Establishing the Baseline Race Strategy: Female Long Course 200-Meter Events

Select Competitions from 1996 - 2012

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Agenda

Introduction

Section I

Executive Summary

The Subject
- An analysis of the top five female finishers in each of the 200-stroke A-Finals from a selection of international competitions over the past two decades

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

The Approach
- Separate and analyze each lap of the 200 for every race over the years to develop an average split delta, in percentage terms, for the second, third, and fourth 50 when base-lining from the first 50 of the race

The Advantage
- Using my results, I developed a list of recommended splits for a range of times in order to give elite level swimmers a factual approach to specific goal times
- Using percentages as a measurement, rather than absolute times, does not disfavor any swimmers

Criteria Used

Sex:
- Female

Distance
- 200 Meters

Stroke
- Freestyle
- Backstroke
- Breaststroke
- Butterfly

Session
- A-Final

Place:
- 1st – 5th

Meets
- Olympics:
  - 96, 00, 04, 08, 12
- World Championships:
  - 01, 03, 05, 07, 09, 11

Note: In some scenarios a swimmer placing out of the top five may be included for comparison purposes.
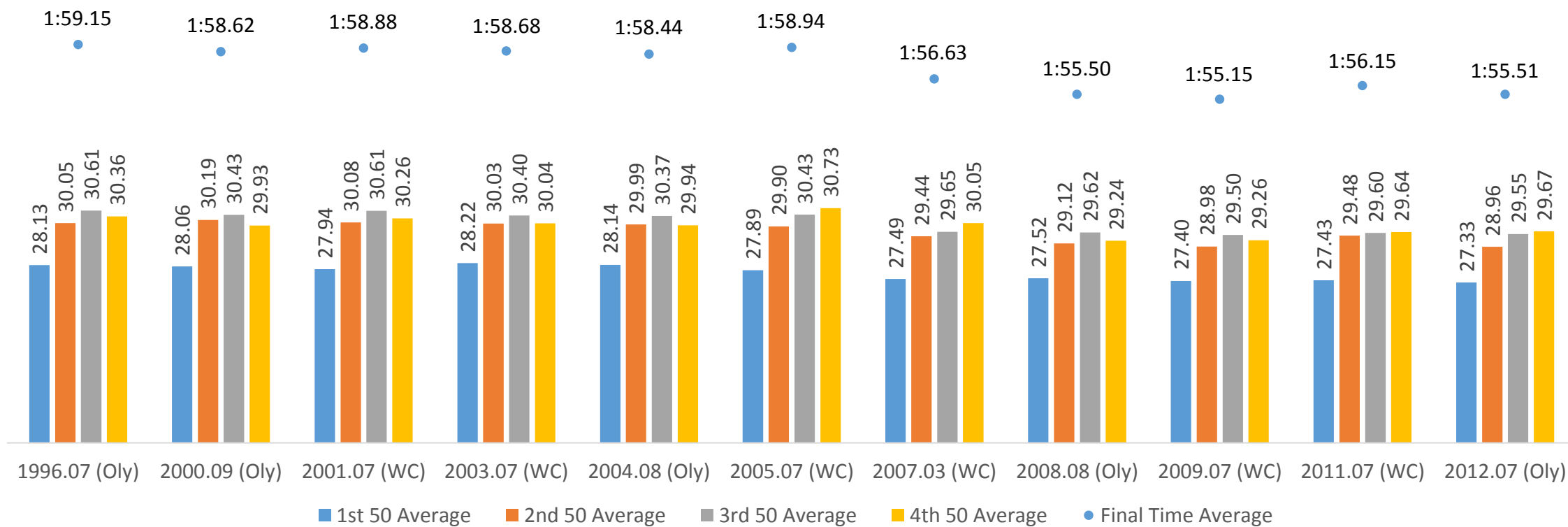Source: International Olympic Committee, SwimRankings, Omega Timing.

Analysis of the 200M Freestyle

Section II

LCM Female 200 Freestyle: Race Averages

	1st 50 Average	2nd 50 Average	3rd 50 Average	4th 50 Average	Final Time Average
1996.07 (Oly)	28.13	30.05	30.61	30.36	1:59.15
2000.09 (Oly)	28.06	30.19	30.43	29.93	1:58.62
2001.07 (WC)	27.94	30.08	30.61	30.26	1:58.88
2003.07 (WC)	28.22	30.03	30.40	30.04	1:58.68
2004.08 (Oly)	28.14	29.99	30.37	29.94	1:58.44
2005.07 (WC)	27.89	29.90	30.43	30.73	1:58.94
2007.03 (WC)	27.49	29.44	29.65	30.05	1:56.63
2008.08 (Oly)	27.52	29.12	29.62	29.24	1:55.50
2009.07 (WC)	27.40	28.98	29.50	29.26	1:55.15
2011.07 (WC)	27.43	29.48	29.60	29.64	1:56.15
2012.07 (Oly)	27.33	28.96	29.55	29.67	1:55.51

LCM Female 200 Freestyle: 1ˢᵗ → 2ⁿᵈ 50

Average 1ˢᵗ 50 = 27.78 | Average 2ⁿᵈ 50 = 29.66 | Average Split Delta = 6.8%

	1996.07 (Oly)	2000.09 (Oly)	2001.07 (WC)	2003.07 (WC)	2004.08 (Oly)	2005.07 (WC)	2007.03 (WC)	2008.08 (Oly)	2009.07 (WC)	2011.07 (WC)	2012.07 (Oly)
1st 50 Average	28.13	28.06	27.94	28.22	28.14	27.89	27.49	27.52	27.40	27.43	27.33
2nd 50 Average	30.05	30.19	30.08	30.03	29.99	29.90	29.44	29.12	28.98	29.48	28.96
2nd 50 Delta	6.8%	7.6%	7.7%	6.4%	6.6%	7.2%	7.1%	5.8%	5.7%	7.5%	6.0%

