



Statistical Literacy

by Milo Schield

Gartner 2018 Data and Analytics Summit



Milo Schield
Schild@Augsburg.edu

13 years experience in business.

- Sr. Consultant and Sr. Operations Research Manager

Over 20 years experience with statistical literacy:



- Designed the first statistical literacy course in 1998
- #1 website www.StatLit.org: 280,000 visits in 2017
- 70 papers on statistical literacy with 660 citations.
- Described as “the movement’s leading voice.”

Marc Isaacson
Marc@Quant-Fluent.com

10 years experience in business
 15 years experience in Statistical Literacy

2003: Designs first online statistical-literacy course
 Designed assessment activities and questions
 Assessed undergrad and MBA students

Statistical Literacy
Competency and Assessment

Analyzed the use of statistics:



- Analyzed graphs in USA Today
- Analyzed tables in the US Statistical Abstract
- Analyzed statistical ideas in Harvard case studies

Identified over 100 specific competencies:

- Created over a thousand questions or activities

Assessed statistical literacy competency world-wide

- US undergrad & MBA students: Over a thousand.
- Teachers in high-school and college: US , Australia & South Africa
- Professional data analysts in Census Bureau: US & South Africa



Statistical Literacy

Statistically literate: *able to read, interpret and evaluate statistics as evidence in arguments.*

Audience is consumers:
 those who use statistics to make decisions

What are the two most fundamental ideas?

1. Statistics are numbers in context
2. All statistics are socially-constructed.



Statistics: numbers in context

Statistics are numbers in context; **the words matter!**
 Numbers: 6 plus 7 = 13. 60% + 70% = 130%

Company has 60% market-share on East half of US;
 a 70% market-share on West half.

What is their market share in the entire US?

130%? No!!! ‘Market share’ changes the context.

Statistics: socially constructed

Statistics are like diamonds!

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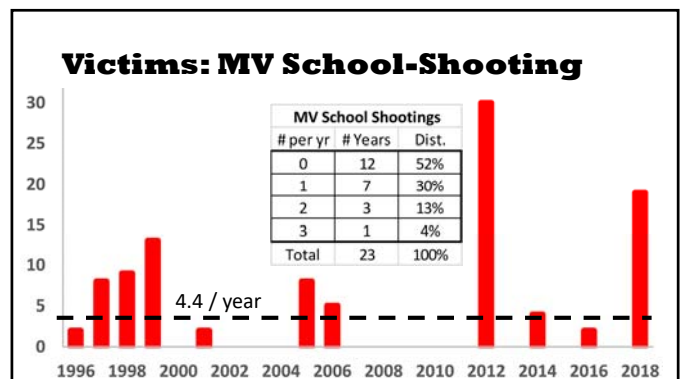
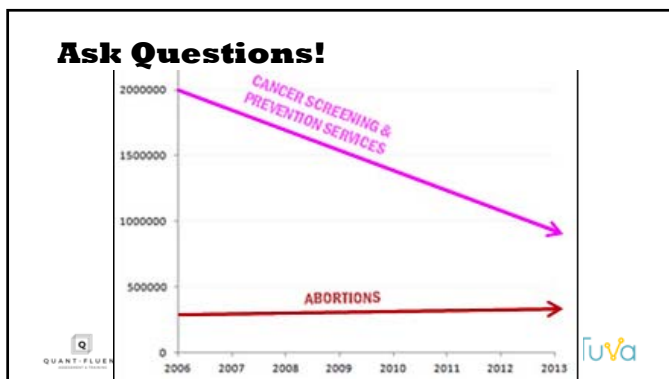
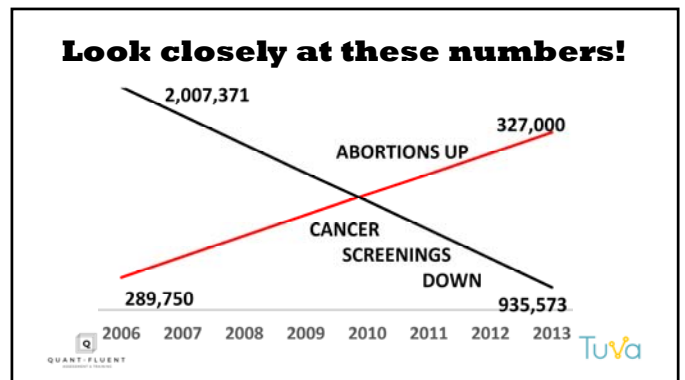
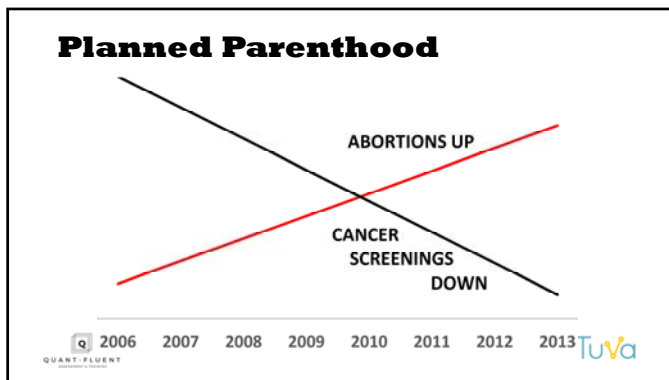
Gatlinburg: \$95/night

