Why Do We Need Evidence Based Policing?
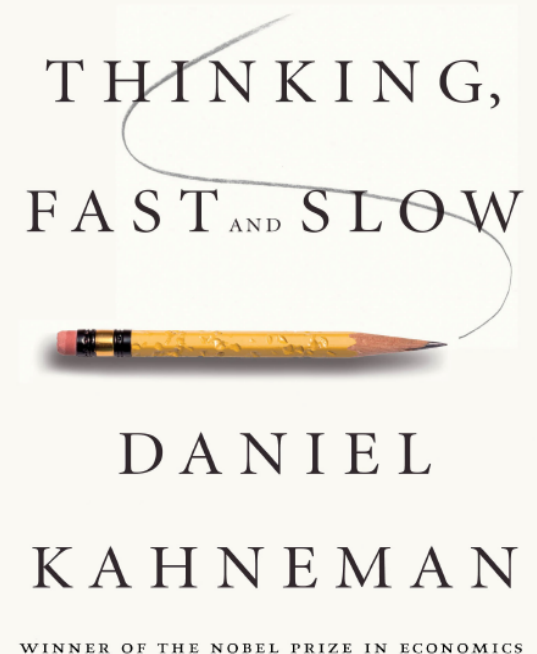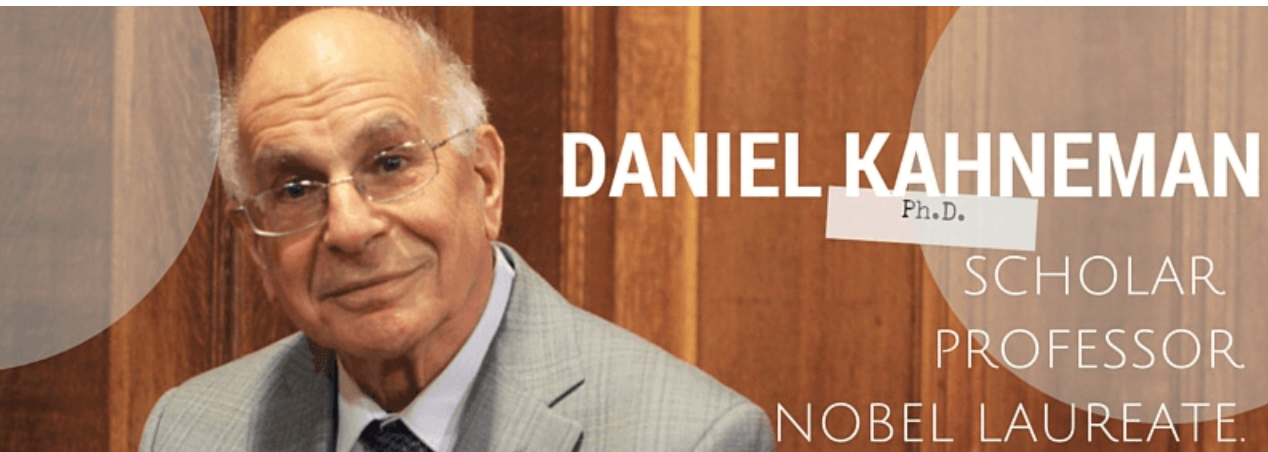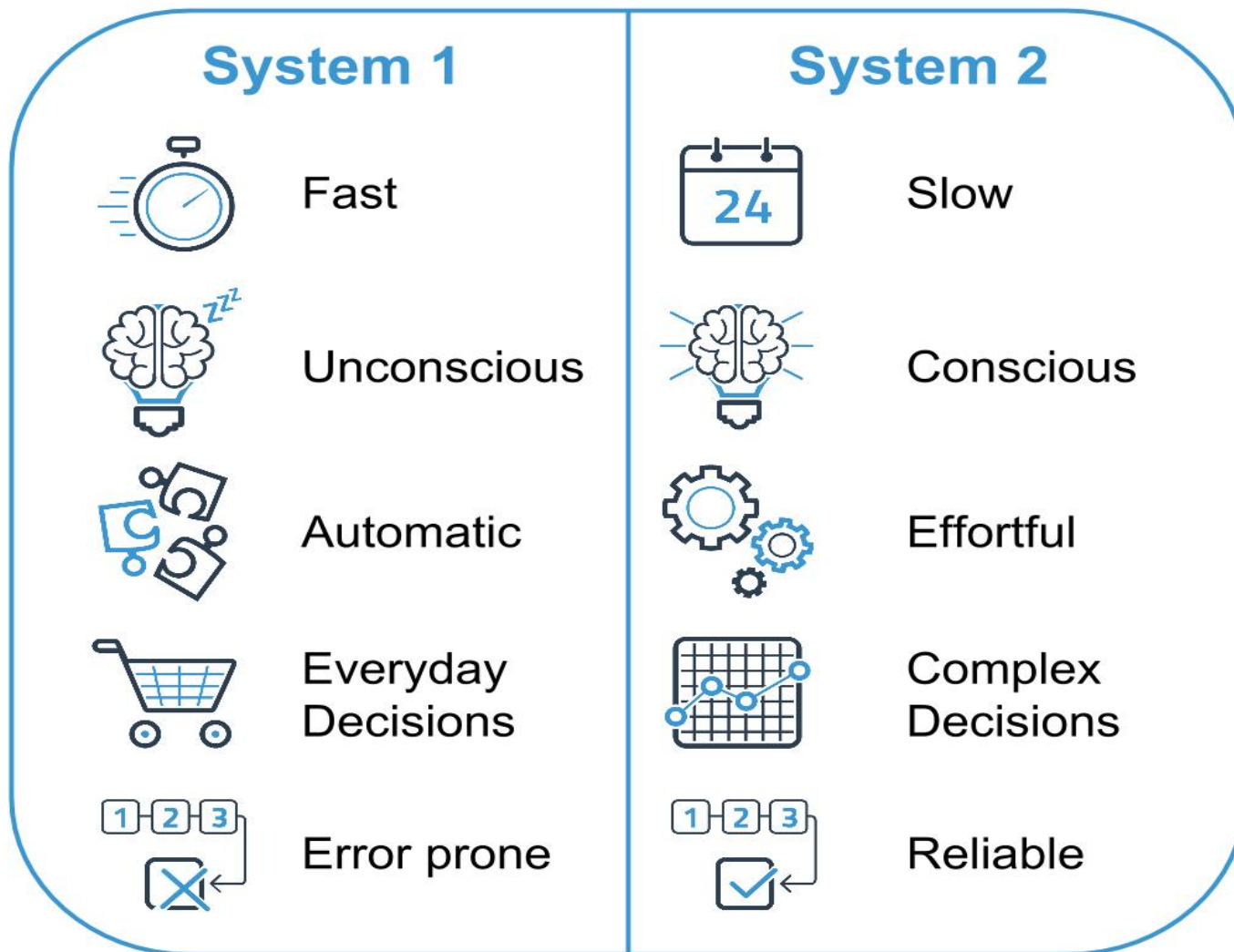
Mark Brennan, Leicestershire Police

