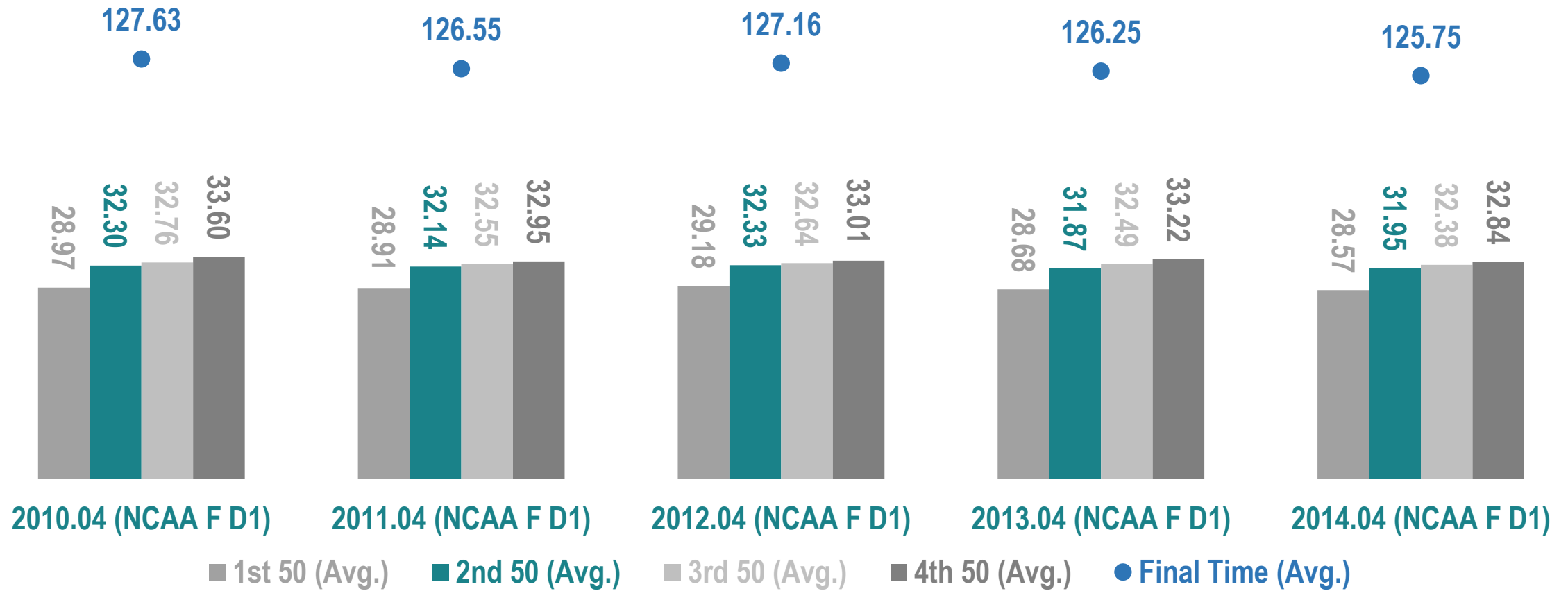
Average Split Delta: 6.7%



Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Breaststroke: Race Averages

Average Time – 2:06.67



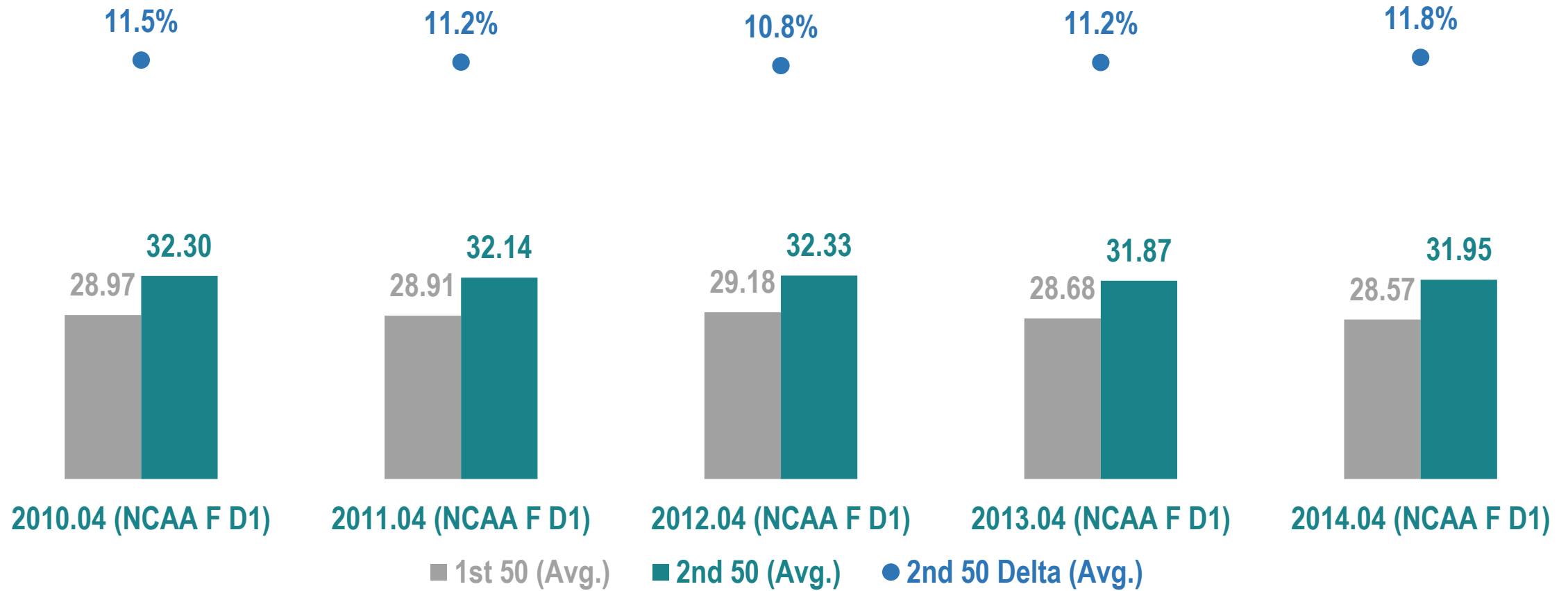
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Breaststroke: 1st → 2nd 50

