

What's Going On?

Checking In

Minds on

Very Convincing...

Action!

Interpreting Statistics in the Media

Consolidation

Changing Your World View

Learning Goal - I will understand how statistics and graphs can be manipulated to misrepresent results.

Checking In

Real Value

The value of an investment less the effects of inflation.

Yesterday we were looking at the CPI.

We identified that the CPI increased by 23% between 2002 and 2013.

We then discussed an investment of \$2,000 made in 2002 that was worth \$2,500 in 2013.

We were asked to determine the "real value" of that investment. The idea here is to determine what value of money in 2002 would be worth \$2,500 today.

$$\frac{V \times 1.23}{1.23} = \frac{2500}{1.23}$$

$$V = 2032.52$$

Farm Product Price Index

The Farm Product Price Index (FPPI) follows the prices farmers receive for their products. In April 2008, the FPPI (1997 = 100) stood at 119.7. Sub-index weightings for 2008 were Crops 45.4% and Livestock 54.6%. Each sub-index is broken down into basic-indices representing, for example, grain, fruit, cattle, eggs, and so on.

Farm Product Price Index

a) Explain what is meant by 1997 = 100, and how it relates to 2008.

The FPPI was "reset" to a base level in 1997.

In 2008, the index was 119.7, indicating that 2008 prices are 1.197 times 1997 prices. This represents a 19.7% price increase.



b) In April 2008, the Crop sub-index had a value of 144.2 and the Livestock sub-index had a value of 99.4. Show how these values are used to determine the value of the FPPI.

Multiply each sub-index value by its weighting and divide by the total weighting (remember, it's a weighted mean!)

Crop → 45.4
Livestock → 54.6

$$\frac{45.4 \times 144.2 + 54.6 \times 99.4}{100} = 119.7$$

overall 19.7% increase

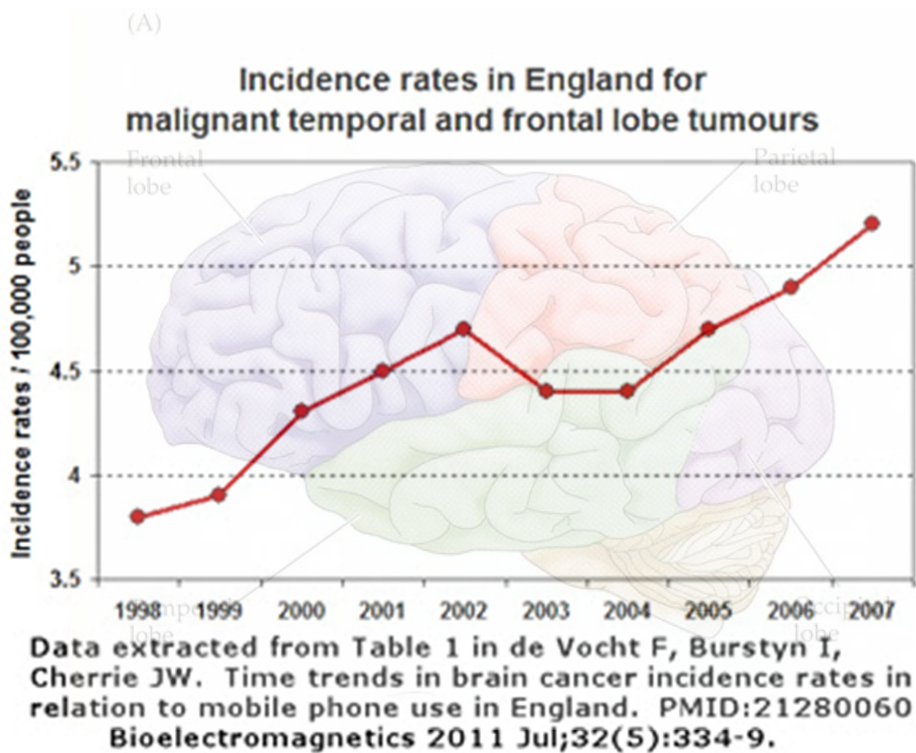
c) If the Crop sub-index increased by 1% from its April 2008 value and the Livestock sub-index decreased by 0.5% from its April 2008 value, calculate the new value of the FPPI.

$$\frac{45.4 \times 144.2 \times 1.01 + 54.6 \times 99.4 \times 0.995}{100}$$

$$= 120.1$$

Minds on

Very Convincing...

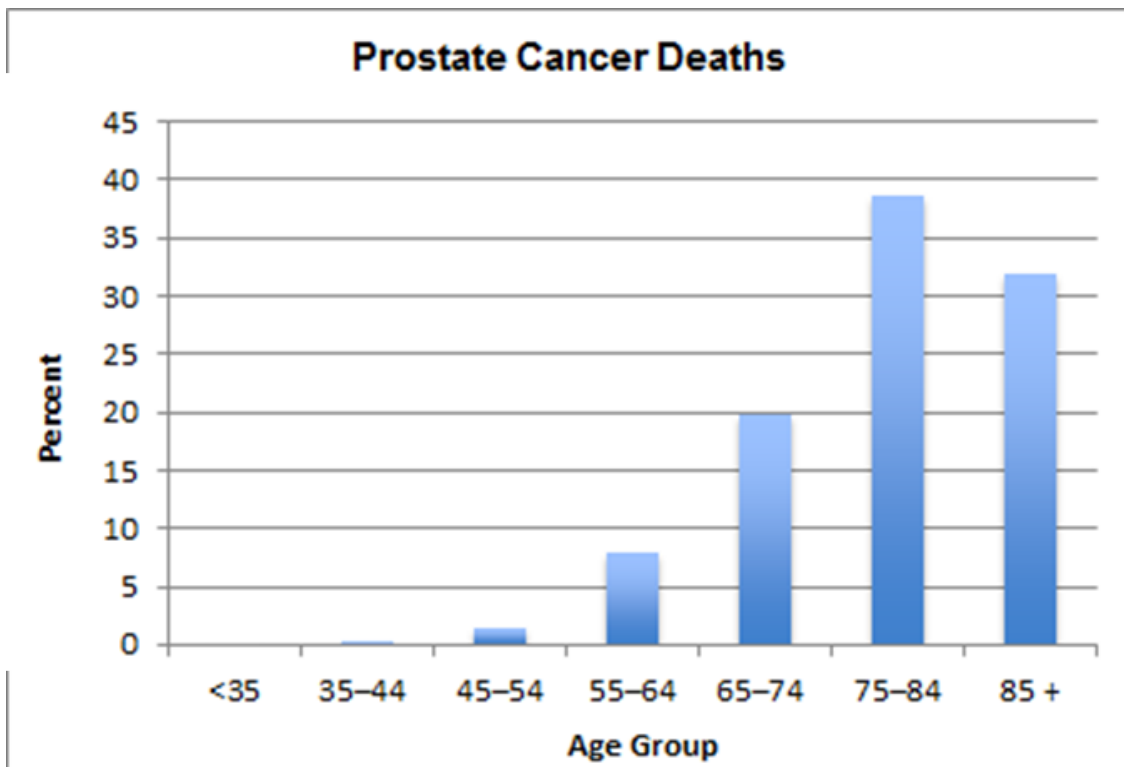


Mobile phones cause brain cancer.