Twitter: @MarkBrennan

leics.police.uk

Why do we need evidence based policing?

Our decision making can be naturally prone to make mistakes…

System 1 and 2

System 1	System 2
Fast	Slow
Unconscious	Conscious
Automatic	Effortful
Everyday Decisions	Complex Decisions
Error prone	Reliable

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System 1 – What emotion is this person showing?

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System 1 and 2

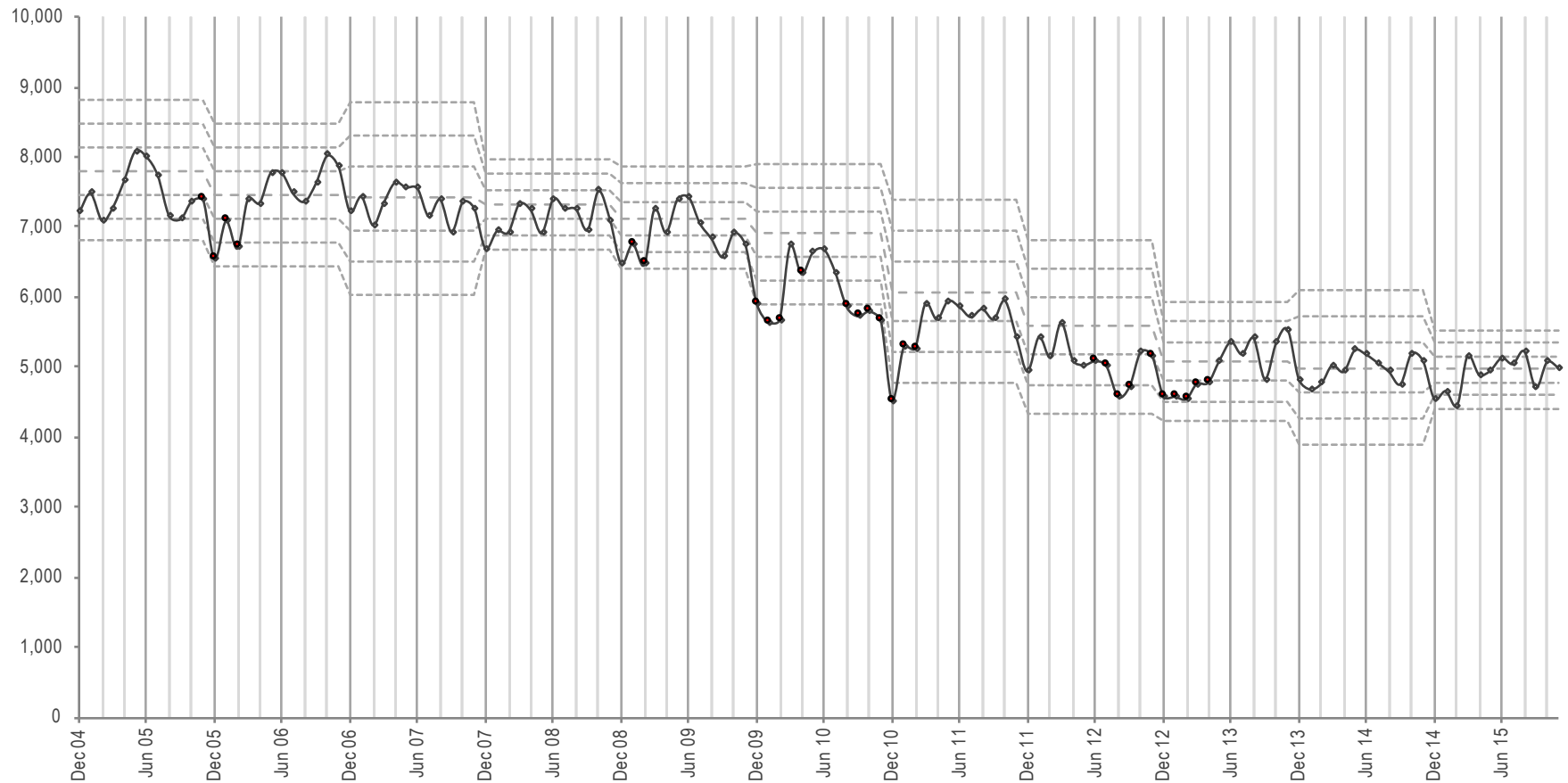| System 1	System 2
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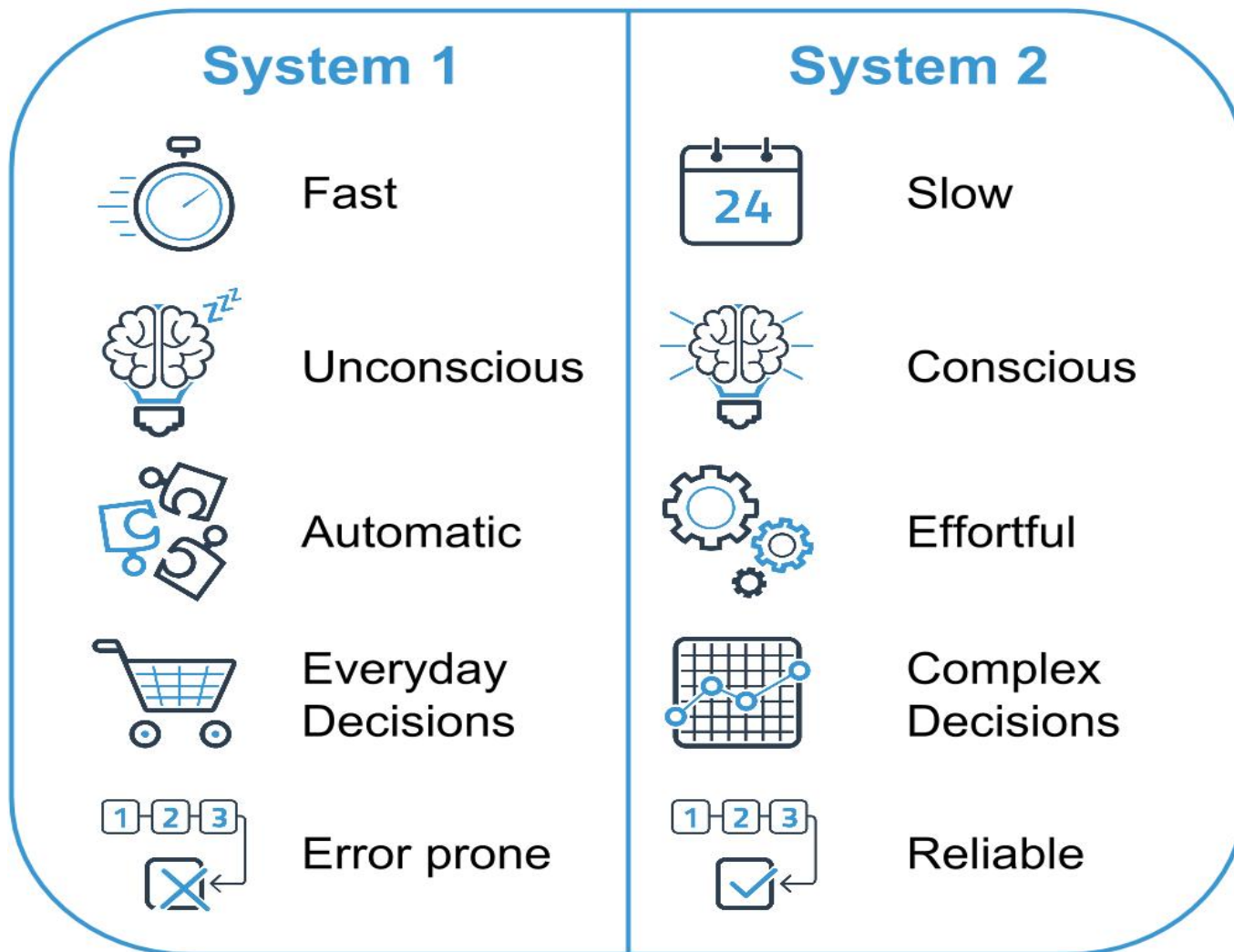
System 2 – Try to answer this question?

$$16 \times 23 =$$

$$368$$

System 1 fails to consider 'Regression to the Mean'

"Unusually large or small measurements tend to be followed **(naturally)** by measurements that are **closer to the mean** (average)." (Barnett et al, 2004)."

