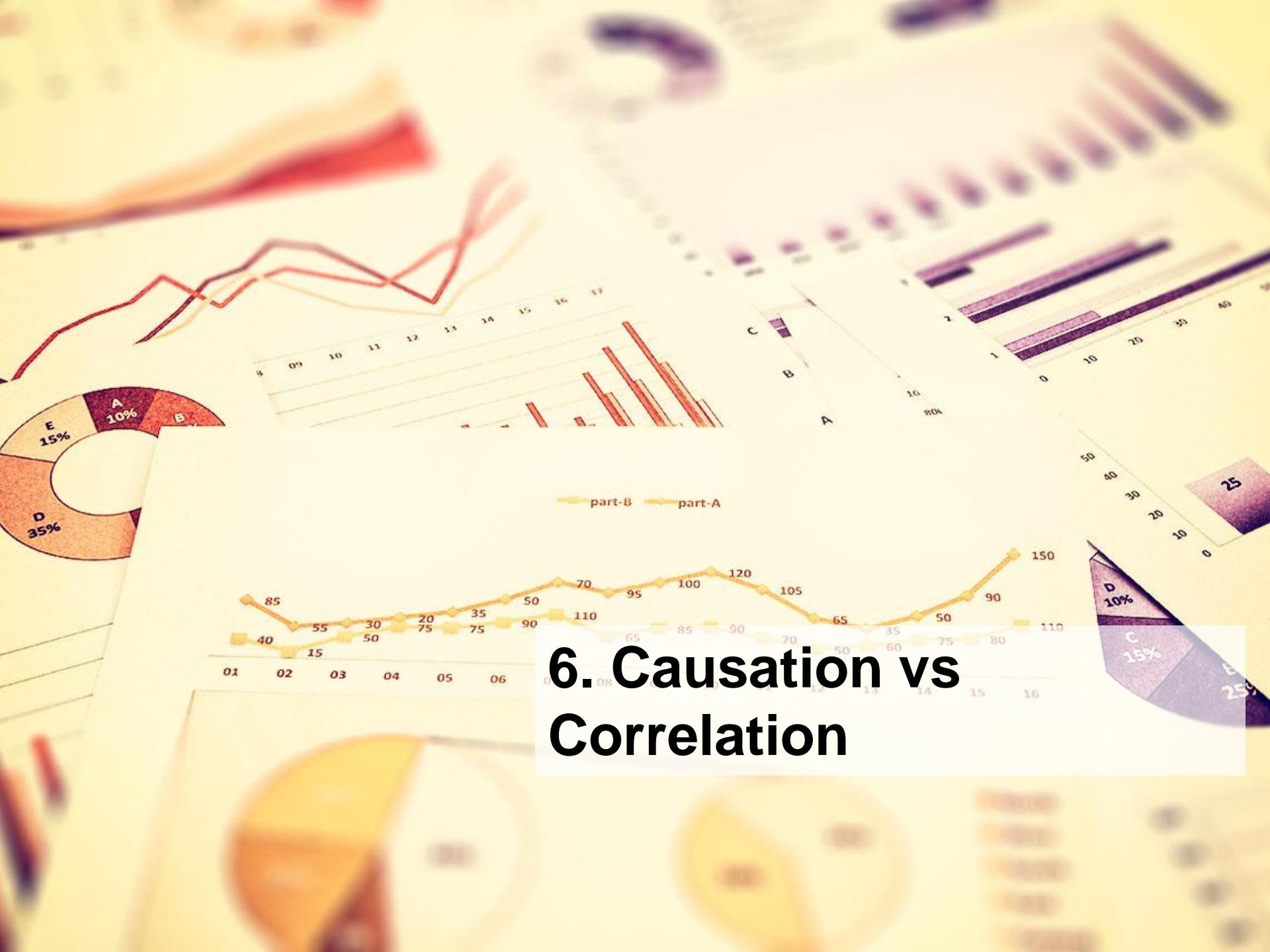


6. Causation vs Correlation