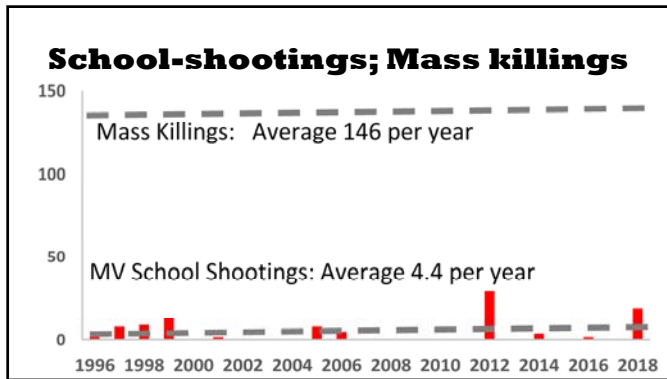
Avg rate per night

\$95

Excludes \$162.00 daily property fee

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Statistical Literacy: An Art! Evaluate Strength of Evidence

Classify all the influences on a statistic into four groups:

- C: Context/confounding:** Study design; effect size; control for; ordinary English for rates, %.
- A: Assembly:** definitions, groups and measures
- R: Randomness:** margin of error, statistical significance; Coincidence; Confounder effect on statistical significance
- E: Error or Bias** (subject, measurement and sampling)

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Assess Statistical Literacy

Two Types of Assessment
Self-report (attitudes) vs Competency (skills)

Competency Based
Quant-Fluent and TUVA

<https://gartnerdatasummit-demo.tuvalabs.com/>
www.Quant-Fluent.com

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Schedule a meeting!