Average 1st 50: 28.86

Average 2nd 50: 32.12

Average Split Delta: 11.3%



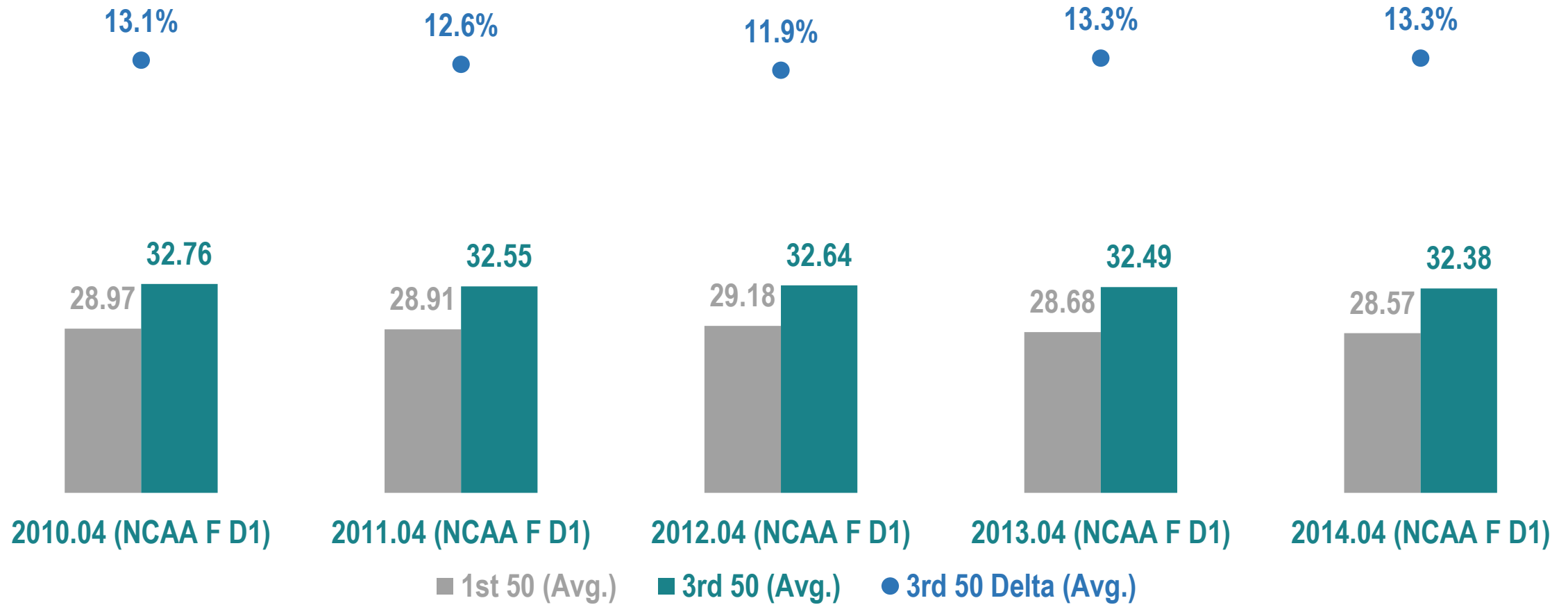
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Breaststroke: 1st → 3rd 50

