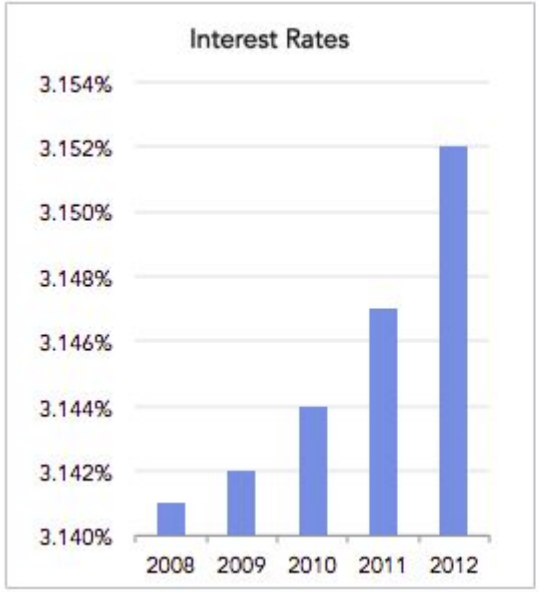
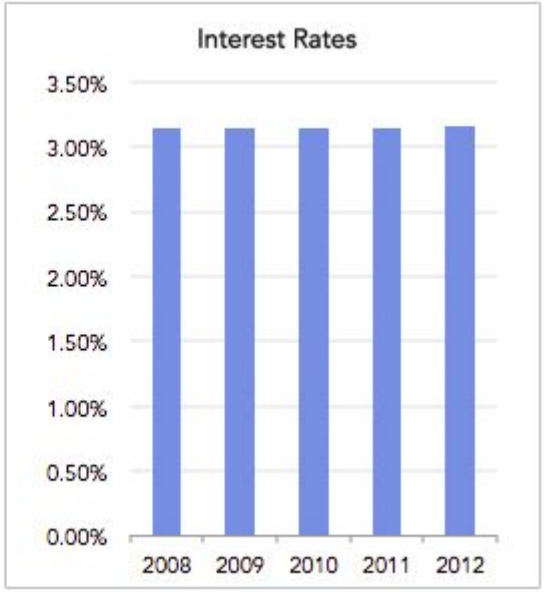
Why Statistics

