

TRUE OR FALSE?

Oxygen we breathe comes from plants

Electrons are smaller than atoms

Antibiotics kill viruses as well as bacteria

All radioactivity is man-made

Lasers work by focusing sound

2+2 = 4

THE WORLD IS NOT FLAT

THE WORLD'S CLIMATE IS CHANGING AS A RESULT OF HUMAN ACTIVITY

SMOKING CAUSES LUNG CANCER

GOD DIDN'T CREATE THE WORLD

ASTROLOGY IS RUBBISH

HERBAL MEDICINE IS DANGEROUS NONSENSE

AIDS IS CAUSED BY A VIRUS

THE MMR VACCINE IS SAFE

GM CROPS ARE HARMLESS

Untold Stories from Science

Richard Evans, City University of
London

For each of the following statements, please tell me if it is true or false.
If you don't know, say so, and we will go on to the next one (% EU25)

Quiz statements (T= true; F= false)	True	False	DK/ NA
1. The Sun goes around the Earth (F)	29%	66%	4%
2. The centre of the Earth is very hot (T)	86%	7%	7%
3. The oxygen we breathe comes from plants (T)	82%	14%	4%
4. Radioactive milk can be made safe by boiling it (F)	10%	75%	15%
5. Electrons are smaller than atoms (T)	46%	29%	25%
6. The continents on which we live have been moving for millions of years and will continue to move in the future (T)	87%	6%	8%
7. It is the mother's genes that decide whether the baby is a boy or a girl (F)	20%	64%	16%
8. The earliest humans lived at the same time as the dinosaurs (F)	23%	66%	11%
9. Antibiotics kill viruses as well as bacteria (F)	43%	46%	11%
10. Lasers work by focusing sound waves (F)	26%	47%	28%
11. All radioactivity is man-made (F)	27%	59%	14%
12. Human beings, as we know them today, developed from earlier species of animals (T)	70%	20%	10%
13. It takes one month for the Earth to go around the Sun (F)	17%	66%	16%

(European Commission, 2005)



*“Literary intellectuals at one pole, at the other scientists ..
Between the two a gulf of mutual incomprehension, sometimes
hostility and dislike, but most of all lack of understanding”.*