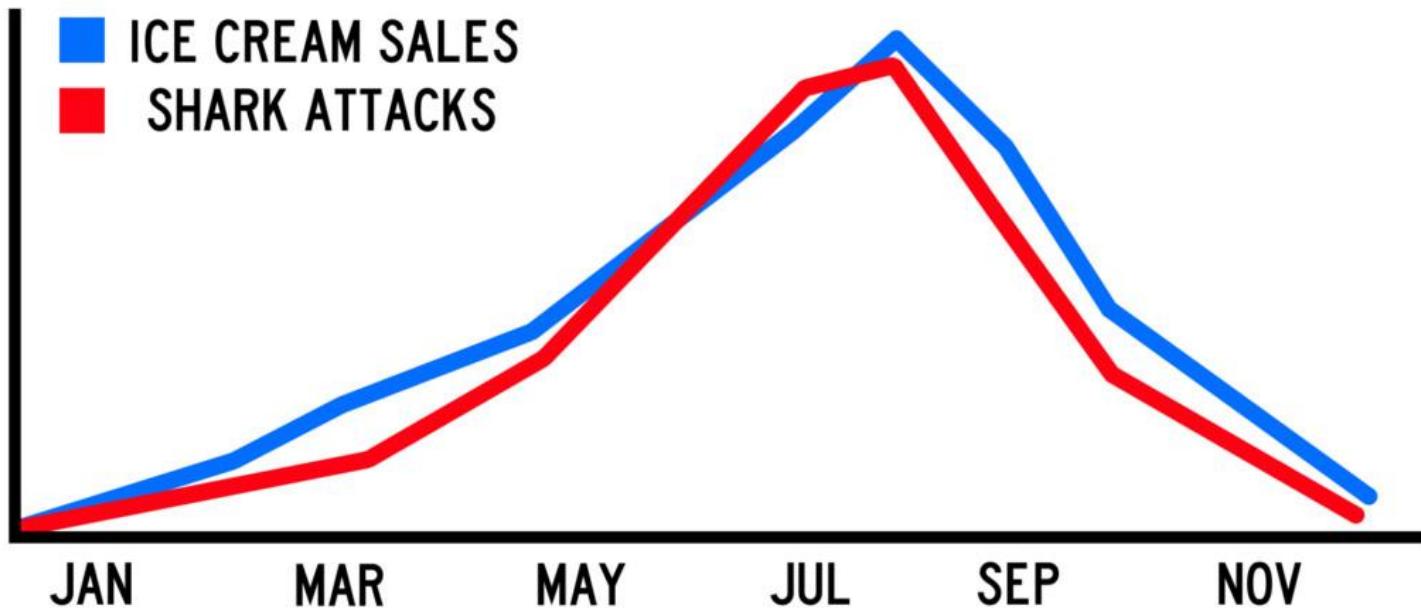


Causation or Correlation?



