Robust Maize Research

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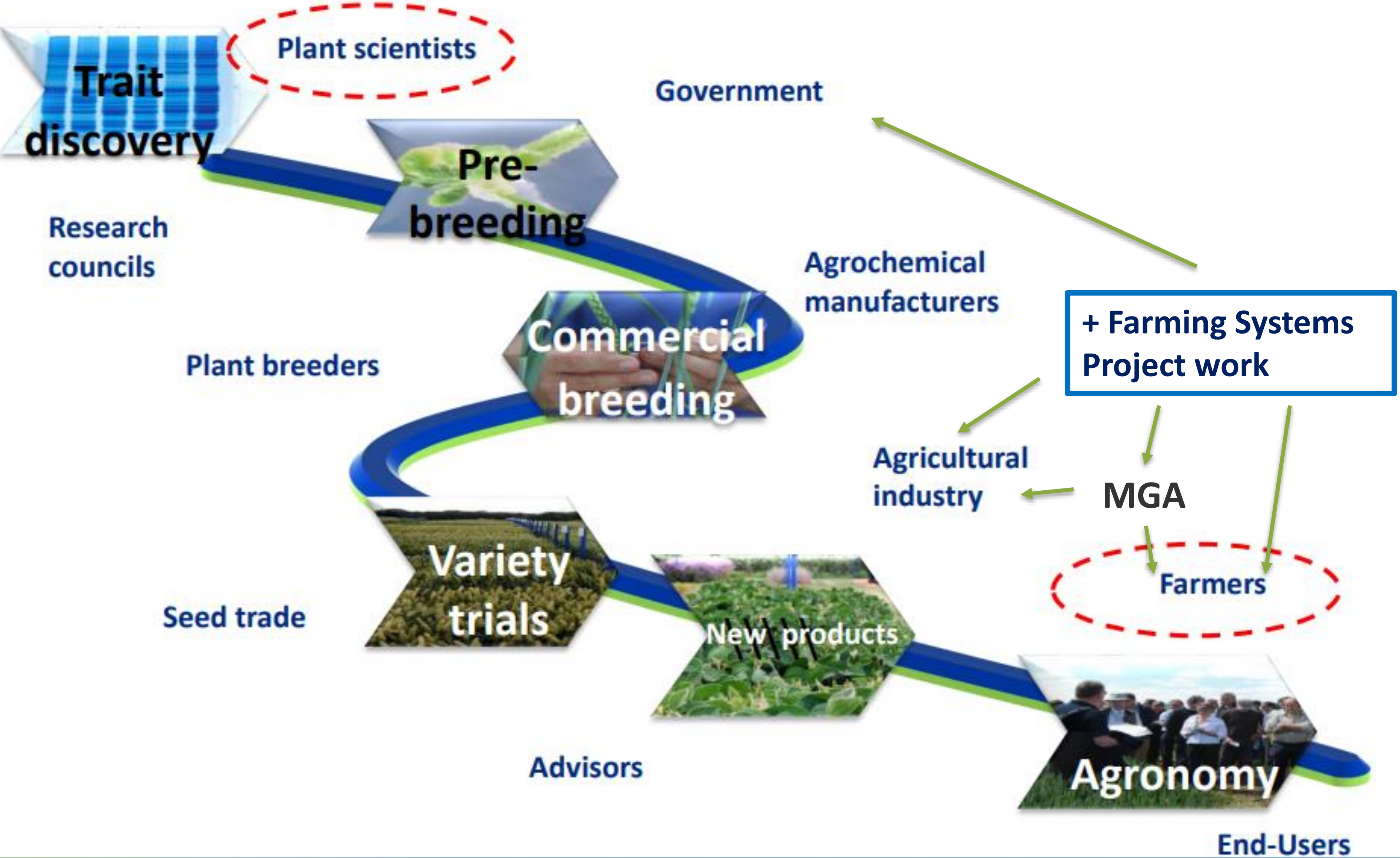
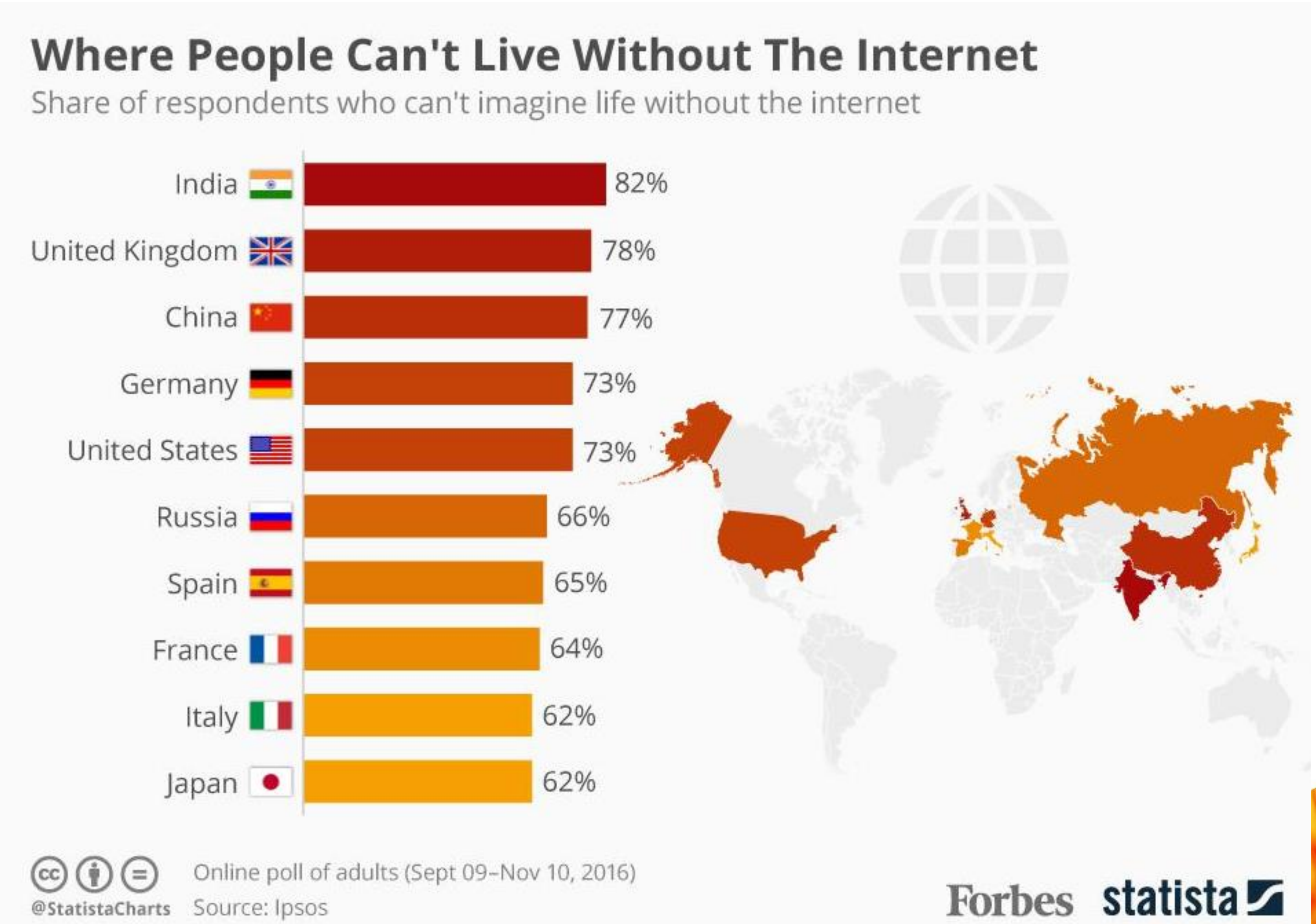
Knowledge Transfer 'pipeline'