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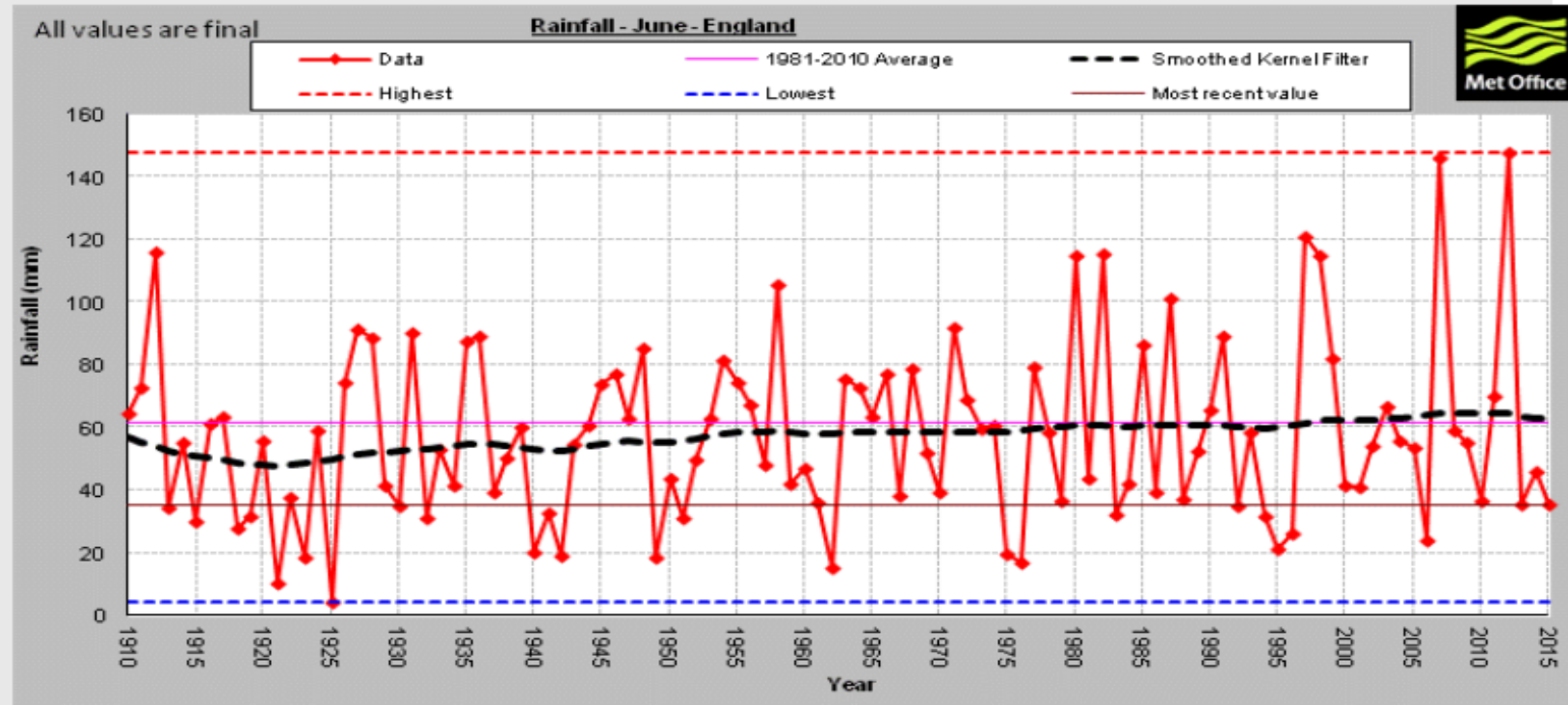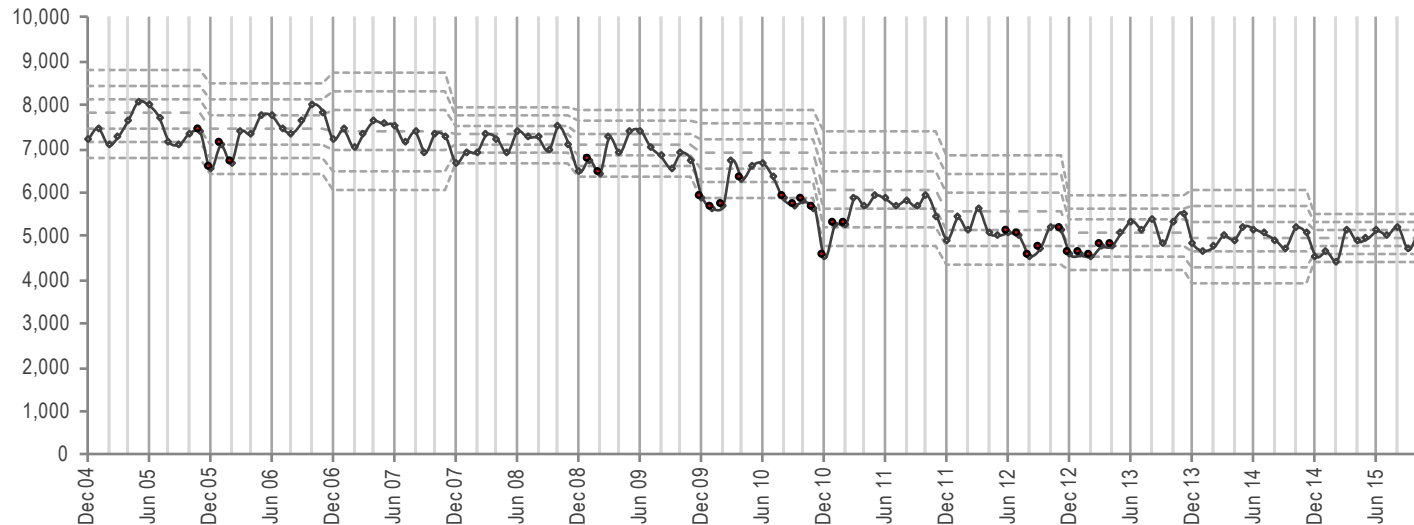
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Regression to the mean can 'prove the effectiveness' of almost any intervention.