Average 1st 50: 28.86

Average 3rd 50: 32.56

Average Split Delta: 12.8%



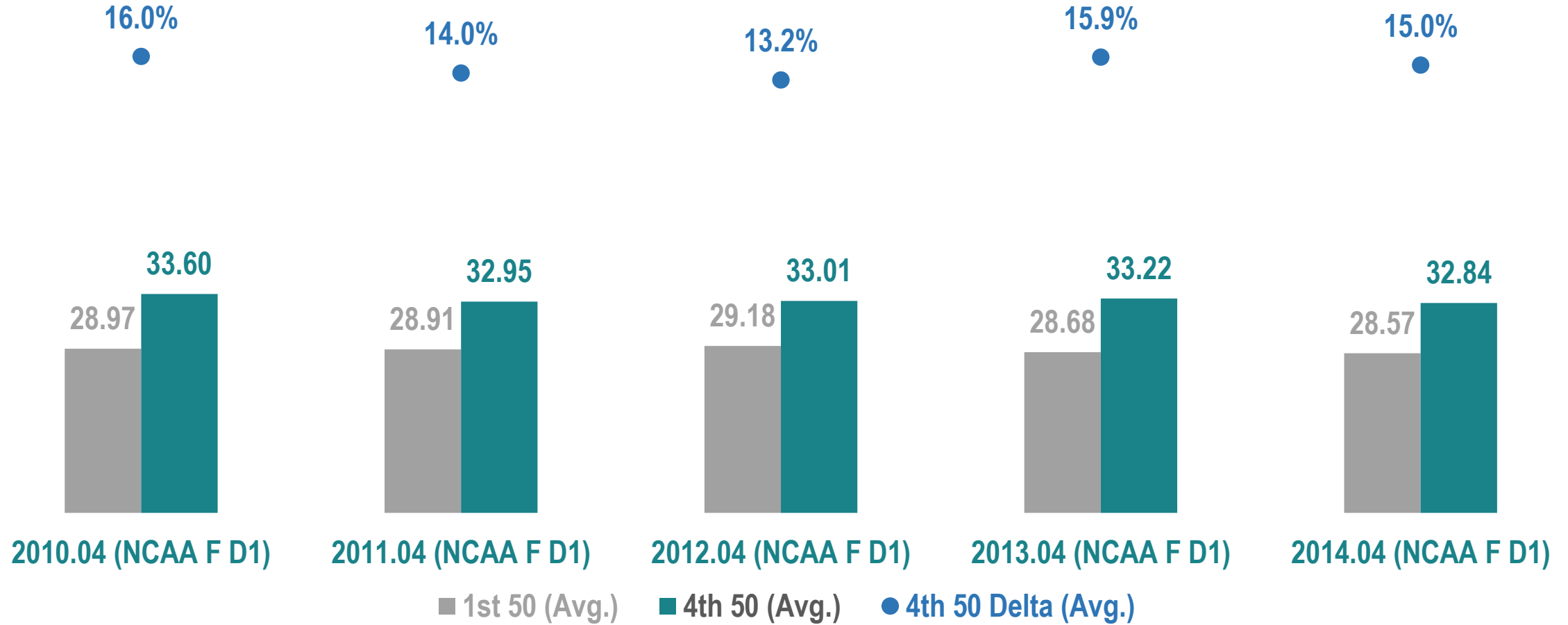
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Breaststroke: 1st → 4th 50

