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ESTATÍSTICA

1. APRESENTAÇÃO

eDisciplinas

<https://edisciplinas.usp.br>

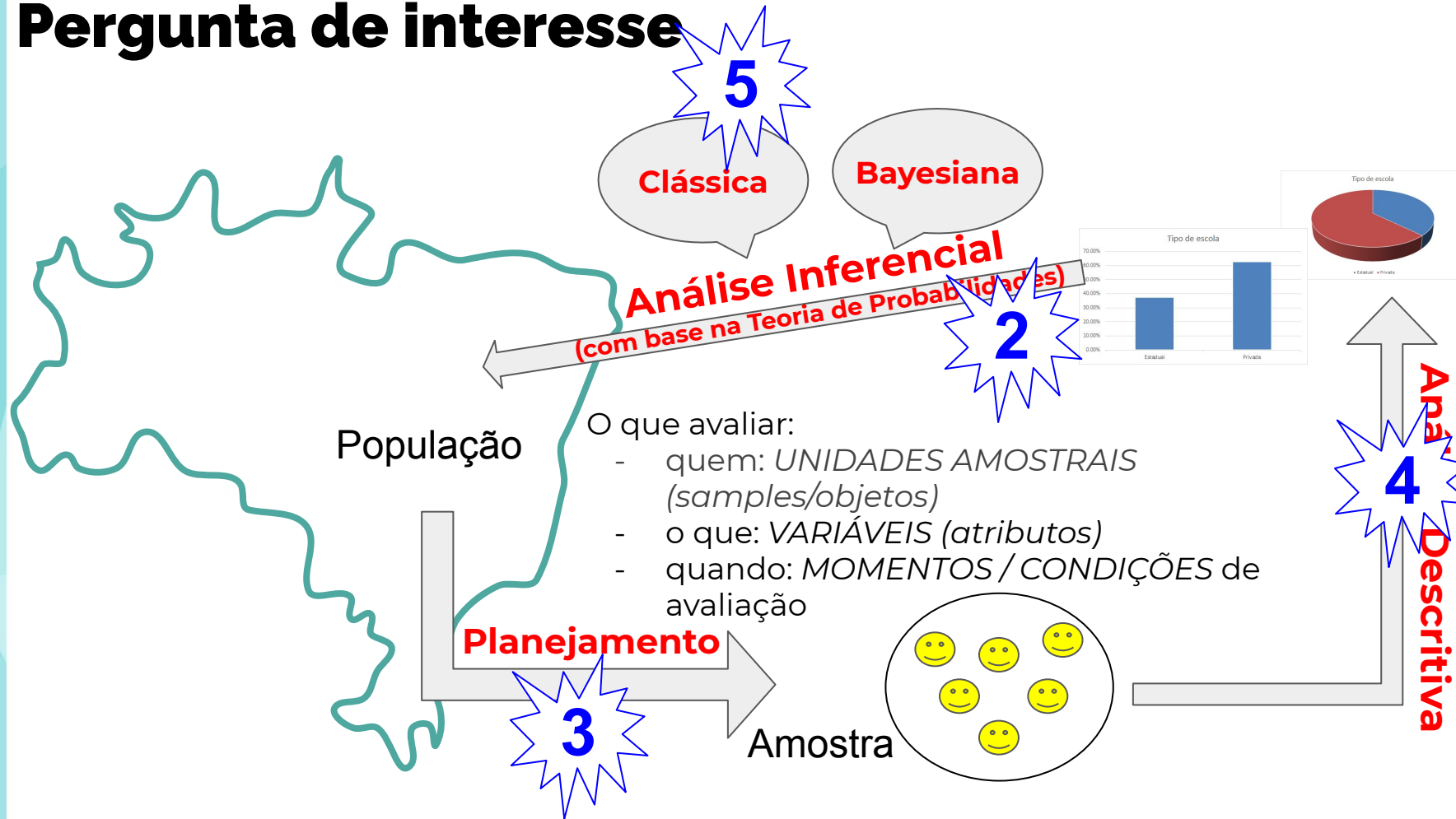
1.1

1. Ementa da disciplina
2. Plano de aulas
3. Monitoria
4. Controle de presença (*quizzes*)
5. Datas das avaliações
6. Referências bibliográficas
7. Slides e *links* para as videoaulas
8. Listas de exercícios
9. *Links* para as avaliações

