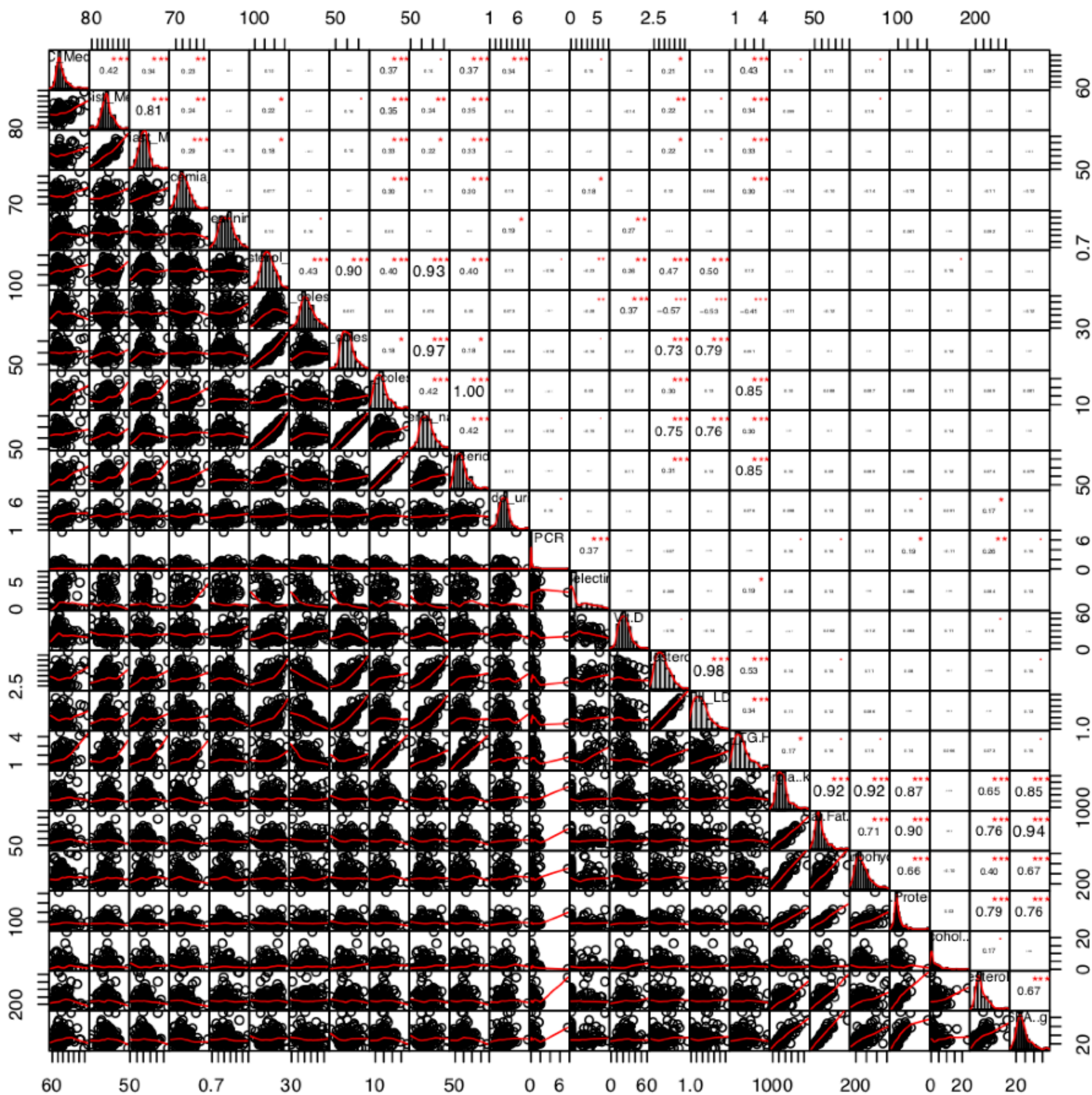




Instituto
René Rachou
FIOCRUZ MINAS



- Widely used to infer association.
- Often sold as causality or consequence.
- Big Data trap.
 - Spurious correlations
- Multiple testing correction

How does multiple testing correction work?