Average 1st 50: 28.86

Average 4th 50: 33.12

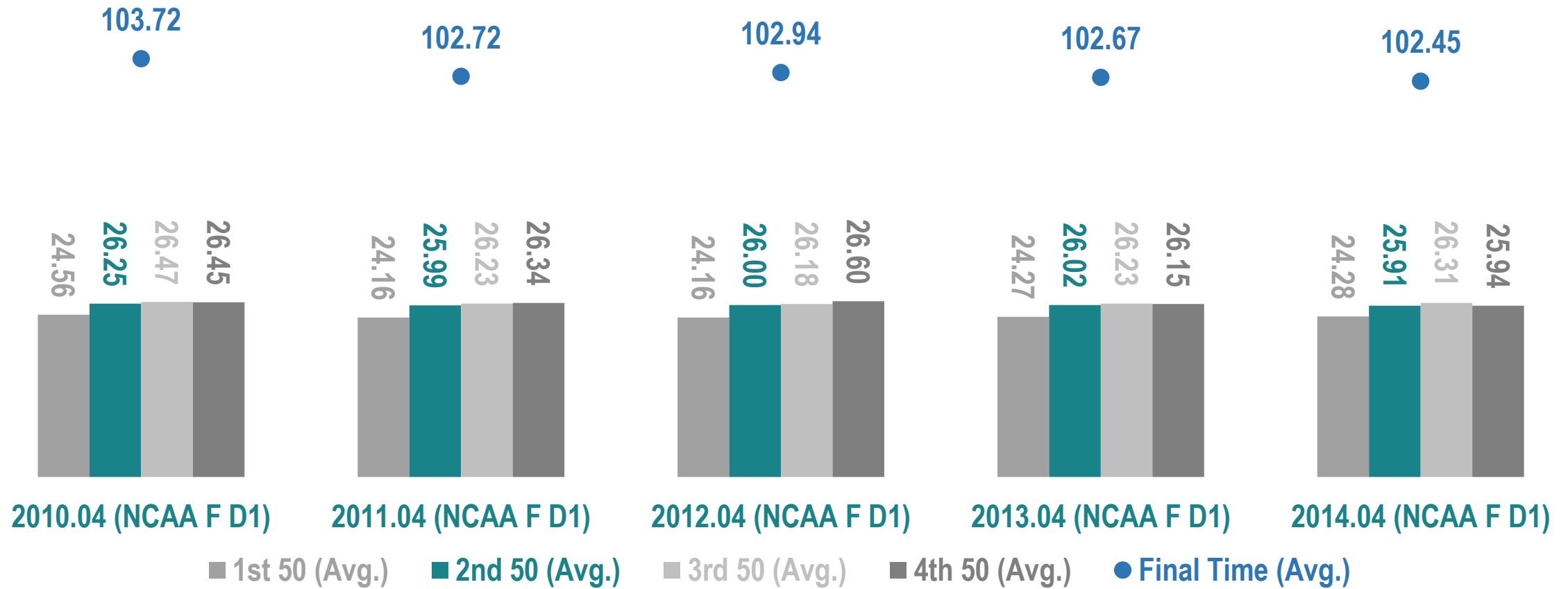
Average Split Delta: 14.8%



Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Freestyle: Race Averages

Average Time – 1:42.90



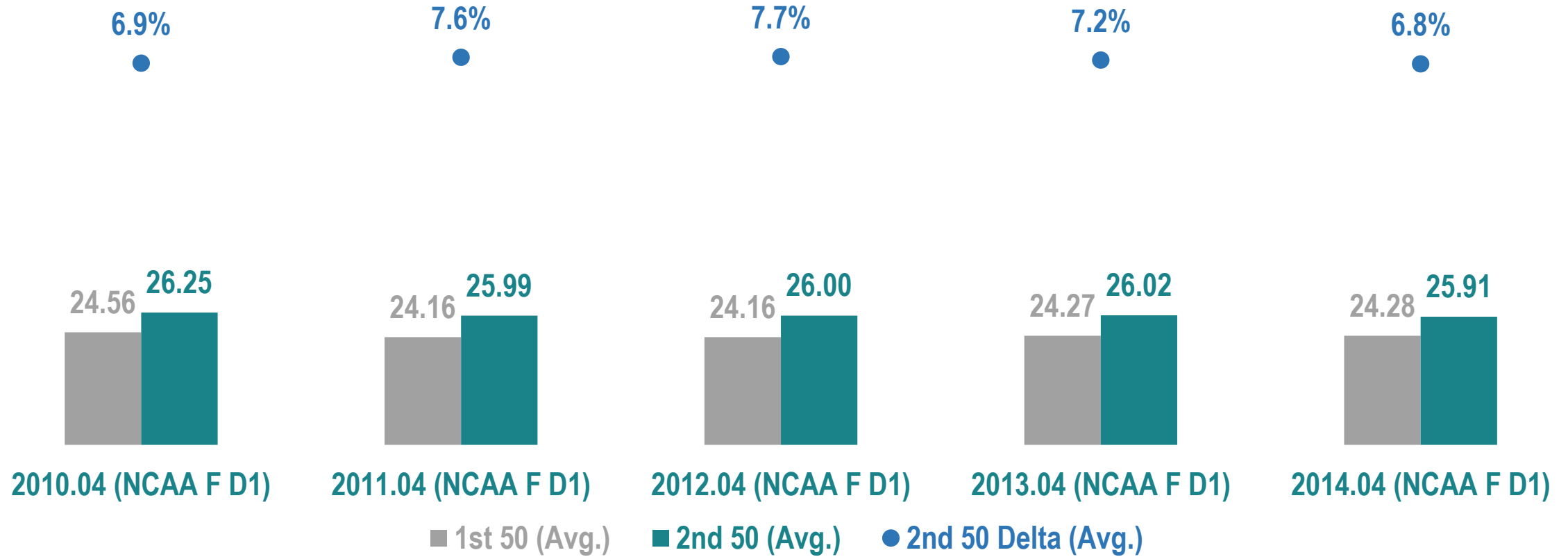
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Freestyle: 1st → 2nd 50