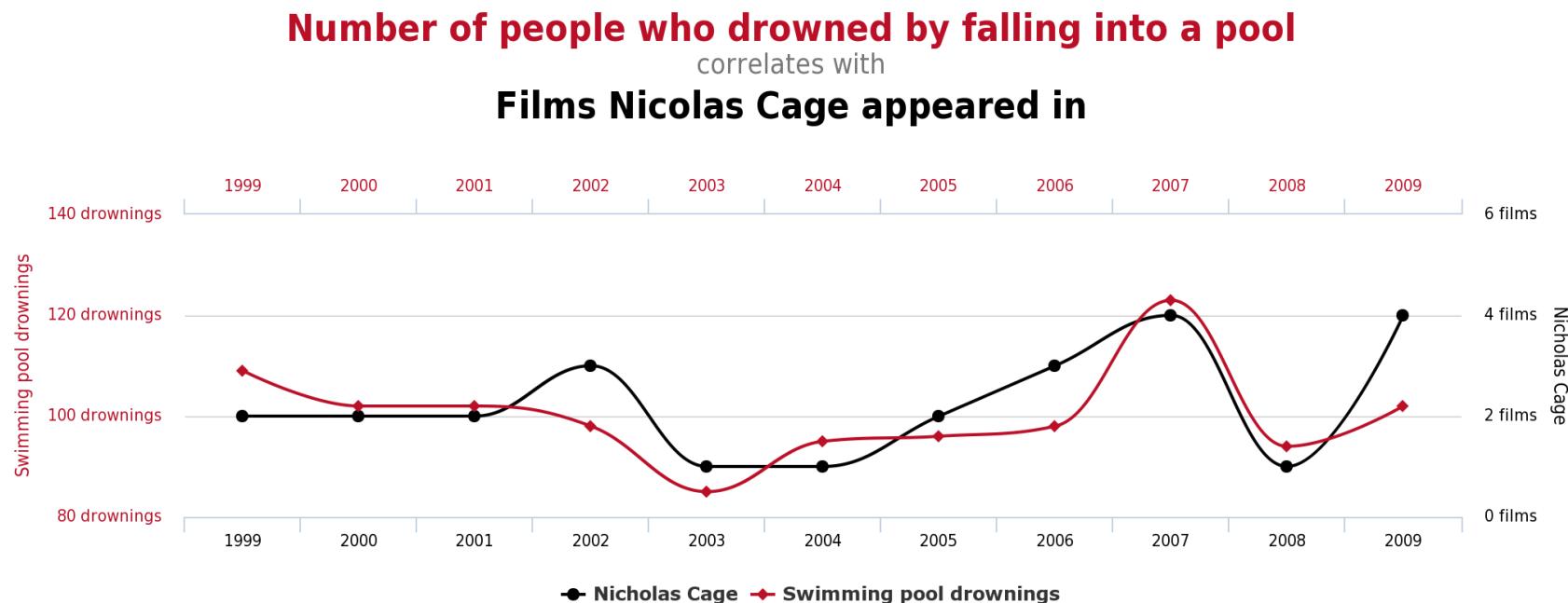
Causation or Correlation?

CORRELATION IS NOT CAUSATION!



Both ice cream sales and shark attacks increase when the weather is hot and sunny, but they are not caused by each other (they are caused by good weather, with lots of people at the beach, both eating ice cream and having a swim in the sea)

Causation or Correlation?



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Causation or Correlation?

Bergstrom, Calling Bullshit:

- Two **variables** are correlated when knowing the **value of one** gives you **information** about the likely **value** of the **other**.
- Two **states** (variables, events) are **causally related** when one state (...) **influence** the other via a **cause-and-effect process**.