Snow, 1959

Scientist

Journalist

Clever, educated, freethinking

Data collectors

Use experience and insight

Bring understanding and order

Slow

Patient, careful and conservative

Tiny piece of the puzzle

Communicate to educate, get support
and funding

Use complicated scientific language

Fast

Hungry for deadlines and drama

The whole story

Communicate to inform and entertain

Use plain simple English



1

UNDERSTAND THE SCIENTIFIC METHOD



Inductive Reasoning

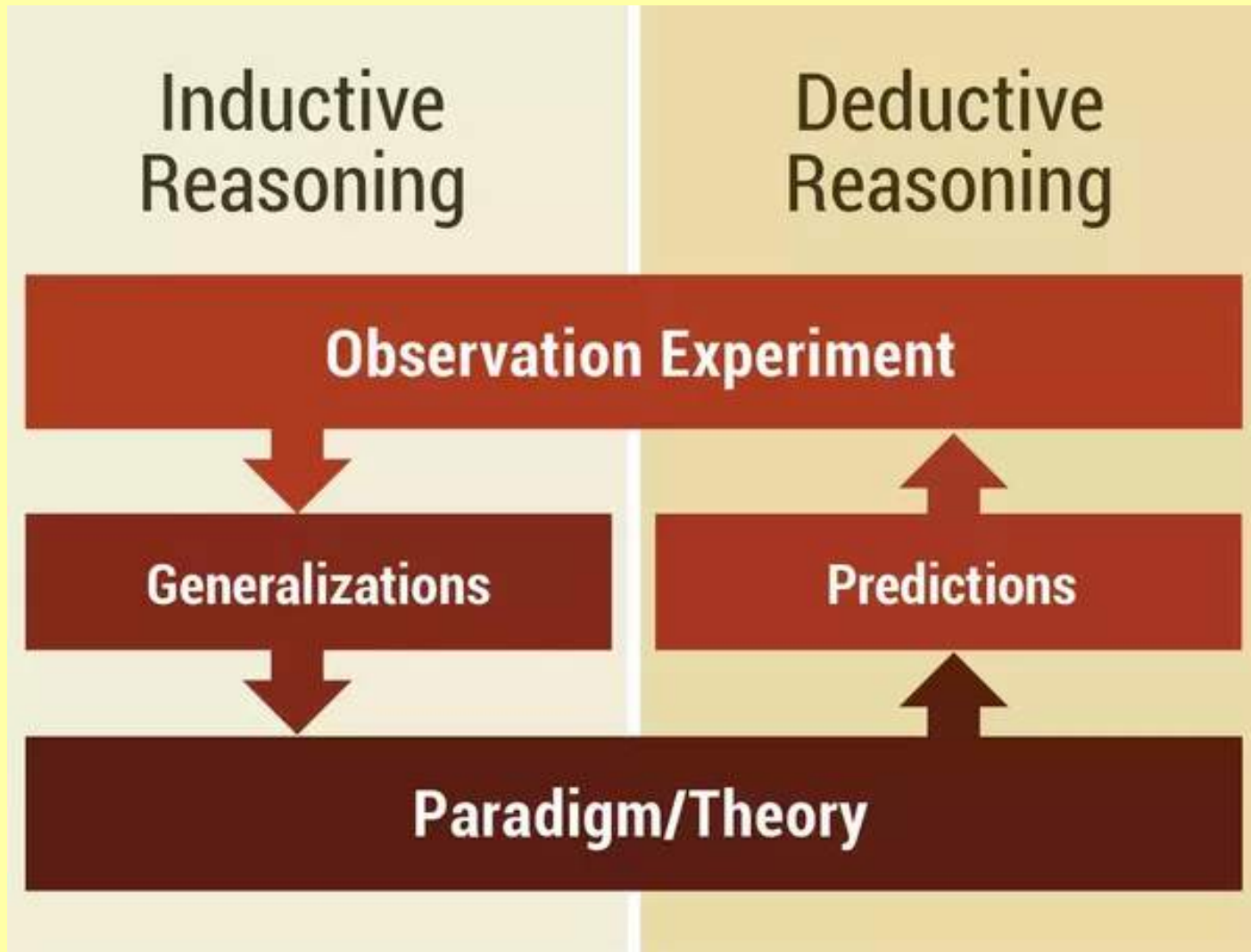
Deductive Reasoning

Observation Experiment

Generalizations

Predictions

Paradigm/Theory



2

BEWARE THE MAVERICK

the media offer a platform to '[amateur] and unorthodox scientists ... and even conventional scientists who have been unsuccessful in publishing their work in the peer-reviewed literature'

(Schunemann, 2013)

Measles made worse by vaccine, claims disgraced British doctor

By Rozina Sahar in Chicago

A DISGRACED British former doctor who became the face of the anti-vaccine movement has claimed vaccines have made measles "a more dangerous disease", as he fundraises for a second film targeting the MMR vaccine.

Andrew Wakefield made a rare public appearance in Chicago on Sunday during which he claimed the US faces a crisis because vaccinations have created a mutant strain of the virus.

He claimed "the measles vaccine is itself causing measles and ... is not producing immunity that protects either against natural measles or the vaccine-induced measles".

Mr Wakefield co-authored a 1998 paper suggesting a possible link between the MMR vaccine and autism. An investigation found that it relied on bogus data although Mr Wakefield repeatedly denied any wrongdoing and declined to retract the paper's findings.

The inquiry uncovered financial and ethical conflicts of interest which led to him being struck off the British medical register in 2009. He later relocated to America, where he has continued to promote his views.

The Telegraph can reveal Mr Wakefield is fundraising for a follow-up to his 2016 film *Vaccines: From Cover-Up to Catastrophe*, which was removed from streaming sites such as Amazon Prime Video earlier this year after an outcry from US lawmakers.

Mr Wakefield was promoting the new film, *Vaxxed II*, during his appearance

on Sunday. Asked by an audience member what America could do to protect itself against the reemergence of measles, he replied: "Help me make a film."

During his 45-minute talk at the Autism One Conference, Mr Wakefield claimed America's intelligence agency was influencing government health policy on vaccinations for use as a "political weapon".

Mr Wakefield's comments come as the US faces its worst measles crisis in 25 years - despite the fact the disease was declared eradicated in 2000. There have been 940 recorded cases of the highly contagious disease this year.