Average 1st 50: 24.28

Average 2nd 50: 26.03

Average Split Delta: 7.2%



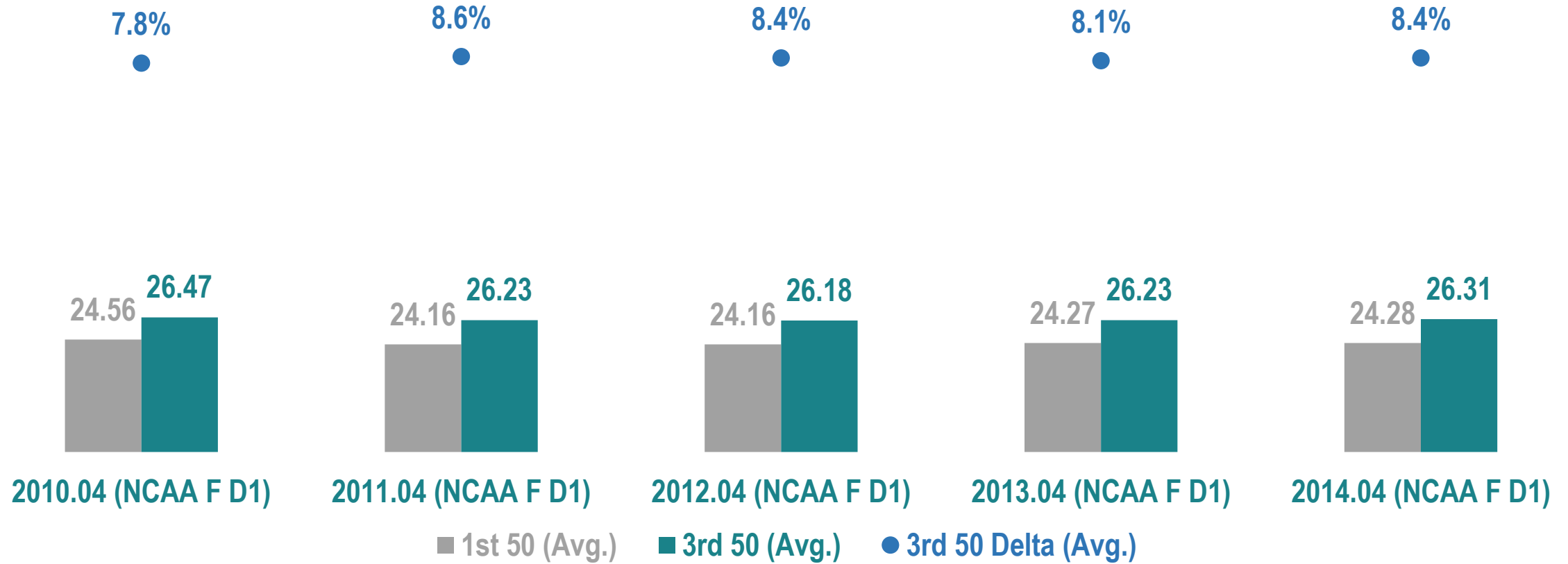
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Freestyle: 1st → 3rd 50

Average 1st 50: 24.28

Average 3rd 50: 26.28

Average Split Delta: 8.2%



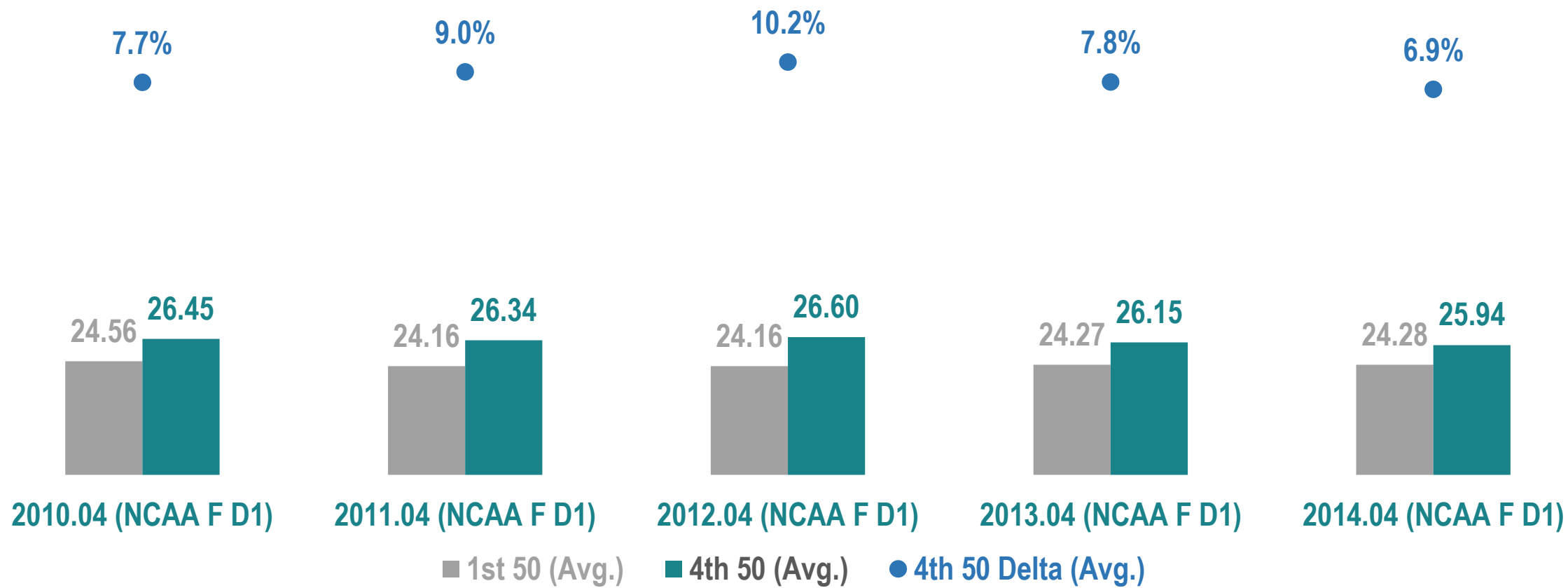
Note: Chart not drawn to scale
Source: NCAA.org