■ 1st 50 Average   ■ 2nd 50 Average   ● 2nd 50 Delta
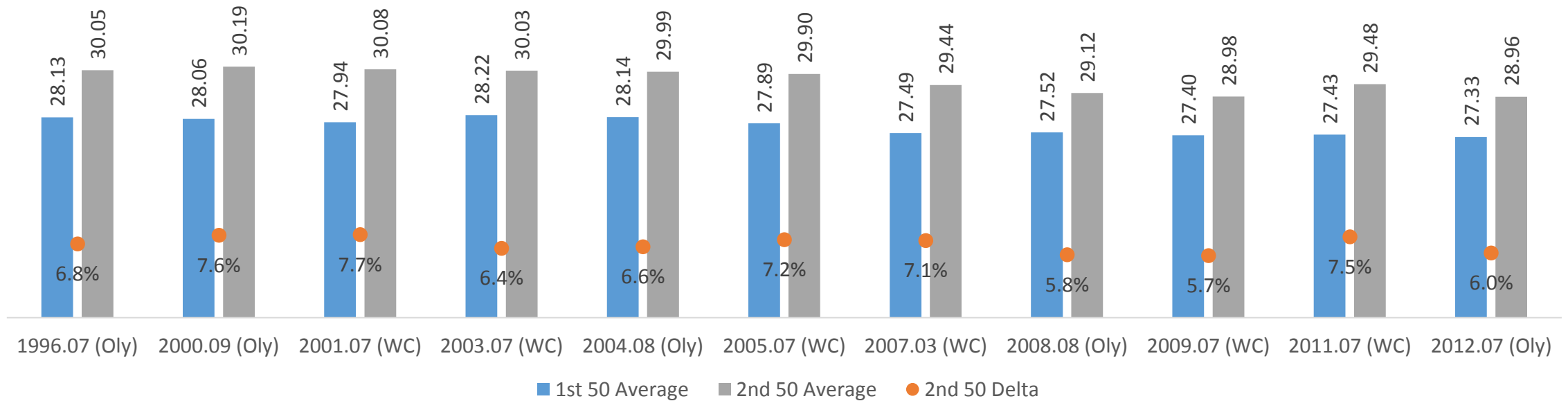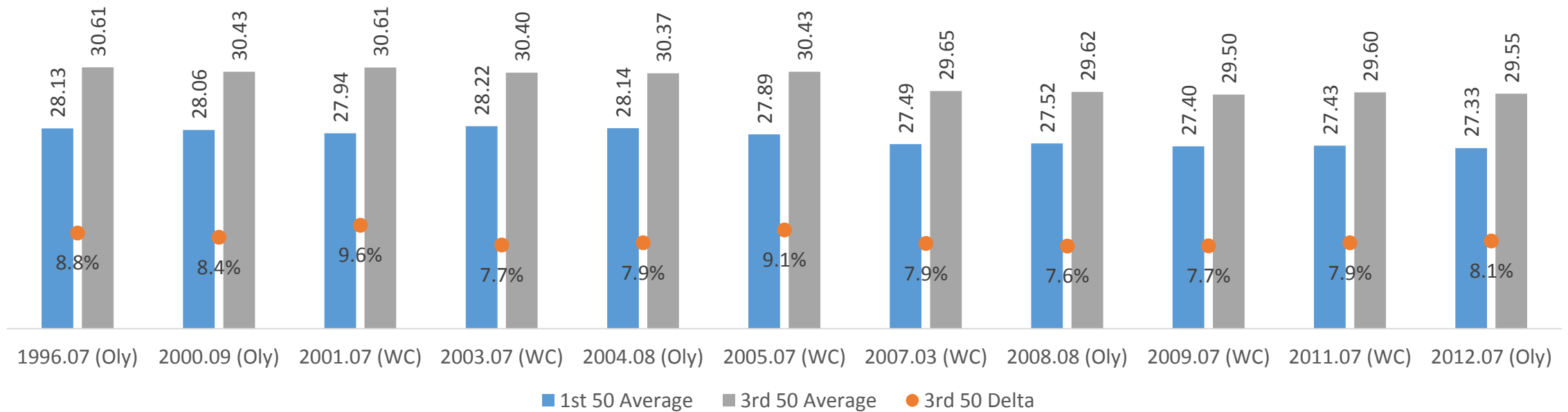
LCM Female 200 Freestyle: 1st → 3rd 50

Average 1st 50 = 27.78   Average 3rd 50 = 30.07   Average Split Delta = 8.3%

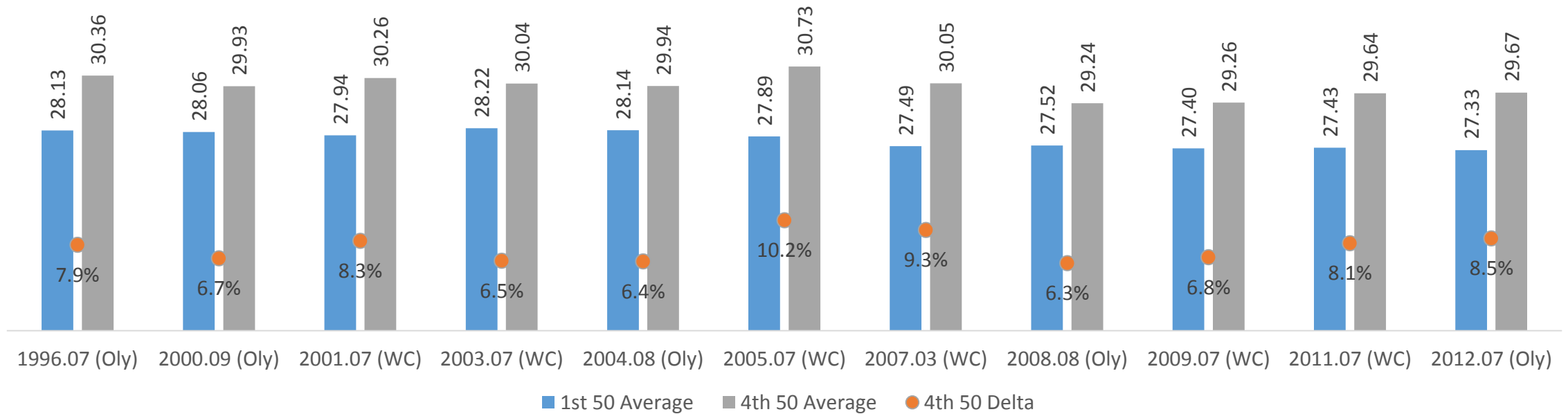
Event	1st 50 Average	3rd 50 Average	3rd 50 Delta
1996.07 (Oly)	28.13	30.61	8.8%
2000.09 (Oly)	28.06	30.43	8.4%
2001.07 (WC)	27.94	30.61	9.6%
2003.07 (WC)	28.22	30.40	7.7%
2004.08 (Oly)	28.14	30.37	7.9%
2005.07 (WC)	27.89	30.43	9.1%
2007.03 (WC)	27.49	29.65	7.9%
2008.08 (Oly)	27.52	29.62	7.6%
2009.07 (WC)	27.40	29.50	7.7%
2011.07 (WC)	27.43	29.60	7.9%
2012.07 (Oly)	27.33	29.55	8.1%

■ 1st 50 Average   ■ 3rd 50 Average   ● 3rd 50 Delta

LCM Female 200 Freestyle: 1st → 4th 50

Average 1st 50 = 27.78   Average 4th 50 = 29.92   Average Split Delta = 7.7%

|	1996.07 (Oly)	2000.09 (Oly)	2001.07 (WC)	2003.07 (WC)	2004.08 (Oly)	2005.07 (WC)	2007.03 (WC)	2008.08 (Oly)	2009.07 (WC)	2011.07 (WC)	2012.07 (Oly)
1st 50 Average	28.13	28.06	27.94	28.22	28.14	27.89	27.49	27.52	27.40	27.43	27.33
4th 50 Average	30.36	29.93	30.26	30.04	29.94	30.73	30.05	29.24	29.26	29.64	29.67
4th 50 Delta	7.9%	6.7%	8.3%	6.5%	6.4%	10.2%	9.3%	6.3%	6.8%	8.1%	8.5%

■ 1st 50 Average   ■ 4th 50 Average   ● 4th 50 Delta

Analysis of the 200M Backstroke

Section III

LCM Female 200 Backstroke: Race Averages
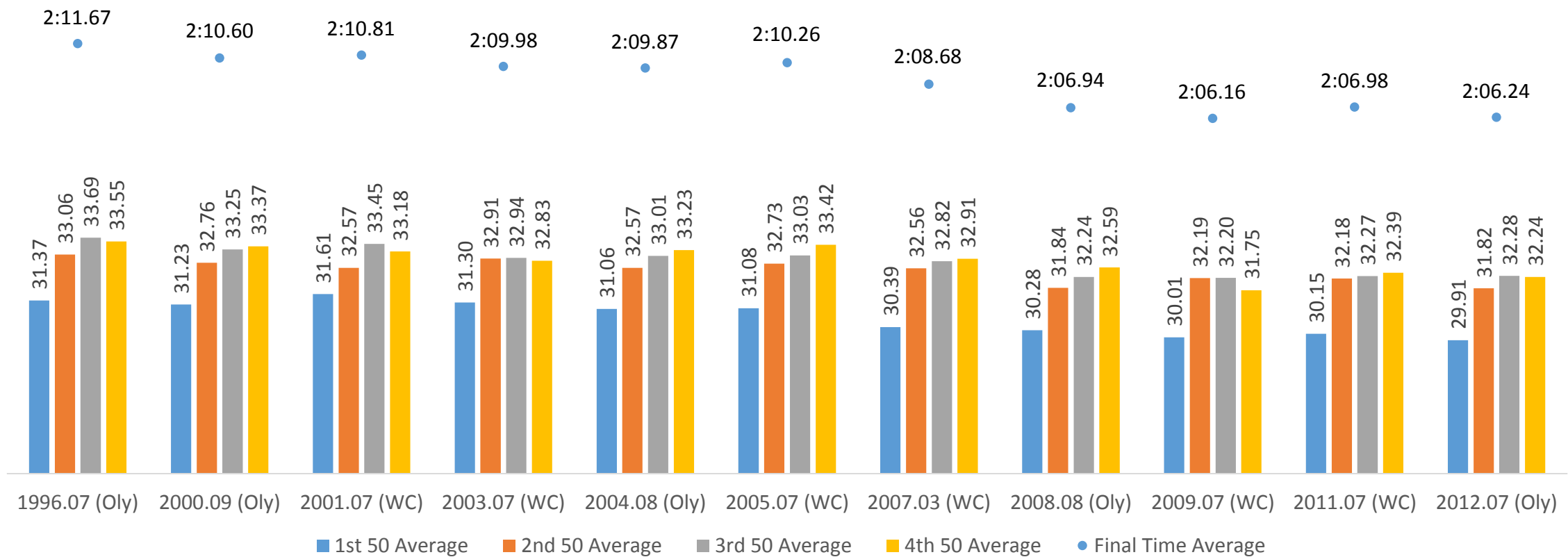
LCM Female 200 Backstroke: 1ˢᵗ → 2ⁿᵈ 50