People more likely to take action when a **score is as its peak.**

They often **fail to take an evidence based approach** to test their intervention.

After results **naturally become more normal** they believe that their action caused this change, when in fact a **regression to the mean** may be a more likely reason.

We must test our intervention with an evidence based approach.

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# Curse of Player of the Month or Regression to the Mean?

Month	Jamie Vardy Goals	Awards Given
Aug	2	None
Sep	4	None
Oct	5	**Premier League Player of the Month**
Nov	3	**Premier League Player of the Month**
Dec	1	None
Jan	1	None
Average Aug 2014 – Jan 2016	**1.31 goals per month**	

"Unusually large or small measurements tend to be followed by measurements that are closer to the mean (average)." (Barnett et al, 2004)."

The only way we can confirm a cause is to test our theory using an evidence based approach.

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System 1 struggles to recognise that "Correlation Does not Mean Causation"

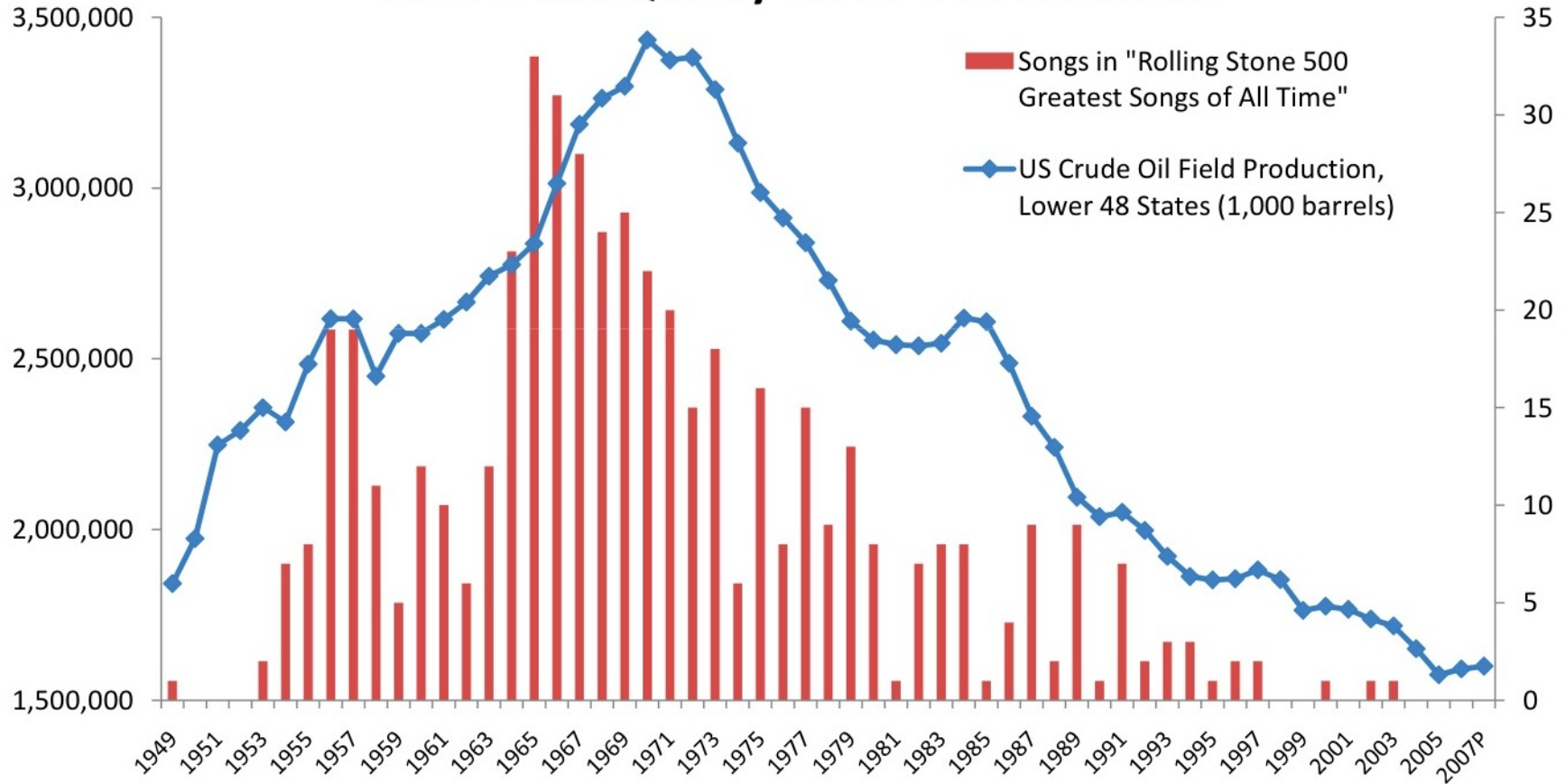System 1 tends to believe that **just because two events occur at the same time** that **one causes the other**.
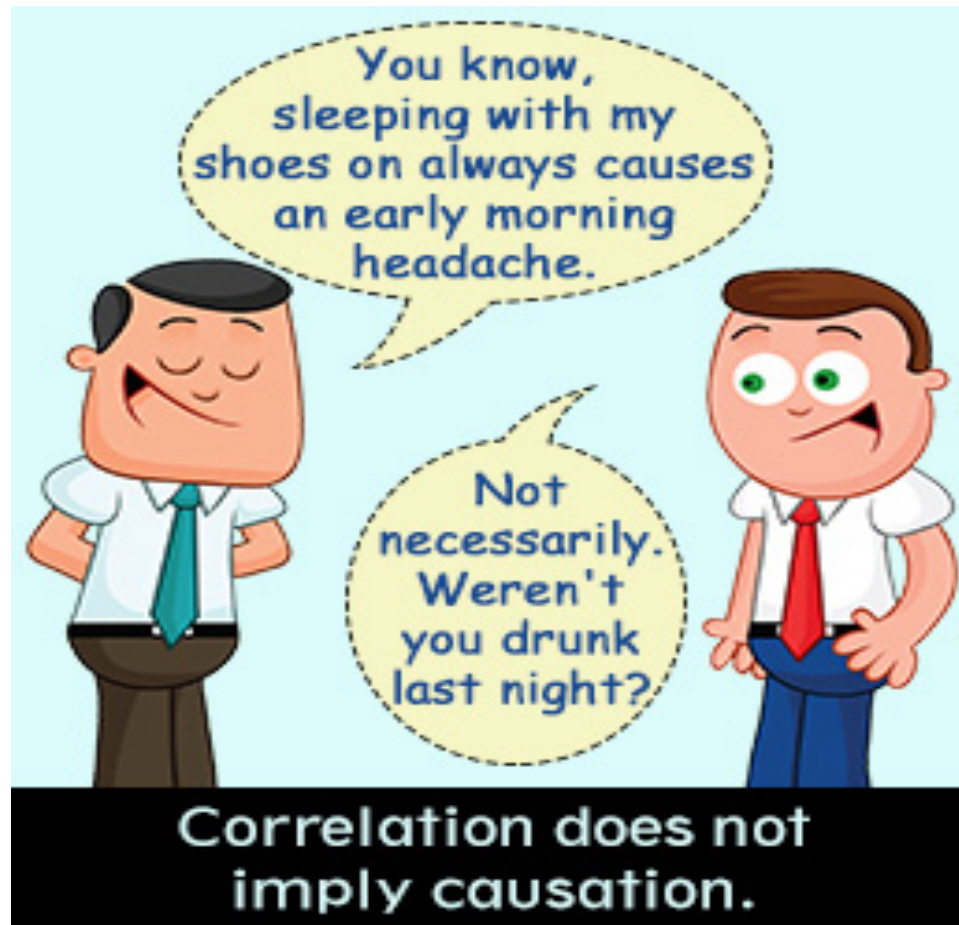
Why Does This Matter?