William S Noble

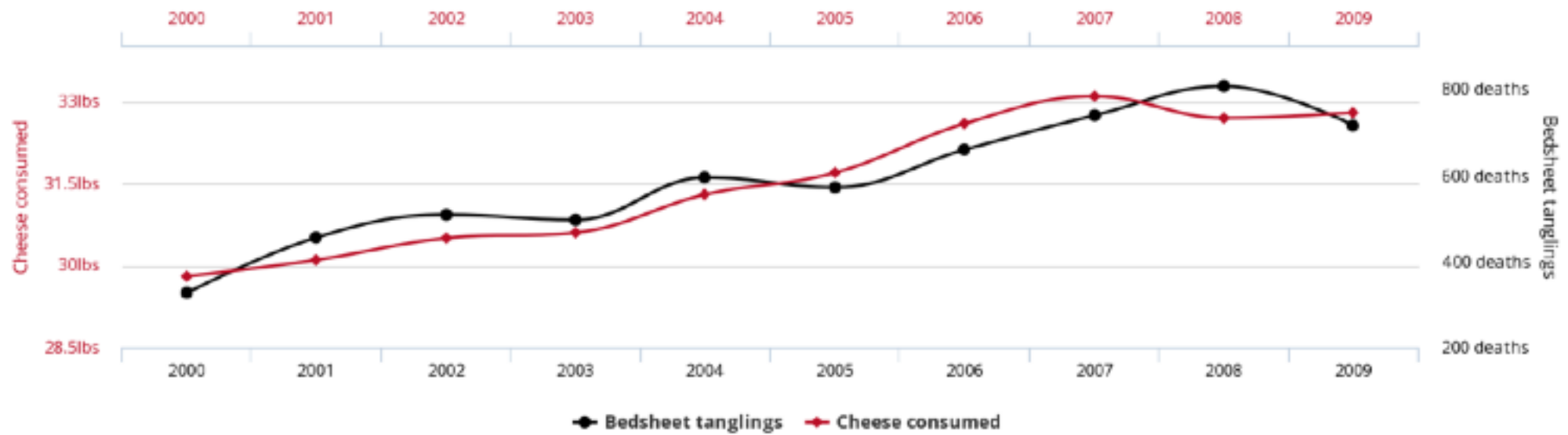
When prioritizing hits from a high-throughput experiment, it is important to correct for random events that falsely appear significant. How is this done and what methods should be used?

There are relations!