Truncating the y-axis

Minds on

Very Convincing...

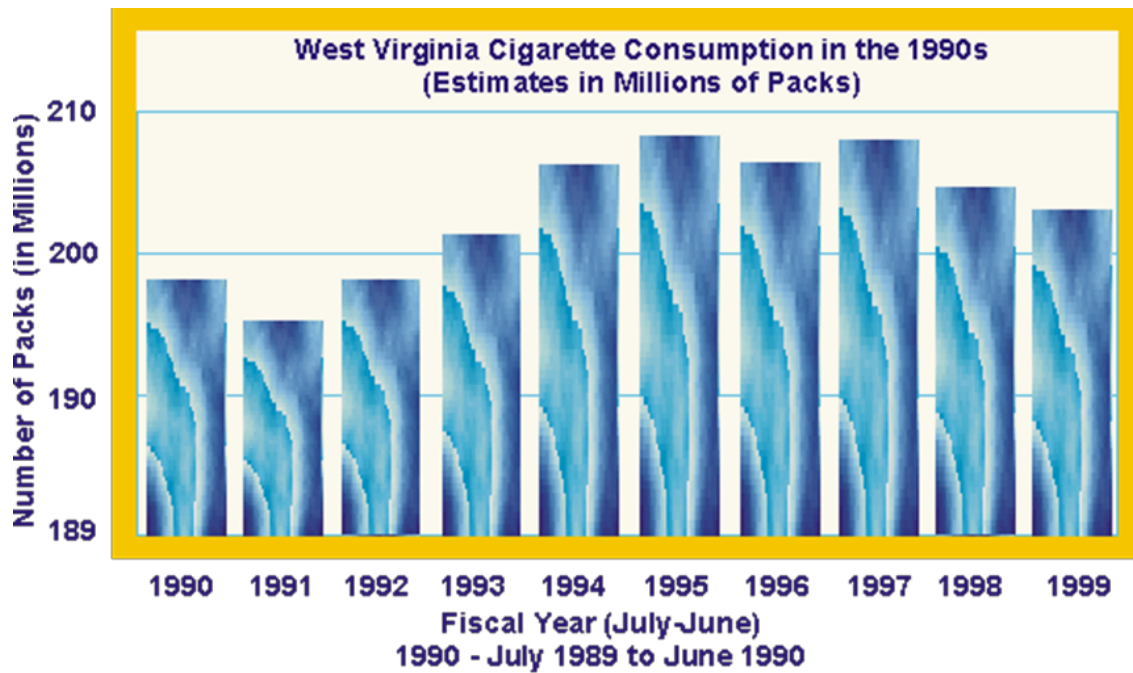


Prostrate cancer disproportionately killing men between the ages of 75 and 84.

Truncating the y-axis

Minds on

Very Convincing...

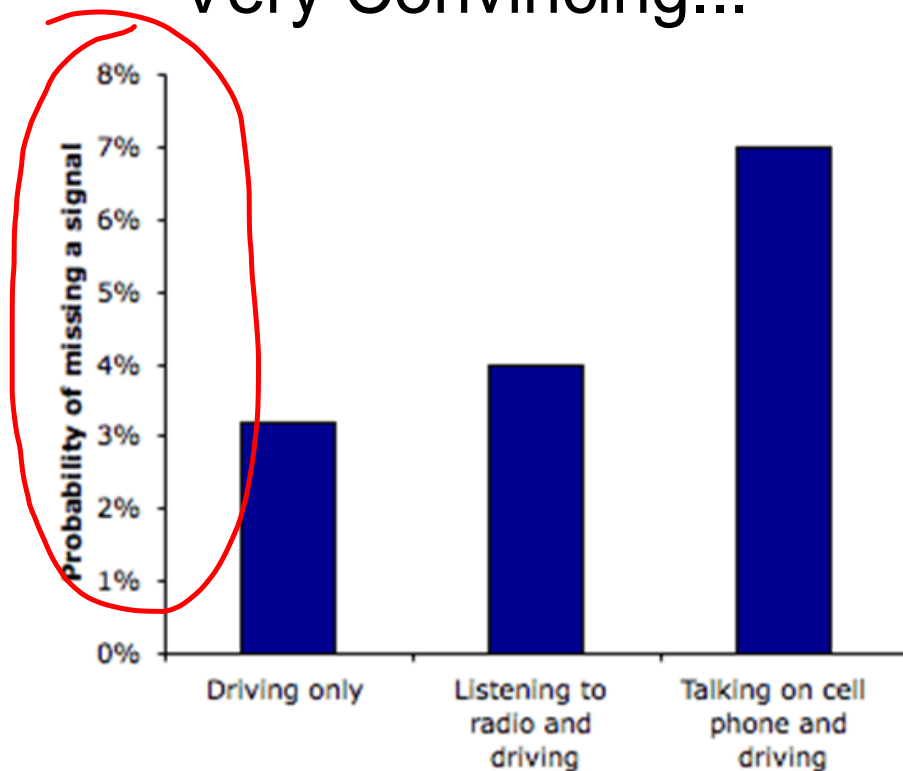


Source: West Virginia cigarette Excise tax Collection History

Truncating the y-axis
"cutting off"

Minds on

Very Convincing...

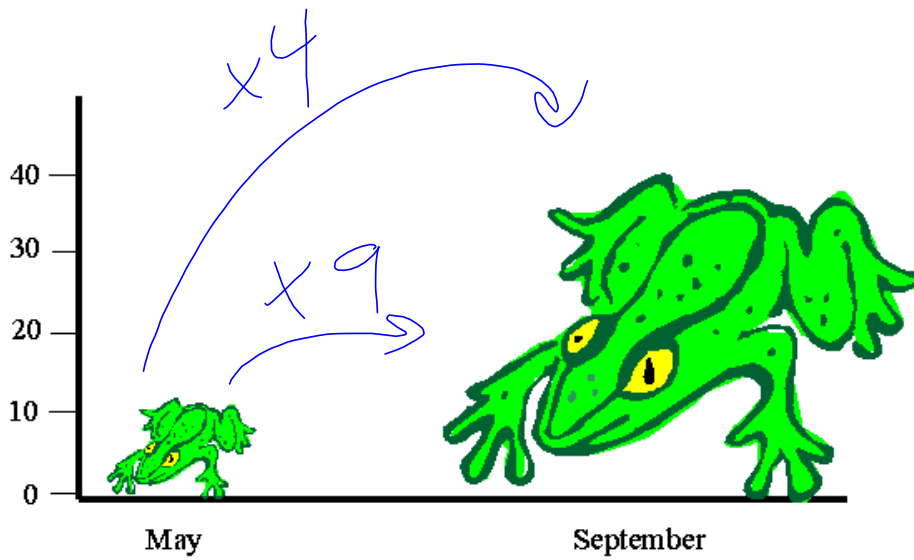


Cell phone talkers more likely to run red lights.