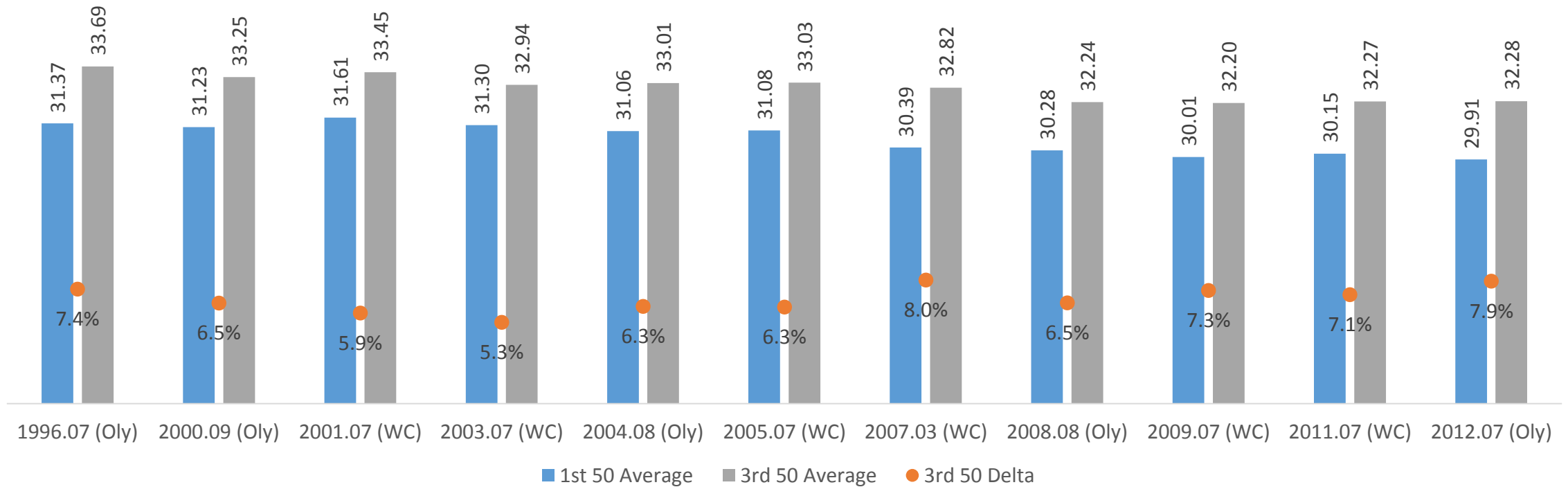Average 1ˢᵗ 50 = 30.76   Average 2ⁿᵈ 50 = 32.47   Average Split Delta = 5.6%

Event	1st 50 Average	2nd 50 Average	2nd 50 Delta
1996.07 (Oly)	31.37	33.06	5.4%
2000.09 (Oly)	31.23	32.76	4.9%
2001.07 (WC)	31.61	32.57	3.1%
2003.07 (WC)	31.30	32.91	5.2%
2004.08 (Oly)	31.06	32.57	4.9%
2005.07 (WC)	31.08	32.73	5.3%
2007.03 (WC)	30.39	32.56	7.1%
2008.08 (Oly)	30.28	31.84	5.2%
2009.07 (WC)	30.01	32.19	7.3%
2011.07 (WC)	30.15	32.18	6.7%
2012.07 (Oly)	29.91	31.82	6.4%

■ 1st 50 Average   ■ 2nd 50 Average   ● 2nd 50 Delta
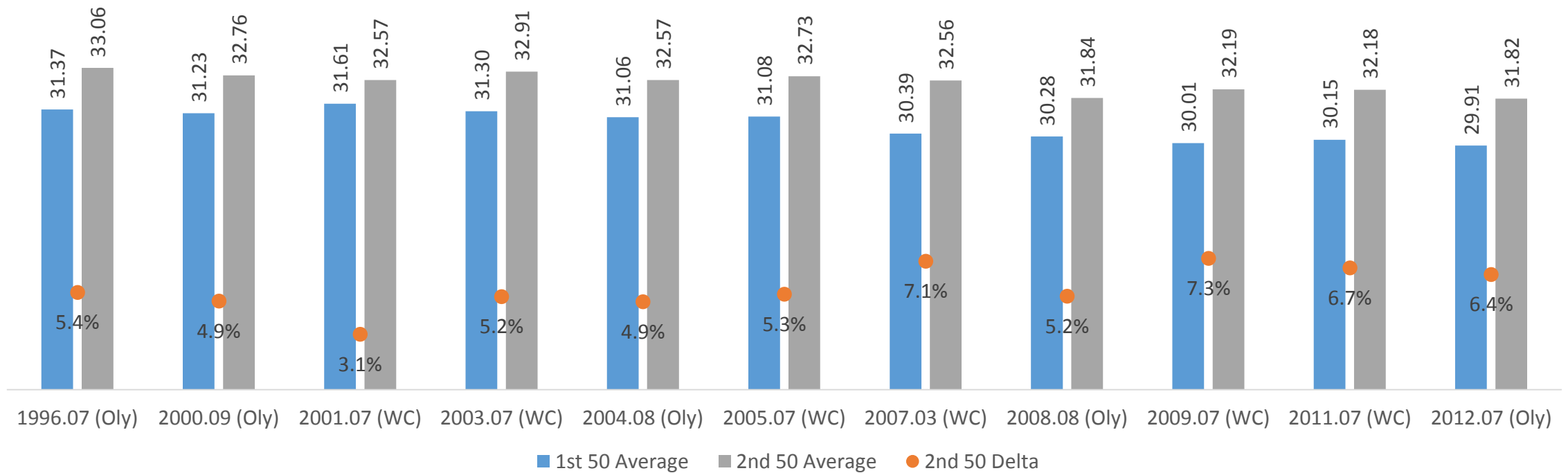
LCM Female 200 Backstroke: 1ˢᵗ → 3ʳᵈ 50

Average 1ˢᵗ 50 = 30.76 **Average 3ʳᵈ 50 = 32.83** **Average Split Delta = 6.8%**

Event	1st 50 Average	3rd 50 Average	3rd 50 Delta
1996.07 (Oly)	31.37	33.69	7.4%
2000.09 (Oly)	31.23	33.25	6.5%
2001.07 (WC)	31.61	33.45	5.9%
2003.07 (WC)	31.30	32.94	5.3%
2004.08 (Oly)	31.06	33.01	6.3%
2005.07 (WC)	31.08	33.03	6.3%
2007.03 (WC)	30.39	32.82	8.0%
2008.08 (Oly)	30.28	32.24	6.5%
2009.07 (WC)	30.01	32.20	7.3%
2011.07 (WC)	30.15	32.27	7.1%
2012.07 (Oly)	29.91	32.28	7.9%