We often claim that our activity caused a crime drop just because they occurred at the same time **WITHOUT any evidence based evaluation.**

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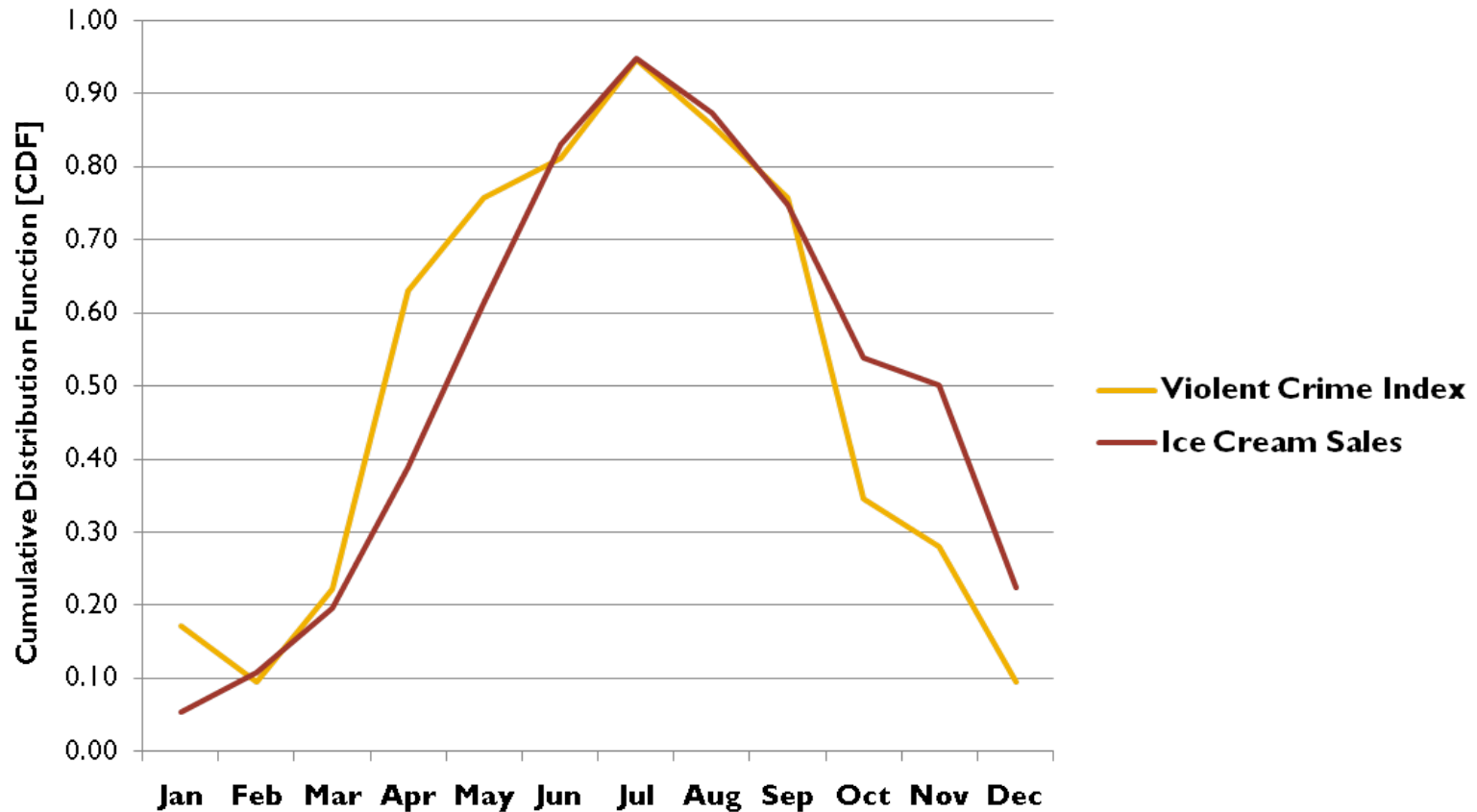
Some Examples of Correlations!