Minds on

Very Convincing...

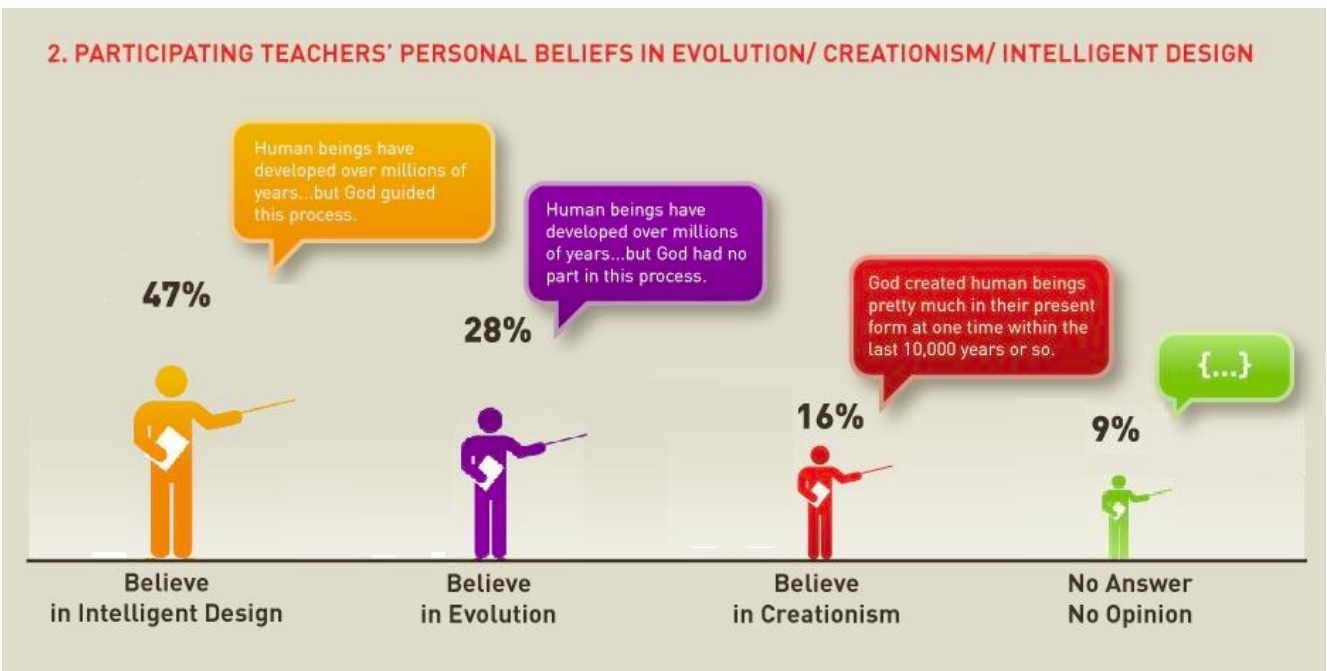
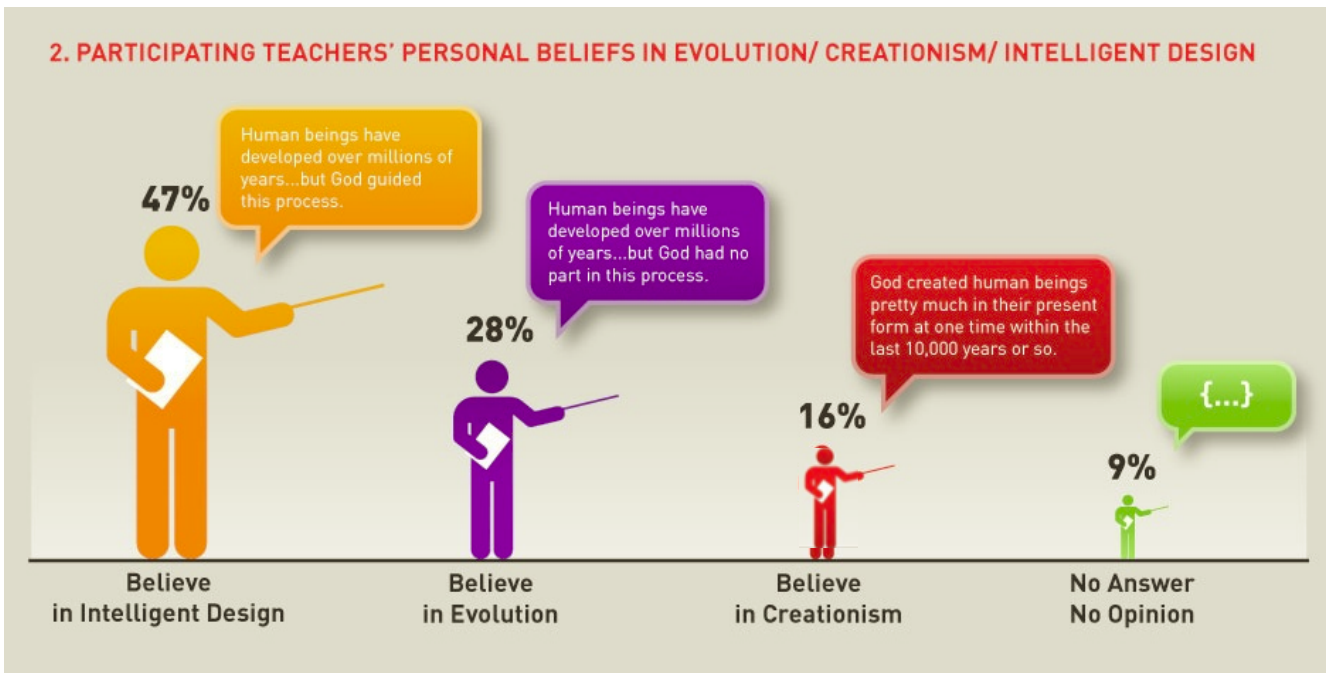
**Number of Adult
Frogs in South Pond**



