

What's Going On?

Checking In

Minds on

Thinking Critically

Action!

Critical Analysis

Consolidation

Key Questions

Learning Goal - I will be able to critically analyze statistical claims in the media.

Checking In

Reminders

Quiz Tomorrow!

See online handout for topics covered.

Extra Quiz Practice

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*This is IN ADDITION TO the other assigned questions. (not instead of)

Checking In

Reminders

Survey due Thursday. (You may email by Saturday)

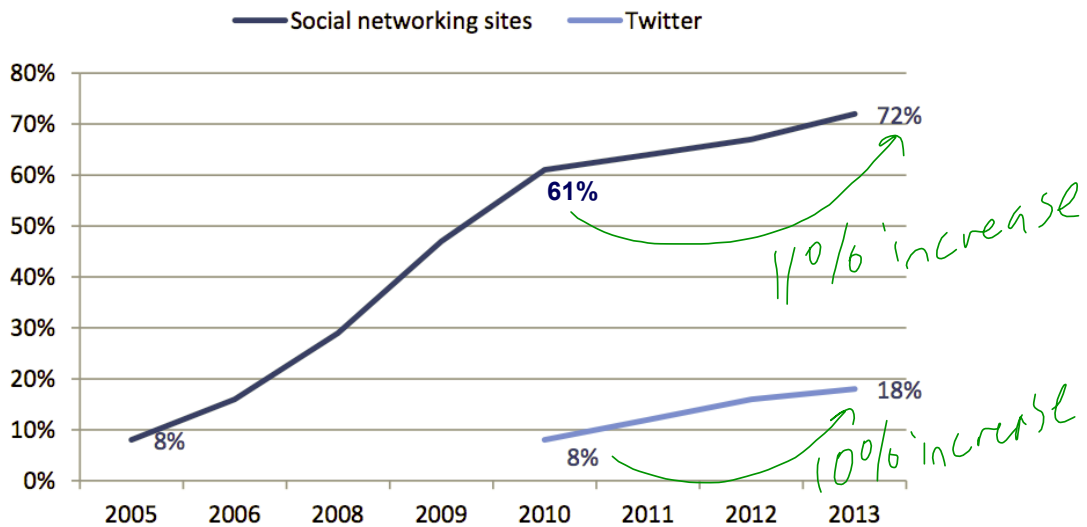
See online handout for details.

*If you submit to me by the end of the day tomorrow, I will review and return so you can make changes.

Social networking sites edge out Twitter by 1% in overall increase from 2010 to 2013.

Adult use of social networking sites and Twitter—change over time

% of adult internet users who use social networking sites or Twitter, over time



Source: Pew Research Center's Internet & American Life Project tracking surveys 2005-2013. Spring Tracking Survey, April 17 – May 19, 2013. N=1,895 adult internet users ages 18+. Interviews were conducted in English and Spanish and on landline and cell phones. The margin of error for results based on all internet users is +/- 2.5 percentage points.

Twitter

$$\frac{18 - 8}{8} \times 100 = 125\%$$

Social Networking

$$\frac{72 - 61}{61} \times 100 = 18\%$$

Minds on

Thinking Critically

Early childhood exposure to TV violence predicts aggressive behavior for both males and females in adulthood.

% accuracy 19 times out of 20

when in adulthood? 18? 30?

who was the sample?

how many kids watched TV?

who was surveyed? kids or adults?

how old is the study?

Inferential

<http://www.apa.org/pi/prevent-violence/resources/tv-violence.aspx>

Minds on

Thinking Critically

Descriptive

An average American child will see 200,000 violent acts and 16,000 murders on TV by age 18

What classifies as a violent act?

When was the data collected?

Where was it collected?

Who conducted the study and why?

how many murders per day?