Legend: ■ 1st 50 Average ■ 3rd 50 Average ● 3rd 50 Delta

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LCM Female 200 Backstroke: 1st → 4th 50

Average 1st 50 = 30.76　　　Average 4th 50 = 32.86　　　Average Split Delta = 6.8%

|	1996.07 (Oly)	2000.09 (Oly)	2001.07 (WC)	2003.07 (WC)	2004.08 (Oly)	2005.07 (WC)	2007.03 (WC)	2008.08 (Oly)	2009.07 (WC)	2011.07 (WC)	2012.07 (Oly)
1st 50 Average	31.37	31.23	31.61	31.30	31.06	31.08	30.39	30.28	30.01	30.15	29.91
4th 50 Average	33.55	33.37	33.18	32.83	33.23	33.42	32.91	32.59	31.75	32.39	32.24
4th 50 Delta	7.0%	6.9%	5.0%	4.9%	7.0%	7.5%	8.3%	7.7%	5.8%	7.5%	7.8%

■ 1st 50 Average　■ 4th 50 Average　● 4th 50 Delta
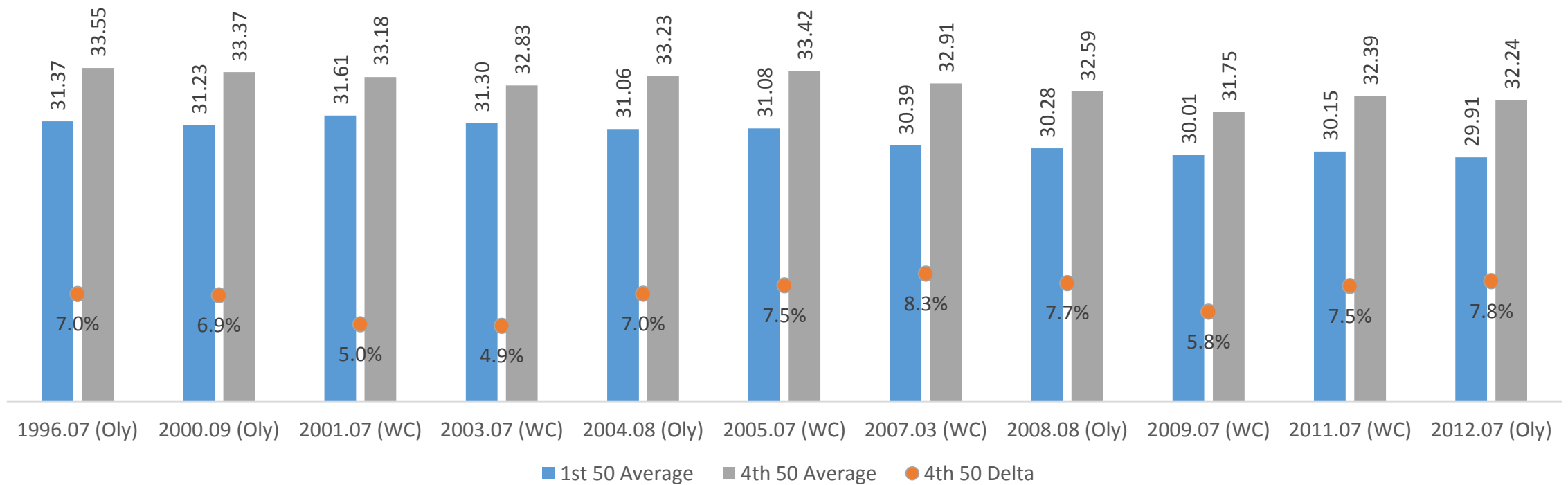
Analysis of the 200M Breaststroke