Disproportionate areas

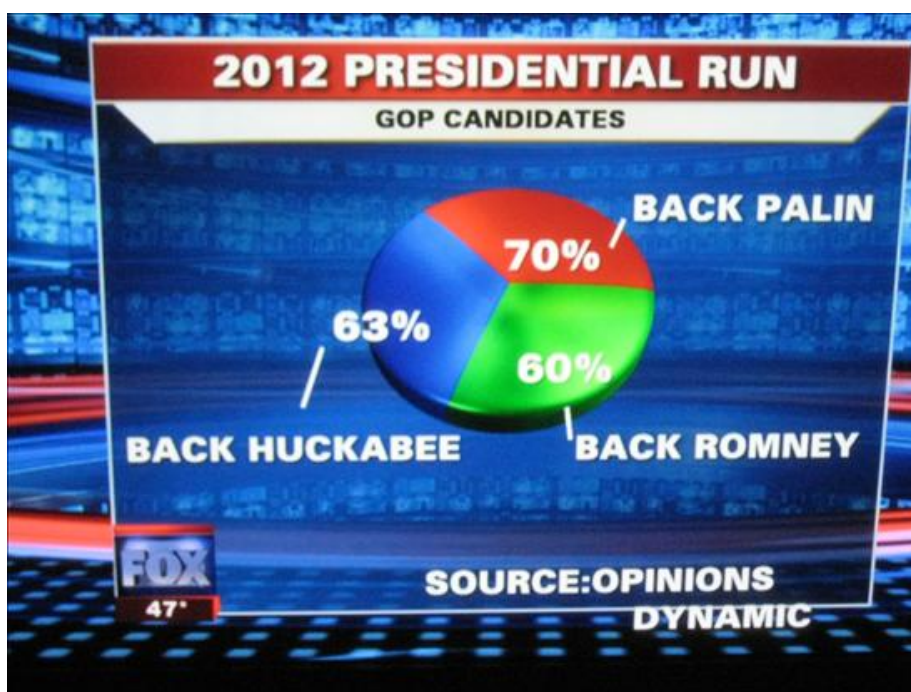


Very Convincing...



Minds on

Very Convincing...



Numbers don't add up

Minds on

Very Convincing...

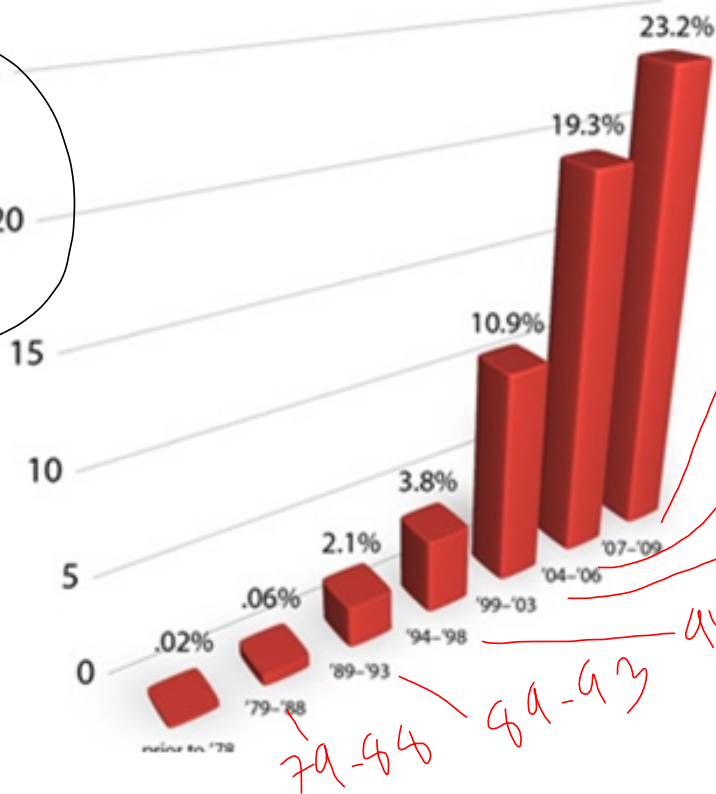
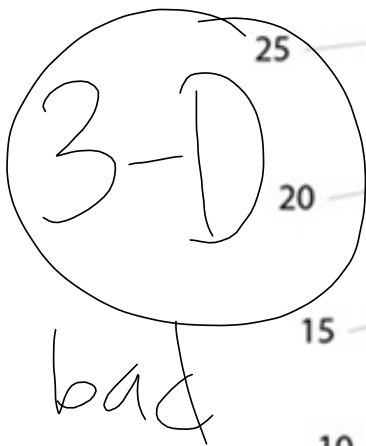


Minds on

Very Convincing...

