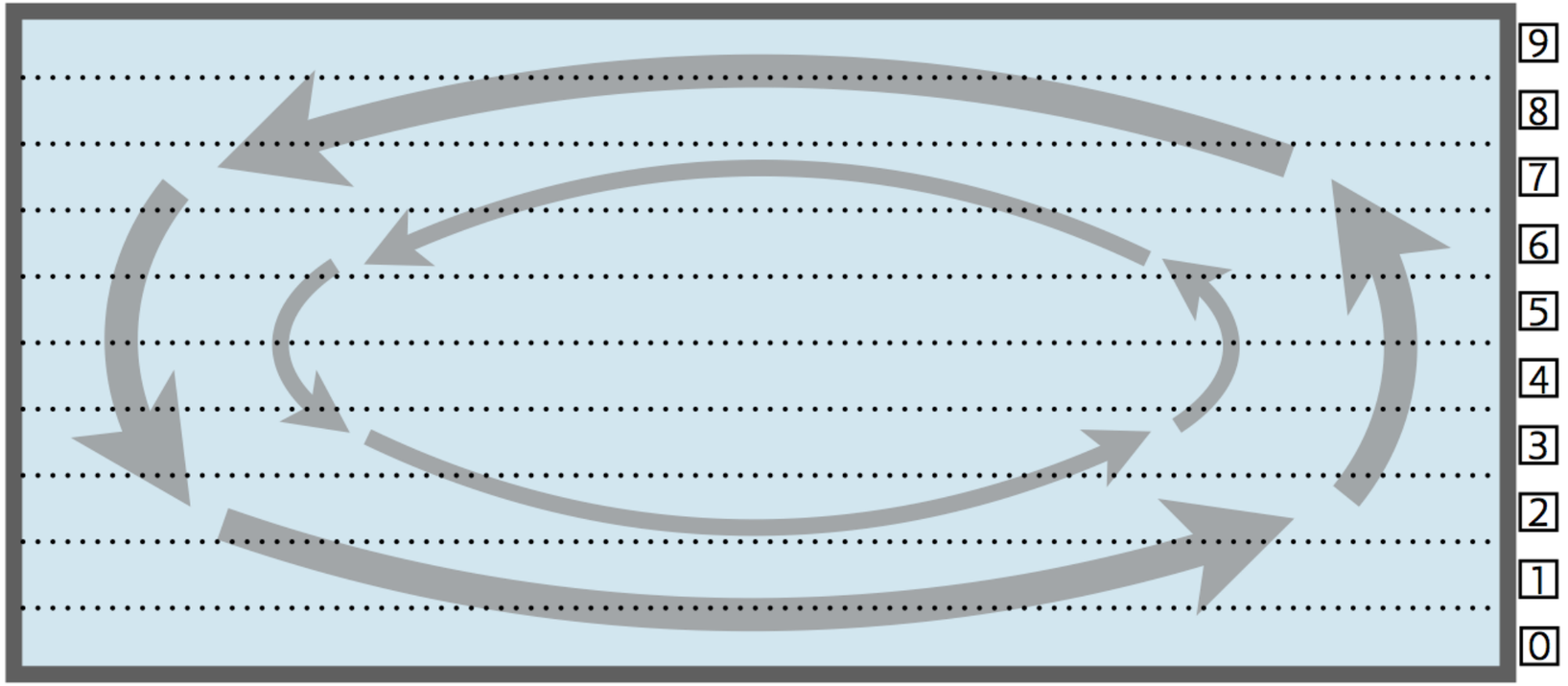
Introduction to the Current Controversy

CASE STUDIES IN STATISTICAL THINKING

Justin Bois
Lecturer, Caltech

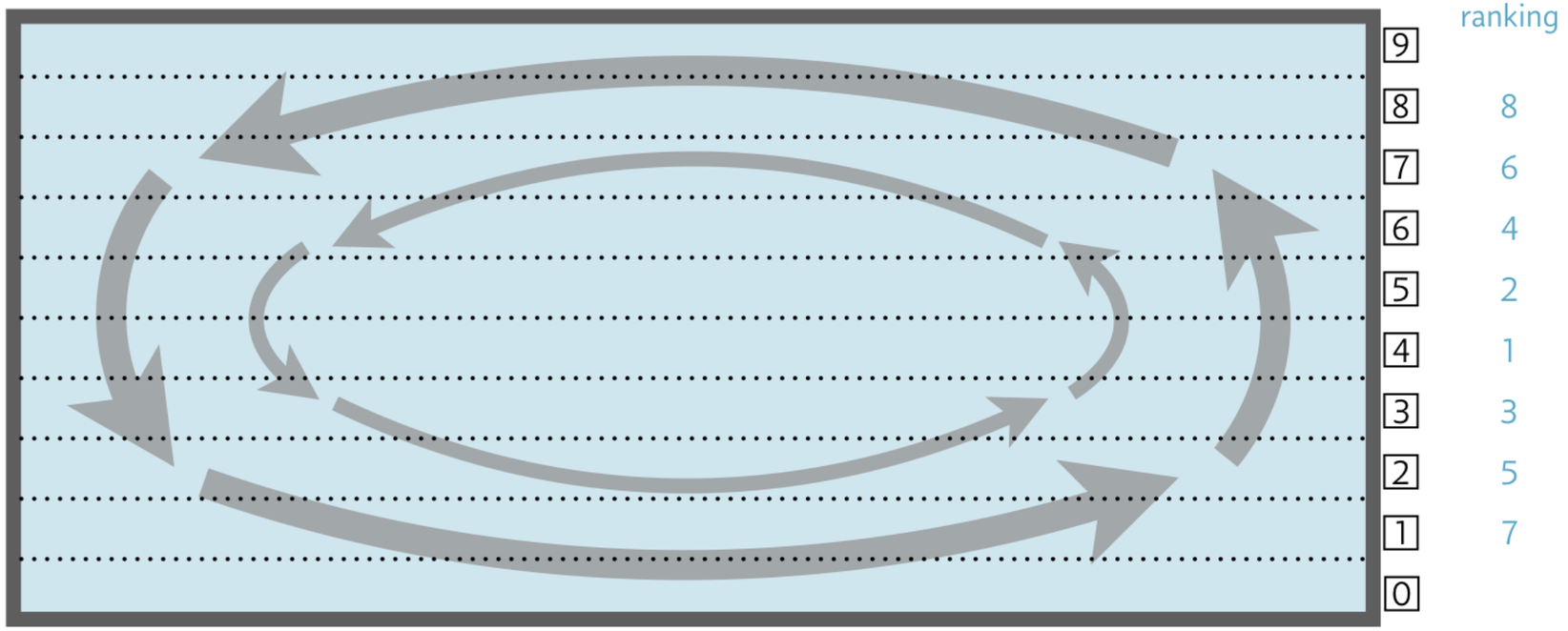
The Current Controversy