Where to meet the world's first 'human cyborg' in Coventry

Kevin Warwick, Distinguished Professor at Coventry and Reading Universities, has performed innovative research into cyborgs



World's first human cyborg

Brace yourself for Blue Monday, the worst day of the year thanks to New Year's resolutions failing, debt and Christmas being a distant memory

- Tomorrow is 'Blue Monday' known as the most depressing day of the entire year
- Dr Cliff Arnall said his formula explains why third Monday of January is so glum
- Mental health organisations have dismissed the term as an unhelpful myth

By JONATHAN BUCKS FOR THE MAIL ON SUNDAY

PUBLISHED: 22:04, 19 January 2019 | UPDATED: 10:57, 21 January 2019

Share

62 shares

211 View comments

As festive memories fade, you may find yourself contemplating your battered bank account, that bulge around the waist and the grim weather - not to mention the realities of a return to work.

And if the January gloom is getting you down, you can take measure comfort



3

DISTINGUISH SCIENCE FROM OPINION

2+2 = 4

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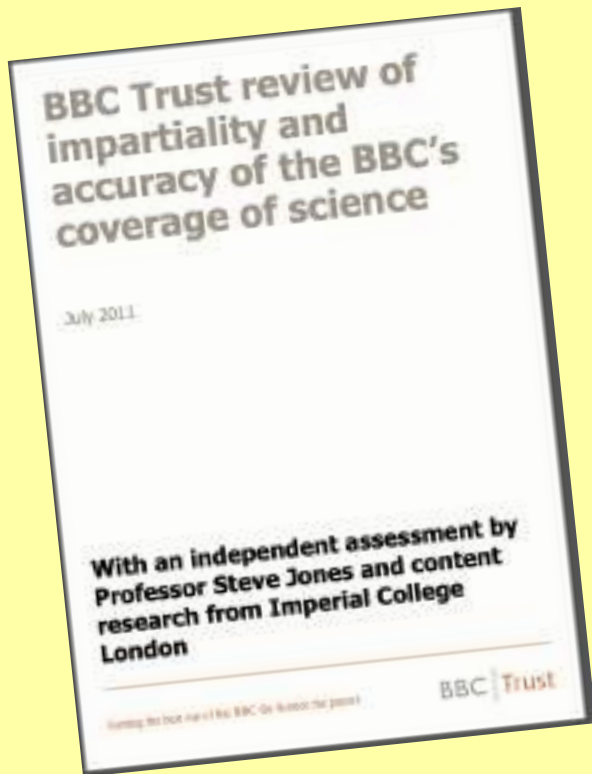
AIDS IS CAUSED BY A VIRUS

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4

AVOID FALSE BALANCE



INTERROGATE STATISTICS

we desperately need journalists who understand basic statistics, especially as it applies to survey research, and fundamental scientific methodology.