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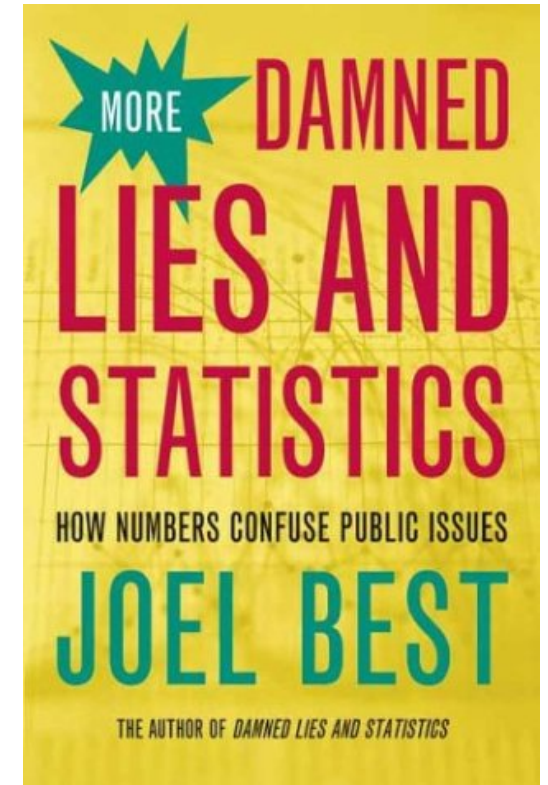
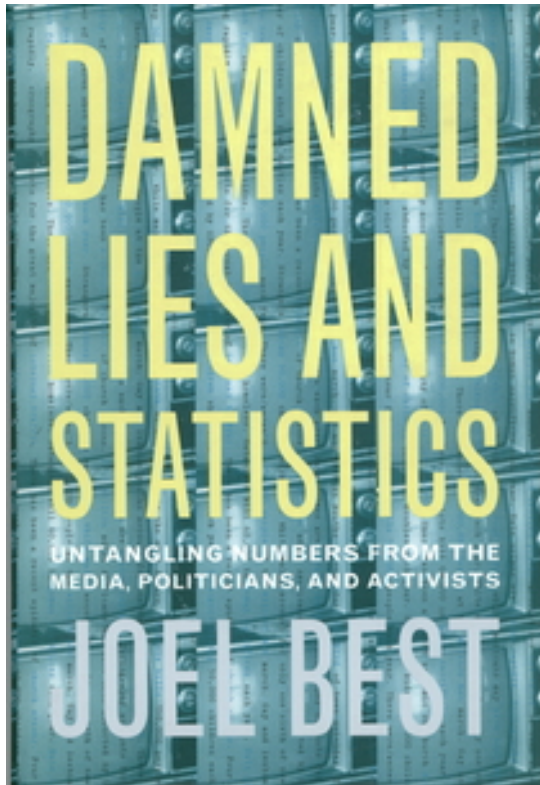
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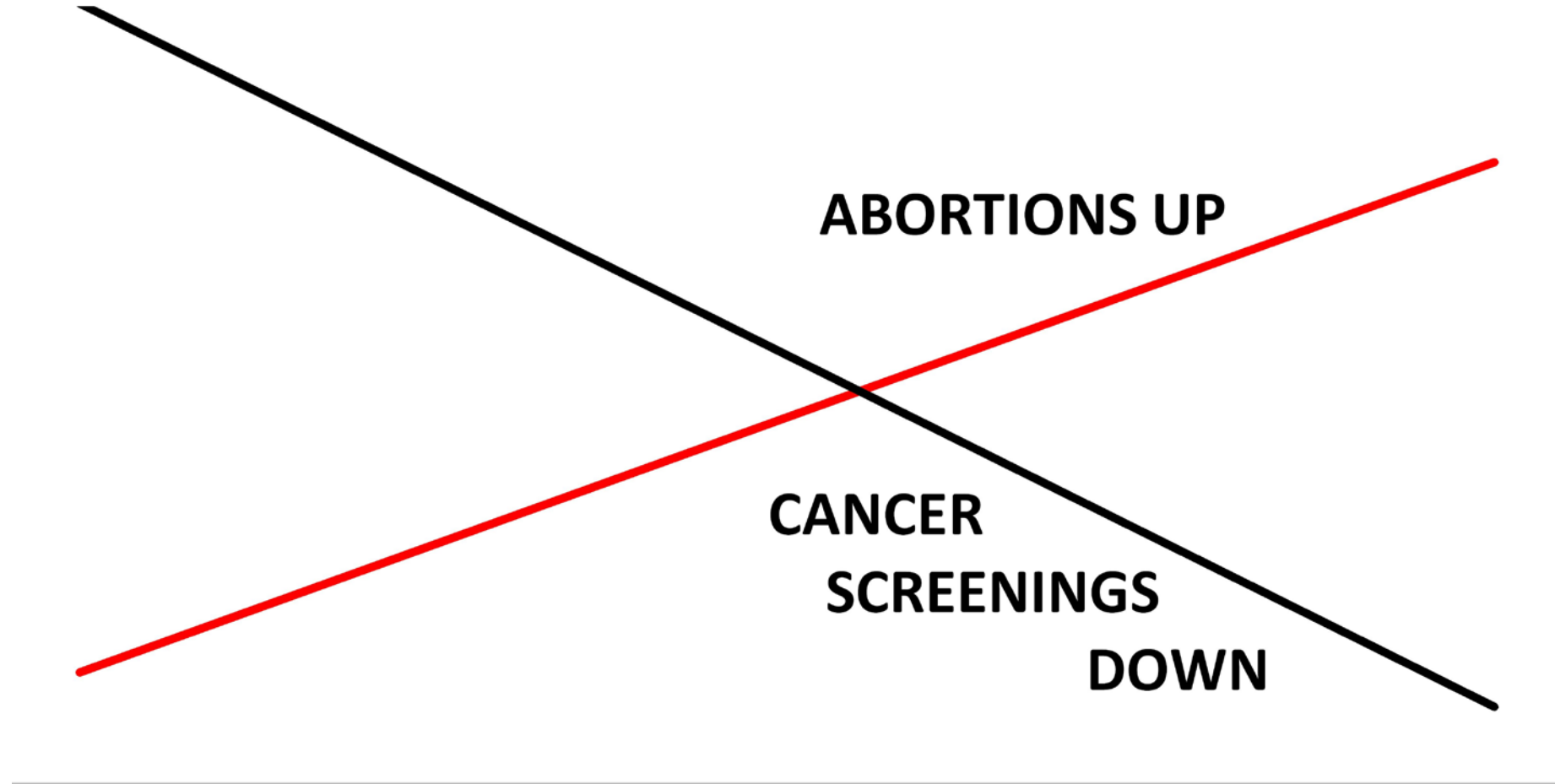