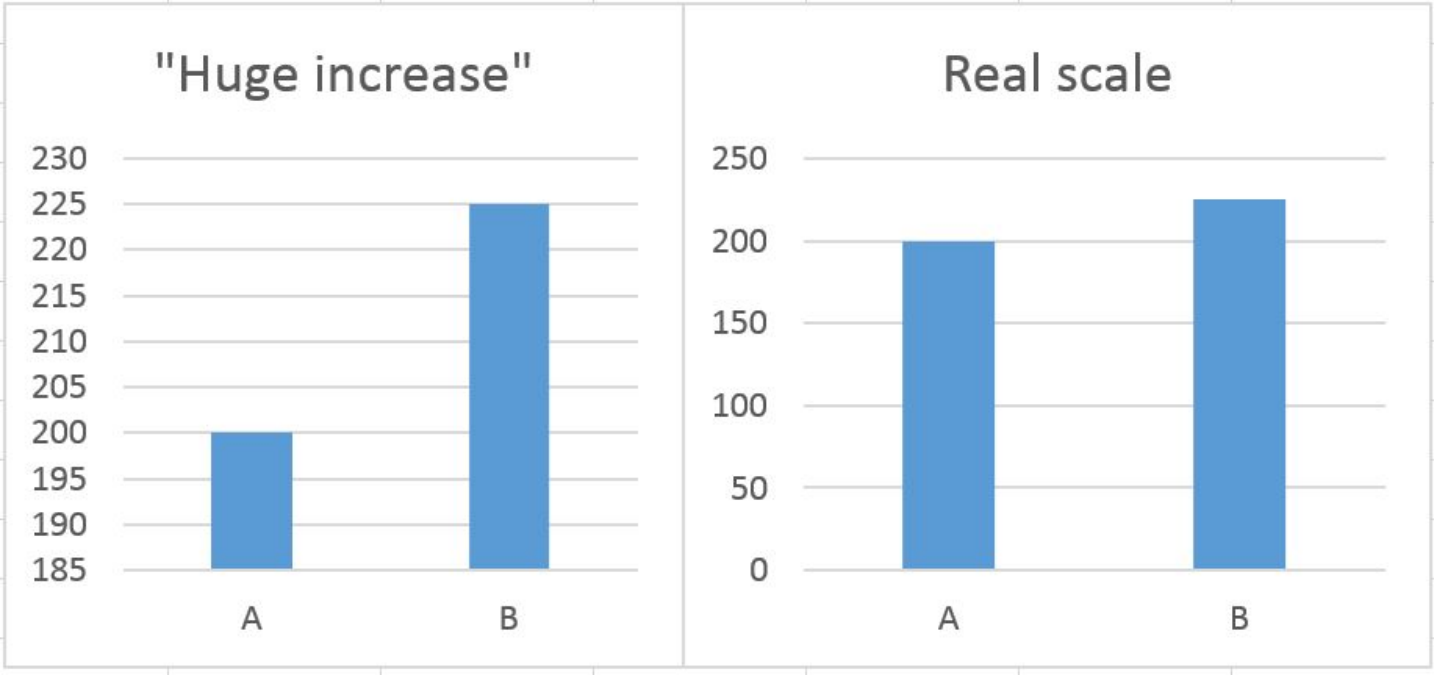
- Case Studies

Why Stats - Scale



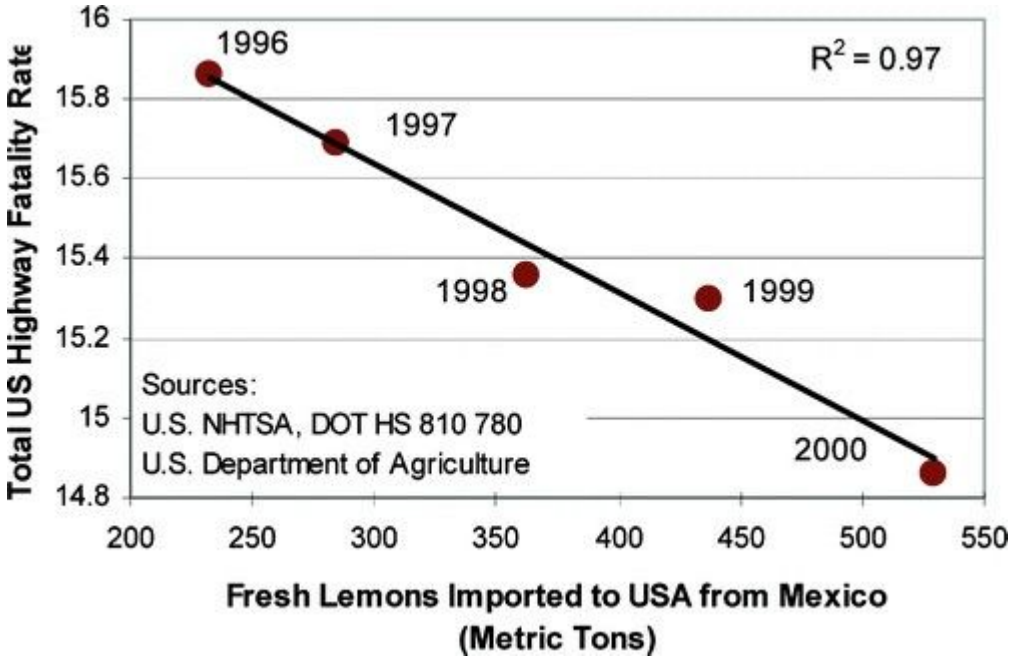


Why Stats - Scale

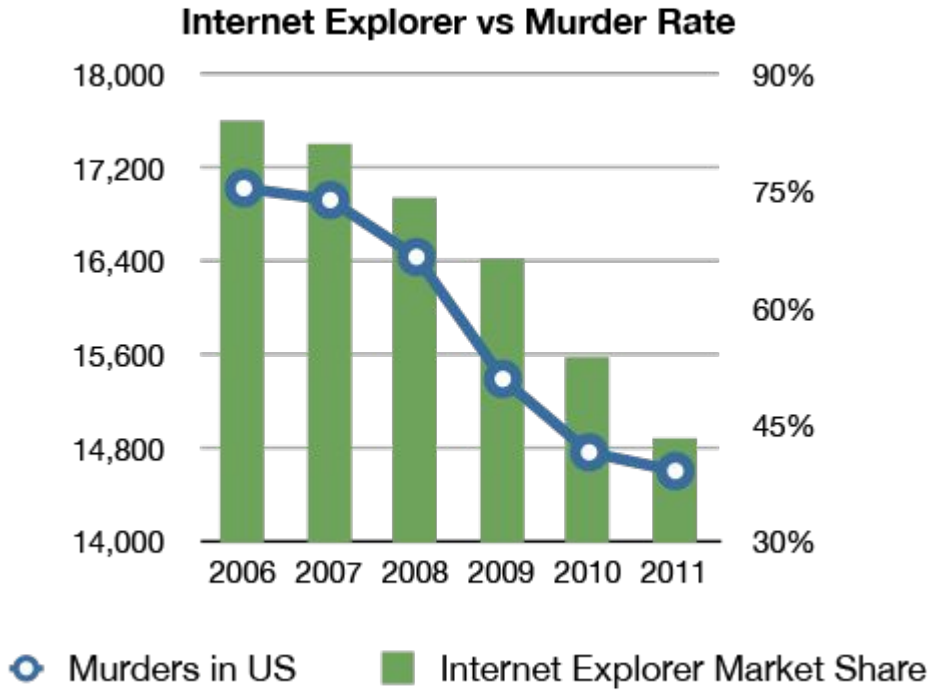


INTERNSHIPSTUDIO

Why Stats - Correlation vs Causation

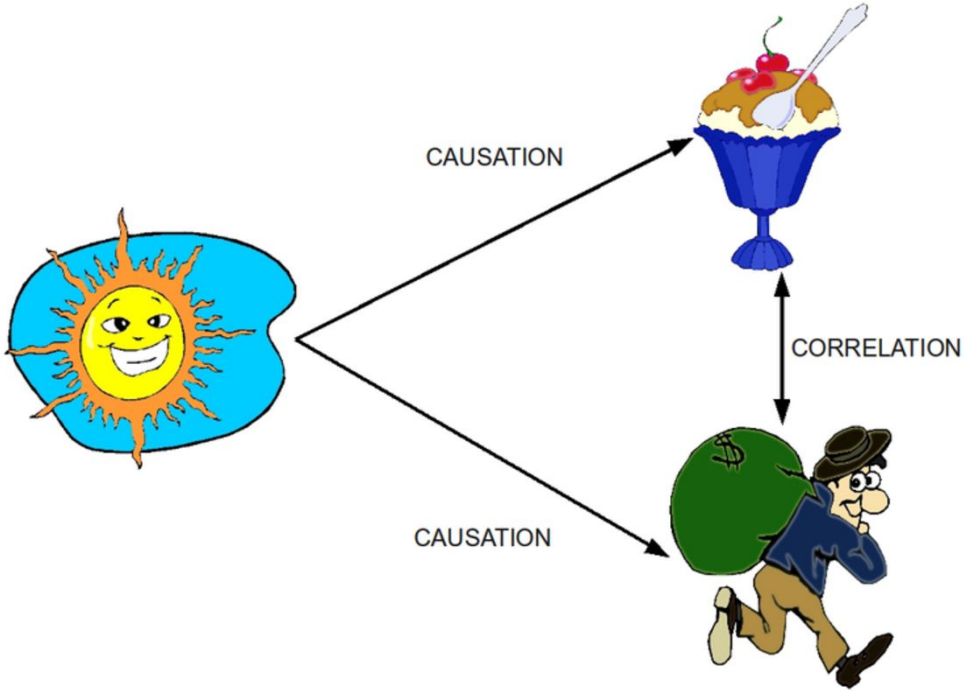


Why Stats - Correlation vs Causation

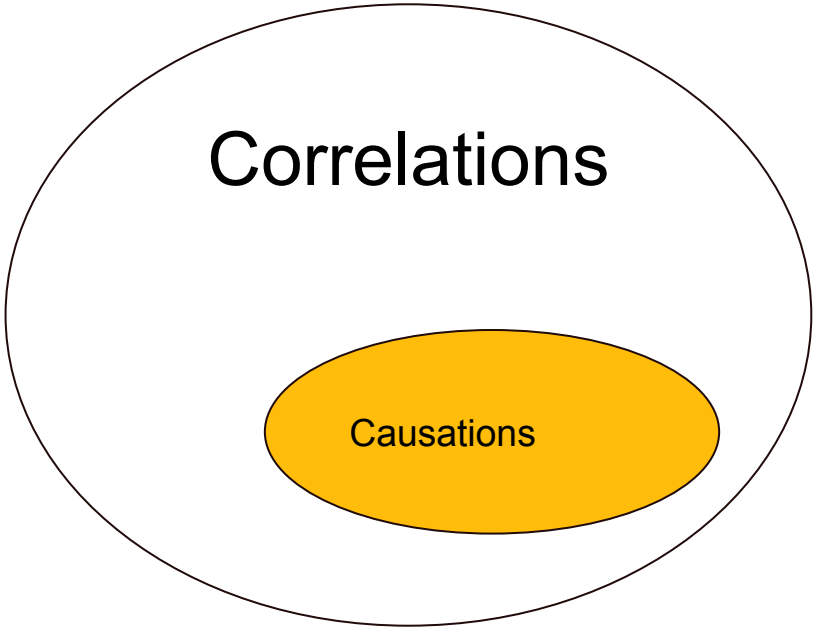


INTERNSHIPSTUDIO

Why Stats - Not confusing correlation with causation



Correlation vs Causation



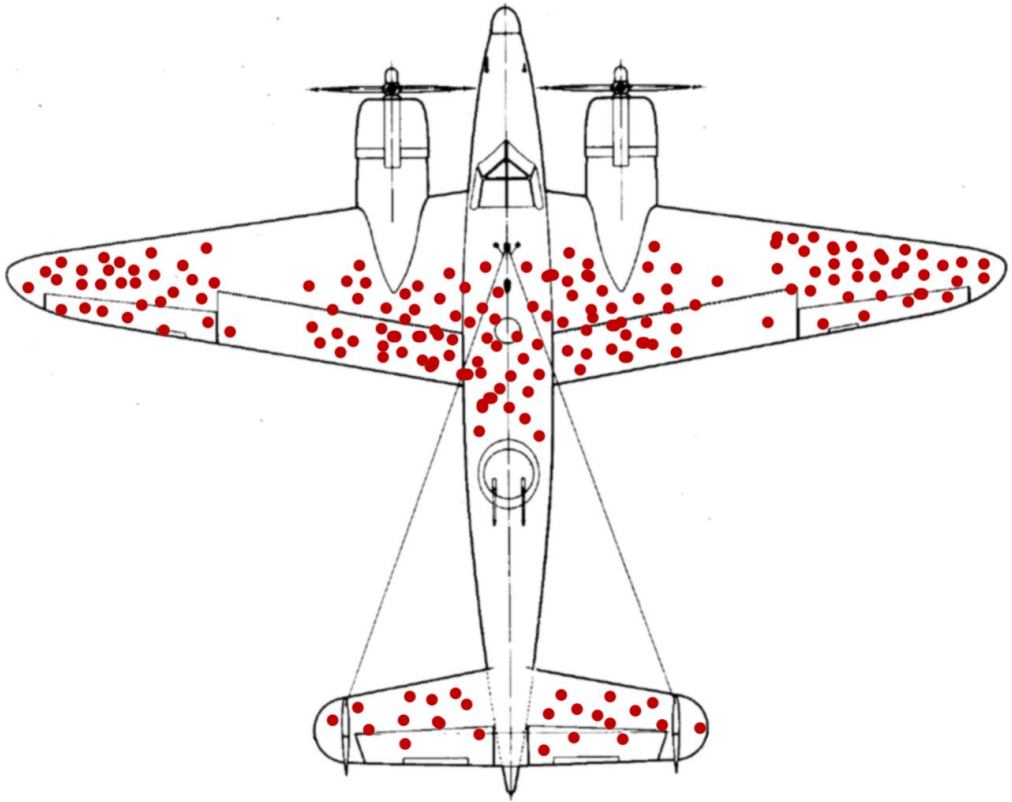