Where People Can't Live Without The Internet
Share of respondents who can't imagine life without the internet
India 82%
United Kingdom 78%
China 77%
Germany 73%
United States 73%
Russia 66%
Spain 65%
France 64%
Italy 62%
Japan 62%
Online poll of adults (Sept 09–Nov 10, 2016)
Source: Ipsos
@StatistaCharts
Forbes
statista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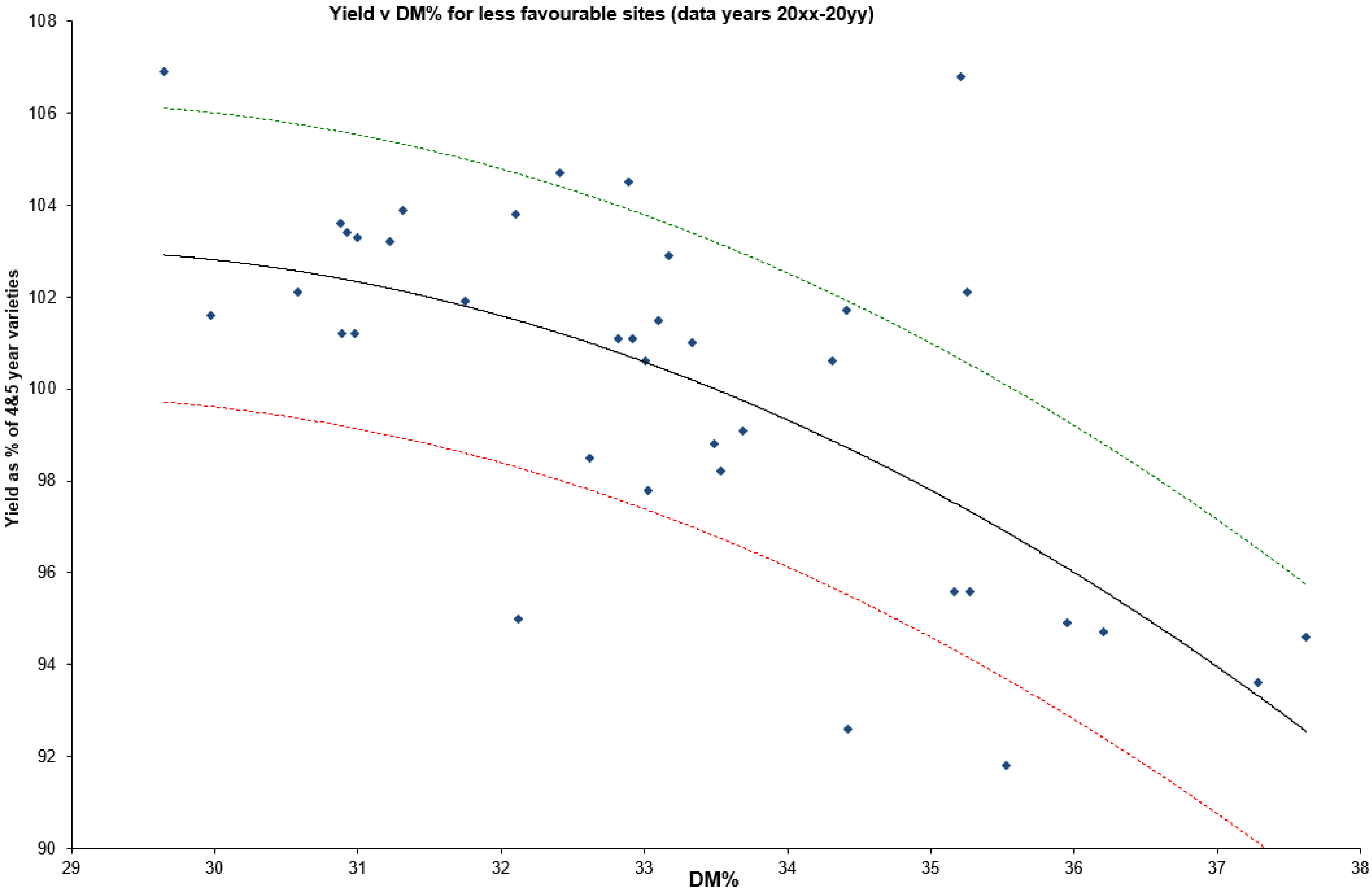
Bias, Correlation & Statistics