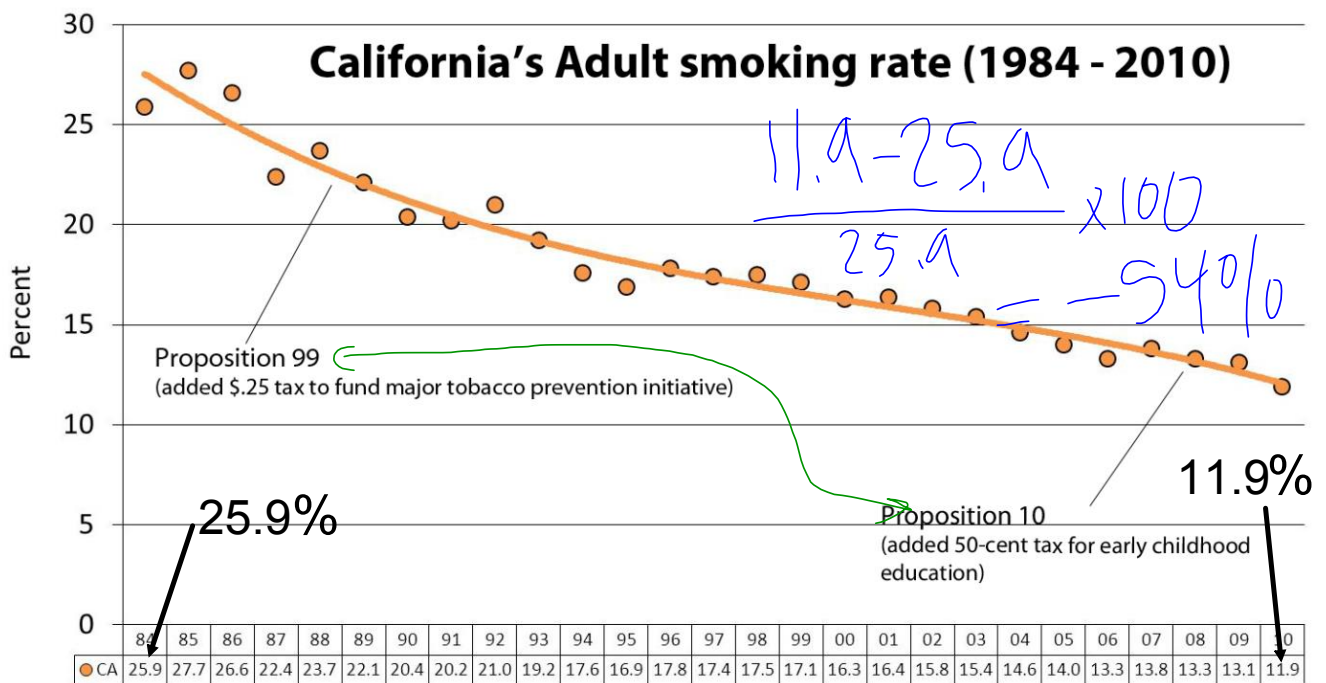
$$\frac{16000}{18} = 888.9 \text{ murders/yr}$$

$$888.9 / 365 = 2.4 \text{ murders/day}$$

Committee on the Judiciary. Children, violence, and the media: a report for parents and policy makers previously available at: <http://judiciary.senate.gov/oldsite/mediavio.htm>.