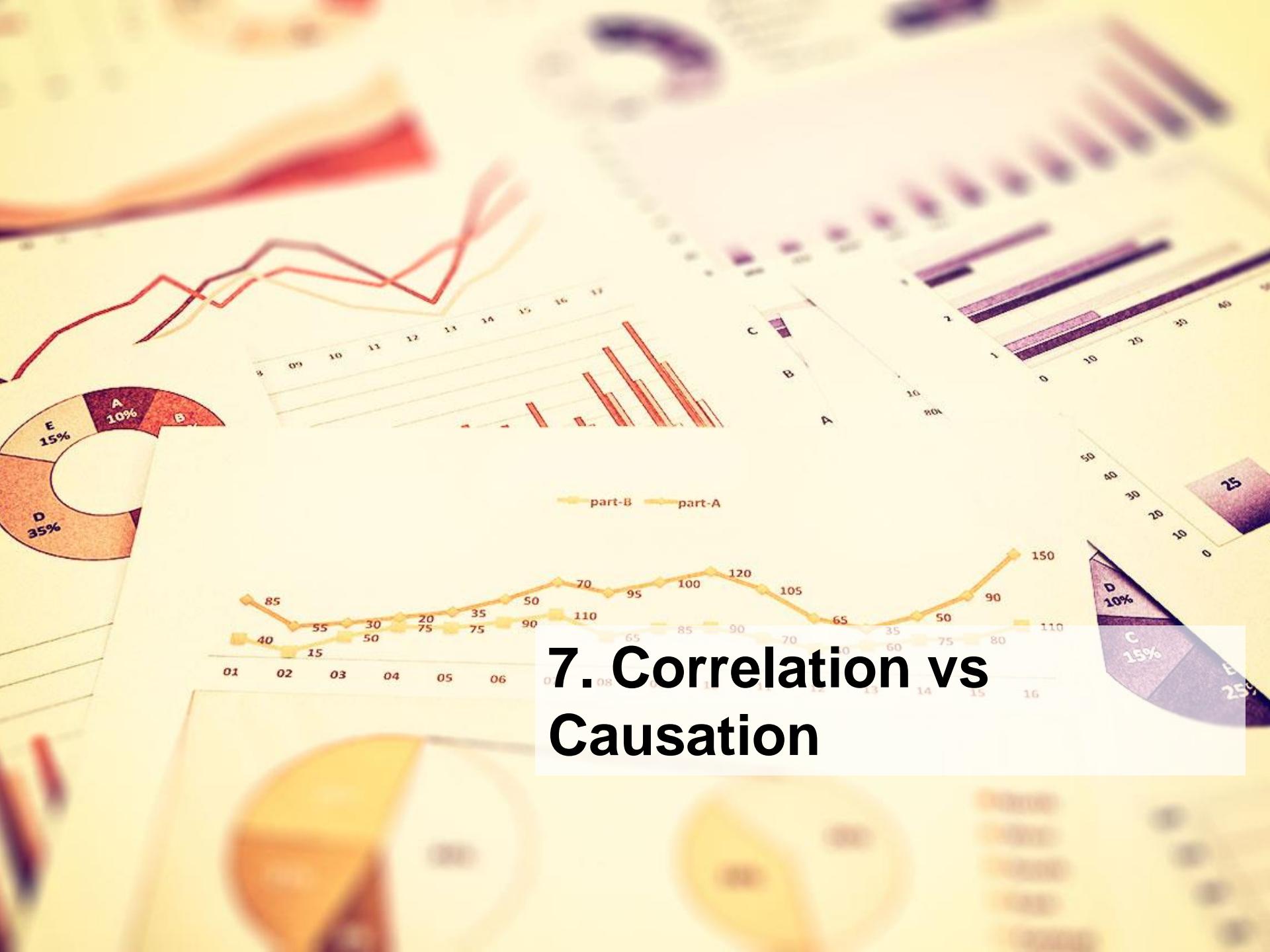
Michael Amberg

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- 1. Motivation**
- 2. Context Data Science**
- 3. Intro to Bullshit**
- 4. Old School Bullshit**
- 5. New School Bullshit**
- 6. Causation / Correlation**
- 7. Bullshit in Science**
- 8. Bullshit in AI / ML**
- 9. Summary**



7. Correlation vs Causation



Correlation or Causation?

Bergstrom, Calling Bullshit:

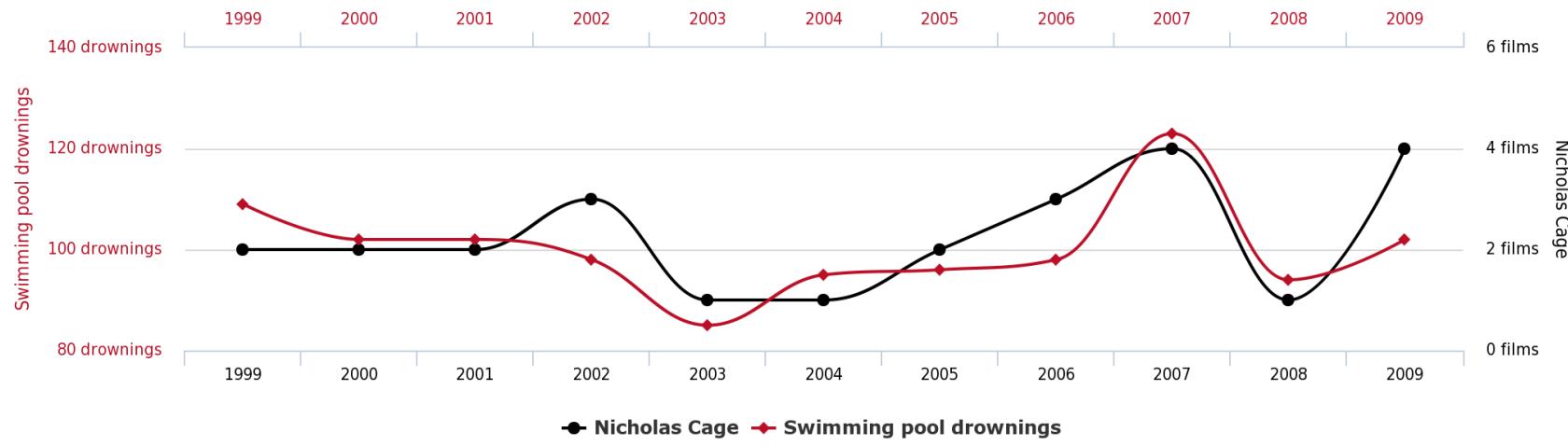
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Correlation or Causation?