Gillmor, 2016

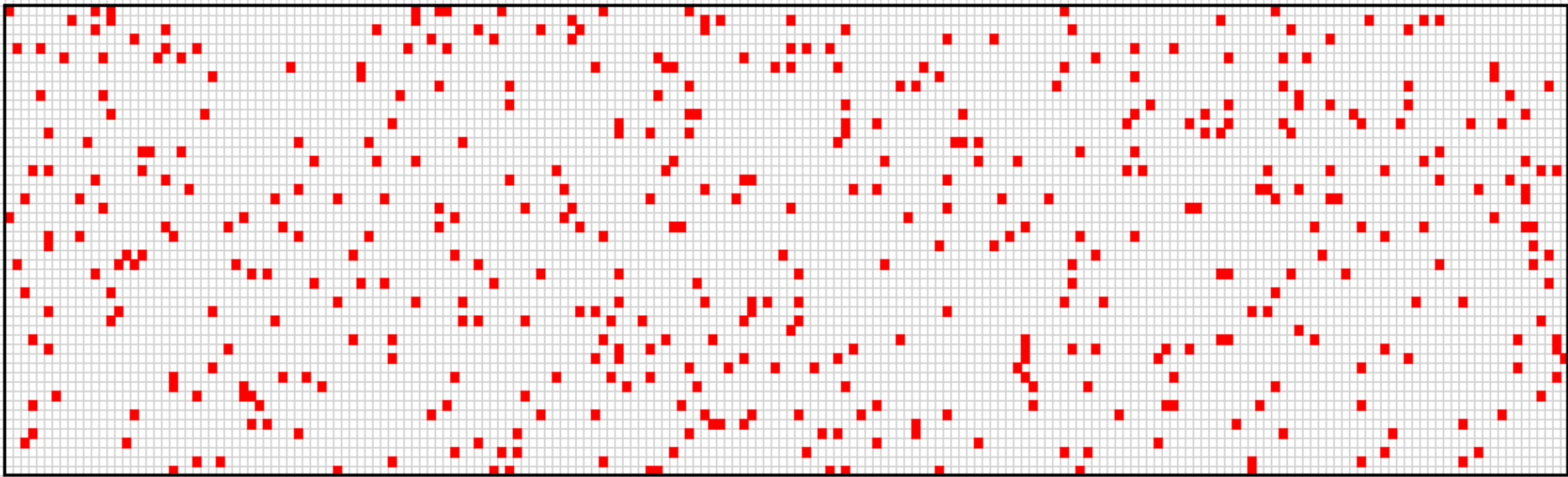
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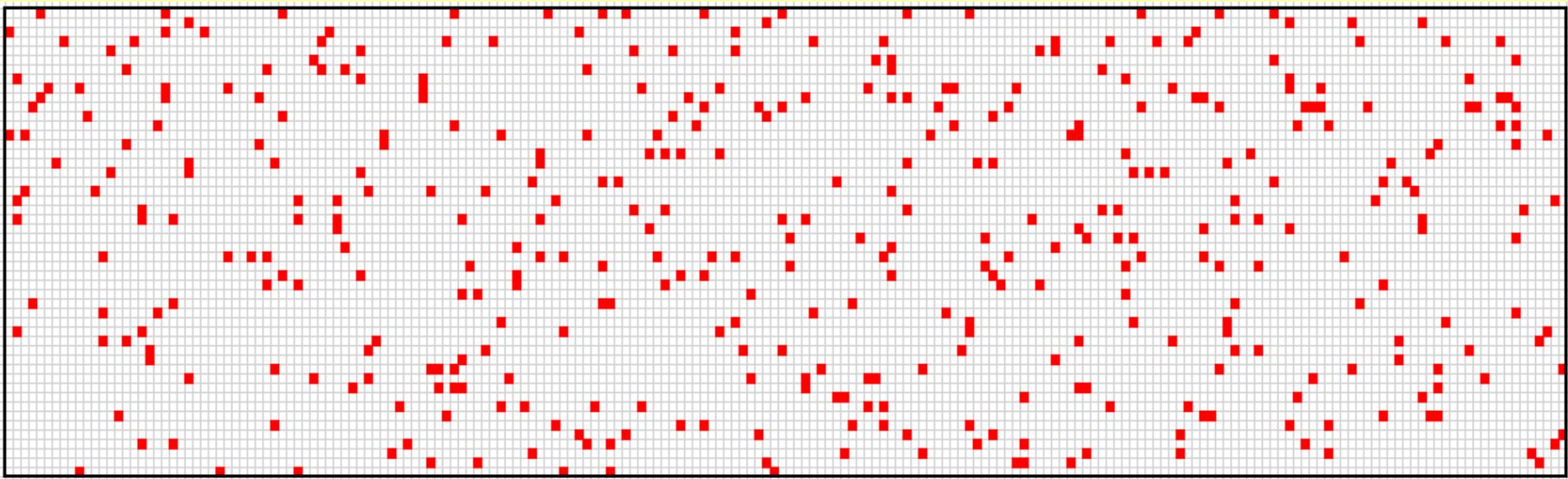
**CORRELATION IS NOT
CAUSATION**