Rock Music Quality vs. US Oil Production

Some Examples of Correlations!

Fig. 1
**IS FACEBOOK DRIVING
THE GREEK DEBT CRISIS?**

750m users

*Number
of active
Facebook users*

3.6

16.82

5.5m users

*Yield on 10-year Greek
government bonds*

2005

2011

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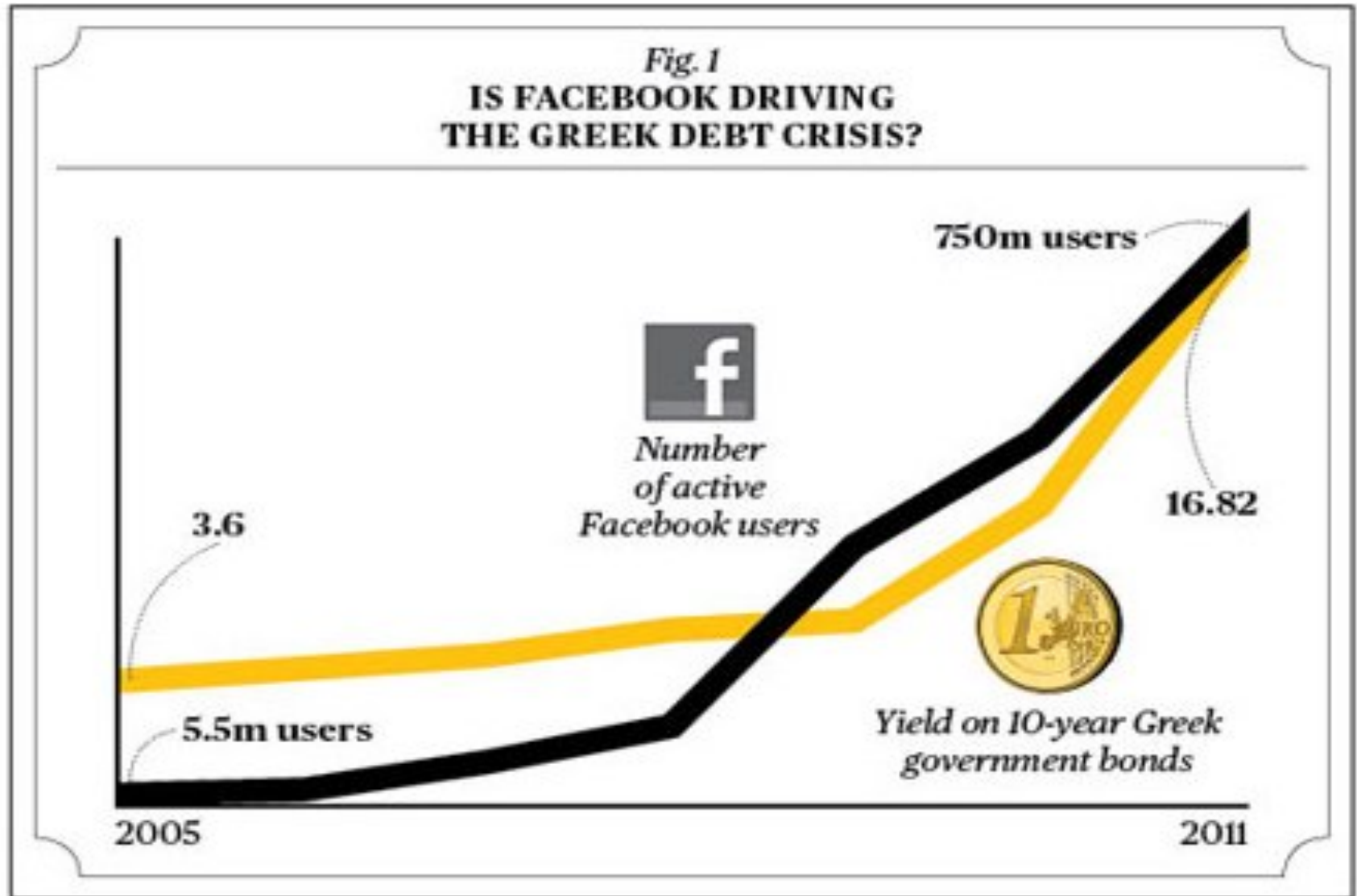
How do you go from bottom to top of the league within one season?