Per capita cheese consumption

correlates with

Number of people who died by becoming tangled in their bedsheets

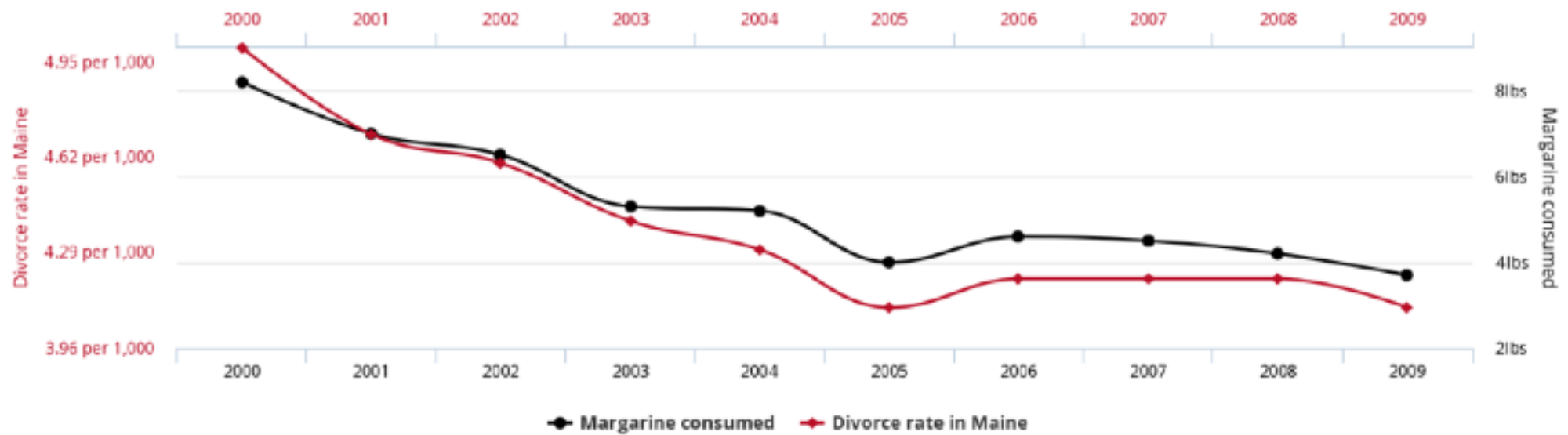


tylervigen.com

Divorce rate in Maine

correlates with

Per capita consumption of margarine

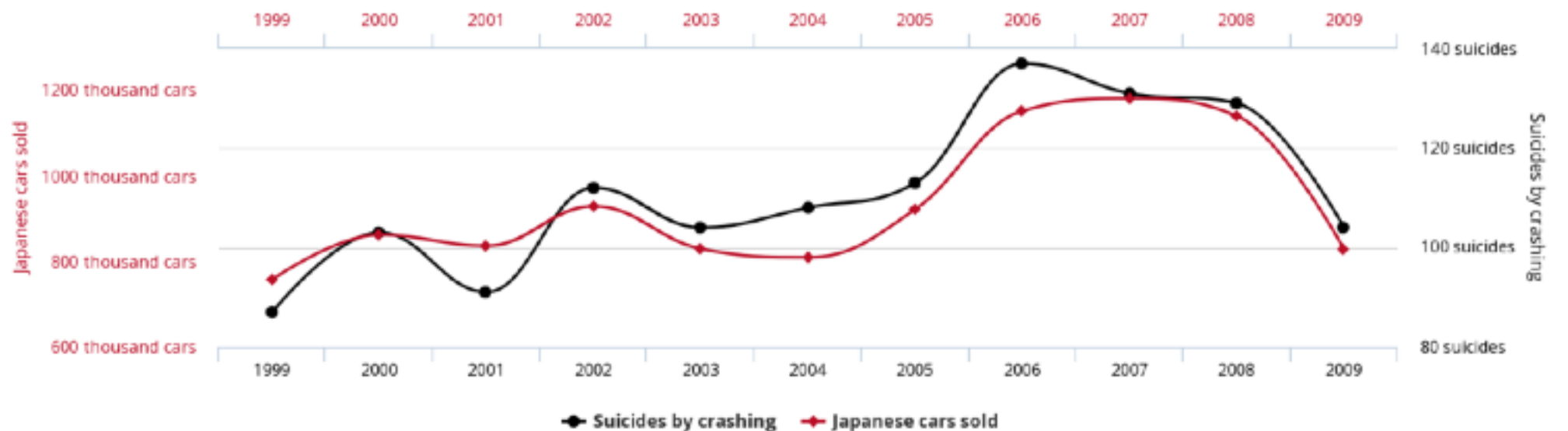