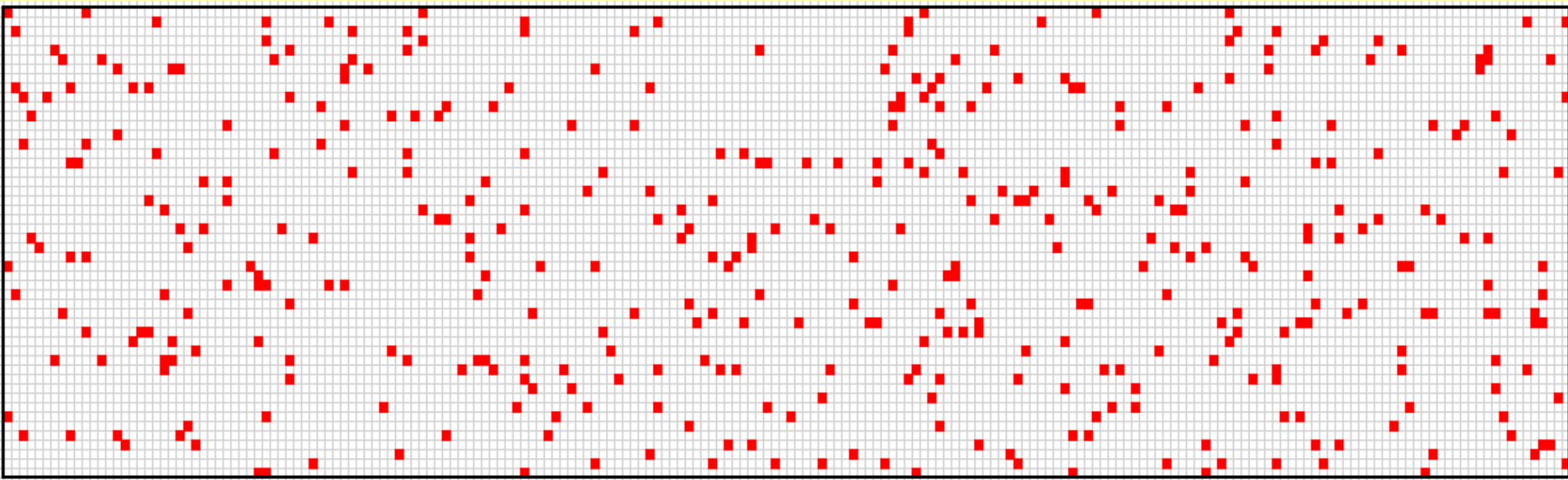
CONFOUNDING FACTORS

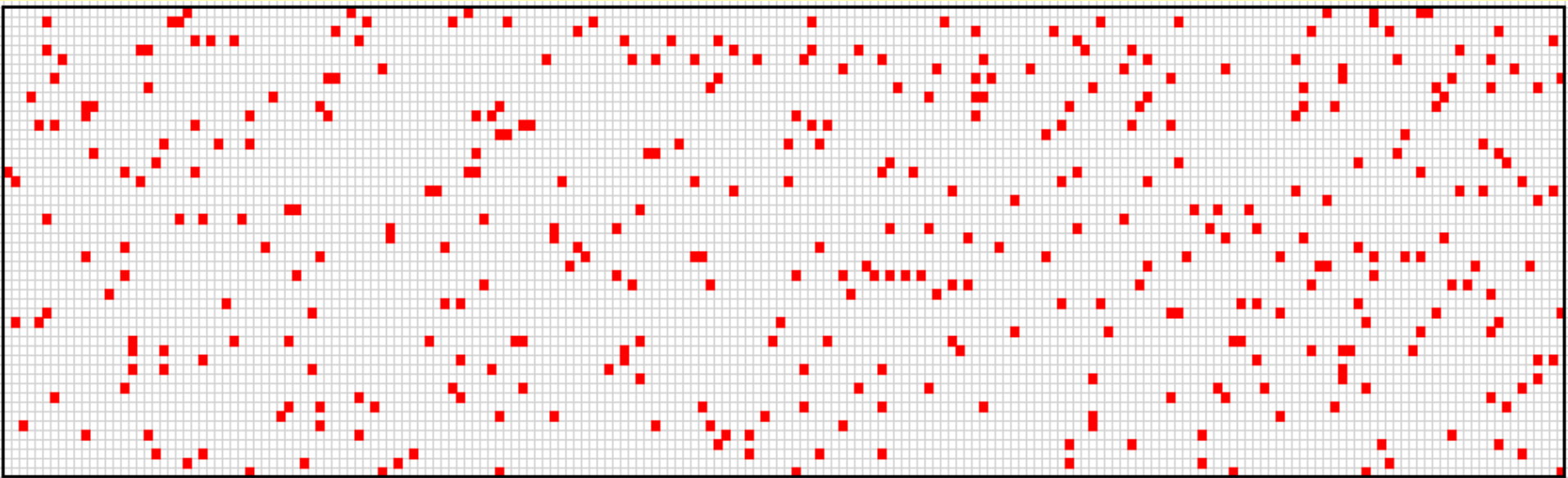