Percentage who met online

*11 rubber band
axis!!*

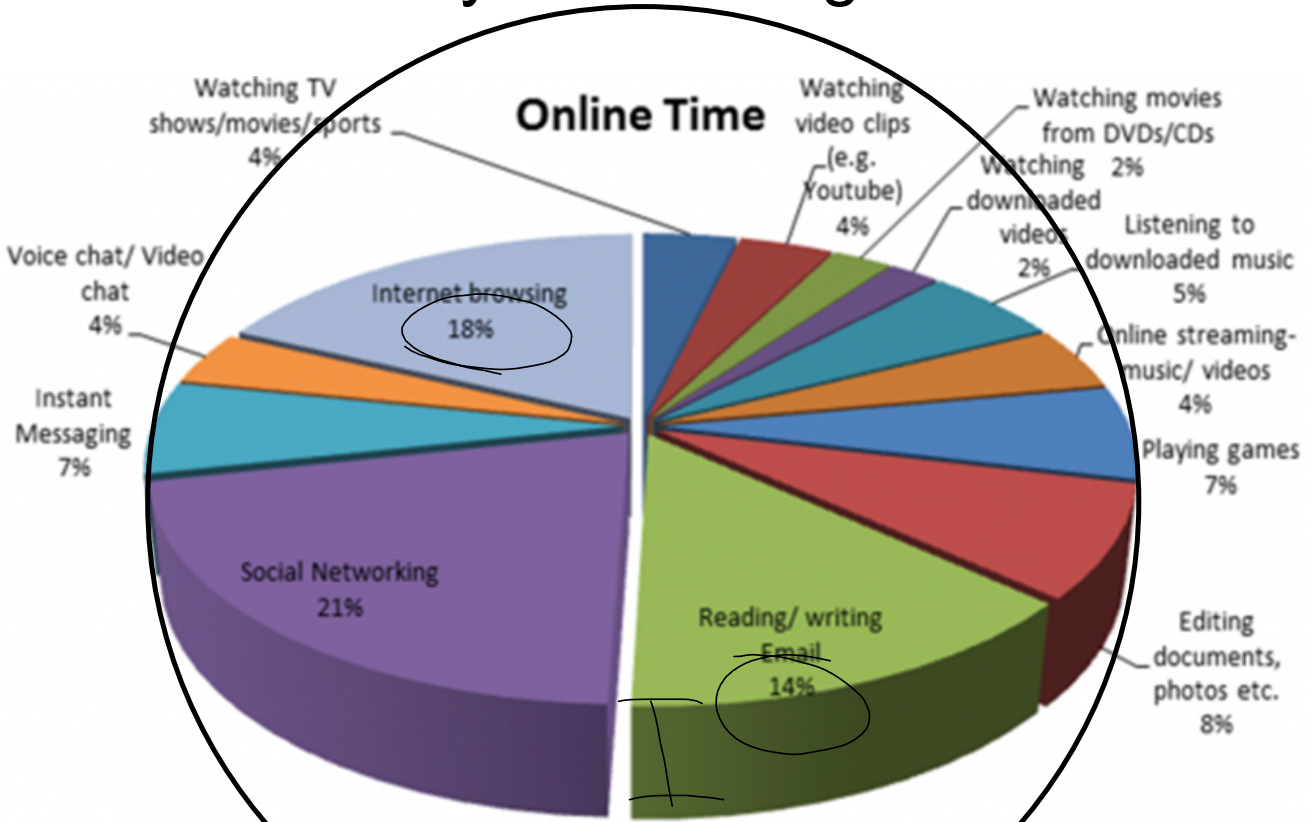


Online dating on the rise!

3-D graphs create a disproportionate representation of the data

Minds on

Very Convincing...



Majority of online time spent on social networking sites and reading / writing email.

3D again! Makes it seem that Reading/writing Email is higher than Internet browsing



Very Convincing...

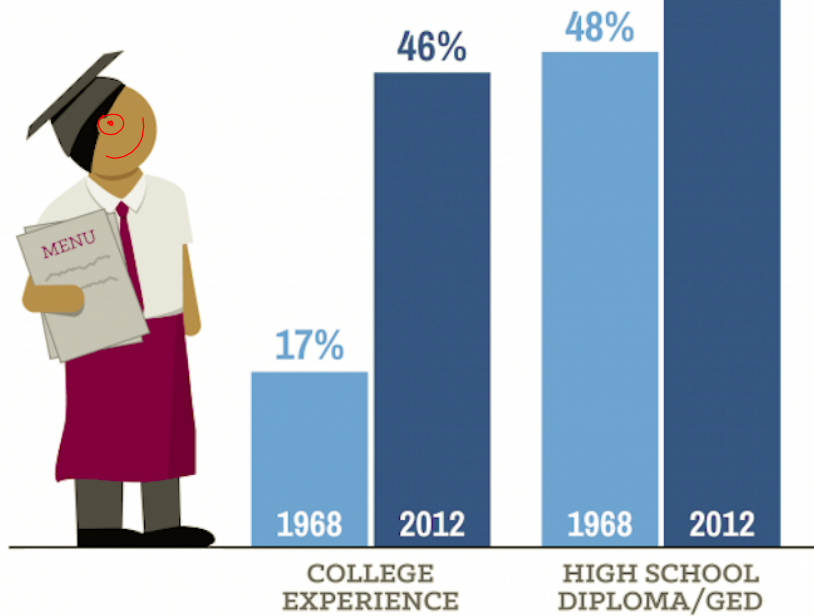


non-regular axis
(hand-picked)

Minds on

Very Convincing...

LOW-WAGE WORKERS ARE FAR MORE EDUCATED THAN THEY WERE IN 1968



BUT WE'RE PAYING THEM LESS

From 1968 to 2013, the federal minimum wage has decreased: **↓ 23%**

Source: EPI analysis of education attainment from March CPS for 1968 and 2012.
 Note: Data for bottom fifth of wage earners. "College experience" means went to "some college" or had college or advanced degree.
 ECONOMIC POLICY INSTITUTE

0-20,000

Note: Data for bottom fifth of wage earners. "College experience" means went to "some college" or had college or advanced degree.

Read the fine print! Low-wage workers include anyone who is unemployed / just out school / volunteering / looking for work

Action!

Interpreting Statistics in the Media



"In a recent blind taste test, more people preferred Pepsi over Coke."

- how many people were surveyed?

"sample size"

- how many more? %?

- where / when was study done

- who did the study

Action!

Interpreting Statistics in the Media



90% Fat Free!

10% Fat!

Action!

Interpreting Statistics in the Media

According to repeated nationwide surveys,

More Doctors Smoke **CAMELS** than any other cigarette!

Doctors in every branch of medicine were asked, "What cigarette do you smoke?" The brand named most was Camel!

You'll enjoy Camels for the same reason so many doctors enjoy them. Camels have real, real satisfaction, pack after pack, and a flavor unmatched by any other cigarette. Make this your daily one. Smoke only Camels for 30 days and we'll let Camels prove your case. How will they tell? (Just think of your steady smoke. You'll see how enjoyable a cigarette can be!)

THE DOCTORS' CHOICE IS AMERICA'S CHOICE!





For 30 days, test Camels in your "V-Zone" (V for Throat, V for Taste).
www.StrangeCosmos.com

Action!

Interpreting Statistics in the Media

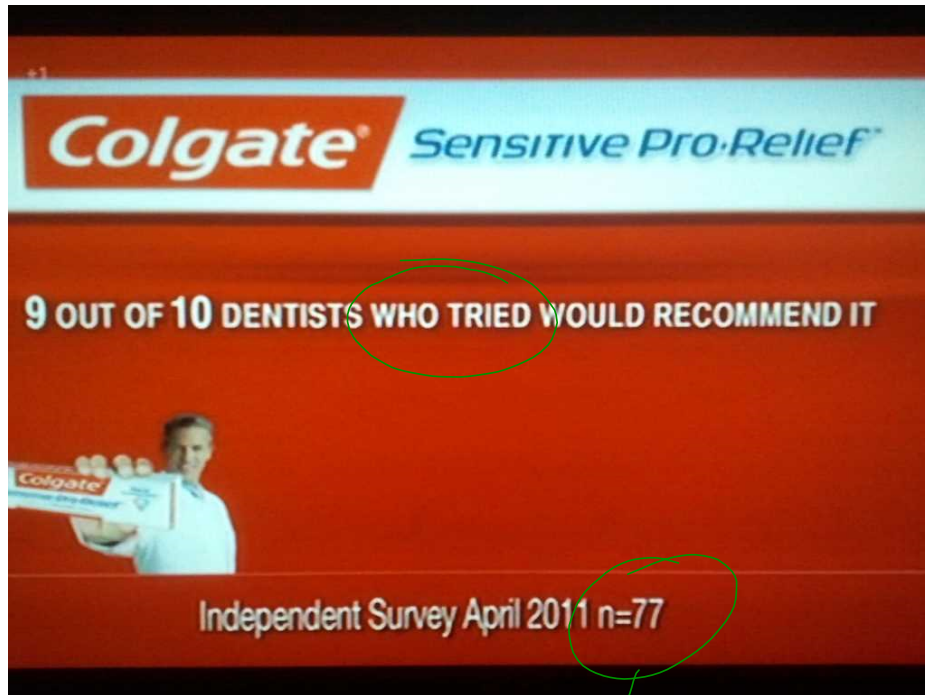


It's a fact! 4 out of 5 dentists surveyed would recommend Trident for their patients who chew gum.

how many did they ask?