INTERNSHIPSTUDIO

Correlation vs Causation

If A and B are correlated, then these are the possibilities:

1. A causes B
2. B causes A
3. C causes both A and B
4. Its pure coincidence

Why stats - Right Sample



INTERNSHIPSTUDIO

Why Stats - Simpson paradox

Admission rate in UC Berkeley

	Men		Women	
	Applicants	Admitted	Applicants	Admitted
Total	8442	**44%**	4321	35%

Why Stats - Simpson’s paradox

Department	Men		Women	
	Applicants	Admitted	Applicants	Admitted
A	***825***	62%	108	**82%**
B	***560***	63%	25	**68%**
C	325	**37%**	***593***	34%
D	417	33%	375	**35%**
E	191	**28%**	***393***	24%
F	373	6%	341	**7%**

Why Stats - Simpson's paradox

INTERNSHIPSTUDIO

Kidney stone treatment

Treatment / Stone size	Treatment A	Treatment B
Small stones	*Group 1* **93% (81/87)**	*Group 2* 87% (234/270)
Large stones	*Group 3* **73% (192/263)**	*Group 4* 69% (55/80)
Both	78% (273/350)	**83% (289/350)**

Summary

- Scale
- Correlation & Causation
- Choosing the right sample
- Simpson’s paradox