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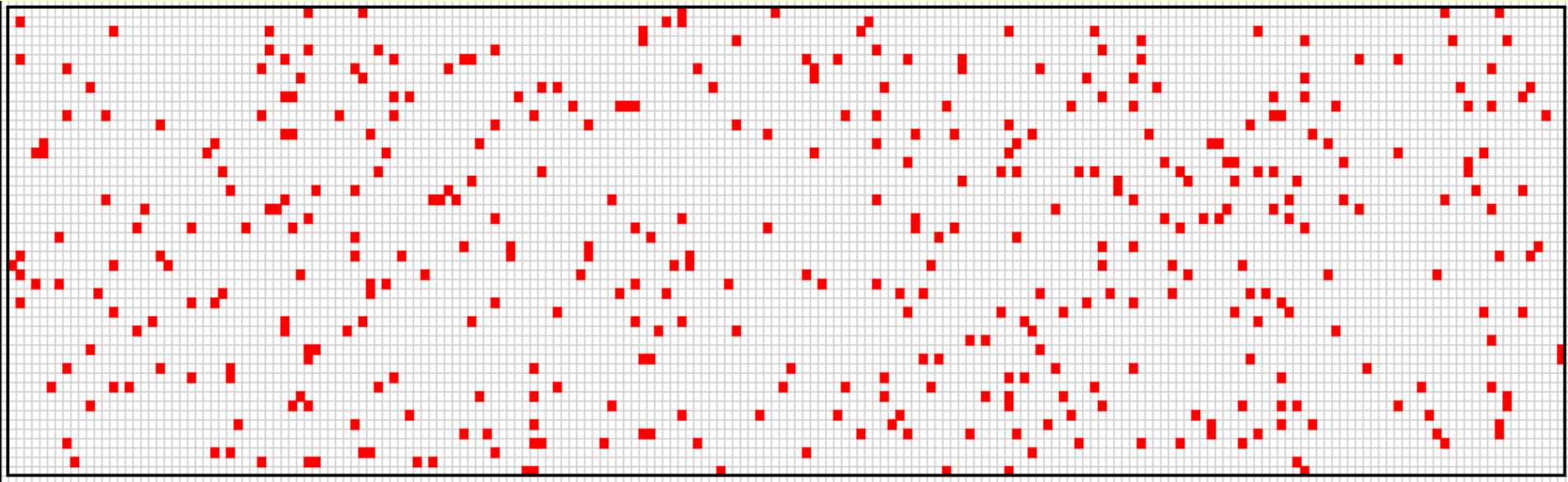
CHANCE EVENT CLUSTERS