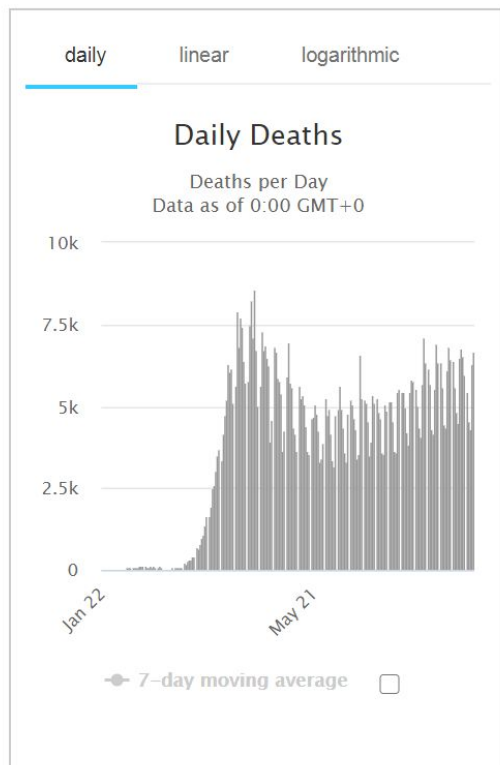
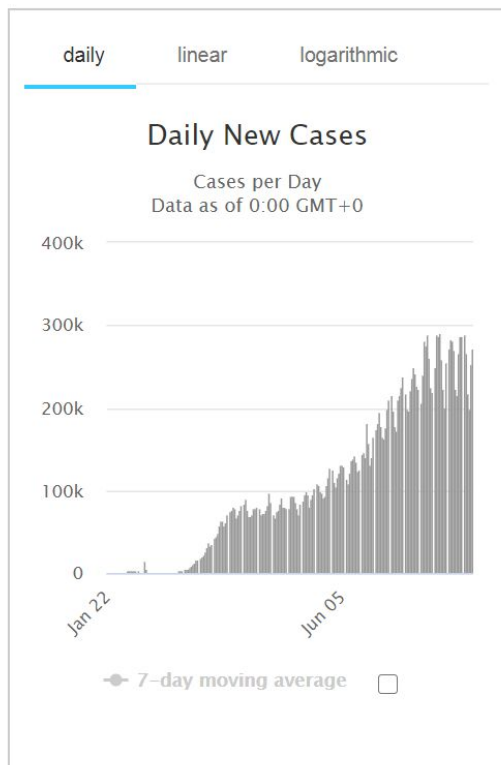
Motivação