SCY Female 200 Freestyle: 1st → 4th 50

Average 1st 50: 24.28

Average 4th 50: 26.30

Average Split Delta: 8.3%



Note: Chart not drawn to scale
Source: NCAA.org

Establishing the Baseline

Section IV

SCY Female 100Y Butterfly: Baseline

- Using the average first 50 (24.22) as a baseline to the average split delta's, results in the following list of race strategies for a selection of times
- Split Delta's
 - 1st → 2nd = 13.1%

Final Time	Splits by 50		Split Delta (seconds)
	1st	2nd (+13.1%)	
46.43	21.79	24.64	2.85
47.14	22.12	25.02	2.90
47.86	22.46	25.40	2.94
48.59	22.80	25.79	2.99
49.33	23.15	26.18	3.03
50.08	23.50	26.58	3.08
50.84	23.86	26.98	3.12
51.61	24.22	27.39	3.17
52.39	24.58	27.80	3.22
53.17	24.95	28.22	3.27
53.97	25.33	28.64	3.32
54.78	25.71	29.07	3.37
55.60	26.09	29.51	3.42
56.44	26.48	29.95	3.47
57.28	26.88	30.40	3.52

Note: Numbers may not add up due to rounding.
Source: NCAA.org

SCY Female 100Y Backstroke: Baseline

- Using the average first 50 (24.90) as a baseline to the average split delta's, results in the following list of race strategies for a selection of times
- Split Delta's
 - 1st → 2nd = 6.4%

Final Time	Splits by 50		Split Delta (seconds)
	1st	2nd (+6.4%)	
46.23	22.40	23.83	1.43
46.94	22.74	24.20	1.46
47.65	23.09	24.57	1.48
48.38	23.44	24.94	1.50
49.11	23.80	25.32	1.52
49.86	24.16	25.70	1.55
50.62	24.53	26.10	1.57
51.39	24.90	26.49	1.59
52.16	25.27	26.89	1.62
52.95	25.65	27.29	1.64
53.74	26.04	27.70	1.67
54.55	26.43	28.12	1.69
55.36	26.82	28.54	1.72
56.19	27.23	28.97	1.74
57.04	27.63	29.40	1.77

Note: Numbers may not add up due to rounding.
Source: NCAA.org

SCY Female 100Y Breaststroke: Baseline

- Using the average first 50 (27.69) as a baseline to the average split delta's, results in the following list of race strategies for a selection of times
- Split Delta's
 - 1st → 2nd = 12.3%

Final Time	Splits by 50		Split Delta (seconds)
	1st	2nd (+12.3%)	
52.88	24.91	27.97	3.07
53.69	25.29	28.40	3.11
54.51	25.67	28.83	3.16
55.34	26.06	29.27	3.21
56.18	26.46	29.72	3.26
57.03	26.86	30.17	3.31
57.90	27.27	30.63	3.36
58.79	27.69	31.10	3.41
59.67	28.10	31.56	3.46
60.56	28.53	32.04	3.51
61.47	28.95	32.52	3.56
62.39	29.39	33.00	3.62
63.33	29.83	33.50	3.67
64.28	30.28	34.00	3.73
65.24	30.73	34.51	3.78

Note: Numbers may not add up due to rounding.
Source: NCAA.org

SCY Female 100Y Freestyle: Baseline

- Using the average first 50 (22.95) as a baseline to the average split delta's, results in the following list of race strategies for a selection of times
- Split Delta's
 - 1st → 2nd = 7.2%