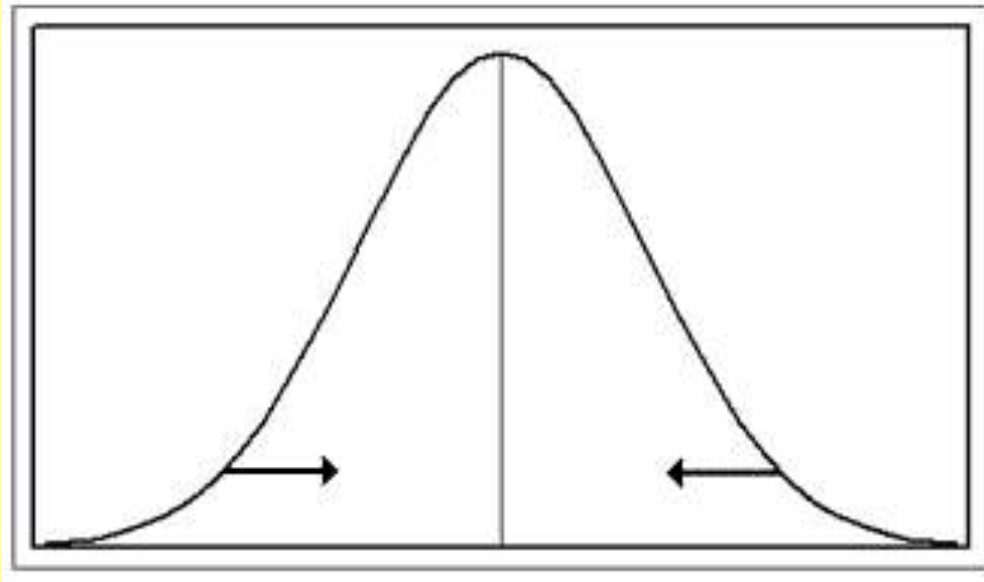






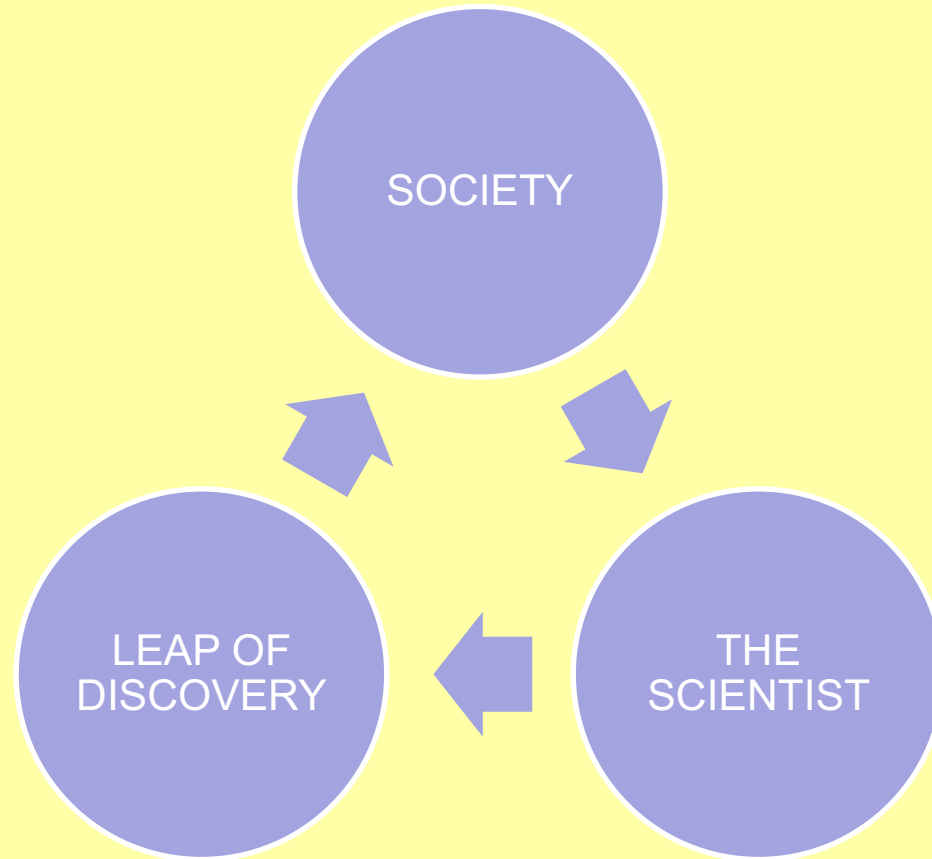
7

REGRESSION TO THE MEAN



TEXAS SHARP SHOOTING

THE PERFECT SCIENCE STORY



(Marchant, 2013)

so long!



and thanks to all the bugs

They'll break the most toxic synthetics on the planet.



Some of these you may actually like because you think they're pretty.



But most you will find at least unappetizing.



And it won't distinguish.



While you wouldn't be disappointed to find out that over the past several decades, the number of flying insects in Europe has dropped drastically, in fact, a team of researchers from Montreal University, in the Netherlands, found that even in protected nature reserves, the number of diurnal insects has fallen by 80% since the 1970s in 2017.

researcher number on the majority of species on their planet, and just a huge mix in a wide variety of natural processes - from pollination, to nutrient cycling, to helping break down and decompose waste. They provide food for vast numbers of birds, fish, bats, and amphibians as well as helping to pollinate these species, of the food we eat - including things like tomatoes and strawberries.

In the 1970s, it's estimated that the work done by insects for the ecosystem (and for our food chain) is worth at least \$17 billion every year.