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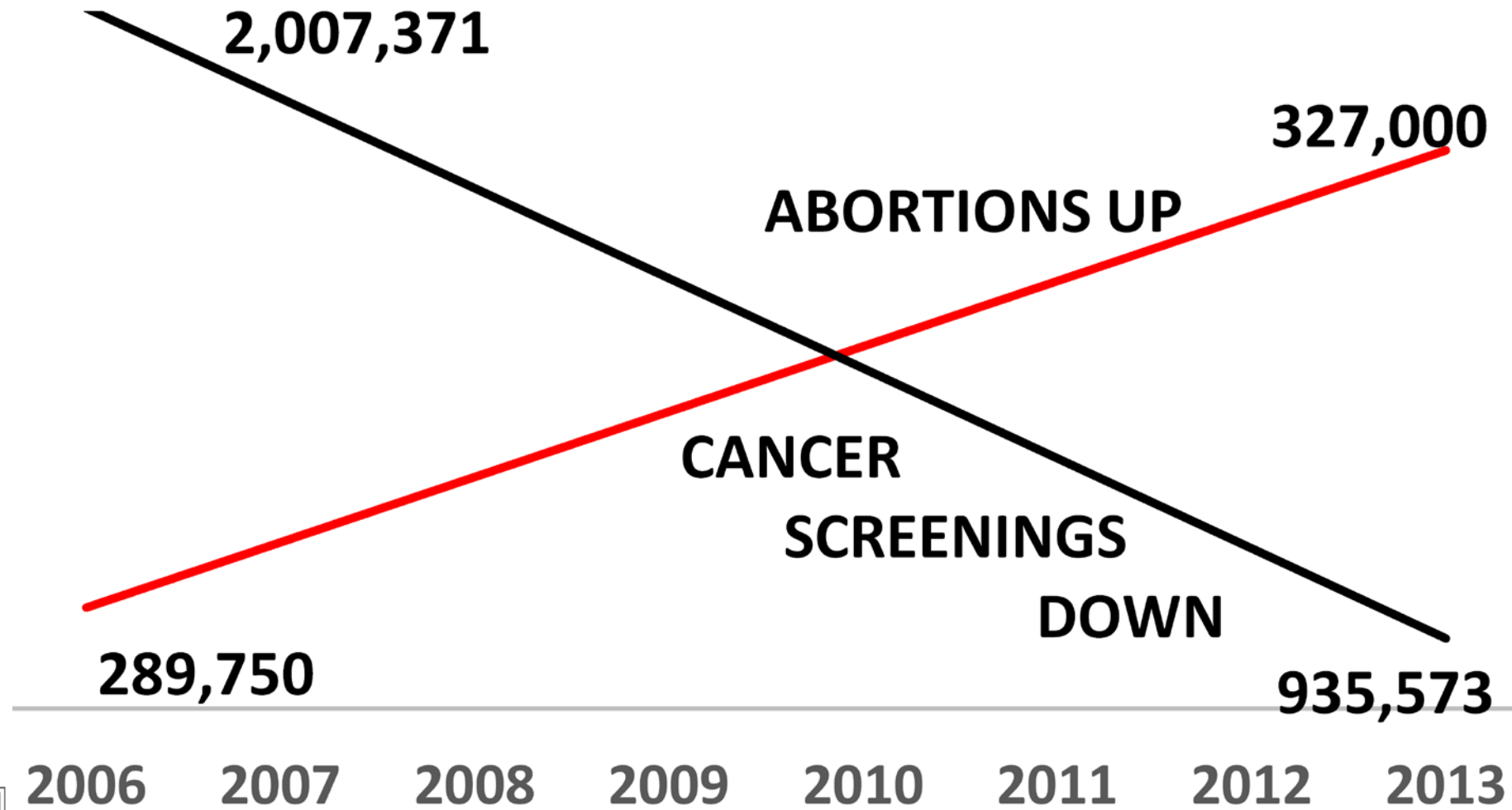