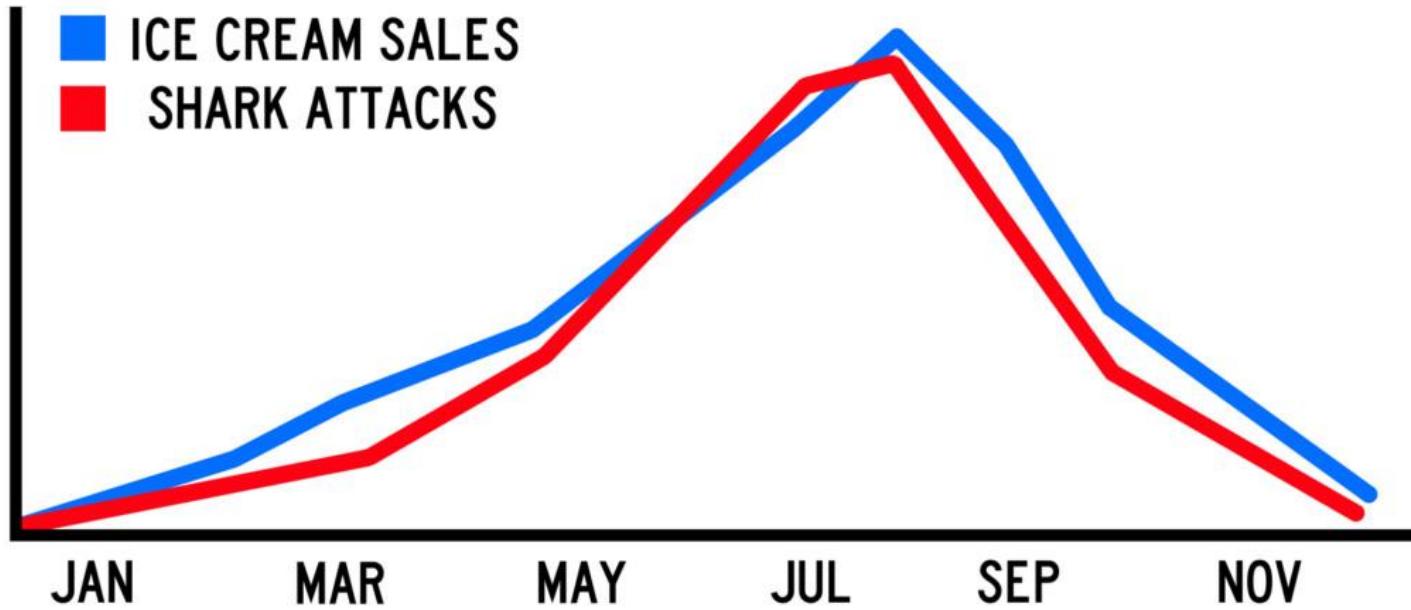
Number of people who drowned by falling into a pool
correlates with
Films Nicolas Cage appeared in