Final Time	Splits by 50		Split Delta (seconds)
	1st	2nd (+7.2%)	
42.78	20.64	22.13	1.49
43.43	20.96	22.47	1.52
44.09	21.28	22.81	1.54
44.76	21.60	23.16	1.56
45.44	21.93	23.51	1.59
46.14	22.26	23.87	1.61
46.84	22.60	24.24	1.63
47.55	22.95	24.61	1.66
48.26	23.29	24.97	1.68
48.99	23.64	25.35	1.71
49.72	23.99	25.73	1.73
50.47	24.35	26.11	1.76
51.23	24.72	26.51	1.79
51.99	25.09	26.90	1.81
52.77	25.47	27.31	1.84

Note: Numbers may not add up due to rounding.
Source: NCAA.org

SCY Female 200Y Butterfly: Baseline

- Using the average first 50 (25.82) as a baseline to the average split delta's, results in the following list of race strategies for a selection of times
- Split Delta's
 - 1st → 2nd = 11.3%
 - 1st → 3rd = 13.3%
 - 1st → 4th = 14.7%

Final Time	Splits by 50				Split Delta			100 Split
	1st	2nd	3rd	4th	2nd (+11.3%)	3rd (+13.3%)	4th (+14.7%)	
1:42.06	23.23	25.86	26.32	26.65	2.63	0.46	0.33	49.09
1:43.61	23.58	26.25	26.72	27.06	2.67	0.47	0.33	49.83
1:45.19	23.94	26.65	27.13	27.47	2.71	0.48	0.34	50.59
1:46.79	24.31	27.06	27.54	27.89	2.75	0.49	0.34	51.36
1:48.42	24.68	27.47	27.96	28.31	2.79	0.49	0.35	52.14
1:50.07	25.05	27.89	28.39	28.74	2.83	0.50	0.35	52.94
1:51.75	25.43	28.31	28.82	29.18	2.88	0.51	0.36	53.75
1:53.45	25.82	28.74	29.26	29.62	2.92	0.52	0.36	54.56
1:55.15	26.21	29.17	29.70	30.07	2.97	0.52	0.37	55.38
1:56.88	26.60	29.61	30.14	30.52	3.01	0.53	0.38	56.21
1:58.63	27.00	30.06	30.60	30.98	3.06	0.54	0.38	57.06
2:00.41	27.41	30.51	31.06	31.44	3.10	0.55	0.39	57.91
2:02.21	27.82	30.96	31.52	31.91	3.15	0.56	0.39	58.78
2:04.05	28.23	31.43	31.99	32.39	3.20	0.57	0.40	59.66
2:05.91	28.66	31.90	32.47	32.88	3.24	0.57	0.40	60.56

Note: Numbers may not add up due to rounding.
Source: NCAA.org

SCY Female 200Y Backstroke: Baseline

- Using the average first 50 (26.52) as a baseline to the average split delta's, results in the following list of race strategies for a selection of times
- Split Delta's
 - 1st → 2nd = 5.9%
 - 1st → 3rd = 6.7%
 - 1st → 4th = 6.7%

Final Time	Splits by 50				Split Delta			100 Split
	1st	2nd	3rd	4th	2nd (+5.9%)	3rd (+6.7%)	4th (+6.7%)	
1:40.05	23.86	25.27	25.46	25.46	1.40	0.20	<0.01	49.13
1:41.57	24.22	25.65	25.85	25.85	1.43	0.20	<0.01	49.87
1:43.12	24.59	26.04	26.24	26.24	1.45	0.20	<0.01	50.63
1:44.69	24.97	26.44	26.64	26.64	1.47	0.20	<0.01	51.40
1:46.28	25.35	26.84	27.05	27.05	1.49	0.21	<0.01	52.19
1:47.90	25.73	27.25	27.46	27.46	1.51	0.21	<0.01	52.98
1:49.54	26.13	27.66	27.88	27.88	1.54	0.21	<0.01	53.79
1:51.21	26.52	28.08	28.30	28.30	1.56	0.22	<0.01	54.61
1:52.88	26.92	28.51	28.73	28.73	1.58	0.22	<0.01	55.43
1:54.57	27.33	28.93	29.16	29.16	1.61	0.22	<0.01	56.26
1:56.29	27.74	29.37	29.59	29.60	1.63	0.23	<0.01	57.10
1:58.04	28.15	29.81	30.04	30.04	1.66	0.23	<0.01	57.96
1:59.81	28.57	30.26	30.49	30.49	1.68	0.23	<0.01	58.83
2:01.60	29.00	30.71	30.95	30.95	1.71	0.24	<0.01	59.71
2:03.43	29.44	31.17	31.41	31.41	1.73	0.24	<0.01	60.61

Note: Numbers may not add up due to rounding.
Source: NCAA.org

SCY Female 200Y Breaststroke: Baseline

- Using the average first 50 (28.86) as a baseline to the average split delta's, results in the following list of race strategies for a selection of times
- Split Delta's
 - 1st → 2nd = 11.3%
 - 1st → 3rd = 12.8%
 - 1st → 4th = 14.8%

