

# Infographics: An Instructional Lens

## Part 1: Rationale and Framework for Teaching Infographics

Debbie Abilock, NoodleTools

Sue Smith, The Harker School

Connie Williams, NBCT, Petaluma High School

July 15, 2016, 2:30-4:00 pm EDT



July 14 - 15, 2016

Free registration - Free SCECHs - Register at <http://data literacy.si.umich.edu/conference>

A project of the University of Michigan School of Information, the U-M Library, and U-M School of Education. This project was made possible in part by the Institute of Museum and Library Services RE-00-15-0113-15.

# Sponsors



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VIRTUAL CONFERENCE  
ON  
**DATA LITERACY**  
CREATING DATA LITERATE STUDENTS

# SCECHs

Log in with your **full name**

Attend at least 3 live sessions and up to 12

Submit your form by July 22!

More information:

<http://dataliteracy.si.umich.edu>, [The logo consists of a circular globe with a bar chart on top. The letters '4T' are prominently displayed in the center of the globe.](http://cech</a></p></div><div data-bbox=)

VIRTUAL CONFERENCE  
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<http://dataliteracy.si.umich.edu/conference>

**#4tvirtualcon**





# VIRTUAL CONFERENCE ON DIGITAL WRITING

TEACHERS TEACHING TEACHERS ABOUT TECHNOLOGY

October 2, 9, 16 & 23, 2016



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## Join the Conversation!

### October 2, 9, 16 & 23, 2016

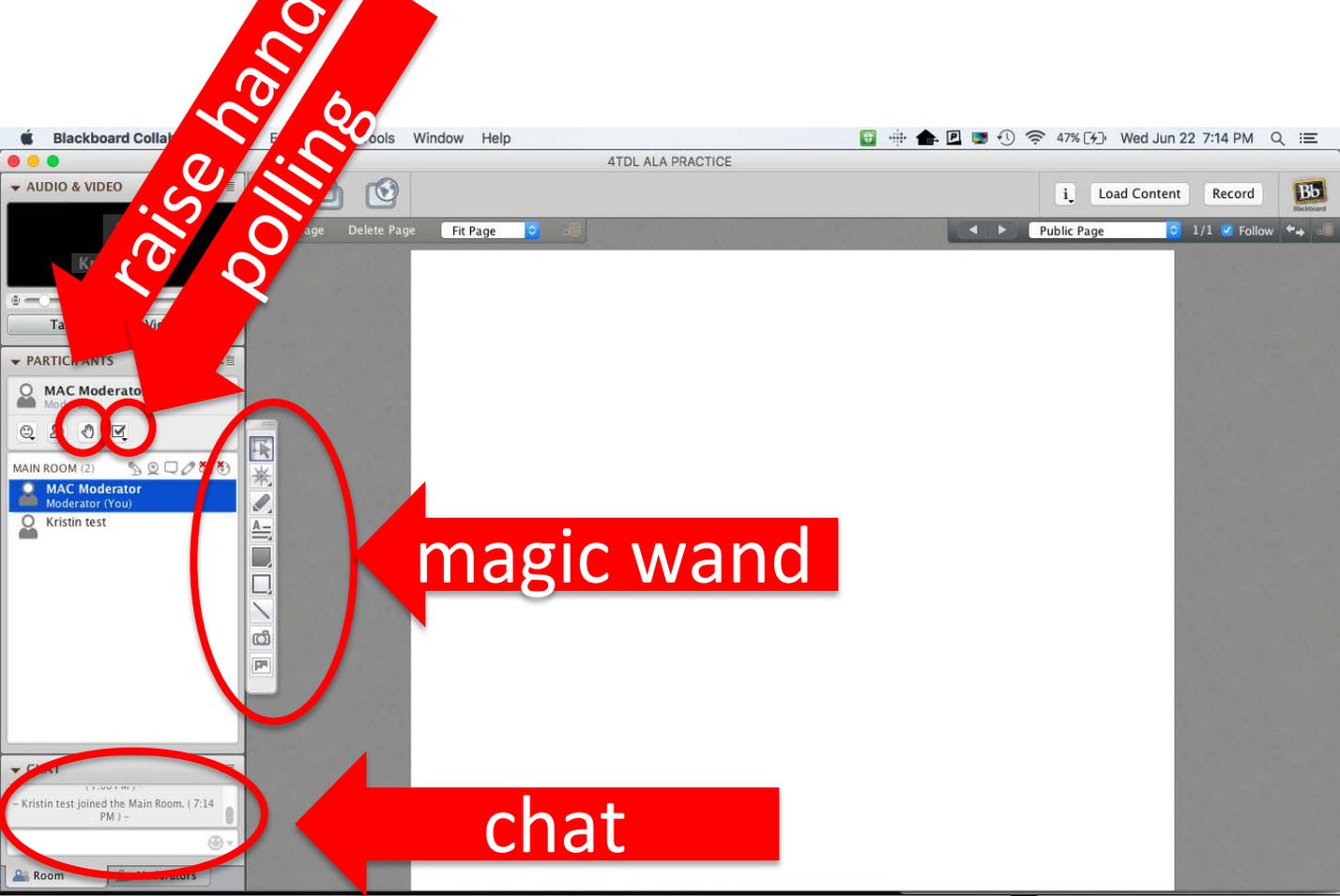
Connect and collaborate with other K-16 educators about the teaching of writing in virtual spaces.