Section IV
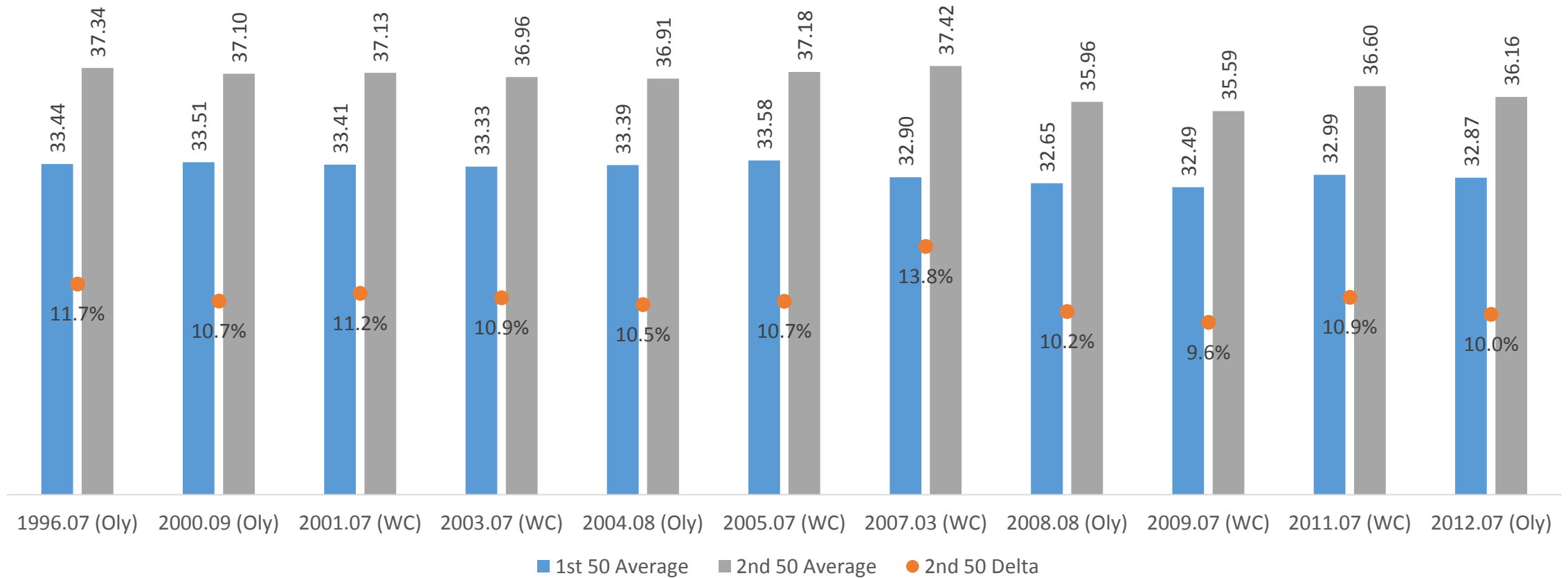
LCM Female 200 Breaststroke: Race Averages
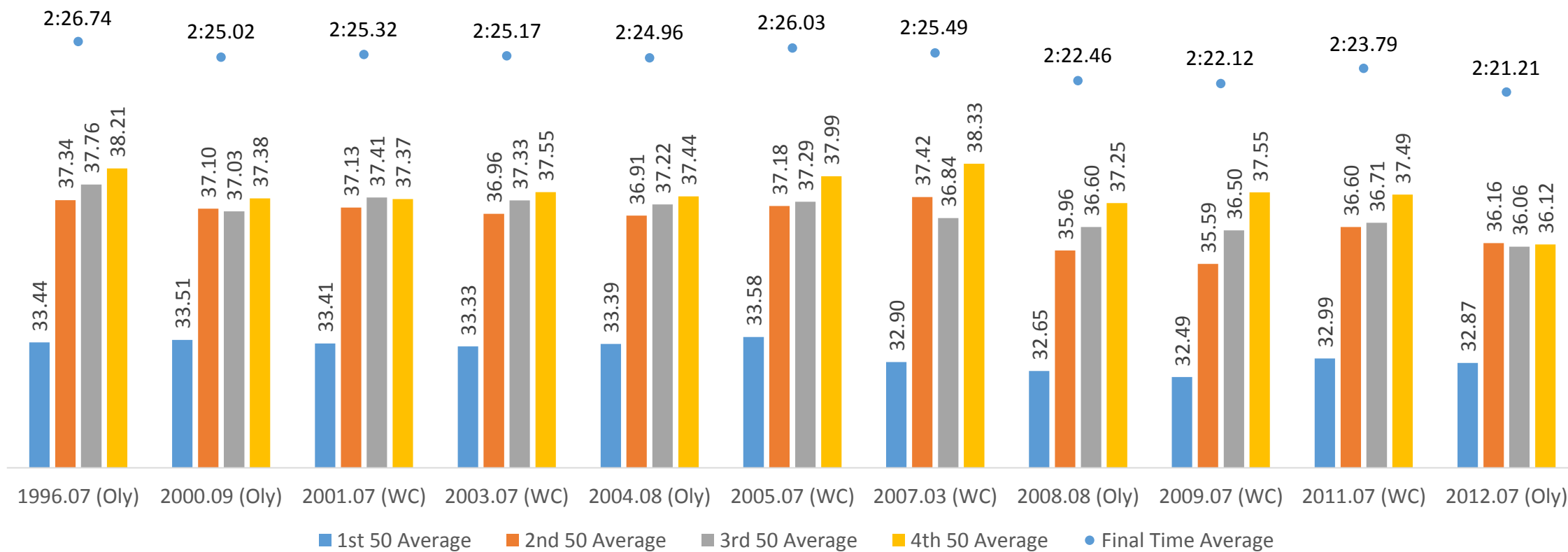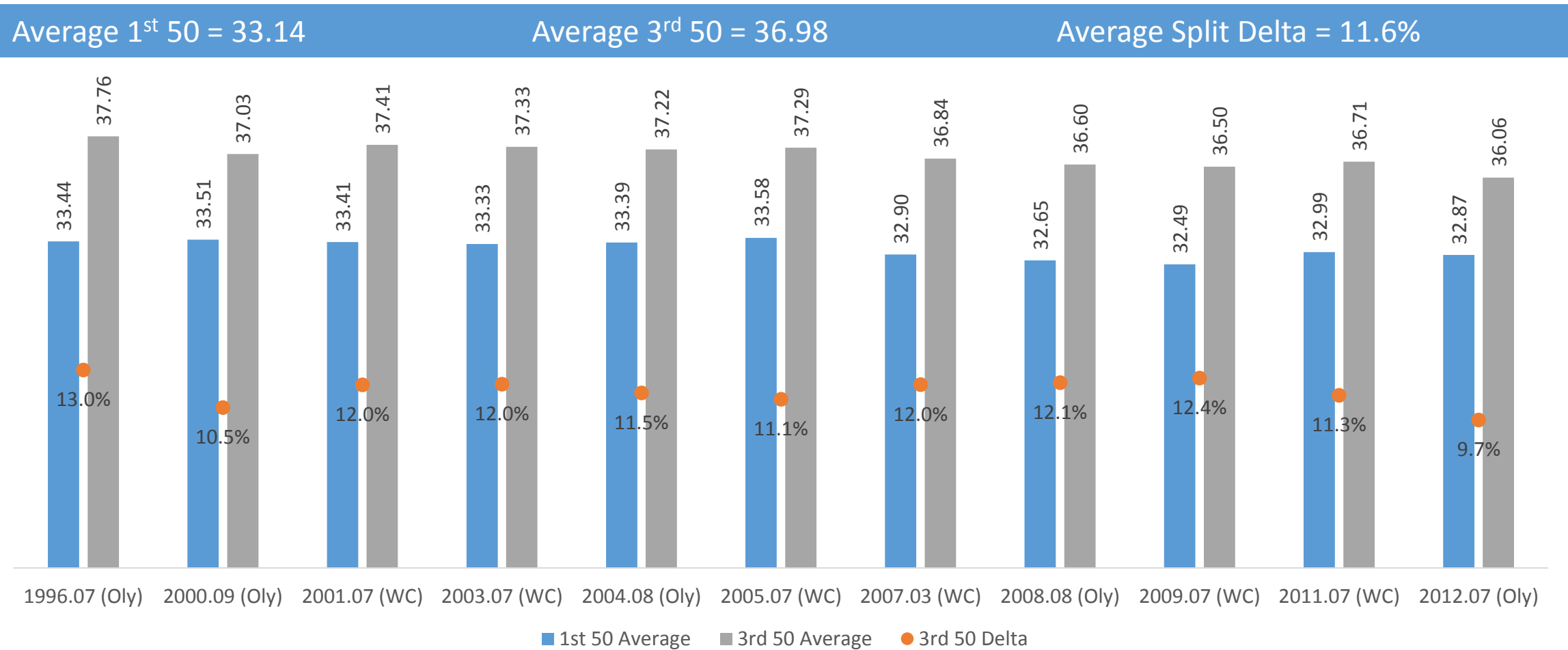
LCM Female 200 Breaststroke: 1ˢᵗ → 2ⁿᵈ 50

Average 1ˢᵗ 50 = 33.14   Average 2ⁿᵈ 50 = 36.76   Average Split Delta = 10.9%
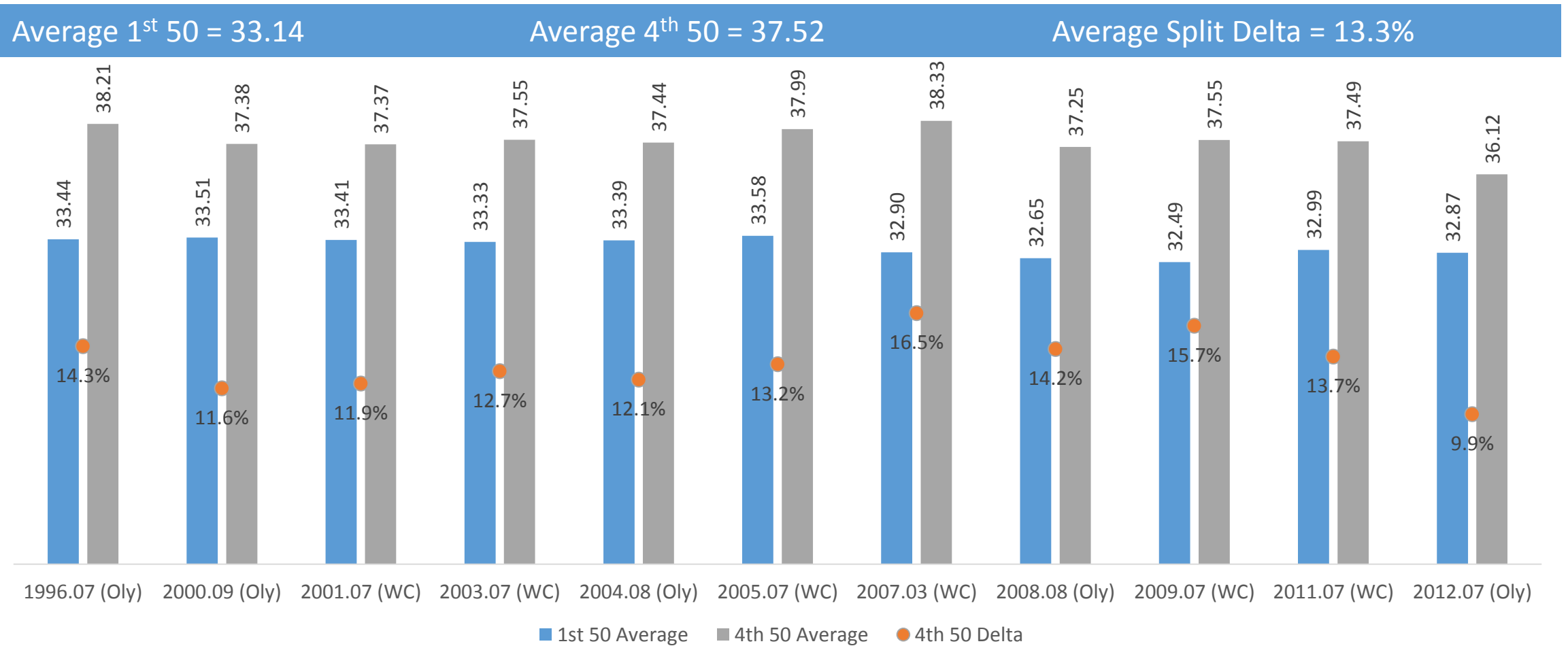
LCM Female 200 Breaststroke: 1st → 3rd 50