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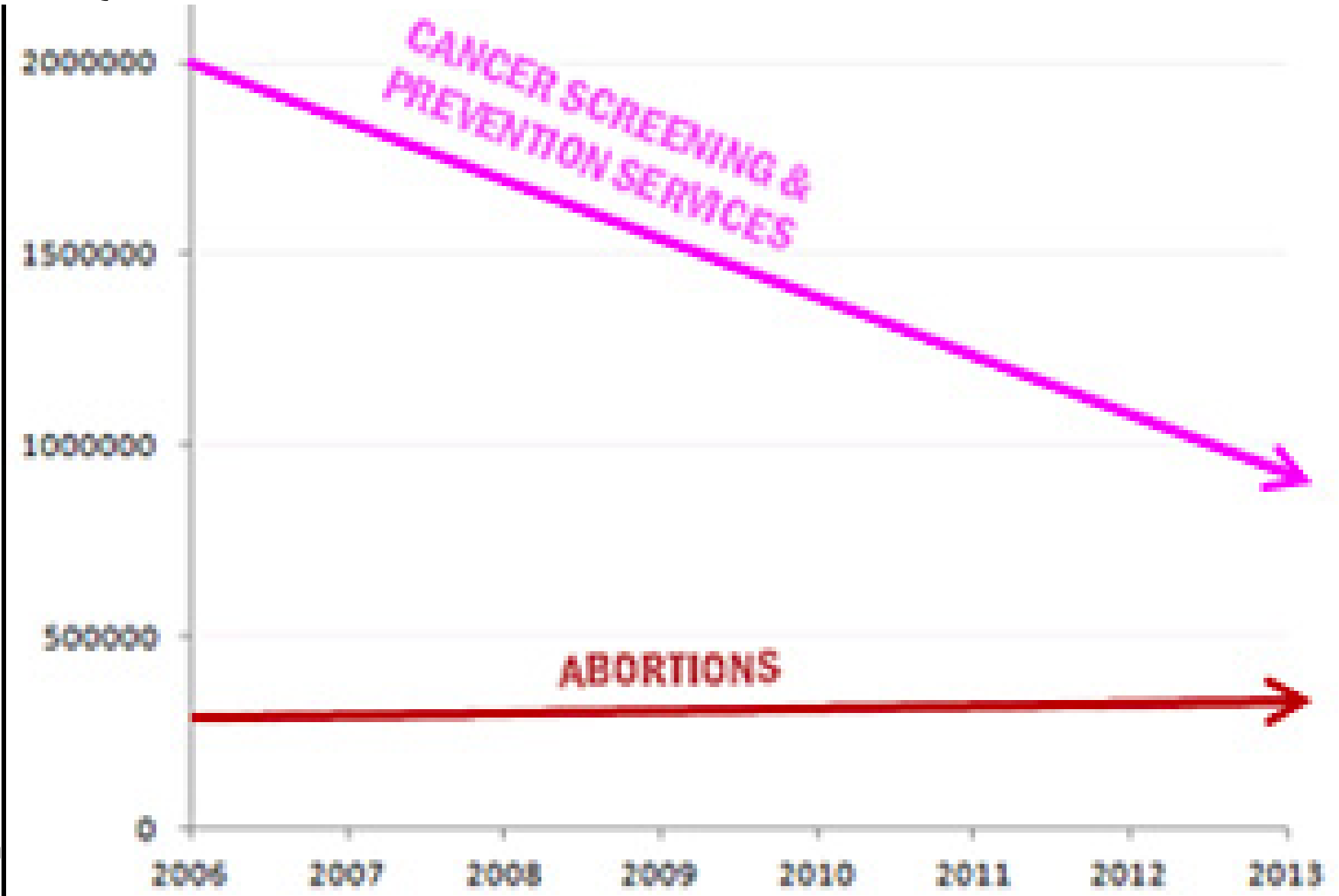
Planned Parenthood