Final Time	Splits by 50				Split Delta			100 Split
	1st	2nd	3rd	4th	2nd (+11.3%)	3rd (+12.8%)	4th (+14.8%)	
1:53.95	25.96	28.89	29.29	29.80	2.93	0.40	0.50	54.86
1:55.69	26.36	29.33	29.74	30.25	2.97	0.41	0.51	55.69
1:57.45	26.76	29.78	30.19	30.71	3.02	0.41	0.52	56.54
1:59.24	27.17	30.23	30.65	31.18	3.07	0.42	0.53	57.40
2:01.05	27.58	30.70	31.12	31.66	3.11	0.43	0.54	58.28
2:02.90	28.00	31.16	31.59	32.14	3.16	0.43	0.54	59.16
2:04.77	28.43	31.64	32.08	32.63	3.21	0.44	0.55	60.07
2:06.67	28.86	32.12	32.56	33.12	3.26	0.44	0.56	60.98
2:08.57	29.29	32.60	33.05	33.62	3.31	0.45	0.57	61.90
2:10.50	29.73	33.09	33.55	34.13	3.36	0.46	0.58	62.82
2:12.45	30.18	33.59	34.05	34.64	3.41	0.47	0.59	63.77
2:14.44	30.63	34.09	34.56	35.16	3.46	0.47	0.60	64.72
2:16.46	31.09	34.60	35.08	35.68	3.51	0.48	0.60	65.69
2:18.51	31.56	35.12	35.61	36.22	3.56	0.49	0.61	66.68
2:20.58	32.03	35.65	36.14	36.76	3.61	0.49	0.62	67.68

Note: Numbers may not add up due to rounding.
Source: NCAA.org

SCY Female 200Y Freestyle: Baseline

- Using the average first 50 (26.54) as a baseline to the average split delta's, results in the following list of race strategies for a selection of times
- Split Delta's
 - 1st → 2nd = 7.2%
 - 1st → 3rd = 8.2%
 - 1st → 4th = 8.3%

Final Time	Splits by 50				Split Delta			100 Split
	1st	2nd	3rd	4th	2nd (+7.2%)	3rd (+8.2%)	4th (+8.3%)	
1:32.57	21.85	23.42	23.65	23.66	1.57	0.23	0.01	45.27
1:33.98	22.18	23.78	24.01	24.02	1.60	0.23	0.01	45.96
1:35.41	22.52	24.14	24.37	24.38	1.62	0.23	0.01	46.66
1:36.86	22.86	24.51	24.74	24.75	1.65	0.24	0.01	47.37
1:38.34	23.21	24.88	25.12	25.13	1.67	0.24	0.01	48.09
1:39.84	23.56	25.26	25.50	25.51	1.70	0.24	0.01	48.82
1:41.36	23.92	25.64	25.89	25.90	1.72	0.25	0.01	49.56
1:42.90	24.28	26.03	26.28	26.30	1.75	0.25	0.01	50.32
1:44.44	24.65	26.42	26.68	26.69	1.78	0.25	0.01	51.07
1:46.01	25.02	26.82	27.08	27.09	1.80	0.26	0.01	51.84
1:47.60	25.39	27.22	27.49	27.50	1.83	0.26	0.01	52.62
1:49.21	25.78	27.63	27.90	27.91	1.86	0.27	0.01	53.41
1:50.85	26.16	28.05	28.32	28.33	1.88	0.27	0.01	54.21
1:52.52	26.55	28.47	28.74	28.75	1.91	0.27	0.01	55.02
1:54.20	26.95	28.89	29.17	29.19	1.94	0.28	0.01	55.85

Note: Numbers may not add up due to rounding.
Source: NCAA.org

Comparisons

Section V

Race Analysis Comparison

		Long Axis			Short Axis		
		Backstroke	Freestyle	Average	Butterfly	Breaststroke	Average
100 Stroke Analysis							
Female	1st → 2nd 50	6.4%	7.2%	6.8%	13.1%	12.3%	12.7%
Male	1st → 2nd 50	7.9%	9.3%	8.6%	14.5%	13.6%	14.1%
200 Stroke Analysis							
Female	1st → 2nd 50	5.9%	7.2%	6.6%	11.3%	11.3%	11.3%
	1st → 3rd 50	6.7%	8.2%	7.5%	13.3%	12.8%	13.1%
	1st → 4th 50	6.7%	8.3%	7.5%	14.7%	14.8%	14.8%
	Range	0.8%	1.1%	-	3.4%	3.5%	-
Male	1st → 2nd 50	7.6%	7.9%	7.8%	13.1%	12.5%	12.8%
	1st → 3rd 50	8.9%	9.4%	9.2%	14.0%	14.0%	14.0%
	1st → 4th 50	9.4%	11.0%	10.2%	16.5%	15.8%	16.2%
	Range	1.8%	3.1%	-	3.4%	3.3%	-