tylervigen.com

Japanese passenger cars sold in the US

correlates with

Suicides by crashing of motor vehicle



tylervigen.com

LIVE

breakyourownnews.com

BREAKING NEWS

BEDSHEET LAWS REVISED

12:02

TANGLING IS A RELEVANT CAUSE OF DEATH IN FRANCE AND IN MINAS GERAIS STATE

LIVE

breakyourownnews.com

BREAKING NEWS

MARGARINE ADS ARE TRUE

12:16

HAPPY AND BEAUTIFUL FAMILIES HAVE BREAKFAST TOGETHER WITH MARGARINE

LIVE

breakyourownnews.com

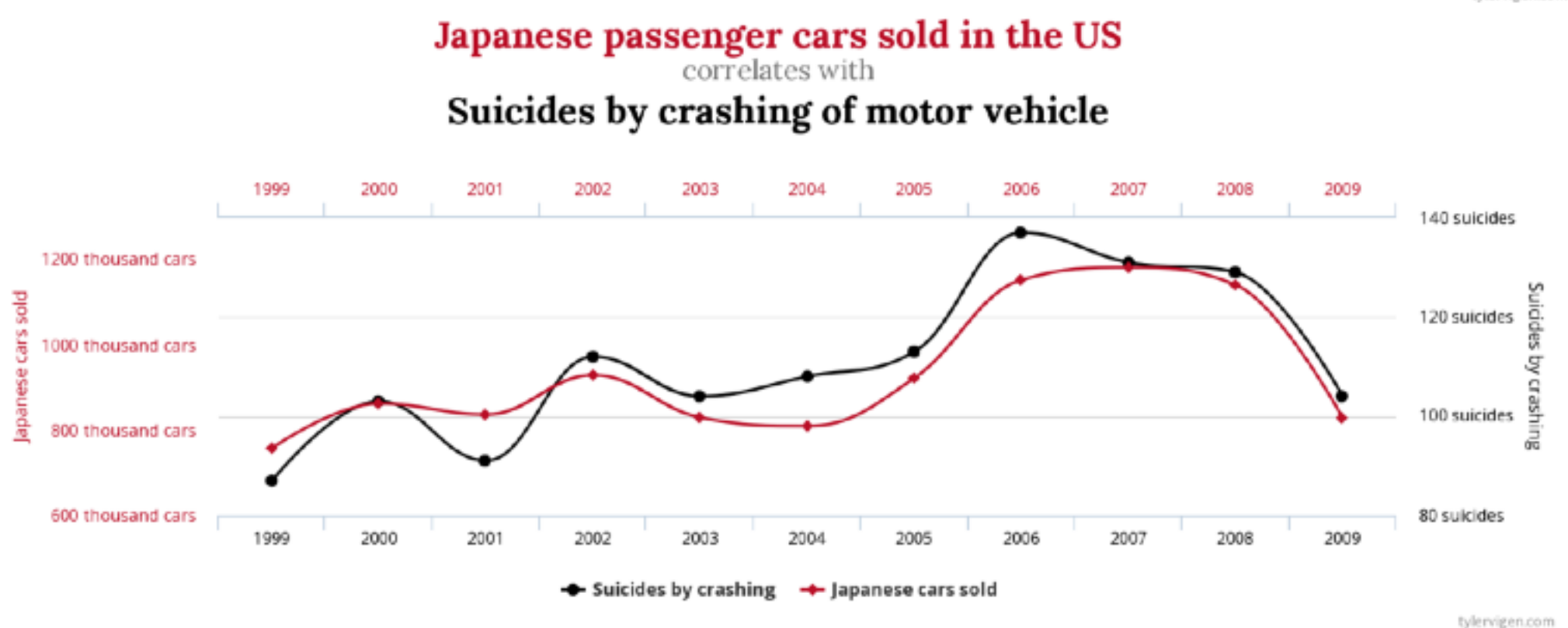
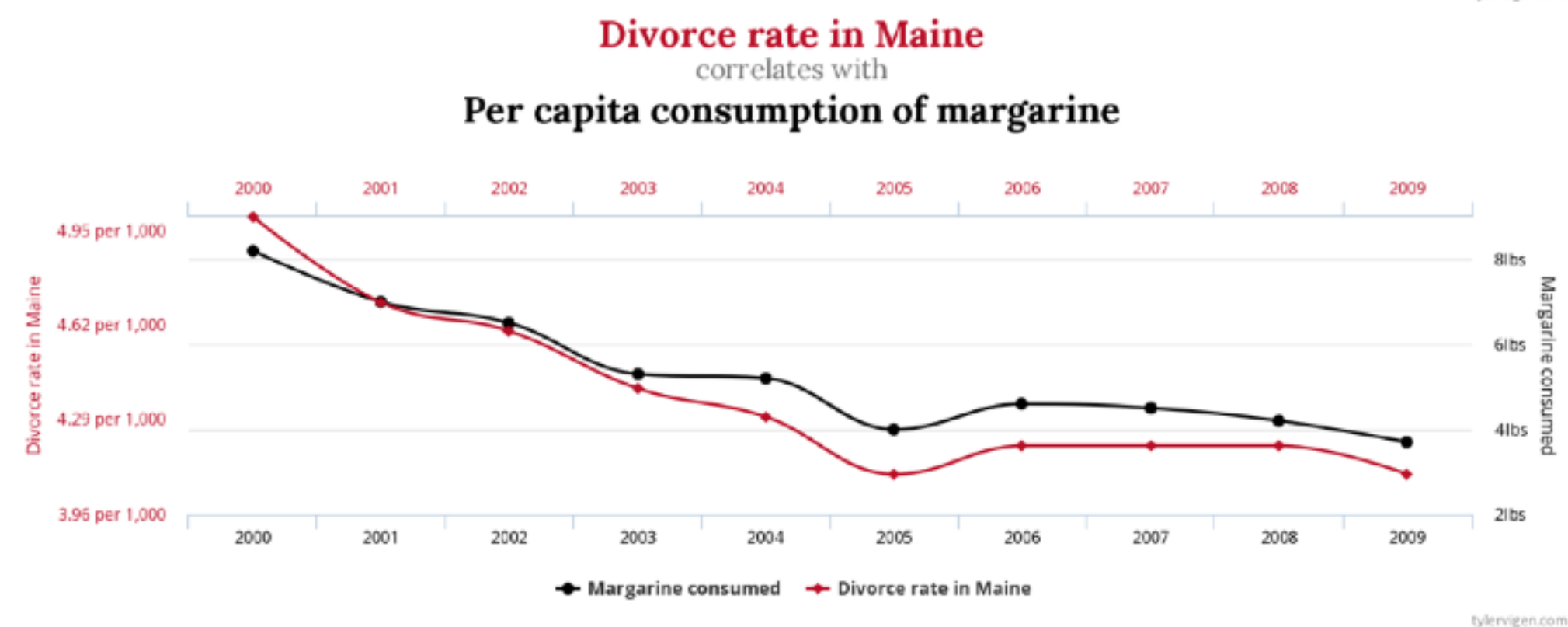
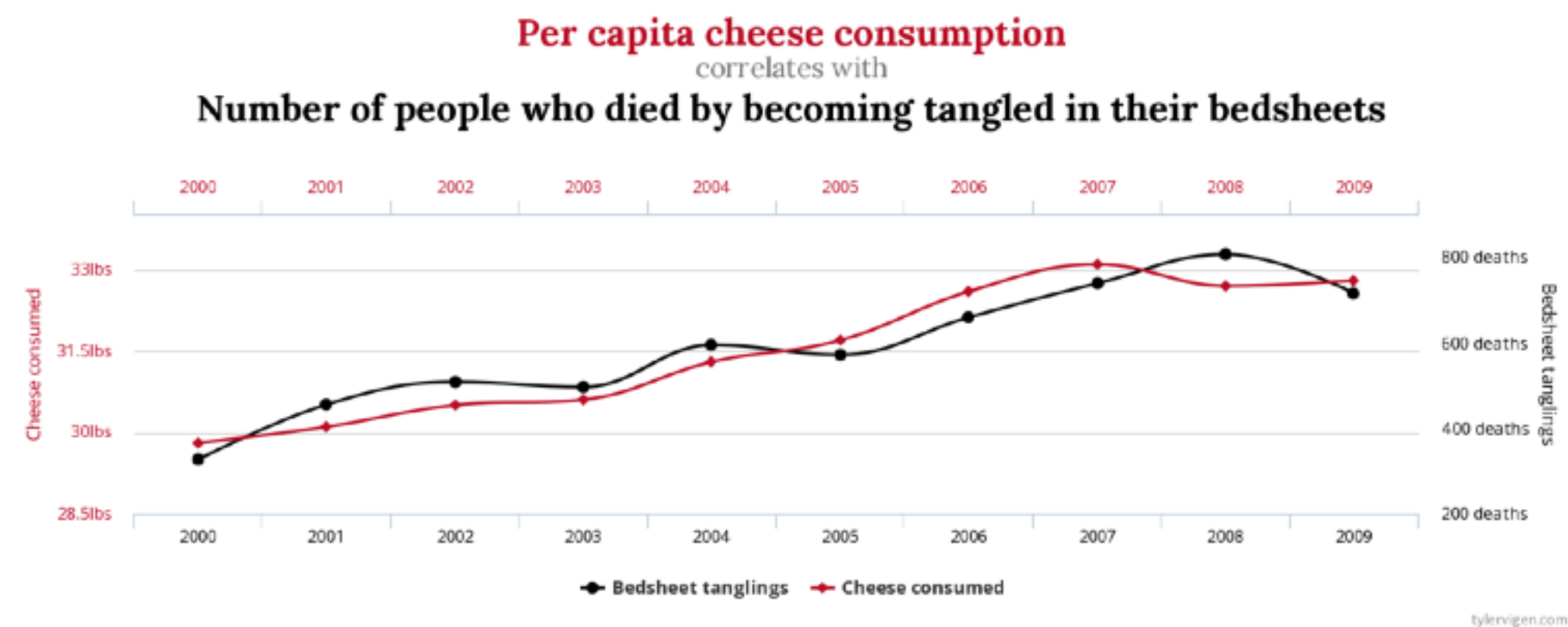
BREAKING NEWS