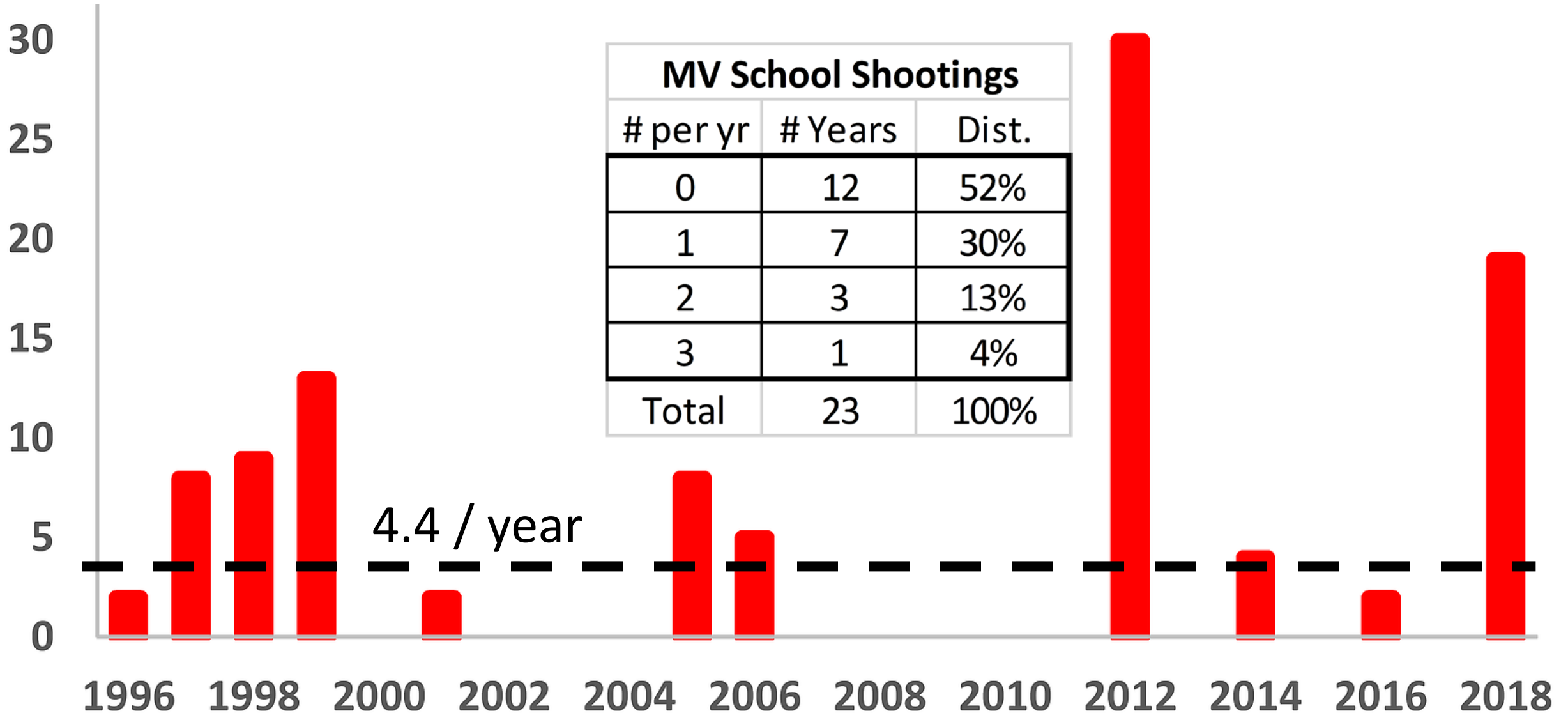
Look closely at these numbers!