- Conscious/Unconscious Bias – importance of independence
- Systematic and objective investigation
- Inherent natural variation
  - Range of circumstances and conditions for most meaningful, applicable results
- Primary purpose of statistical analysis:
  - Summarise sets of data so trends can be identified
  - Determining probability of cause and effect – statistical test of significance
- The more variable the data, the more statistical analysis is required to make sense of it.

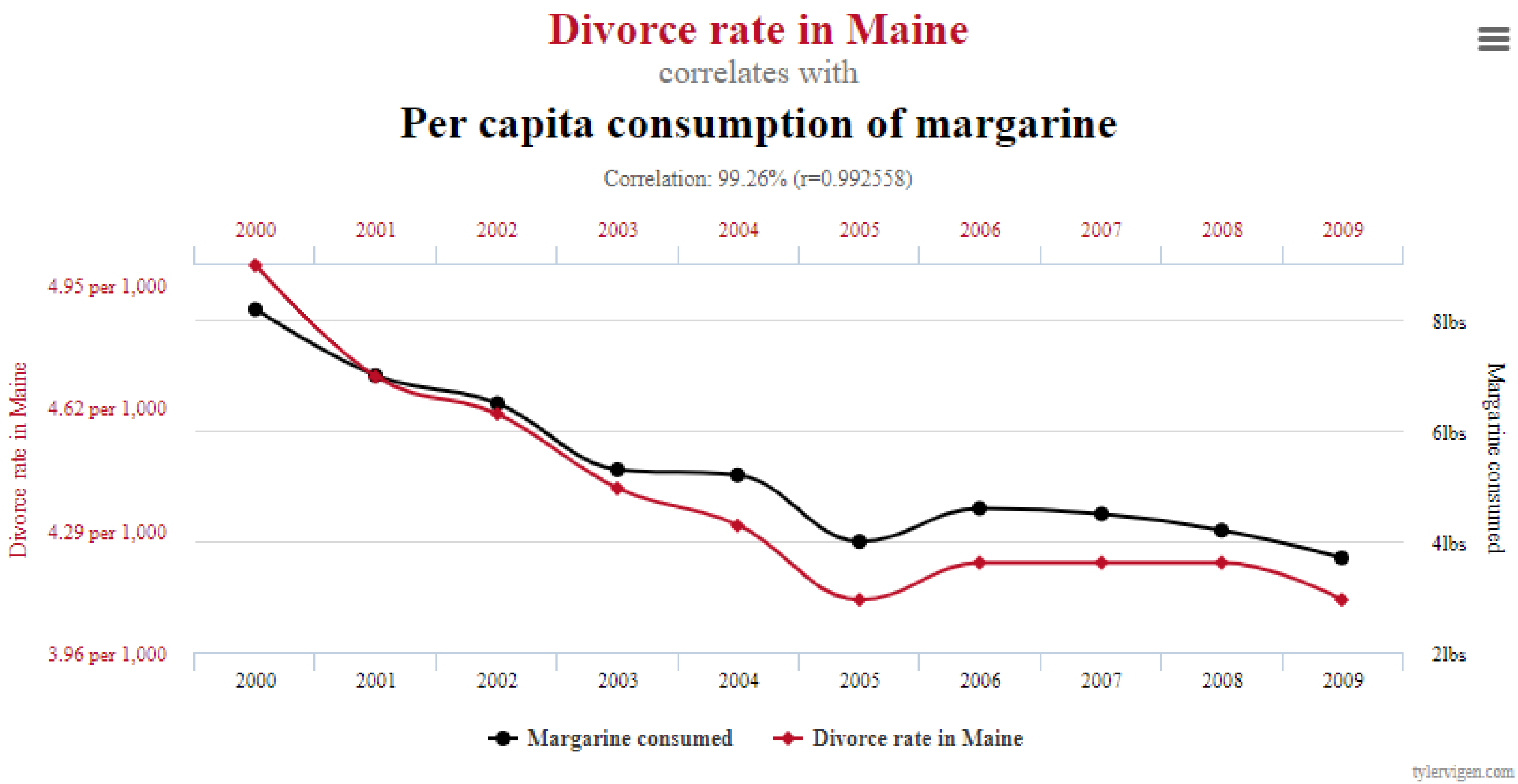
Bias, Correlation & Statistics