Average 1st 50 = 33.14   Average 3rd 50 = 36.98   Average Split Delta = 11.6%

	1996.07 (Oly)	2000.09 (Oly)	2001.07 (WC)	2003.07 (WC)	2004.08 (Oly)	2005.07 (WC)	2007.03 (WC)	2008.08 (Oly)	2009.07 (WC)	2011.07 (WC)	2012.07 (Oly)
1st 50 Average	33.44	33.51	33.41	33.33	33.39	33.58	32.90	32.65	32.49	32.99	32.87
3rd 50 Average	37.76	37.03	37.41	37.33	37.22	37.29	36.84	36.60	36.50	36.71	36.06
3rd 50 Delta	13.0%	10.5%	12.0%	12.0%	11.5%	11.1%	12.0%	12.1%	12.4%	11.3%	9.7%

Legend: ■ 1st 50 Average ■ 3rd 50 Average ● 3rd 50 Delta

LCM Female 200 Breaststroke: 1st → 4th 50

Average 1st 50 = 33.14   Average 4th 50 = 37.52   Average Split Delta = 13.3%

	1996.07 (Oly)	2000.09 (Oly)	2001.07 (WC)	2003.07 (WC)	2004.08 (Oly)	2005.07 (WC)	2007.03 (WC)	2008.08 (Oly)	2009.07 (WC)	2011.07 (WC)	2012.07 (Oly)
1st 50 Average	33.44	33.51	33.41	33.33	33.39	33.58	32.90	32.65	32.49	32.99	32.87
4th 50 Average	38.21	37.38	37.37	37.55	37.44	37.99	38.33	37.25	37.55	37.49	36.12
4th 50 Delta	14.3%	11.6%	11.9%	12.7%	12.1%	13.2%	16.5%	14.2%	15.7%	13.7%	9.9%

■ 1st 50 Average   ■ 4th 50 Average   ● 4th 50 Delta

Analysis of the 200M Butterfly

Section V

LCM Female 200 Butterfly: Race Averages
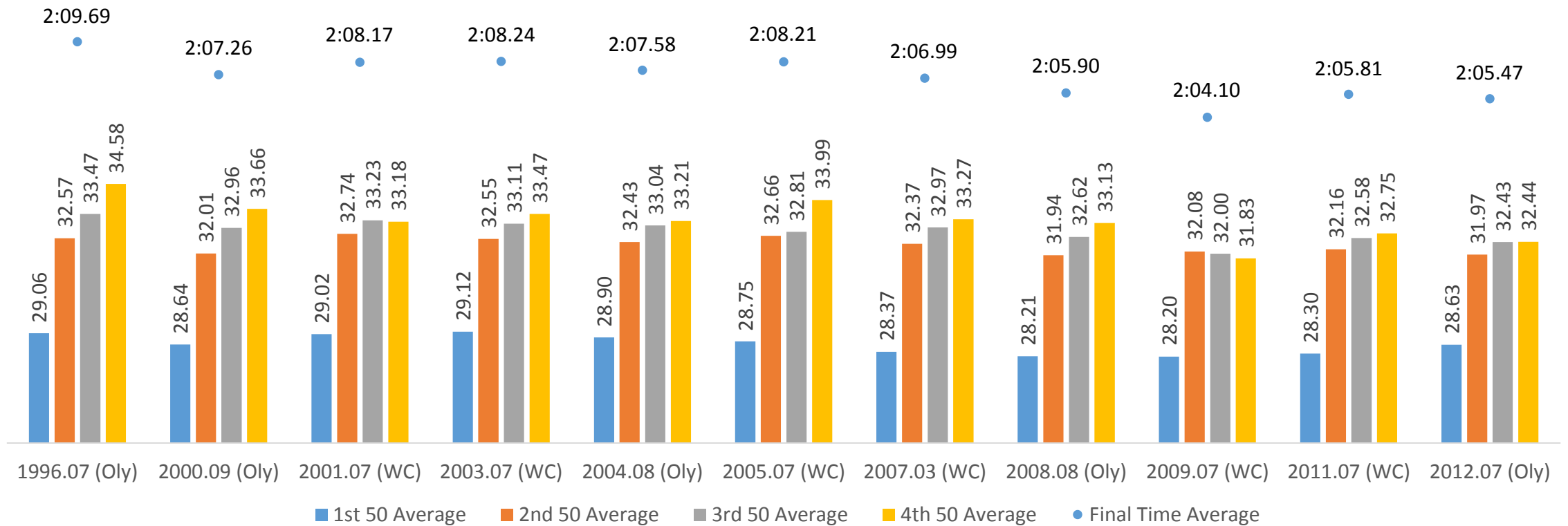
LCM Female 200 Butterfly: 1ˢᵗ → 2ⁿᵈ 50

Average 1ˢᵗ 50 = 28.66   Average 2ⁿᵈ 50 = 32.32   Average Split Delta = 12.8%
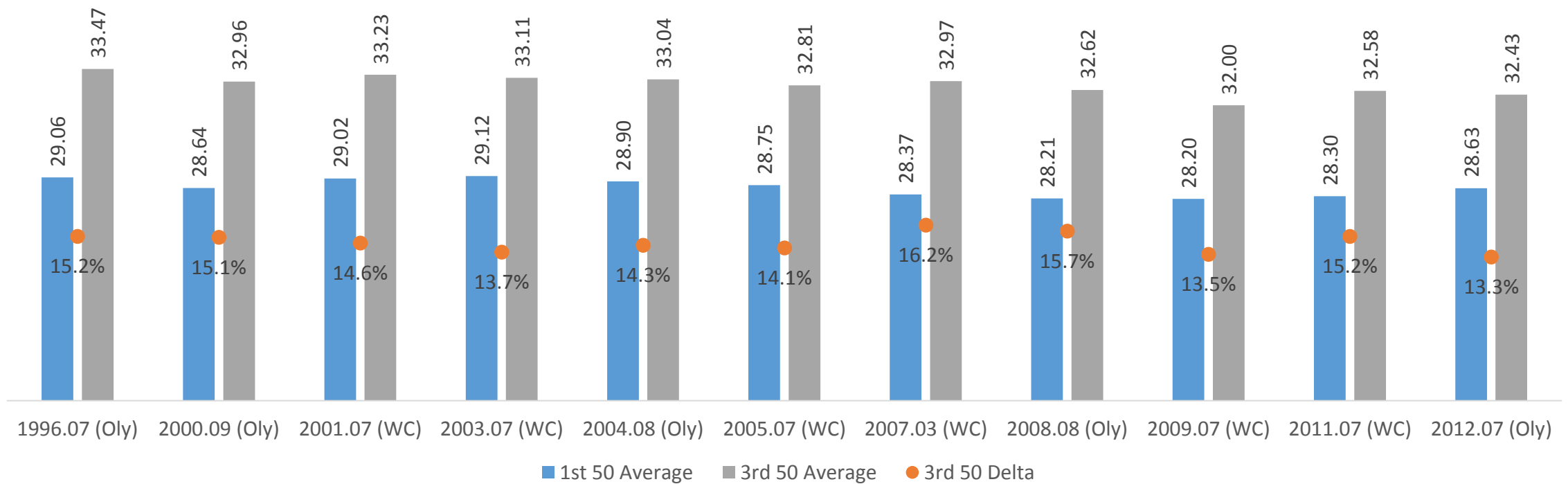