Is King Richard III's Re-Burial Sparking Leicester City's Improbable Rise?

by **Marcus Kwesi O'Mard** on Wed, Mar 23, 2016 at 6:08PM 🔥 1,987 🐦 Follow @NESNSoccer

King Power: How Richard III is inspiring Leicester to Premier League title glory

Spooky stats show dead king has improved Foxes' win rate

Is Richard III responsible for Leicester City's title form?

By **Barry_Cooper1** | Posted: February 02, 2016

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17

How do you go from bottom to top within one season?

	29 games before Richard III Re-interment	29 games after Richard III Re-interment
Points	19	**62**
Points Per Game	0.65	**2.13**
Win Percentage	13.8%	**65.5%**

"The re-interment of Richard III has caused Leicester City to win more games. This could be because the event made the people of Leicester feel pride which then drove them to support their team with more passion".

We must test our theory with an evidence based approach.

Availability Bias – "If I can imagine it, then it must be likely!

"People assess the probability of an event by **the ease with which instances or occurrences can be bought to mind**" (Tversky and Kahneman, 1974:425).

When evaluating an operation, our availability bias often means we **ignore statistical evidence** and instead rely on **vivid, single events or our own experience that are easily remembered** but may not be representative of the majority.

Availability Bias – Cause of Death, USA 2013

Motor Vehicle Accidents

35,369
(29,231/- **17.3%**)

Heart disease

611,105
(32,965/ - **94.6%**)

Murder as a result of firearms

11,208
(17,566/**+ 56.7%**)

http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm

We must test our intervention with an evidence based approach.

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# A system 1 response to a problem in a well known town!

- One type of incident reaches an **unusually high peak.**

- Media, public, political exposure contributes to an **availability bias** that these incidents are a big problem justifying an expensive response.

- After the high peak, **incident numbers fall to a more normal level**… which would have likely occurred even if no action was taken given that "***Unusually large or small measurements** tend to be followed **(naturally)** by measurements that are **closer to the mean** (average)."*

- The presence of the response **occurs at the same time as the drop in incidents** leading to the biased conclusion that one has caused the other.

- https://www.youtube.com/watch?v=OkV_ztynYDM

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So how can I protect against heuristic and biases?

By taking an evidence based approach.
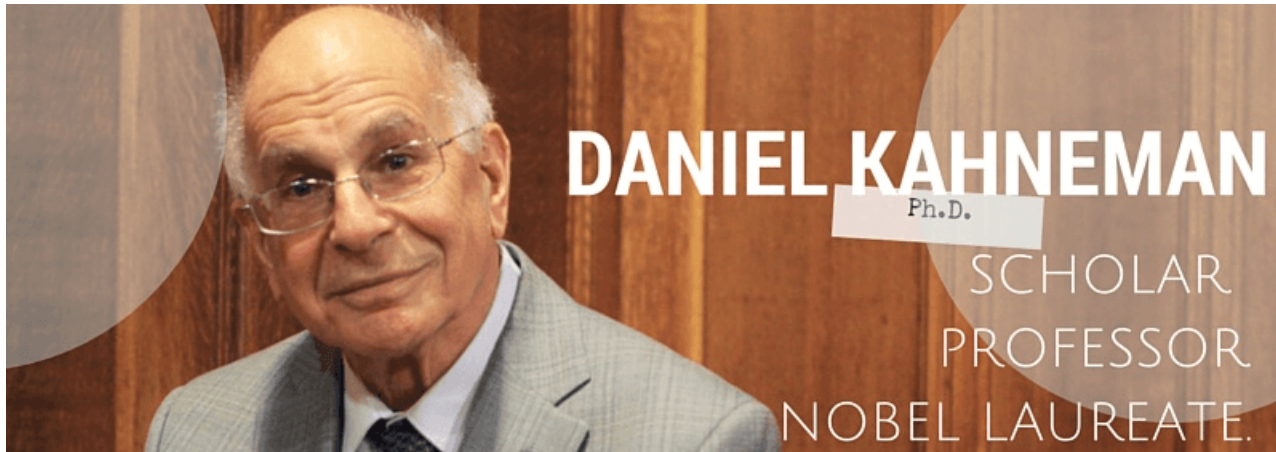
"In order to conclude that a treatment is effective you must compare a group of patients who receive this treatment to a "control group" that receives no treatment" (Kahneman, 2011:183).