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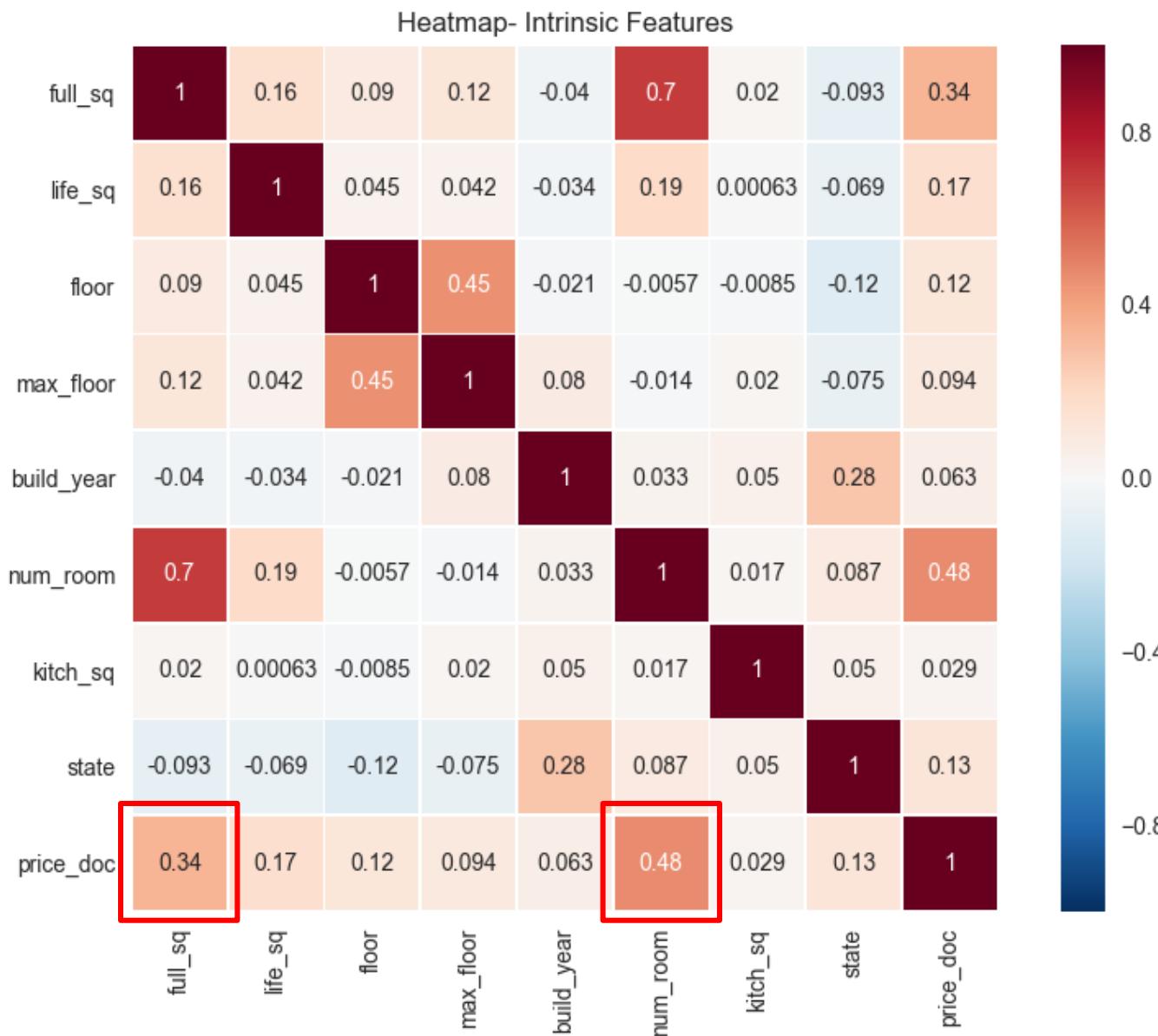
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Correlation illustrated by a heatmap.



The prices of houses are correlated with the number of square meters and the number of rooms

- 
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We are drowning in Bullshit.

Statistical Bullshit is the new norm.

Avoid falling for Bullshit.

Society needs Critical Thinking & Data Science Skills more than ever.