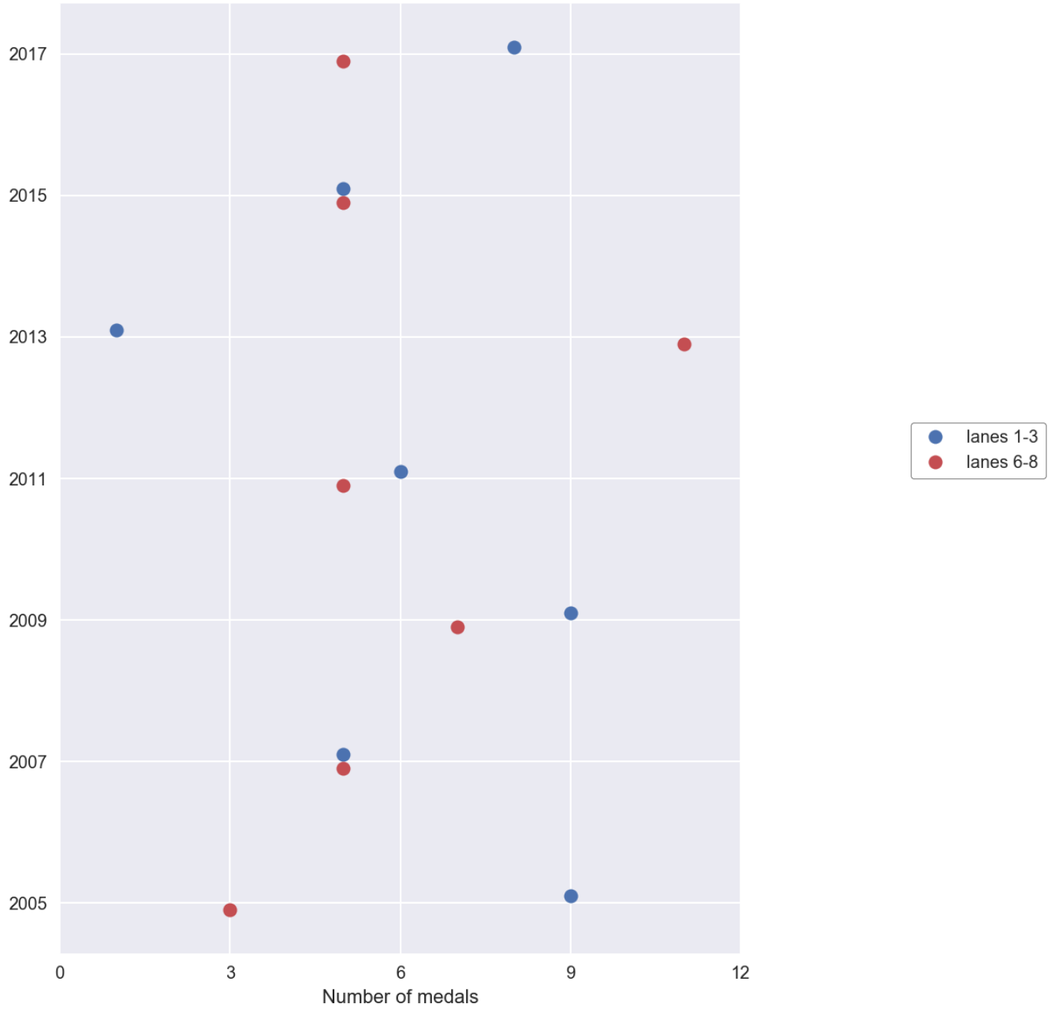
Citation

A. Cornett, C. Brammer, J. Stager, Current Controversy: Analysis of the 2013 FINA World Swimming Championships, *Medicine and Science in Sport Exercise*, **47**, 649-654, 2015