1.2

Pergunta de interesse

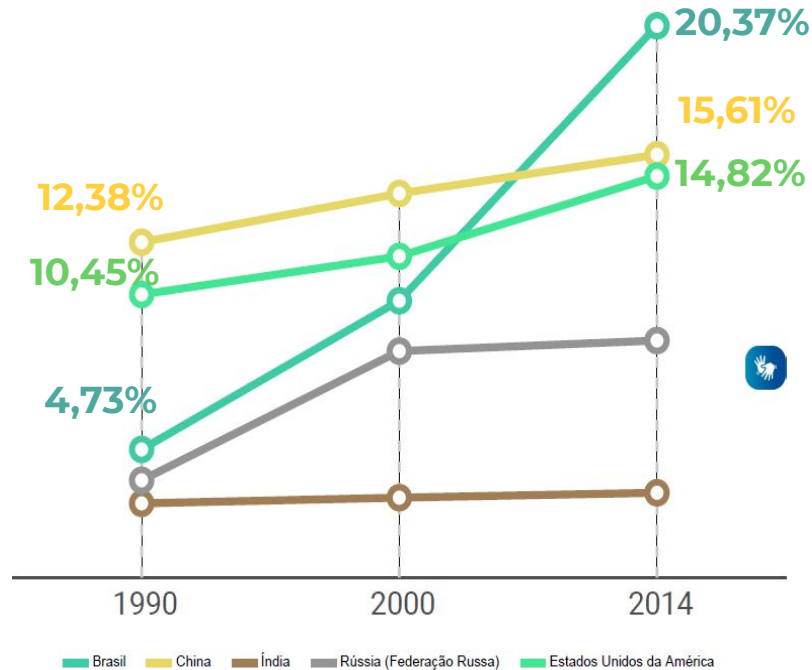


A Estatística está em nosso dia a dia



Áreas protegidas no total do território nacional

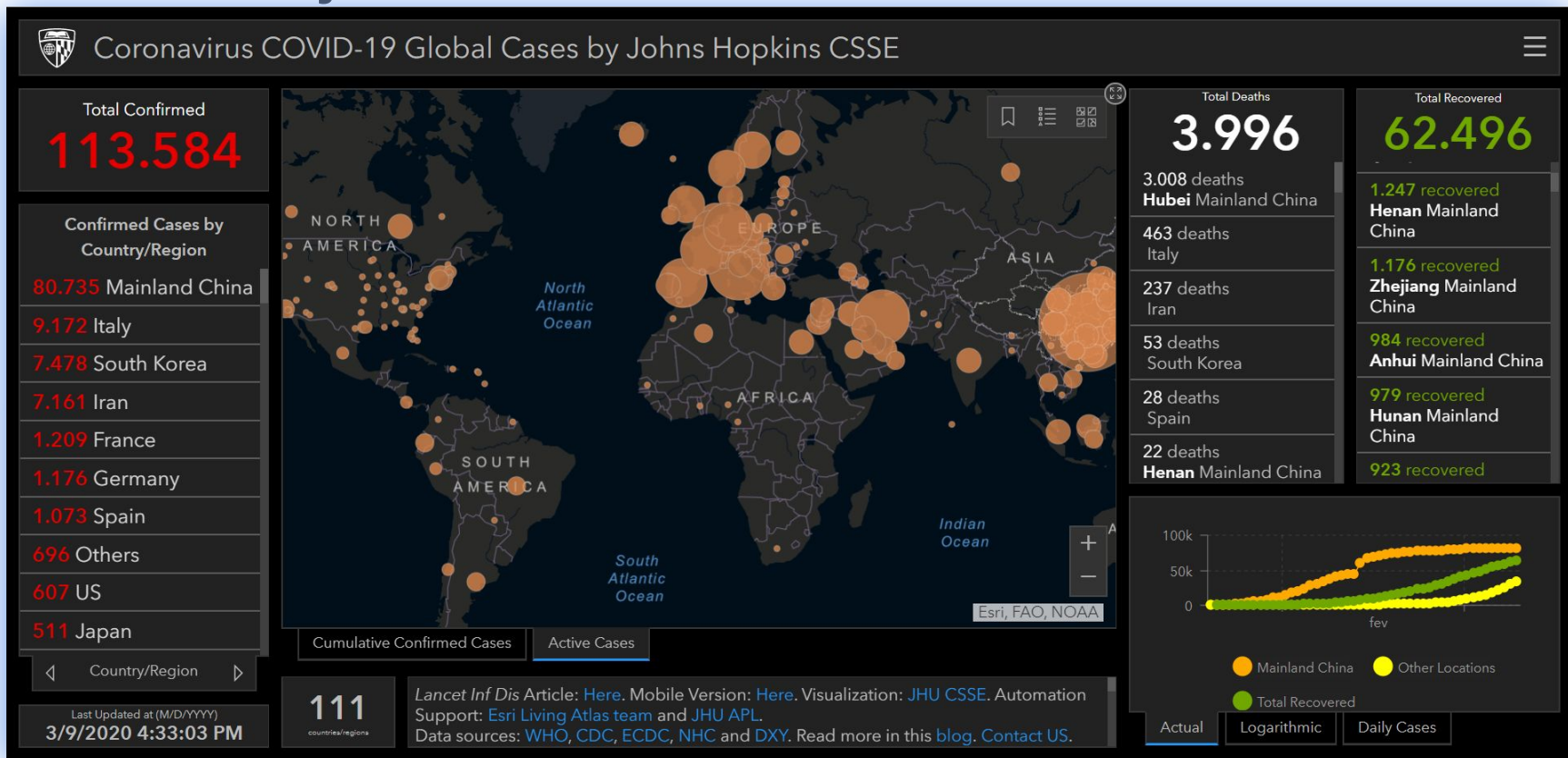
<https://paises.ibge.gov.br/#/mapa/comparar/brasil?lang=pt>