Thinking Critically

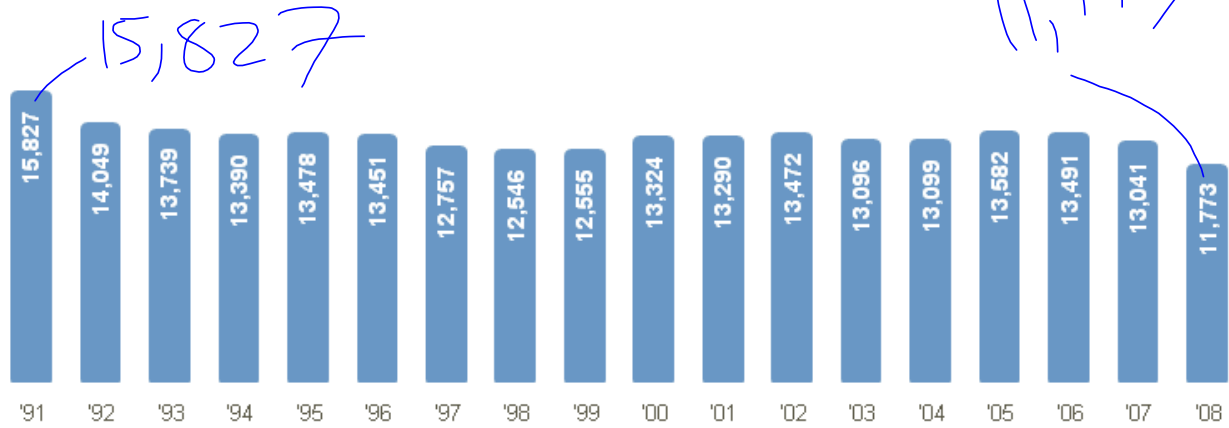
California's adult smoking rate decreased by 14% between 1984 and 2010. — *Descriptive*



Source: CA Dep. Public Health

Thinking Critically

Alcohol-impaired driving fatalities have declined 26% from 1991 to 2008.



Alcohol-Impaired Driving Fatalities: 1991-2008

Source: NHTSA/FARS <http://www.nhtsa.gov/FARS>

Descriptive

$$\frac{\text{new-old}}{\text{old}} \times 100$$
$$\frac{11773 - 15827}{15827} \times 100$$
$$= -25.6$$

Action!

Critical Analysis

Descriptive Statistics

Statistics that used to summarize or describe the characteristics of known data.

- mean
- % change ...

Inferential Statistics

Known data that is treated as a sample and used to draw conclusions about a larger population.

Action!

Critical Analysis

As we have seen, statistics can be manipulated to support an argument.

Therefore, it is important to evaluate the statistical information being used, by **asking key questions** about the information being provided.

This evaluation is referred to as a critical analysis.

Action!

Critical Analysis

Sample

- Was an appropriate sample used?
- Was the sample large enough, and diverse enough, to be used for inferential statistics?
- Was the sample randomly selected?

Action!

Critical Analysis

Author

- Who conducted the study?
- Were they hired to conduct the study?
- Who were they hired by?
- Does the author have a vested interest in the outcome of the study?

Action!

Critical Analysis

Source

- Is the data from a primary or secondary source?
- Have the sources been documented?
- Are the sources reliable?

Action!

Critical Analysis

Relevance

- When was the study done?
- Is the sample reflective of the population?
- Is the study making claims beyond the scope of the study?

Action!

Critical Analysis

Bias

- Do the methods show any bias?
- If inferential statistics are used, is it appropriate to do so?
- sufficient sample size?
- strong correlation?
- outliers?
- influential points?
- third variable?
- extrapolation appropriate?
- appropriate type of regression used?

leading questions?

