

Why statistics?

To answer questions like...

- what's the probability that something occurs?

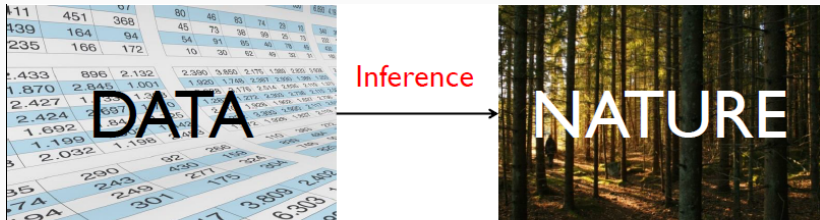
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- does X influence Y? How much?
- can we predict Y knowing X, Z... How well?

To ensure correct inferences



Bolker et al 2009 TREE:

'311 out of 537 GLMM analyses (58%) used these tools inappropriately'

To get answers to tough problems

How many seeds do trees produce?



A. Torrenegra

Inferring tree fecundity



Course goals

- Understand statistical inference

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- **Understand** statistical inference
- Avoid **misconceptions**

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- Avoid **misconceptions**
- Promote **good practices**

*The purpose of models is not to fit data
but to sharpen thinking*

Sam Karlin

- Descriptive statistics

Topics

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- Graphics

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- Sampling

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- Linear models & GLMs
- Model selection