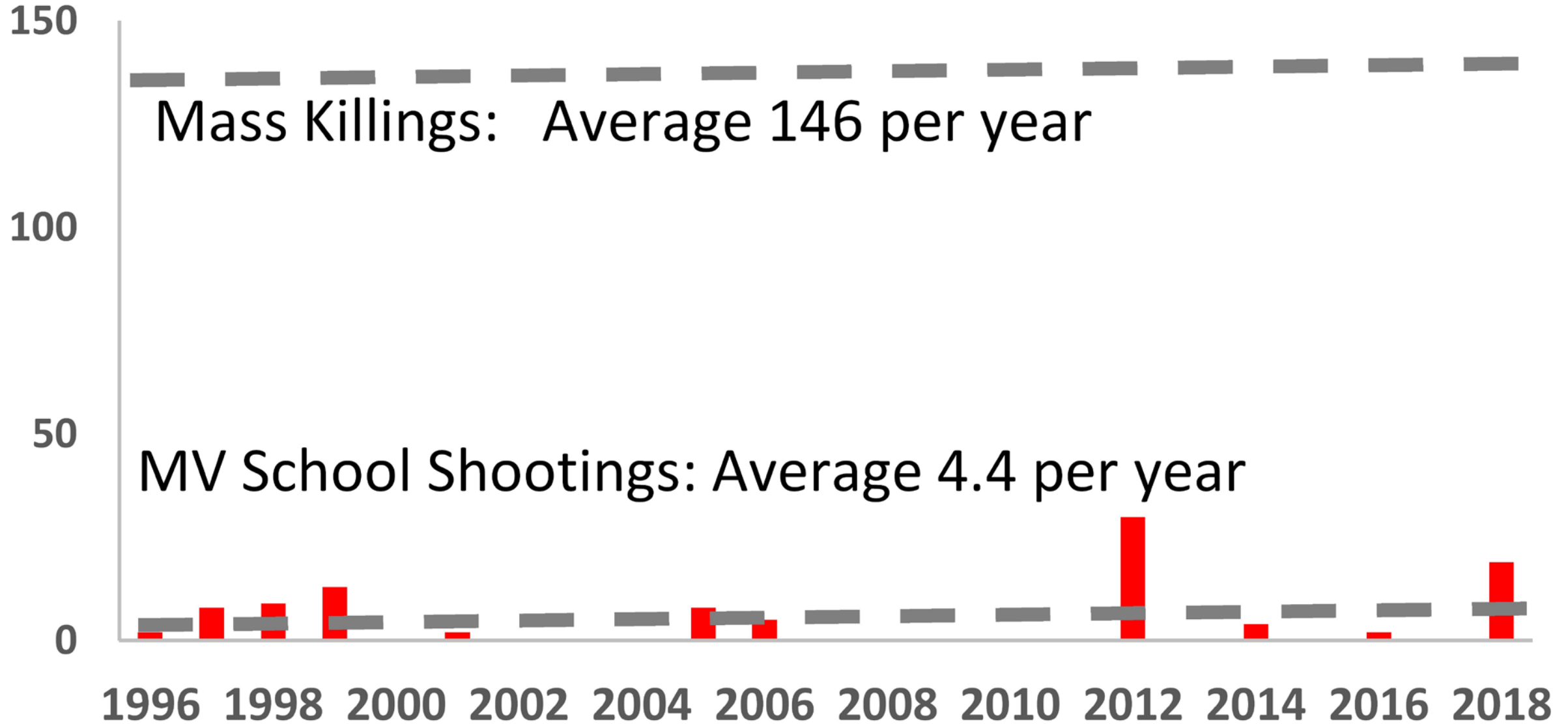
Ask Questions!



Victims: MV School-Shooting



School-shootings; Mass killings



Statistical Literacy: An Art!

Evaluate Strength of Evidence

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