

2. Which statistic do we want?

- (a) We want to compare the safety of driving versus flying. I found the following statistics:
- i. In 2009, there were 20 fatal air accidents resulting in 757 deaths.
 - ii. In 2009, there were 33,808 fatalities in 30,797 fatal crashes due to US highway accidents.
 - iii. In 2008, there were no fatalities on US airlines
 - iv. In 2008, there were 37,423 fatalities due to US highway accidents.
 - v. In the US in 2009, there were 1.13 deaths per 100 million vehicle miles traveled.
 - vi. For US carriers from 1991-2000, there were 938 fatalities in 31 fatal accidents, 145 million flight hours, and 59.7 billion miles flown
 - vii. In 2008, there were 583,506 million passenger-miles on US airline carriers
 - viii. From 1991-2000, there were 4,320,687 passenger-miles on US airline carriers
 - ix. In 2008, there were 4,871,683 passenger-miles on US highways.

What different comparisons can you make using these numbers? Which do you think most accurately reflects the relative safety?

- (b) Suppose an advertisement for a vacuum cleaner contains the information "Removes 54% more dust, and 43% more cat hair". What does the advertiser want you to conclude? What other possibilities could lead to this same statistic?

- (c) Suppose that for some company over the last year, their profits increased from 1 million to 1.5 million. The wages paid to their employees increased from 25 million to 26 million. Which number showed the largest actual increase? Which showed the largest percentage increase?

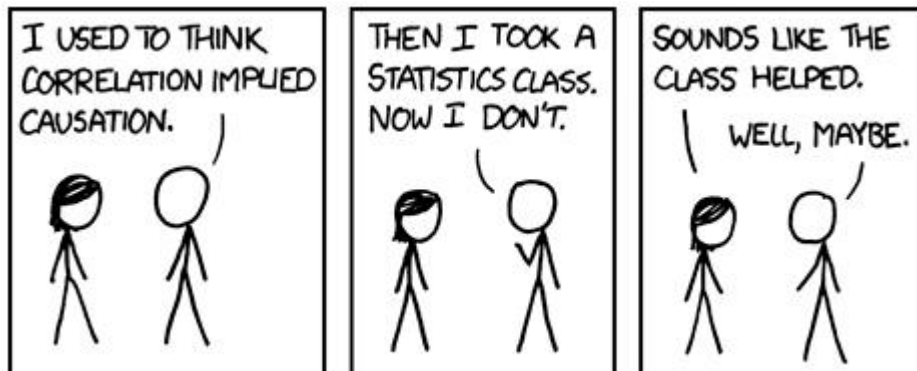
3. Correlation, Causation, and Confusion

(a) Many studies have tried to determine the effect of replacing fats with seed oils in the diet. An overview of these studies found:

- i. Interventions that replaced animal and trans fat with seed oils that were rich in LA but low in omega-3 caused a non-significant trend toward increased heart attacks (13% increase) and overall mortality.
- ii. Interventions that replaced animal and trans fat with a combination of LA and omega-3 fats significantly reduced heart attacks (by 22%). The numbers for total mortality followed a similar trend.

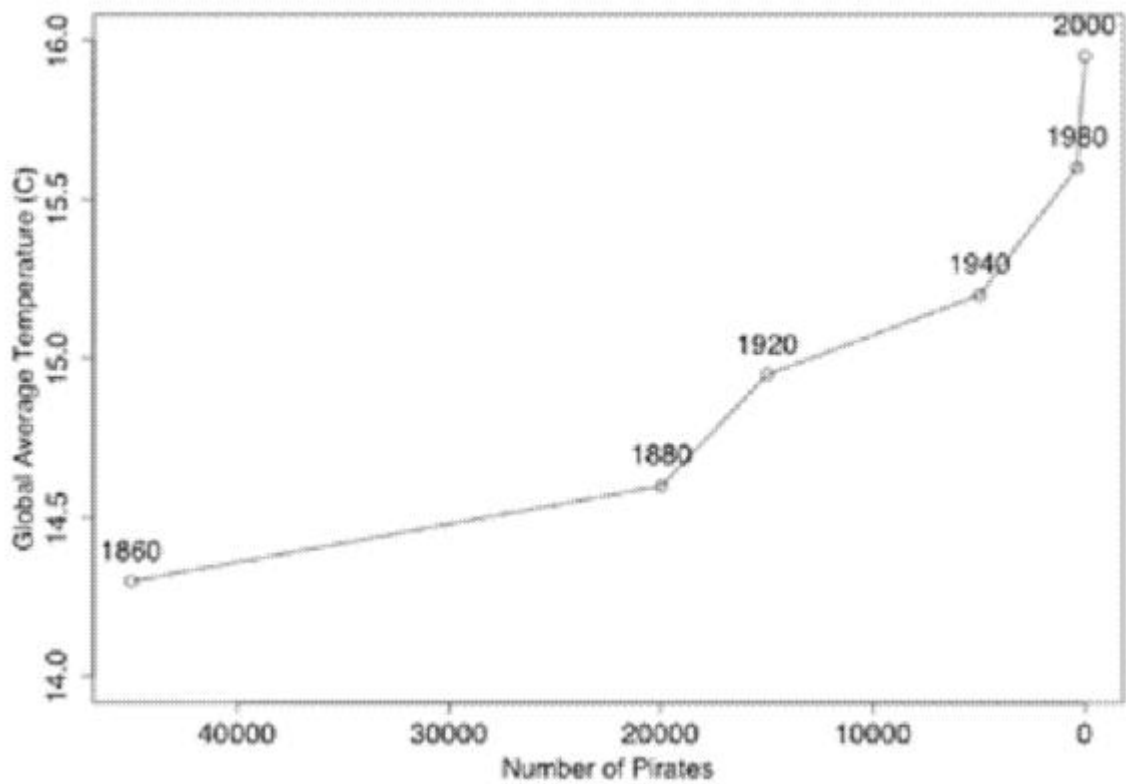
(Source: <http://wholehealthsource.blogspot.com/>)

Do these studies actually tell us anything about the results of replacing animal fats with seed oils in the diet? What conclusions can we draw from this data?



(b)

- (c) The SIDS rate decreased from 1.2 per 1,000 births in 1992 to 0.53 per 1,000 births in 2003. In 1992, The American Academy of Pediatrics started recommending that babies sleep on their backs. What can we conclude about putting babies to sleep on their backs?



- (d)