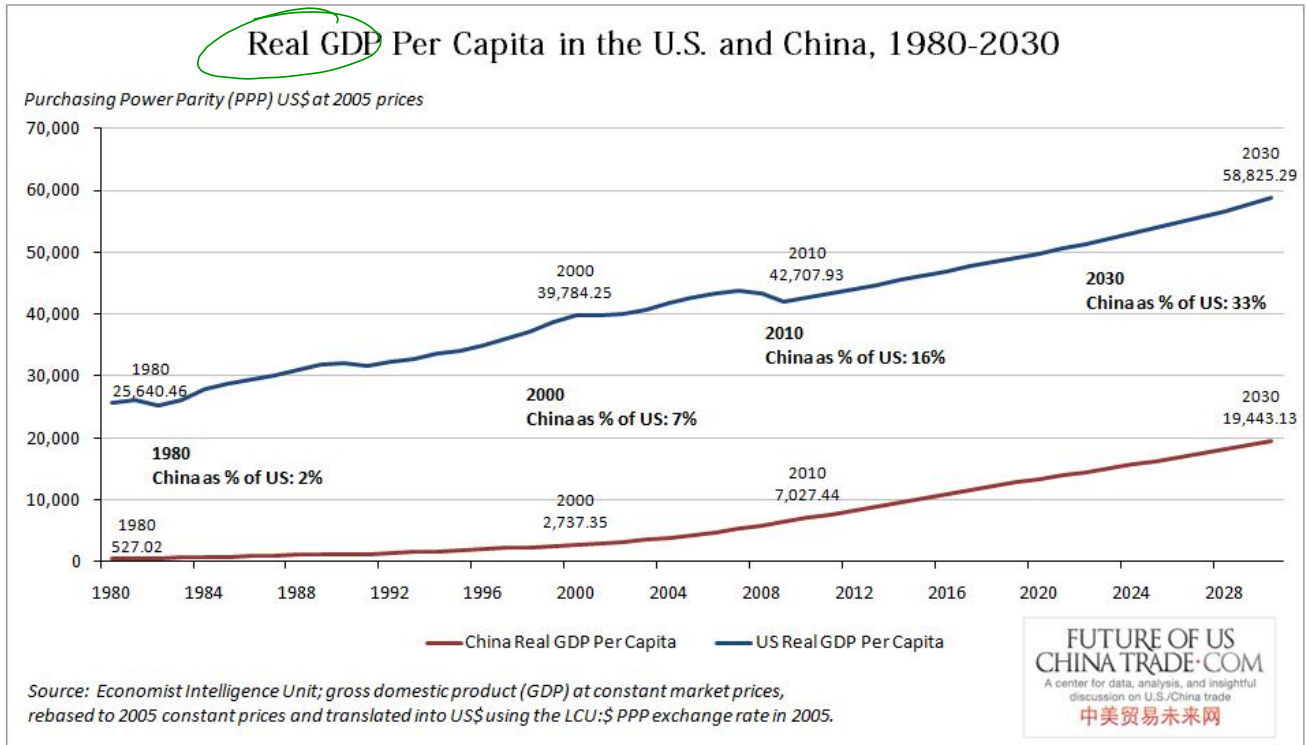
Action!

Interpreting Statistics in the Media

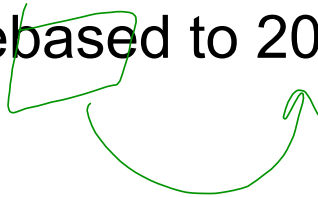


sample size

77 dentists were surveyed, how many of them had tried it??



*Rebased to 2005 constant prices...



From 1968 to 2013,
the federal minimum
wage has decreased:

 **23%**

real

Minimum wage

*Adjusted to 1996 dollars

1968 - \$1.60 / hour

\$7.21 / hour

2013 - \$7.25 / hour

\$4.87 / hour

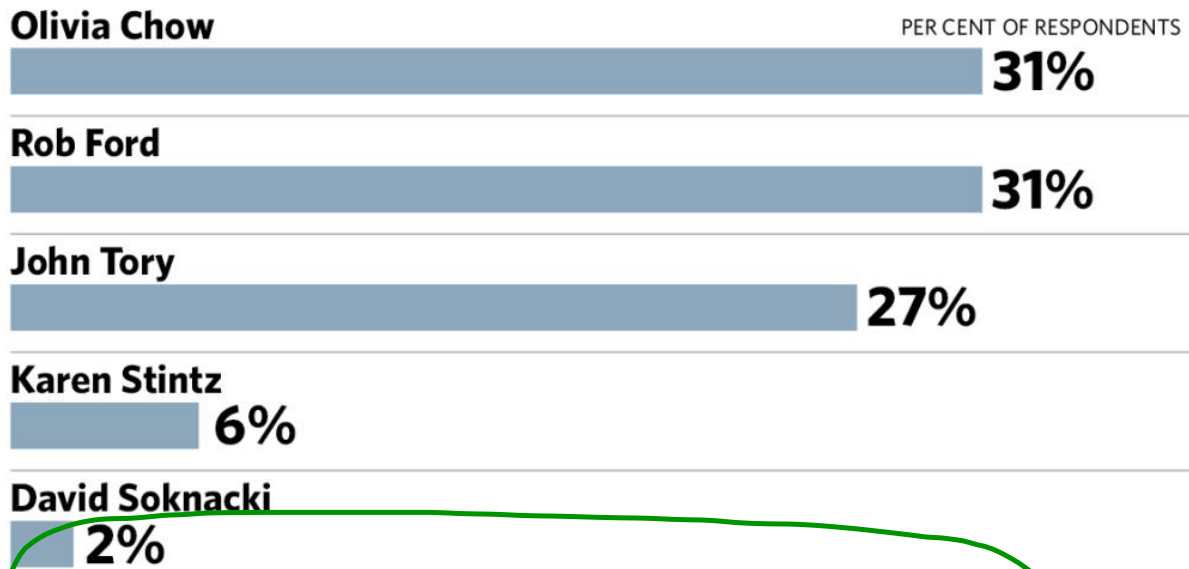
 <http://www.infoplease.com/ipa/A0774473.html>

Action!