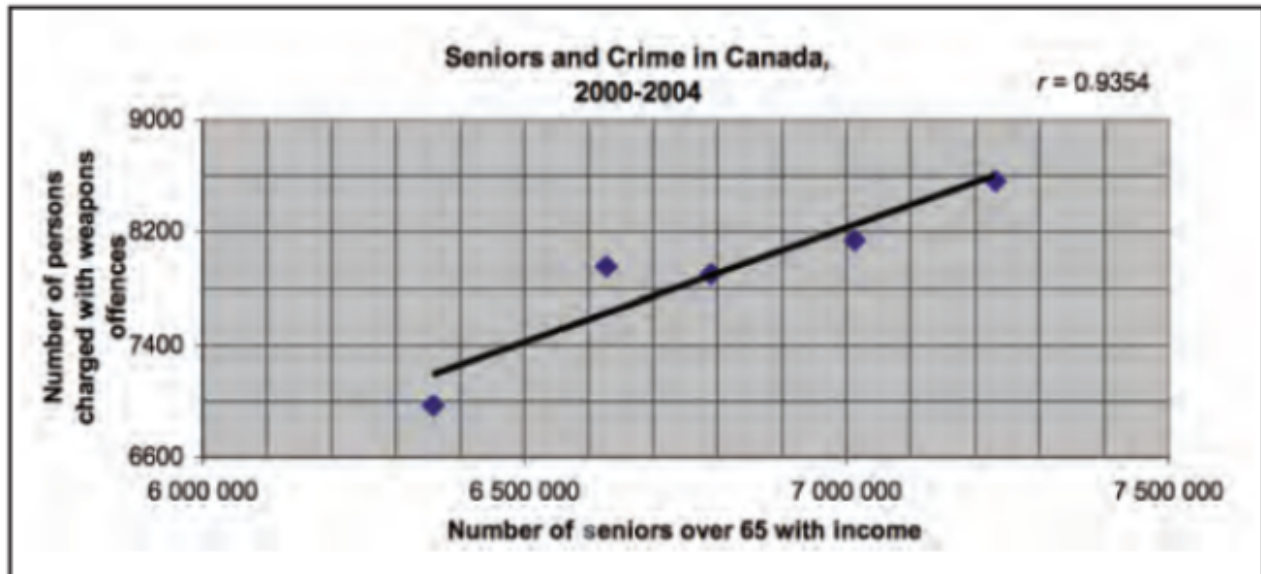
errors in
data
analysis

Consolidation

Key Questions

For the following scenarios, come up with a set of questions that would serve as a critical analysis of the claim being made.

A group of Grade 12 students performed a linear regression on data they collected from Statistics Canada about the number of seniors and the number of weapons crimes in Canada.

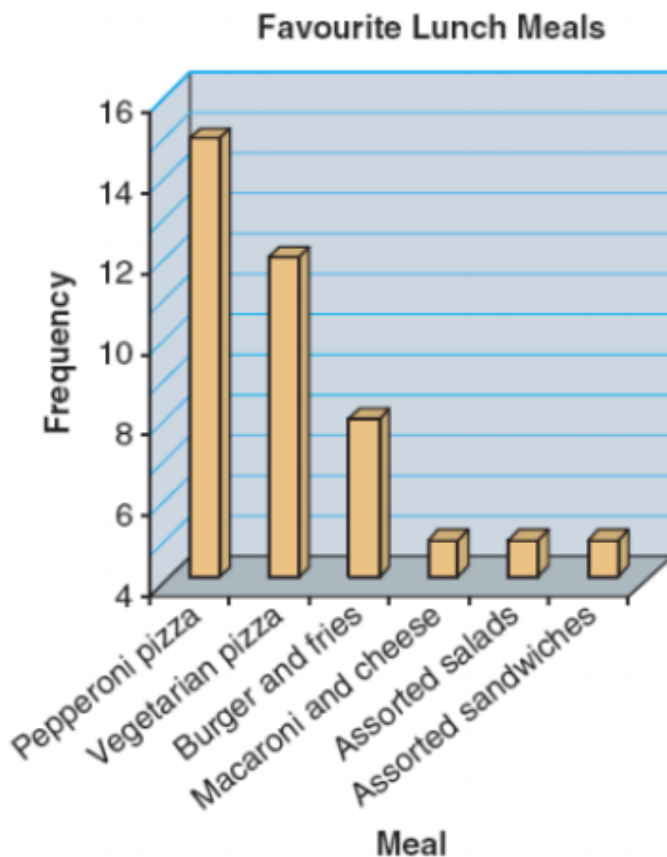


They concluded:

There is a strong positive correlation between the two variables. As the number of seniors increases, weapons charges increase. Therefore, criminals in Canada are becoming bolder because of our aging population.

Come up with a list of questions and possible concerns as part of a critical analysis of this claim.

Four grade 9 students collected data on school lunch preferences.



They concluded:

We asked students to tell us their favourite lunch meals and displayed the results in this bar graph. We conclude that the school cafeteria should serve more pizza since it is clearly the favourite lunch of students.

Is their conclusion valid?

Come up with a list of questions and possible concerns as part of a critical analysis of this claim.

Consolidation

Homework!

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