Fonte: <https://www.worldometers.info/coronavirus/>

Fonte: Millennium Development Goals Indicators. United Nations Statistics Division, Department of Economic and Social Affairs. <<http://mdgs.un.org/unsd/mdg/Data.aspx>>. Acessado em: janeiro 2020 (<http://mdgs.un.org/unsd/mdg/Data.aspx>)

Representações sofisticadas

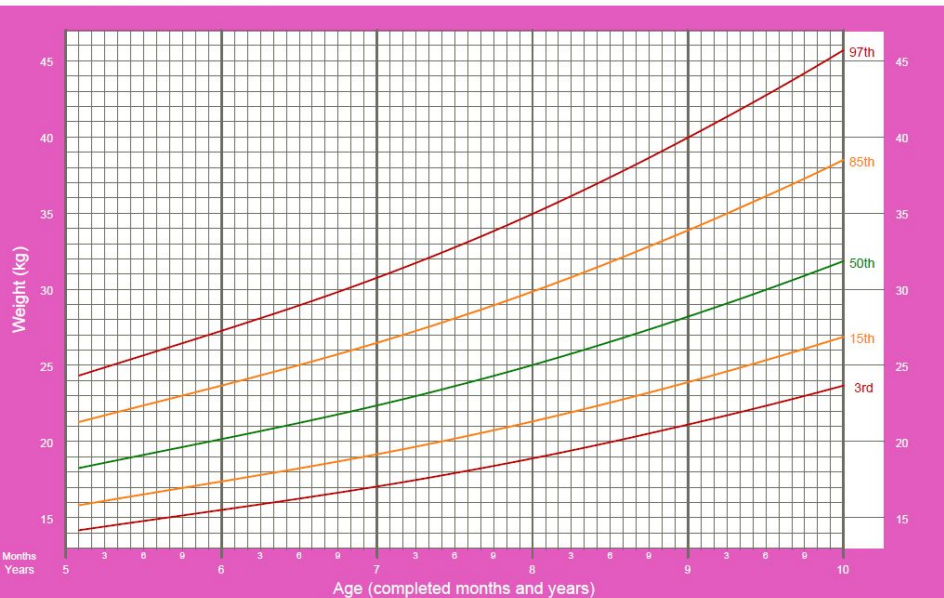


Fonte: <https://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6>

Em diversas áreas

Weight-for-age GIRLS

5 to 10 years (percentiles)



Fonte:

https://www.who.int/growthref/cht_wfa_girls_perc_5_10years.pdf?ua=1

“Normal distribution of temperatures”

“Statistically significant”



Intervalo: 3:15 a 4:00

Fonte:

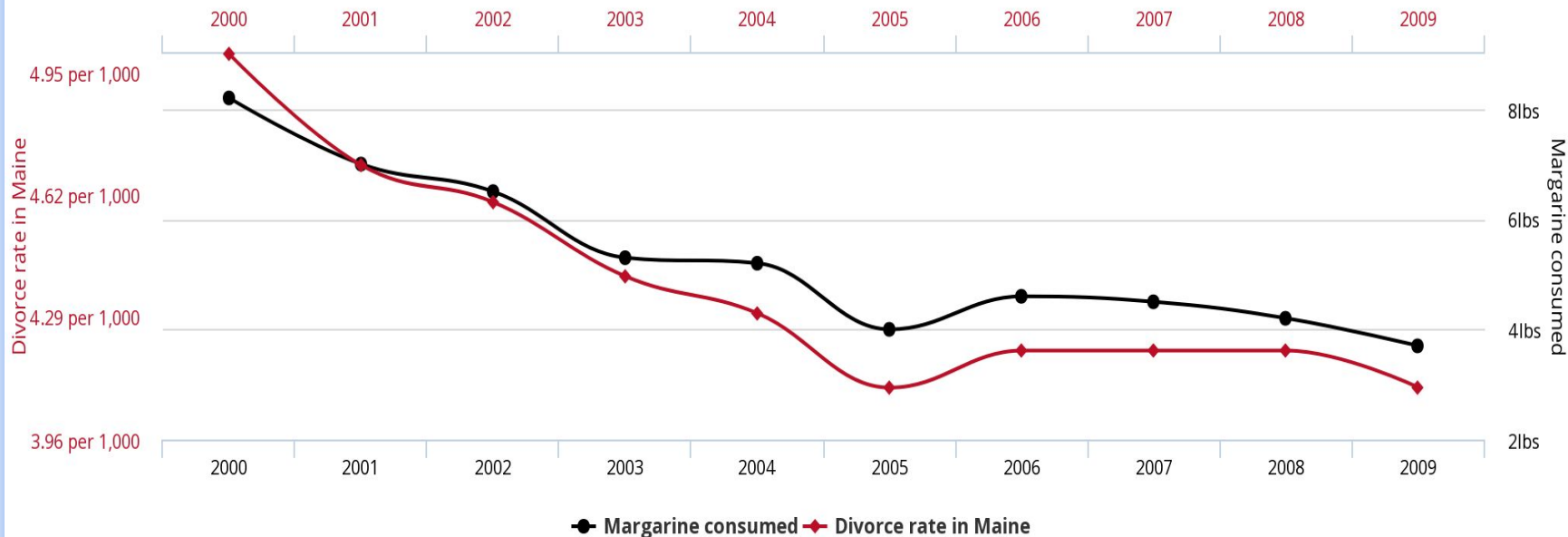
<https://www.youtube.com/watch?v=u7E1v24DIlk&t=1142s>

Cuidados com conclusões equivocadas

Divorce rate in Maine

correlates with

Per capita consumption of margarine



tylervigen.com

Fonte:

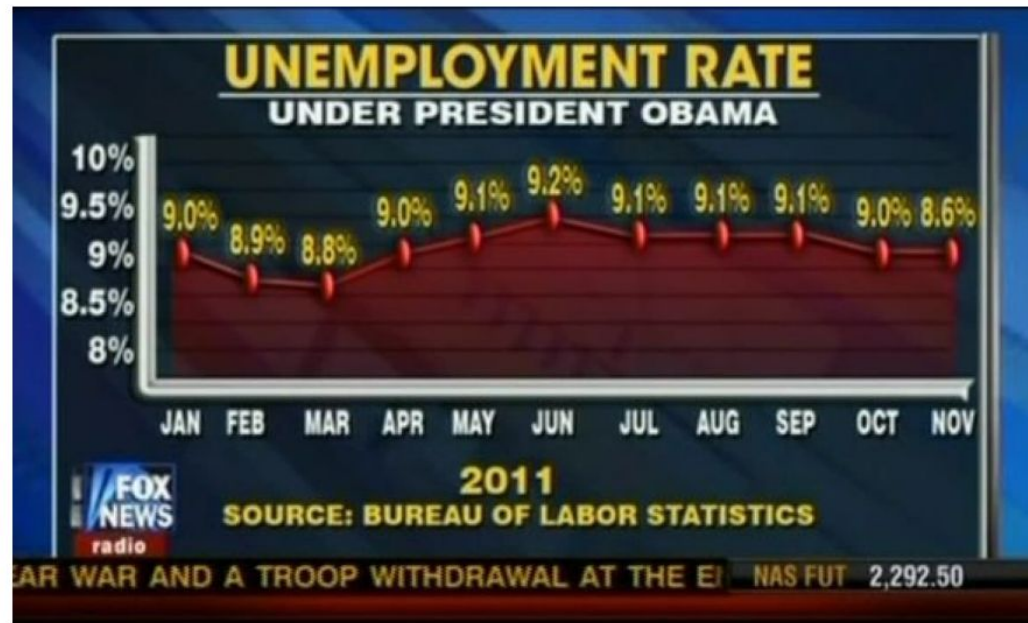
<https://www.tylervigen.com/spurious-correlations>