Interpreting Statistics in the Media

State of the mayoral race

SURVEY QUESTION: If a mayoral election were held today, who would you vote for if the candidates were Rob Ford, Olivia Chow, Karen Stintz, John Tory and David Soknacki?



The Forum Research automated voice response telephone poll of 1,310 residents is considered accurate within 3 percentage points, 19 times out of 20. It was conducted on Monday.

SOURCE: Forum Research Inc.

TORONTO STAR GRAPHIC

Action!

Interpreting Statistics in the Media

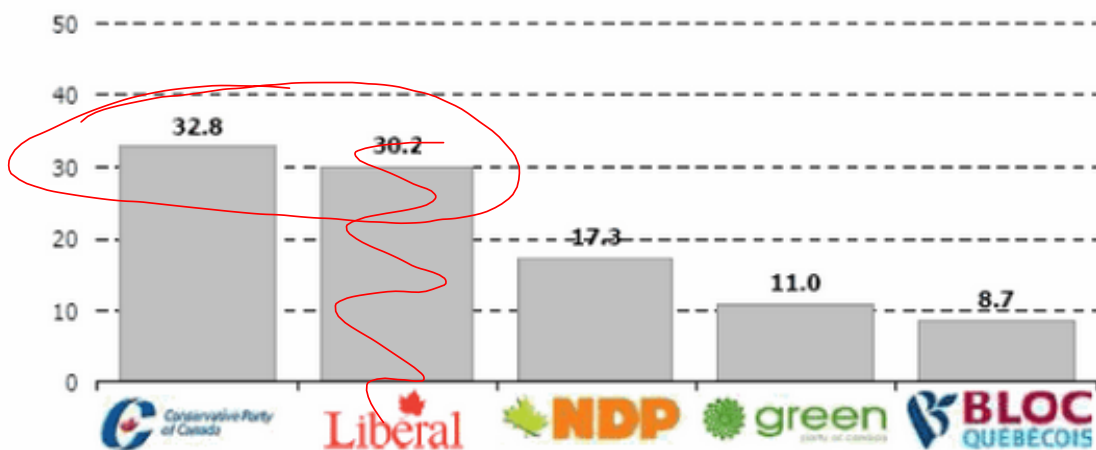
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Federal vote intention

Q. If a federal election were held tomorrow, which party would you vote for?



The survey of 1,886 Canadians was conducted between Aug. 12 and Aug. 18, 2009, and has a margin of error of 2.3 percentage points, 19 times out of 20.

Action!

Interpreting Statistics in the Media

Summary

Lying With Graphs

Graphs can often be misleading.

Statistical Manipulation

Advertisements can manipulate statistics for their own purposes.

"Real"

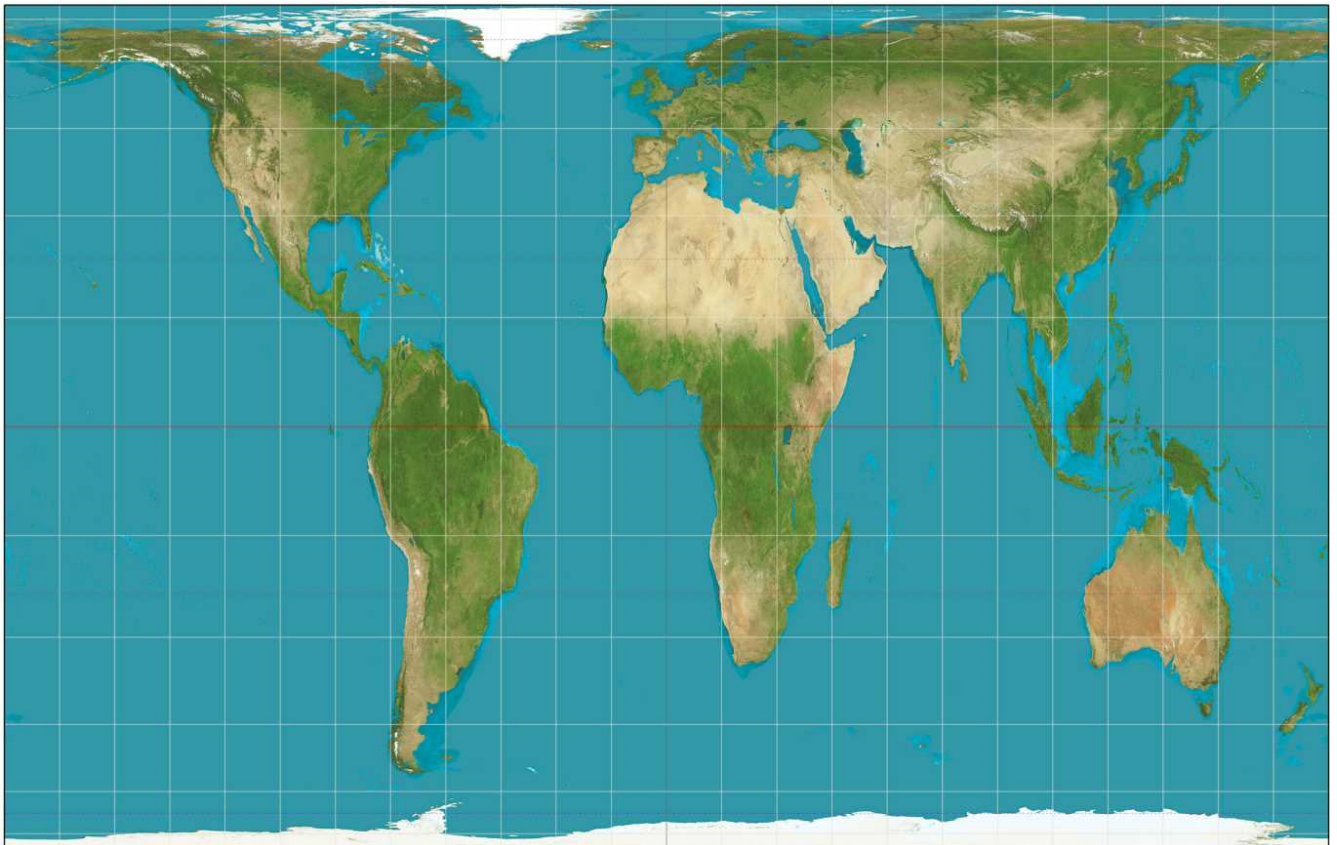
Used in economic statistics to eliminate the effects of inflation. Changes in data are compared to a fixed starting data.

