The big data challenges of connectomics

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Silver at South by Southwest, 2009

Born	Nathaniel Read Silver January 13, 1978 (age 37)[1] East Lansing, Michigan
Residence	Manhattan, New York City[2]
Nationality	American
Education	A.B., Economics (2000)
Alma mater	University of Chicago
Occupation	Statistician, journalist
Employer	ESPN
Known for	PECOTA, FiveThirtyEight
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Th... I don't think his chances
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zero, but I think they're lower
than 20 [percent] or 25 percent.

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Who cares?

- **Pecota**
- **<99% success rate**
- Mainstream iconoclast?

Who is JR Smith?

Who is JR Smith?

Who is JR Smith?

- **Tree lover**
- **Trey shooter**
- **Streaky**

Who cares?

- **Sports analytics**
- **Nate Silver**
- **Connectomics**

Why is sports analytics so difficult?

- Sports analytics "Meta"
- Greater variance
- Moneyball?

An experiment in p values

- http://fivethirtyeight.com/features/science-isnt-broken/
- P-hacking ruins good science
- Statistics uses assumptions that are deeply flawed

How big data is connectomics?

- **Top tier**
- **Hard to store**
- **Inefficient analysis**

Why does size matter

- **Pixels breed inaccuracy**
- **Big data = big graphs**
- **Inefficient analysis**

Can machines accept variation?

- **Cursive predicament**
- **Uniformity in question**
- **How bad is variation**

Inefficient analysis leads to bad science

- **P-hacking**
- **Overfitting**
- **Time frame for success**

Connectomics dependency on statistics

- **No ground truth**
- **Currently tenuous results**
- **Balance between error rate and analysis time**

When is connectomics meaningful

- **When are results definitive**
- **Can results be definitive**
- **Will there be a bottleneck?**

?