Michael Amberg

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1 Bullshit with Data

- The Art of Skepticism in a Data-Driven World
(7) Correlation vs Causation



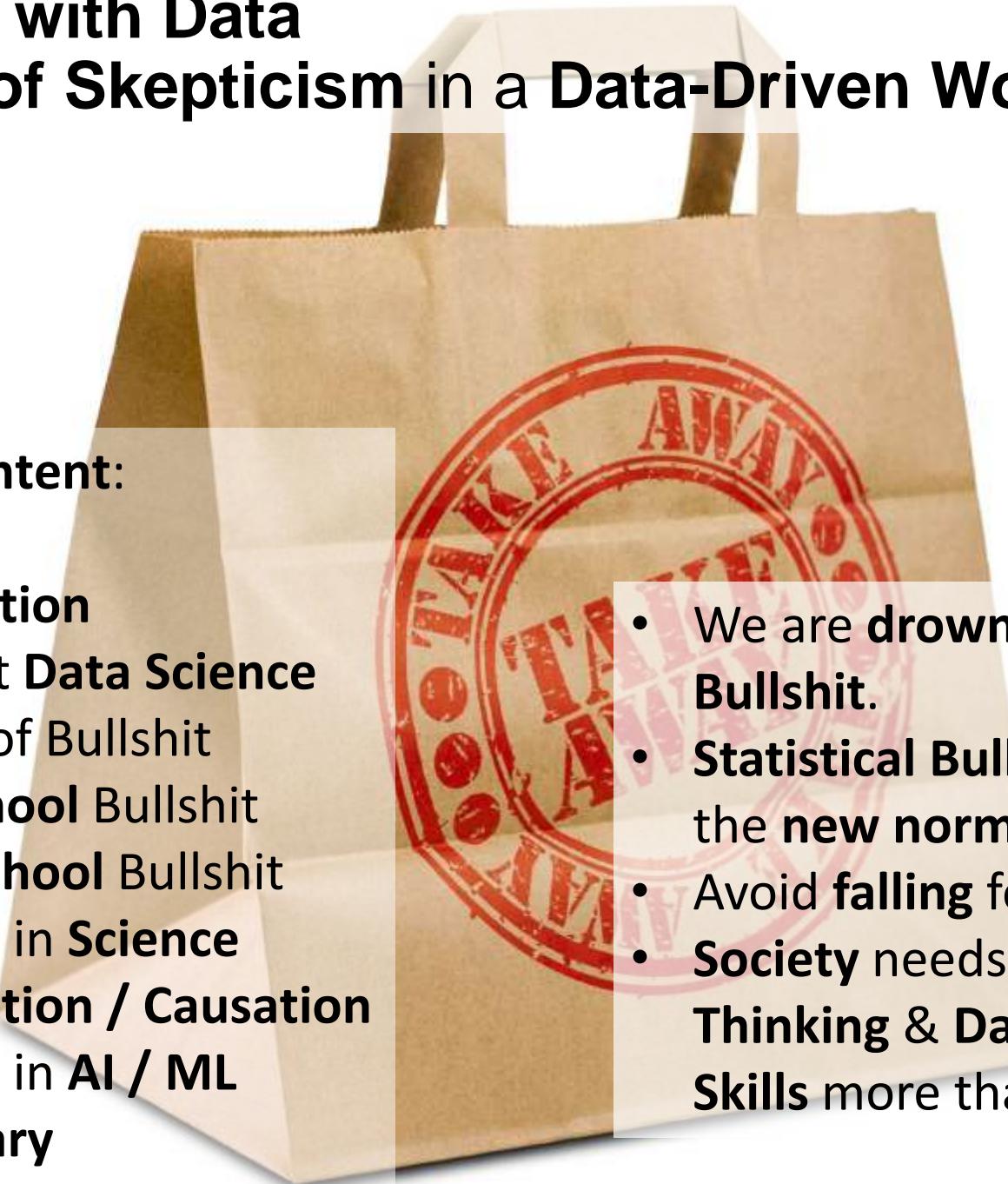
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- We are **drowning** in **Bullshit**.
- **Statistical Bullshit** is the **new norm**.
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1 Bullshit with Data

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