FREE REGISTRATION & SCECHs #4TDW

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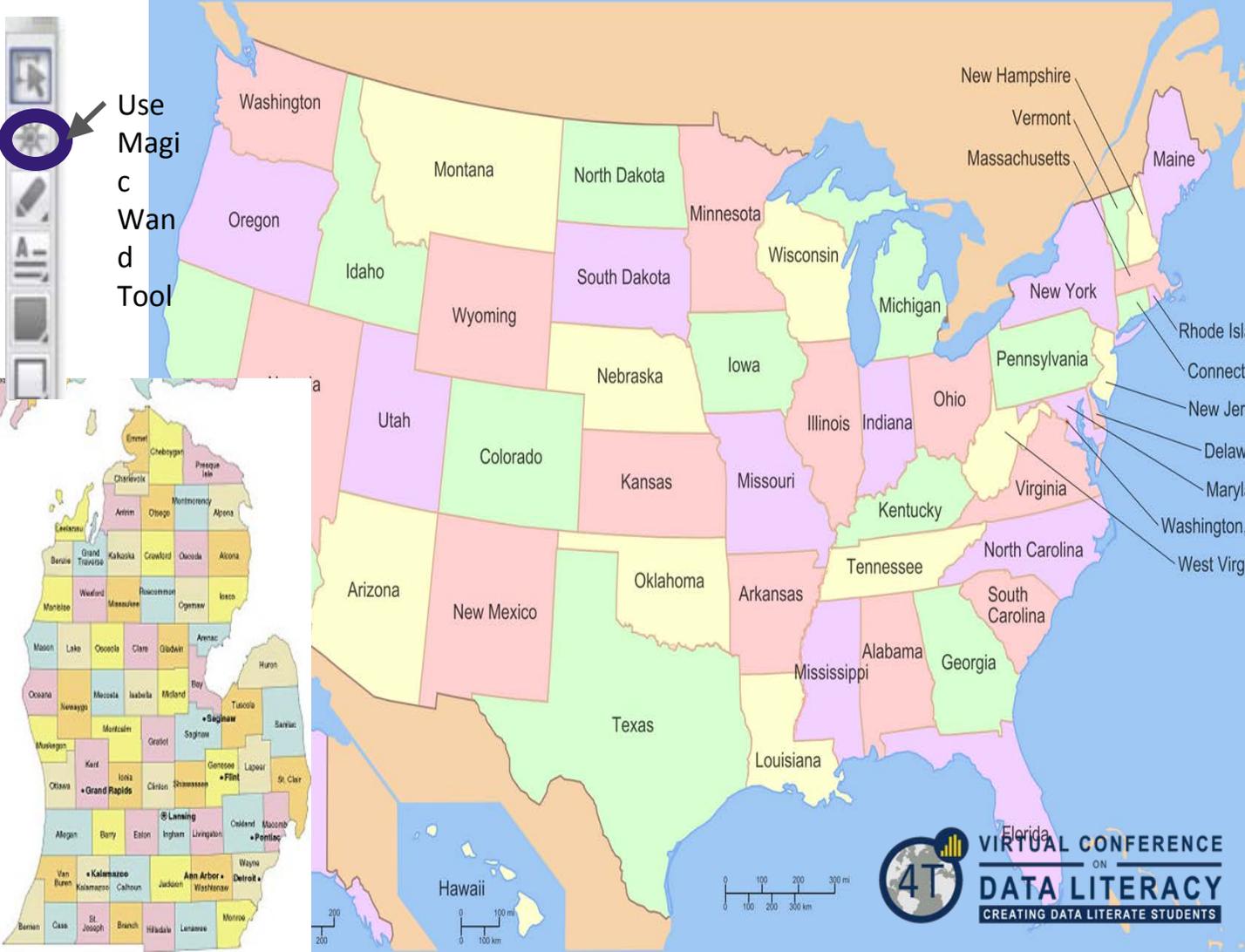


raise hand  
polling

magic wand

chat





# What Do You Teach?





# Infographics: An Instructional Lens

Part 1:  
*Rationale and  
Framework for  
Teaching  
Infographics*



[https://commons.wikimedia.org/wiki/File:Hand\\_showing\\_lens\\_demonstration.jpg](https://commons.wikimedia.org/wiki/File:Hand_showing_lens_demonstration.jpg)