Manipulações?

Fox News's unemployment chart: Better graphics?

By **Erik Wemple**

December 12, 2011



Screen grab of chart showing unemployment rate under President Obama. (Fox News)

Fonte: https://www.washingtonpost.com/blogs/erik-wemple/post/fox-newss-unemployment-chart-better-graphics/2011/12/12/gIQAUVqNgO_blog.html

Erros de aplicações da Estatística



Beyond reasonable doubt

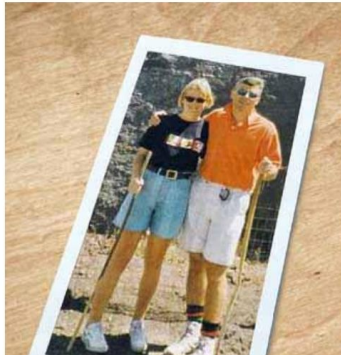
By Helen Joyce

Submitted by plusadmin on September 1, 2002

Five years ago, a young couple from Cheshire suffered one of the most devastating losses imaginable - their baby Christopher died in his sleep, aged 11 weeks. Doctors, neighbours, all were sympathetic, and the death was certified as natural causes - there was evidence of a respiratory infection, and no sign of any failure of care.

But just a year later, in what must have felt like a horribly familiar nightmare, the Clarks' second child Harry died, aged 8 weeks. This time, there was no sympathy from the professionals. Four weeks after Harry's death the couple were arrested, and eventually Sally Clark was charged with murdering both children. She was tried and convicted in 1999 and is now almost three years into a life sentence.

The forensic evidence was slim to nonexistent - certainly neither case would have stood up alone. Even the prosecution team disagreed among themselves as to how the two children had died. They claimed




Fonte: <https://plus.maths.org/content/beyond-reasonable-doubt>



UNIVERSITY OF
CAMBRIDGE

Sally Clark, advogada, 1964-2007

- condenada pelo assassinato dos dois filhos lactentes em 1999-2000
- testemunho de Roy Meadow: *'uma morte súbita na infância é uma tragédia para a família, duas são suspeitas e três são assassinio a menos que existam provas em contrário'*
- evidência estatística falha: 'a probabilidade de dois lactentes de uma família abastada vir a óbito por morte súbita é 1 em 73 milhões $\cong (1/8500)^2$  **os 2 eventos foram considerados independentes!!!!**
- Libertada após 3 anos: evidências de infecção no líquido do 2º filho

Estatística

- aplicada em muitas áreas

Statistical Significance Series da ASA (American Statistical Association)

<https://www.amstat.org/ASA/Science-Policy-and-Advocacy/Statistical-Significance-Series.aspx>

- conhecimento das metodologias disponíveis
- melhores resultados: conhecimentos em ambas as áreas (individual e/ou equipe)
- uso de softwares: R, SAS, SPSS, Minitab, Python, ...

