

Hitchhikers Need Free Vehicles!

Gregory M. Kapfhammer
Phil McMinn and Chris J. Wright

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Randomization

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Inherent in SBST techniques

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Necessitates careful experiment design

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Inherent in SBST techniques

Necessitates careful experiment design

Statistical analysis of results required!

When I say
"statistics" ...





But, we need
statistical
analysis!



Statistical Analysis



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Statistical Analysis

*A Hitchhiker's Guide to Statistical Tests for Assessing
Randomized Algorithms in Software Engineering*

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*A Hitchhiker's Guide to Statistical Tests for Assessing
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Arcuri and Briand recommend statistical techniques

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Arcuri and Briand recommend statistical techniques

Code snippets provided in the R language

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Statistical Analysis

A Hitchhiker's Guide to Statistical Tests for Assessing Randomized Algorithms in Software Engineering

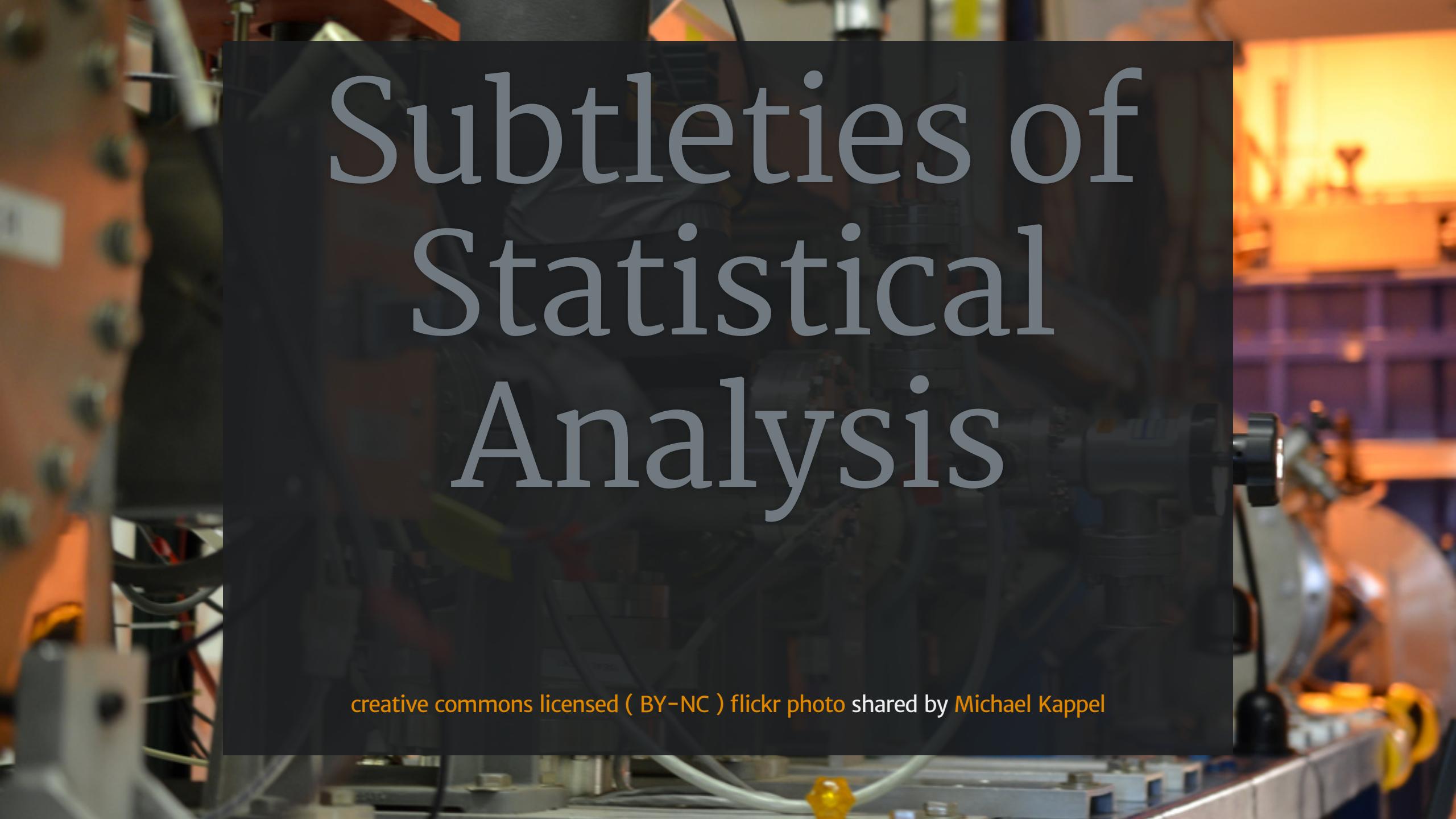
Arcuri and Briand recommend statistical techniques

Code snippets provided in the R language

A tremendous asset to the SBST community!

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Subtleties of Statistical Analysis



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Subtleties of Statistical Analysis

Well-meaning researchers may make small mistakes

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Subtleties of Statistical Analysis

Well-meaning researchers may make small mistakes
Marco Torchiano revealed paradoxical effect sizes

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Hitchhikers
Need Vehicles

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Shared repositories of statistical code

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Shared repositories of statistical code
Well-tested implementations of procedures

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Shared repositories of statistical code
Well-tested implementations of procedures
Additional documentation and guidelines

Hitchhikers Need Vehicles

- Shared repositories of statistical code
- Well-tested implementations of procedures
- Additional documentation and guidelines
- Replication packages for completed analyses

Why is This
Important?

Enhance the
Maturity of the
SBST Field

Supporting
Tools and
Platforms?



Suggestions

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Suggestions

Use GitHub to store data and analysis code

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Create R packages using `devtools`

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Use GitHub to store data and analysis code

Create R packages using `devtools`

Reveal your full analysis with `RMarkdown`

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Suggestions

Use GitHub to store data and analysis code

Create R packages using `devtools`

Reveal your full analysis with `RMarkdown`

Use "best of breed" tools to support your work!

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Carefully pick
your analysis
team ...



"Hadleyverse"

Publicly available photo shared by Hadley Wickham

"Hadleyverse"

dplyr for fast data manipulation

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"Hadleyverse"

`dplyr` for fast data manipulation
`tidyr` for disciplined data restructuring

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`ggplot2` for impressive data visualization

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Or, use the languages and packages you prefer

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"Hadleyverse"

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Or, use the languages and packages you prefer

But, seriously, Hadley Wickham's code is awesome!

Publicly available photo shared by Hadley Wickham

Where do we
go next?



Let's Talk

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Let's Talk

What statistical analysis do you regularly perform?

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Let's Talk

What statistical analysis do you regularly perform?
What is needed to move the SBST community forward?

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Let's Talk

What statistical analysis do you regularly perform?
What is needed to move the SBST community forward?
What types of vehicles do hitchhikers really need?

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Questions

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Questions

Sharing data sets larger than what GitHub supports?

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Questions

**Sharing data sets larger than what GitHub supports?
Use Git Large File Storage (LFS)**

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Questions

Sharing data sets larger than what GitHub supports?

Use Git Large File Storage (LFS)

Why don't we release scripts for running experiments?

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Questions

Sharing data sets larger than what GitHub supports?

Use Git Large File Storage (LFS)

Why don't we release scripts for running experiments?

They are often customized. But, yes, we should!

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