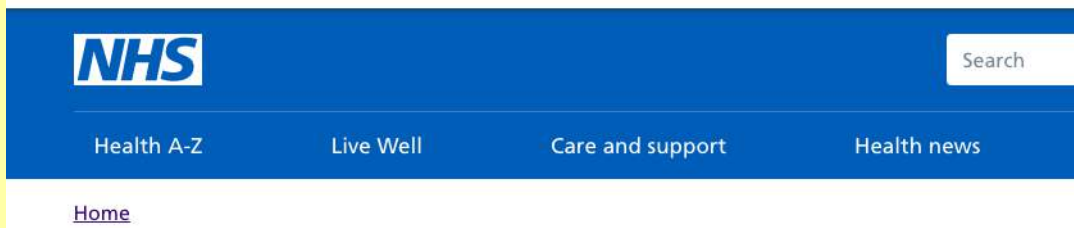
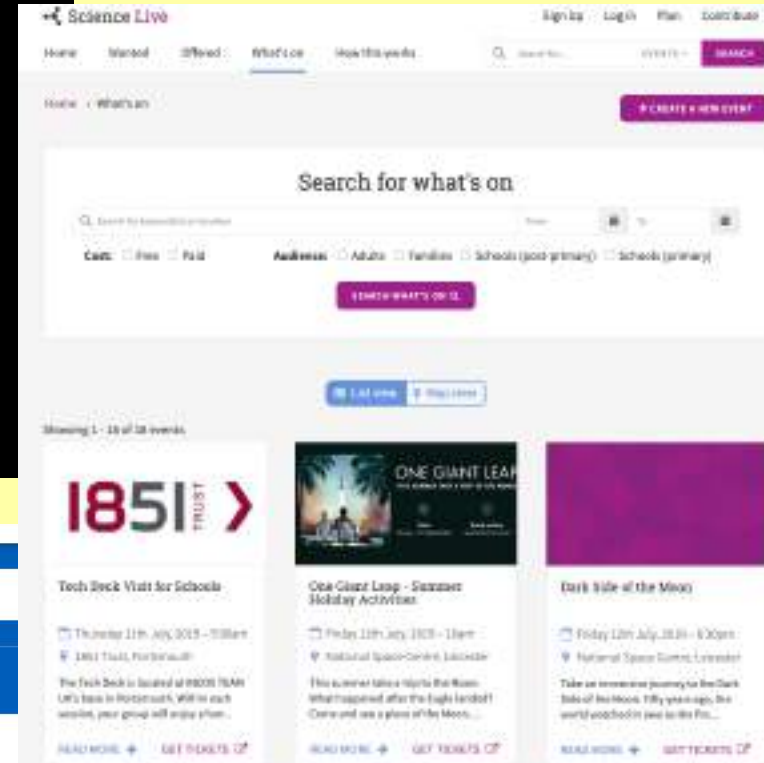
Even the number of insect-eating birds is falling.

Panel 1: Professor Peter Caplan worked on the experiment, and said while he believed there is a combination of factors - including climate change and habitat loss - which led to this, it was highly likely that the use of synthetic insecticides are contributing to the issue.

Panel 2: I think it is very likely that pesticides are contributing to the use of 10,000s of pesticides over our lives.

Panel 3: People may think of insects as just eating other things, but without them, most animals would starve. It sounds dramatic, but if we lost our insects it would equal the collapse of all life on Earth. People are largely oblivious of the fact that we do an unbelievable amount of work a year in a quite small number of insects.

Panel 4: Insects are essential to our food chain by pollinating natural crops in various natural reserves like in Germany and restoring the volume of insects caught while the fact that certain insects species are declining will directly impact on the food chain, so that the food we eat is affected by the state of the soil.



Behind the Headlines

Your guide to the science that makes the news.

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[1 in 5 hospital patients have alcohol-related problems](#)

Thursday 4 July 2019

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<https://www.nhs.uk/news/>
<https://sciencelive.net/whats-on/>

1. UNDERSTAND THE SCIENTIFIC METHOD
2. BEWARE THE MAVERICK
3. DISTINGUISH SCIENCE FROM OPINIONS
4. AVOID FALSE BALANCE
5. CORROLATION IS NOT CAUSATION
6. CHANCE EVENT CLUSTER
7. REGRESSION TO THE MEAN

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