- Outliers & data smoothing – data validation – easier on large data sets
- Outliers increase the variability in data, which **decreases statistical power**. Consequently, excluding outliers can cause your results to become statistically significant
- **Data smoothing** can be defined as a statistical approach of eliminating outliers from datasets to make the patterns more noticeable.



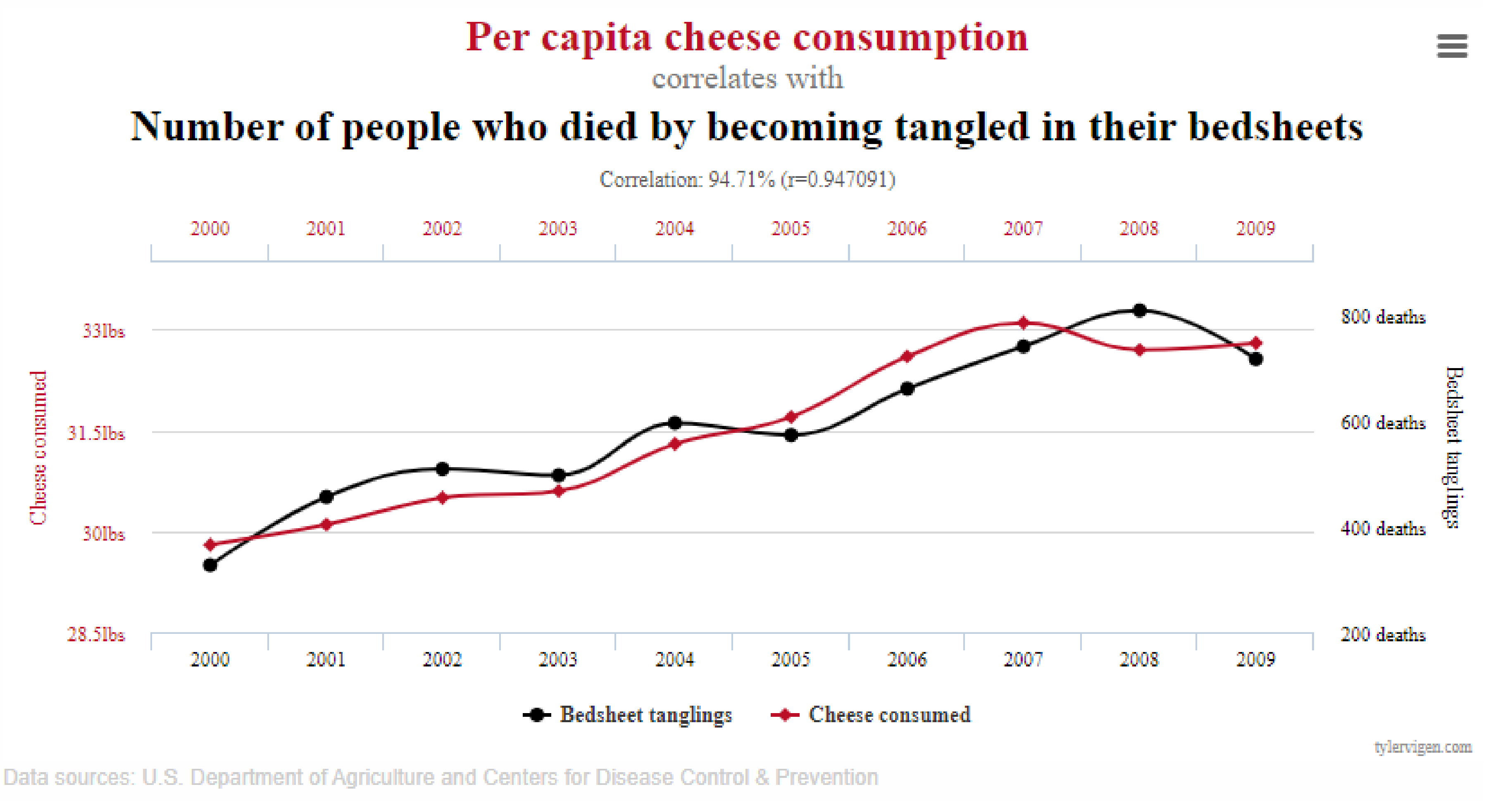
Yield v DM% for less favourable sites (data years 20xx-20yy)
Yield as % of 4&5 year varieties
DM%
108
106
104
102
100
98
96
94
92
90
29
30
31
32
33
34
35
36
37
38