	1996.07 (Oly)	2000.09 (Oly)	2001.07 (WC)	2003.07 (WC)	2004.08 (Oly)	2005.07 (WC)	2007.03 (WC)	2008.08 (Oly)	2009.07 (WC)	2011.07 (WC)	2012.07 (Oly)
1st 50 Average	29.06	28.64	29.02	29.12	28.90	28.75	28.37	28.21	28.20	28.30	28.63
2nd 50 Average	32.57	32.01	32.74	32.55	32.43	32.66	32.37	31.94	32.08	32.16	31.97
2nd 50 Delta	12.1%	11.8%	12.9%	11.8%	12.2%	13.6%	14.1%	13.2%	13.8%	13.7%	11.7%

■ 1st 50 Average   ■ 2nd 50 Average   ● 2nd 50 Delta
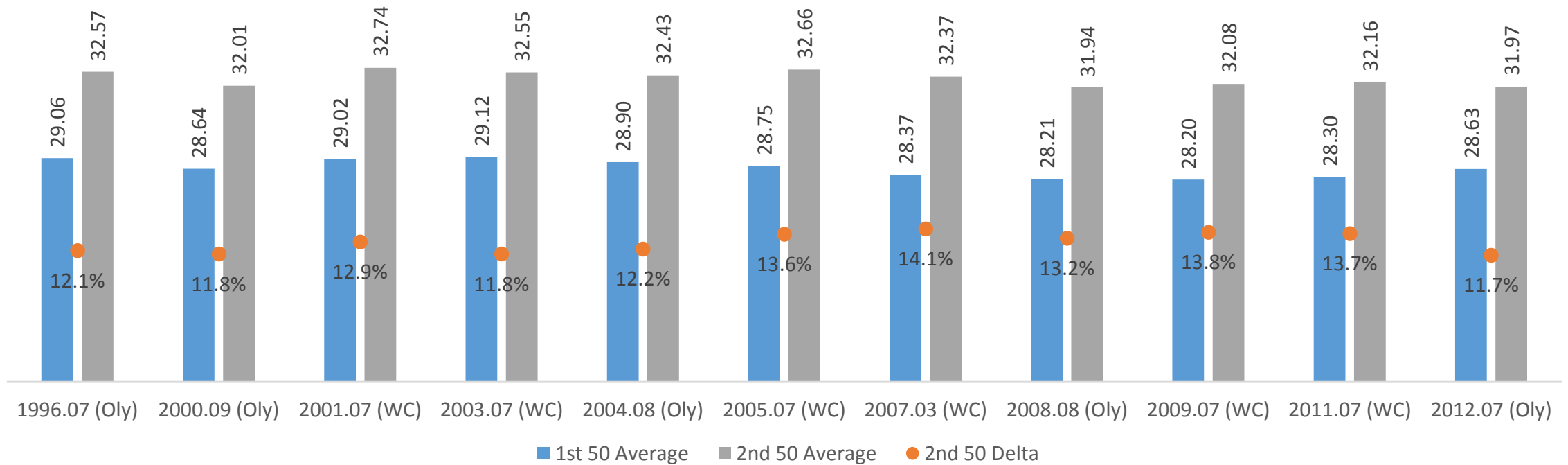
LCM Female 200 Butterfly: 1ˢᵗ → 3ʳᵈ 50

Average 1ˢᵗ 50 = 28.66   Average 3ʳᵈ 50 = 32.84   Average Split Delta = 14.6%

	1996.07 (Oly)	2000.09 (Oly)	2001.07 (WC)	2003.07 (WC)	2004.08 (Oly)	2005.07 (WC)	2007.03 (WC)	2008.08 (Oly)	2009.07 (WC)	2011.07 (WC)	2012.07 (Oly)
1st 50 Average	29.06	28.64	29.02	29.12	28.90	28.75	28.37	28.21	28.20	28.30	28.63
3rd 50 Average	33.47	32.96	33.23	33.11	33.04	32.81	32.97	32.62	32.00	32.58	32.43
3rd 50 Delta	15.2%	15.1%	14.6%	13.7%	14.3%	14.1%	16.2%	15.7%	13.5%	15.2%	13.3%

■ 1st 50 Average   ■ 3rd 50 Average   ● 3rd 50 Delta

LCM Female 200 Butterfly: 1st → 4th 50
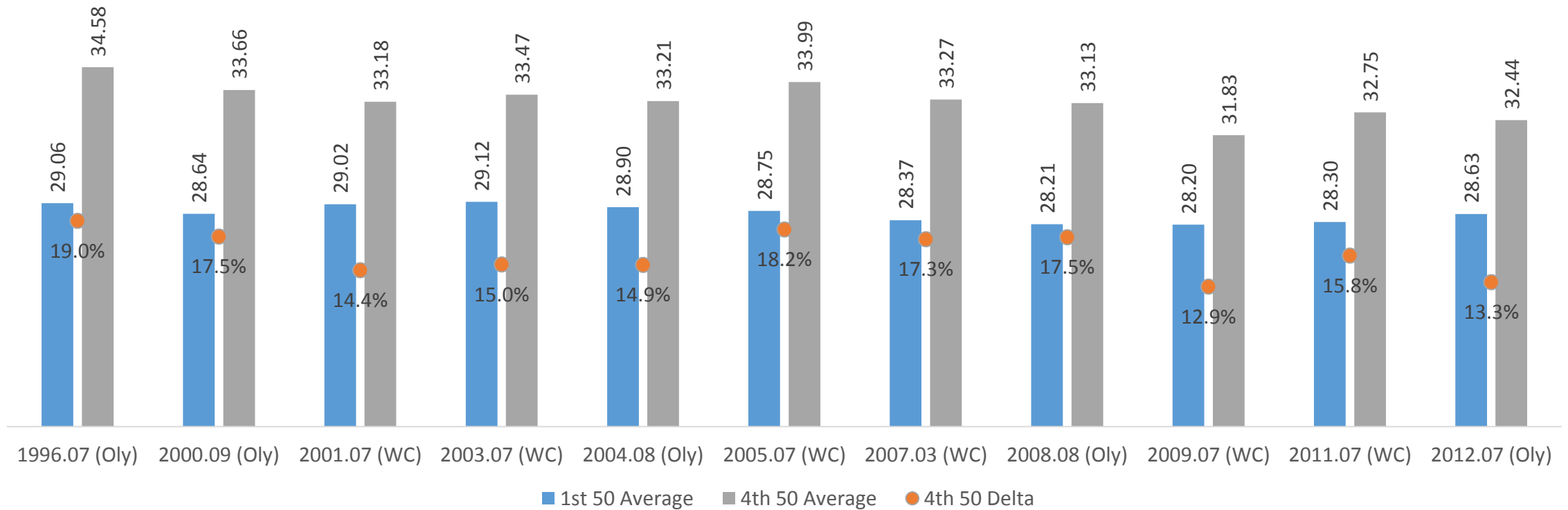
Establishing the Baseline

Section VI

- Using the average first 50 (27.78) 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