JAPANESE CARS: HELL ON WHEELS

12:10

JAPANESE CARS ARE SO BAD THAT MAKE THE OWNERS WANT TO DIE

The correlations!



- JARK effect
 - Justify After Results are Known
 - Qualquer resultado pode ser publicado
 - Vai achar referências que suportem seu desenho experimental errado.
- Too many journals? Towards a theory of repeated rejections and ultimate acceptance**

Jan Oosterhaven

- Muitos trabalhos de microbioma (Science, Nature, PNAS...) não são reprodutíveis.
 - Clustering method
 - Classification method
 - Assembly method

Prediabetes

Association	Organism	Result	Out of Range
Associated	<i>Prevotella</i> [57]	<div><div></div></div> Normal	
	<i>Veillonella</i> [57]	<div><div></div></div> Normal	
Inversely associated	<i>Akkermansia muciniphila</i> [58]	<div><div></div></div> Normal	
	<i>Bifidobacterium</i> [57]	<div><div></div></div> Low	<div><div></div></div> Condition more likely
	<i>Butyricimonas</i> [57]	<div><div></div></div> Normal	
	Microbial Diversity [51]	<div><div></div></div> Normal	



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Lab Director Susan Zneimer, PhD, FACMG
CLIA 05D2089115
CAP 9263832

SmartGut™ Report

Patient Sam Sample
DOB N/A

Metabolic disorders (continued)

Type 2 Diabetes

Association	Organism	Result	Out of Range
Associated	<i>Akkermansia muciniphila</i> [59]	<div><div></div></div> Normal	
	<i>Barnesiella</i> [60]	<div><div></div></div> Normal	
	<i>Collinsella</i> [61]	<div><div></div></div> Normal	
	<i>Prevotella</i> [62,63]	<div><div></div></div> Normal	
Inversely associated	<i>Lactobacillus</i> [64,65]	<div><div></div></div> Low	<div><div></div></div> Condition more likely
	<i>Roseburia</i> [59,66]	<div><div></div></div> Normal	