Correlation versus causation



Data sources: National Vital Statistics Reports and U.S. Department of Agriculture

Correlation versus causation



Bias, Correlation & Statistics

- Stats are only as good as the systems & people behind them
- Who should be able to influence research and how influence can be exercised, without damaging the productivity and integrity of research is critical to research robustness and value.

Defra/APHA National Variety Listing Process

- Animal and Plant Health Agency (APHA)
  - Plant Varieties and Seeds Committee
- British Society of Plant Breeders (BSPB)
  - Maize Crop Group – breeders, growers and independents
  - Trial inspection and data validation
- NIAB
  - Manage VCU trial programme on behalf of BSPB, programme monitored and adjustments to approach proposed by BSPB Maize Crop Group & Technical Representative
- APHA National Lists & Seeds Committee
  - Recommendations put forward by Technical Experts for England, Wales, Scotland and Northern Ireland based on minimum of two years trial data
  - Value for Cultivation and Use (VCU) (UK trials)
  - Distinct, Uniform and Stable (DUS) reports purchased from EU

Descriptive List Forage Maize Trial Programme

- British Society of Plant Breeders (BSPB)
    - Maize Crop Group – breeders, growers and independents

- NIAB
    - Manage VCU trial programme on behalf of BSPB, programme monitored and adjustments to approach proposed by BSPB Maize Crop Group & Technical Representative

- Annual Decision Panel meeting
    - First and second choice listing
    - Favourable, Less Favourable and Very Favourable
    - Breeders, growers and independents

Descriptive List Forage Maize Trial Programme

- Kent
- Hampshire
- Dorset
- Devon
- Somerset
- Gloucestershire
- Wiltshire

13 sites

- Norfolk
- Cambridge
- Lincolnshire
- Nottinghamshire
- Cheshire
- North Yorkshire

- **Soil types, topography, climate**
- **Varieties perform differently**

the more **data points,** the **wider** the **test circumstances,** the more **robust** the test and the more **reliable** the outcomes

Descriptive List Forage Maize Trial Programme

- 4&5 year data sets in matrix
- Reviewed by a panel of industry experts, breeders, farmers and independents
- Independently overseen, inspected and validated by NIAB and BSPB

Trial Programme Management Priorities

- All varieties or treatments are managed fairly & consistently in replicated trials
- No variety or treatment disadvantaged by:
  - Field conditions
  - Location
  - Husbandry practice
  - Bias
  - Timing of treatments or assessments
- Consistent data collection
- Independent panel data validation
  - Valid
  - Reliable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WARNING

Thank you for listening!
Any Questions?

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