  - $1^{st} \rightarrow 2^{nd}$ 50 = 6.8%

  - $1^{st} \rightarrow 3^{rd}$ 50 = 8.3%

  - $1^{st} \rightarrow 4^{th}$ 50 = 7.7%

Final Time	Splits by 50				Split Delta			100 Split
	1st	2nd	3rd	4th	2nd	3rd	4th	
Note: all times are formatted in mm:ss.hh								
1:43.57	24.50	26.16	26.52	26.39	1.66	0.37	(0.13)	50.66
1:45.69	25.00	26.69	27.07	26.93	1.69	0.37	(0.13)	51.69
1:47.80	25.50	27.22	27.61	27.47	1.72	0.38	(0.14)	52.72
1:49.91	26.00	27.76	28.15	28.01	1.76	0.39	(0.14)	53.76
1:52.03	26.50	28.29	28.69	28.55	1.79	0.40	(0.14)	54.79
1:54.14	27.00	28.83	29.23	29.09	1.83	0.40	(0.14)	55.83
1:56.26	27.50	29.36	29.77	29.62	1.86	0.41	(0.15)	56.86
1:57.43	27.78	29.66	30.07	29.92	1.88	0.42	(0.15)	57.44
1:58.37	28.00	29.89	30.31	30.16	1.89	0.42	(0.15)	57.89
2:00.48	28.50	30.43	30.85	30.70	1.93	0.43	(0.15)	58.93
2:02.60	29.00	30.96	31.40	31.24	1.96	0.43	(0.16)	59.96
2:04.71	29.50	31.50	31.94	31.78	2.00	0.44	(0.16)	61.00
2:06.82	30.00	32.03	32.48	32.32	2.03	0.45	(0.16)	62.03
2:08.94	30.50	32.56	33.02	32.86	2.06	0.46	(0.16)	63.06
2:11.05	31.00	33.10	33.56	33.39	2.10	0.46	(0.17)	64.10
2:13.17	31.50	33.63	34.10	33.93	2.13	0.47	(0.17)	65.13
2:15.28	32.00	34.16	34.64	34.47	2.16	0.48	(0.17)	66.16

- Using the average first 50 (30.76) 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 50 = 5.6%

  - 1st → 3rd 50 = 6.8%

  - 1st → 4th 50 = 6.8%

Final	Splits by 50				Split Delta			100
Time	1st	2nd	3rd	4th	2nd	3rd	4th	Split
Note: all times are formatted in mm:ss.hh								
1:55.27	27.50	29.04	29.36	29.38	1.54	0.32	0.02	56.54
1:57.37	28.00	29.56	29.89	29.92	1.56	0.33	0.02	57.56
1:59.47	28.50	30.09	30.43	30.45	1.59	0.33	0.02	58.59
2:01.56	29.00	30.62	30.96	30.98	1.62	0.34	0.02	59.62
2:03.66	29.50	31.15	31.49	31.52	1.65	0.35	0.03	60.65
2:05.75	30.00	31.67	32.03	32.05	1.67	0.35	0.03	61.67
2:07.85	30.50	32.20	32.56	32.59	1.70	0.36	0.03	62.70
2:08.95	30.76	32.48	32.84	32.87	1.72	0.36	0.03	63.24
2:09.95	31.00	32.73	33.09	33.12	1.73	0.36	0.03	63.73
2:12.04	31.50	33.26	33.63	33.66	1.76	0.37	0.03	64.76
2:14.14	32.00	33.79	34.16	34.19	1.79	0.38	0.03	65.79
2:16.23	32.50	34.31	34.70	34.72	1.81	0.38	0.03	66.81
2:18.33	33.00	34.84	35.23	35.26	1.84	0.39	0.03	67.84
2:20.43	33.50	35.37	35.76	35.79	1.87	0.39	0.03	68.87
2:22.52	34.00	35.90	36.30	36.33	1.90	0.40	0.03	69.90
2:24.62	34.50	36.43	36.83	36.86	1.93	0.40	0.03	70.93
2:26.71	35.00	36.95	37.36	37.39	1.95	0.41	0.03	71.95

- Using the average first 50 (33.14) 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 50 = 10.9%

  - 1st → 3rd 50 = 11.6%

  - 1st → 4th 50 = 13.3%

Final Time	Splits by 50				Split Delta			100 Split
	1st	2nd	3rd	4th	2nd	3rd	4th	
Note: all times are formatted in mm:ss.hh								
2:10.73	30.00	33.28	33.48	33.98	3.28	0.20	0.50	63.28
2:12.91	30.50	33.83	34.04	34.54	3.33	0.21	0.50	64.33
2:15.09	31.00	34.39	34.60	35.11	3.39	0.21	0.51	65.39
2:17.27	31.50	34.94	35.15	35.67	3.44	0.21	0.52	66.44
2:19.45	32.00	35.50	35.71	36.24	3.50	0.22	0.53	67.50
2:21.63	32.50	36.05	36.27	36.81	3.55	0.22	0.54	68.55
2:23.81	33.00	36.60	36.83	37.37	3.60	0.22	0.55	69.60
2:24.42	33.14	36.76	36.98	37.53	3.62	0.22	0.55	69.90
2:25.98	33.50	37.16	37.39	37.94	3.66	0.23	0.55	70.66
2:28.16	34.00	37.71	37.94	38.51	3.71	0.23	0.56	71.71
2:30.34	34.50	38.27	38.50	39.07	3.77	0.23	0.57	72.77
2:32.52	35.00	38.82	39.06	39.64	3.82	0.24	0.58	73.82
2:34.70	35.50	39.38	39.62	40.20	3.88	0.24	0.59	74.88
2:36.88	36.00	39.93	40.18	40.77	3.93	0.24	0.60	75.93
2:39.06	36.50	40.49	40.73	41.34	3.99	0.25	0.60	76.99
2:41.24	37.00	41.04	41.29	41.90	4.04	0.25	0.61	78.04
2:43.42	37.50	41.60	41.85	42.47	4.10	0.25	0.62	79.10

LCM Female 200 Butterfly: Baseline

- Using the average first 50 (28.66) 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

  - $1^{st} \rightarrow 2^{nd}$ 50 = 12.8%

  - $1^{st} \rightarrow 3^{rd}$ 50 = 14.6%

  - $1^{st} \rightarrow 4^{th}$ 50 = 16.0%

Final Time	Splits by 50				Split Delta			100 Split
	1st	2nd	3rd	4th	2nd	3rd	4th	Split
Note: all times are formatted in mm:ss.hh								
1:53.07	25.50	28.76	29.23	29.58	3.26	0.47	0.35	54.26
1:55.29	26.00	29.33	29.80	30.16	3.33	0.47	0.35	55.33
1:57.50	26.50	29.89	30.37	30.74	3.39	0.48	0.36	56.39
1:59.72	27.00	30.46	30.95	31.32	3.46	0.49	0.37	57.46
2:01.94	27.50	31.02	31.52	31.90	3.52	0.50	0.38	58.52
2:04.15	28.00	31.58	32.09	32.48	3.58	0.51	0.38	59.58
2:06.37	28.50	32.15	32.67	33.06	3.65	0.52	0.39	60.65
2:07.06	28.66	32.32	32.84	33.24	3.67	0.52	0.39	60.98
2:08.59	29.00	32.71	33.24	33.64	3.71	0.53	0.40	61.71
2:10.80	29.50	33.28	33.81	34.22	3.78	0.54	0.40	62.78
2:13.02	30.00	33.84	34.39	34.80	3.84	0.55	0.41	63.84
2:15.24	30.50	34.40	34.96	35.38	3.90	0.56	0.42	64.90
2:17.46	31.00	34.97	35.53	35.96	3.97	0.57	0.42	65.97
2:19.67	31.50	35.53	36.11	36.54	4.03	0.57	0.43	67.03
2:21.89	32.00	36.10	36.68	37.12	4.10	0.58	0.44	68.10
2:24.11	32.50	36.66	37.25	37.70	4.16	0.59	0.44	69.16
2:26.32	33.00	37.22	37.83	38.28	4.22	0.60	0.45	70.22

Race Analysis Comparison

		Long-Axis			Short-Axis		
		Freestyle	Backstroke	**Average**	Breastroke	Butterfly	**Average**
Max Delta From 1st 50	Female	8.3%	6.8%	**7.6%**	13.3%	16.0%	**14.7%**
	Male	8.9%	8.8%	**8.9%**	15.0%	16.2%	**15.6%**
Delta Range: 2nd, 3rd, 4th 50's	Female	1.5%	1.2%	**1.2%**	2.4%	3.2%	**2.8%**
	Male	1.7%	2.1%	**1.9%**	3.0%	3.3%	**3.2%**