Accuracy

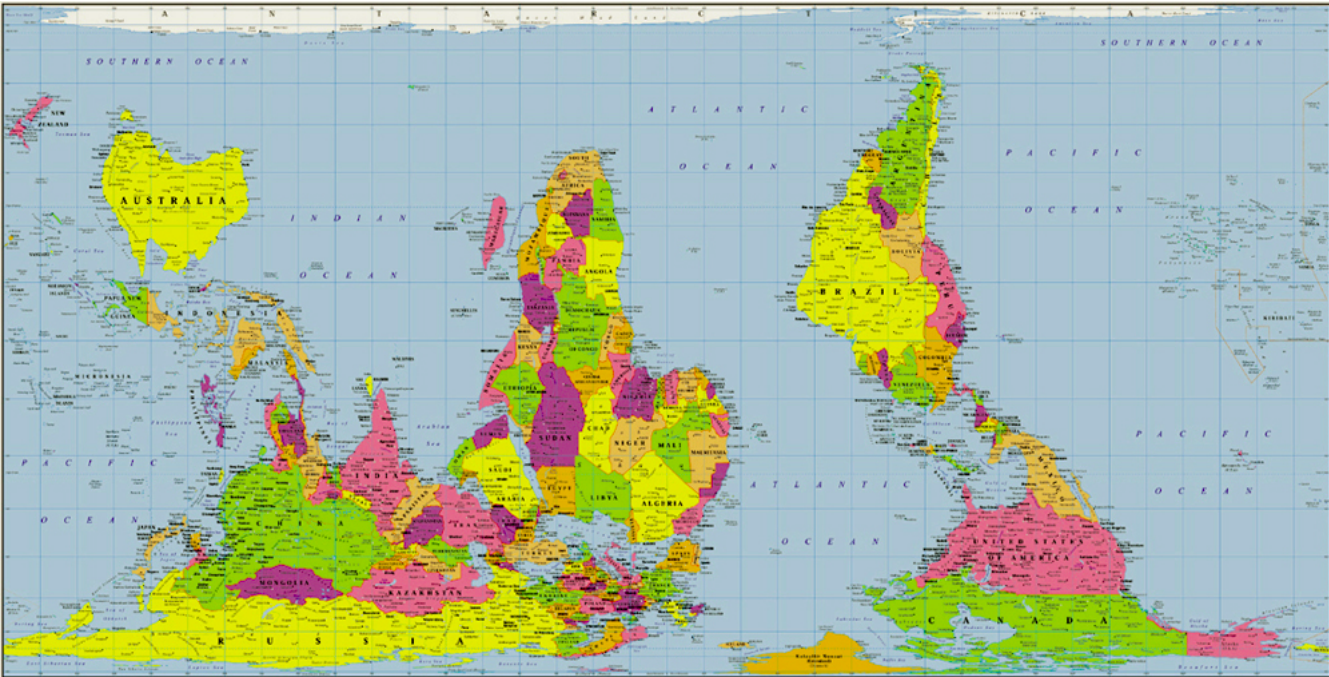
Studies will typically say they are accurate to a certain percentage 19 times out of 20. This indicates the range of predictable values that would occur 95% of the time.

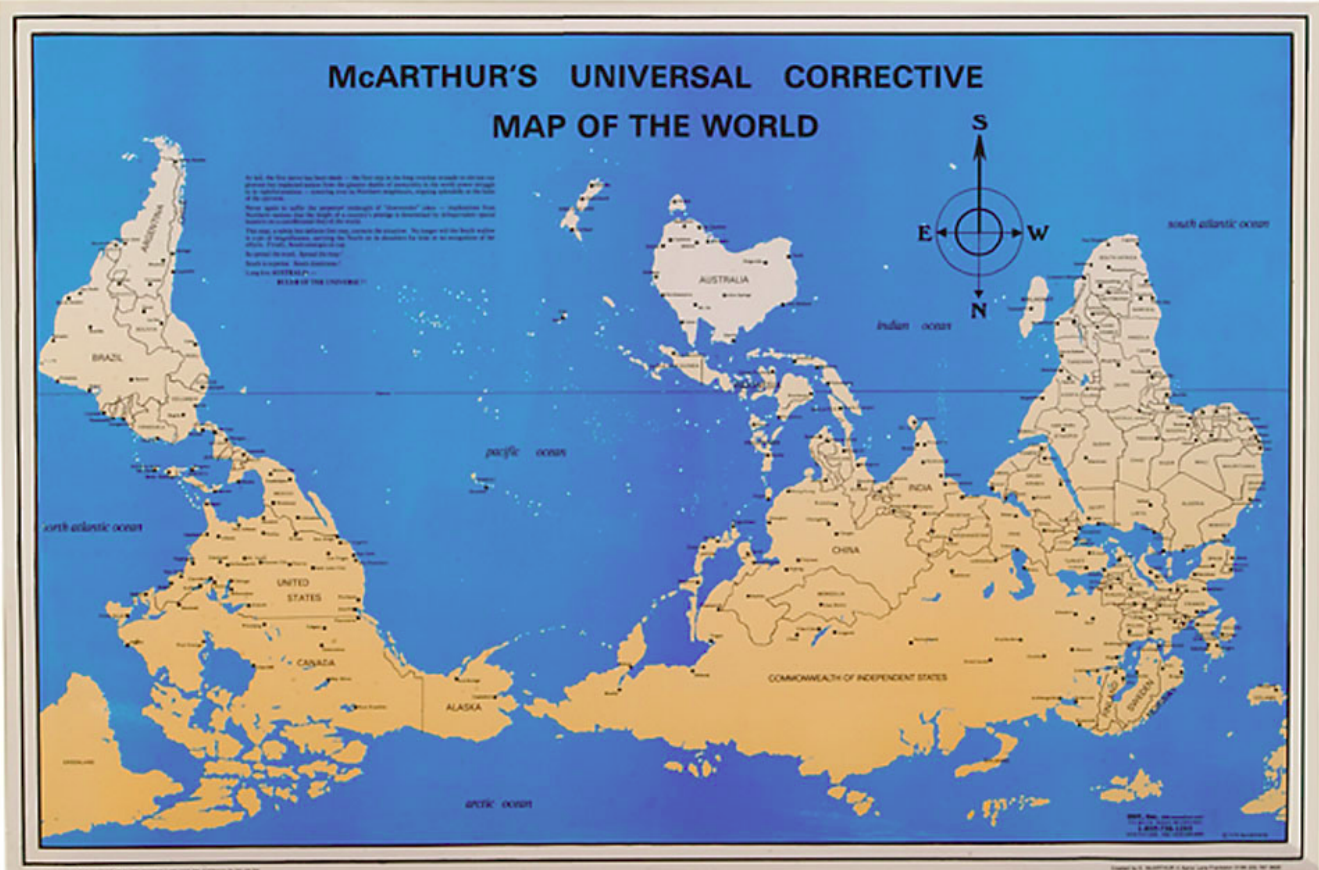
Consolidation

Changing Your World View











Consolidation

Homework!

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