The Current Controversy



Medal counts



How probable is it?

```
binom_draws = np.random.binomial(12, 0.5, size=100000)

np.sum(binom_draws <= 1) / 100000
```

```
0.0033600000000000001
```

Your tasks

- Investigate improvement of individual swimmers moving from low- to high-numbered lanes in 50 m events
- Compute the size of the effect
- Test the hypothesis that on average there is no difference between low- and high-numbered lanes

Let's practice!

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The zigzag effect

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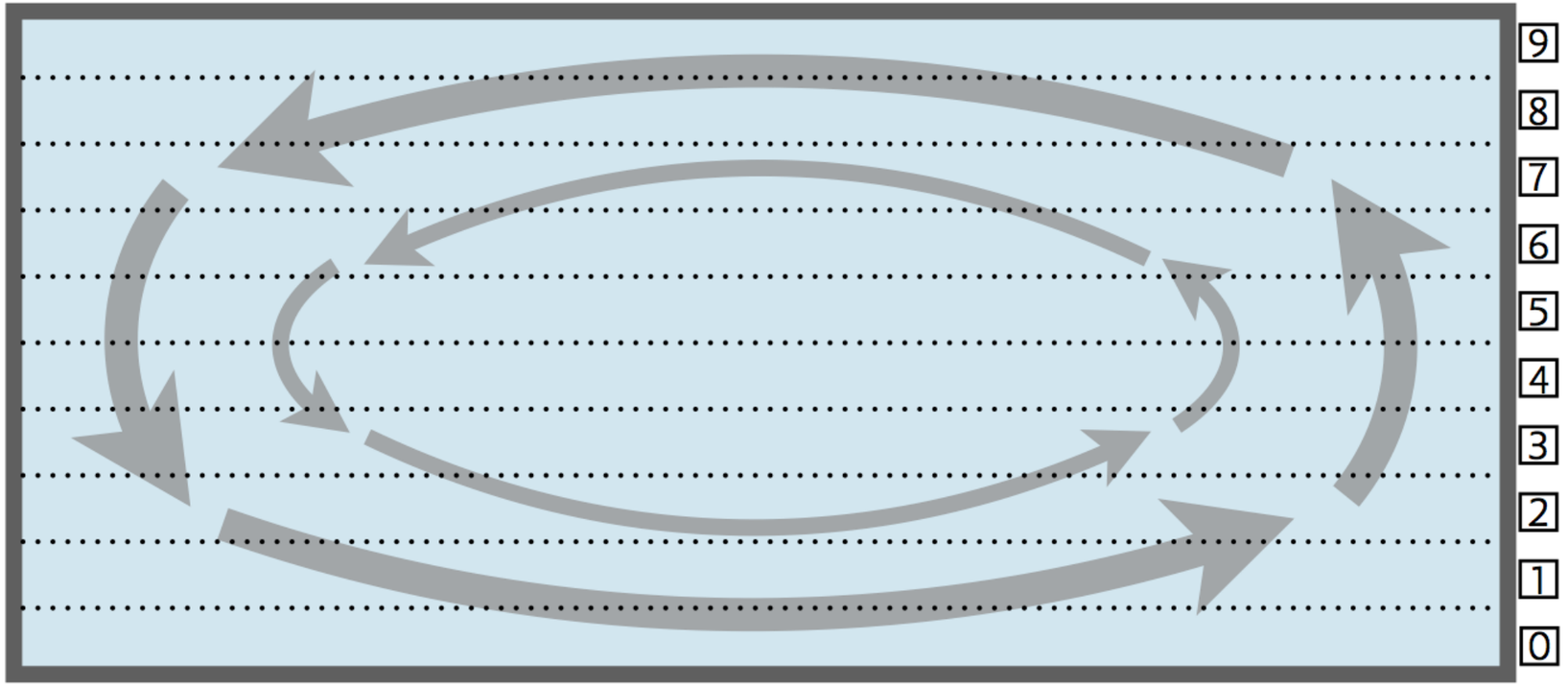
The current and longer swims



1500 m splits and the zigzag effect

Let's practice!

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Recap of swimming analysis

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Statistical inference pipeline

- Exploratory data analysis
  - Sharpen the question
- Optimal parameter calculation with confidence interval
- Hypothesis test

Keep it up!

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