VIRTUAL CONFERENCE  
ON  
**DATA LITERACY**  
CREATING DATA LITERATE STUDENTS



# Sue Smith

## Presenter



# Debbie Abilock

## Presenter



# Connie Williams

## Presenter



“An information graphic (infographic) is a visual representation of a data set or instructive material. An infographic takes a large amount of information in text or numerical form and then condenses it into a combination of images and text, allowing viewers to quickly grasp the essential insights the data contains.”

# Everywhere...



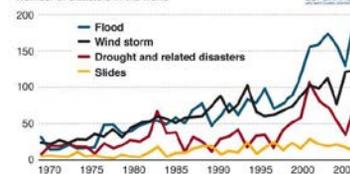
Goal	SOG	Shots
0	0	0
Assist	Allowed Goals	Saves
0	0	0
Foul	0	0
0	0	0
Draw Attempt	Draw Poss.	Draw Control
0	0	0
Ground Ball	Cassed Turnover	Turnover
0	2	0
FP Goal	FP Shot	+
0	0	

## Extreme weather

Number of floods has risen sharply due to climate changes.

### Trend in extreme weather events 1970-2005

Number of disasters in the world

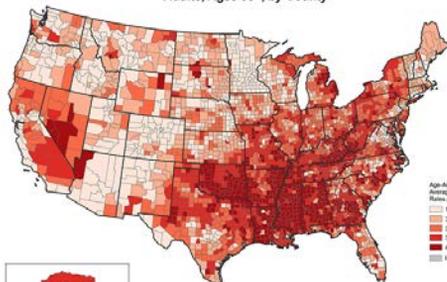


Source: United Nations International Strategy for Disaster Reduction 2009  
Graphic: Julia Scheibe, East Post



© 2009 MCT

Heart Disease Death Rates, 2008-2010  
Adults, Ages 35+, by County



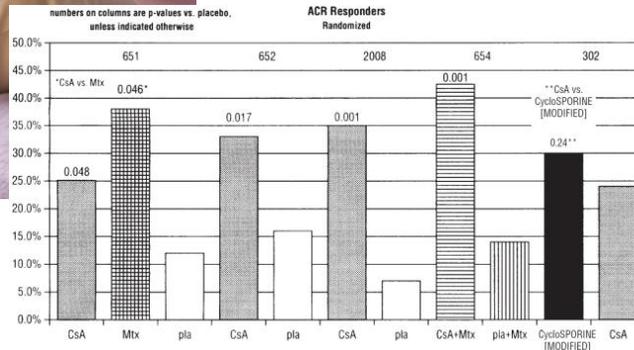
Age-Adjusted  
Average Annual  
Rates per 100,000

- 100.0 - 106.2
- 106.3 - 110.9
- 111.0 - 121.6
- 121.7 - 143.9
- 144.0 - 165.1
- Insufficient Data

Notes: Rates are slightly smoothed to enhance the accuracy of rates in counties with small populations.  
Data Source: National Health Statistics System  
National Center for Health Statistics



numbers on columns are p-values vs. placebo, unless indicated otherwise





# Workplace and life needs

Companies spent 62% of their 2015 content marketing budget on infographics, up 15% from 2014.\*

84% of internet communications will be visual by 2018\*\*

\*Content Marketing Institute. *B2C Content Marketing: Benchmarks, Budgets, and Trends— North America*. Cleveland, OH: Content Marketing Institute, 2016. Accessed May 1, 2016.

[http://contentmarketinginstitute.com/wp-content/uploads/2015/10/2016\\_B2C\\_Research\\_Final.pdf](http://contentmarketinginstitute.com/wp-content/uploads/2015/10/2016_B2C_Research_Final.pdf).

\*\*Lopes, Marina. "Videos May Make Up 84 Percent of Internet Traffic by 2018: Cisco." Edited by Andre Grenon. Reuters.com. Last modified June 10, 2014. Accessed May 1, 2016.

<http://www.reuters.com/article/us-internet-consumers-cisco-systems-idUSKBN0EL15E20140610>



# Goals for teaching infographic evaluation

- ✓ Post-secondary disciplinary education
- ✓ Career applications
- ✓ Civic literacy, health literacy and life-long literacy



# Needs...

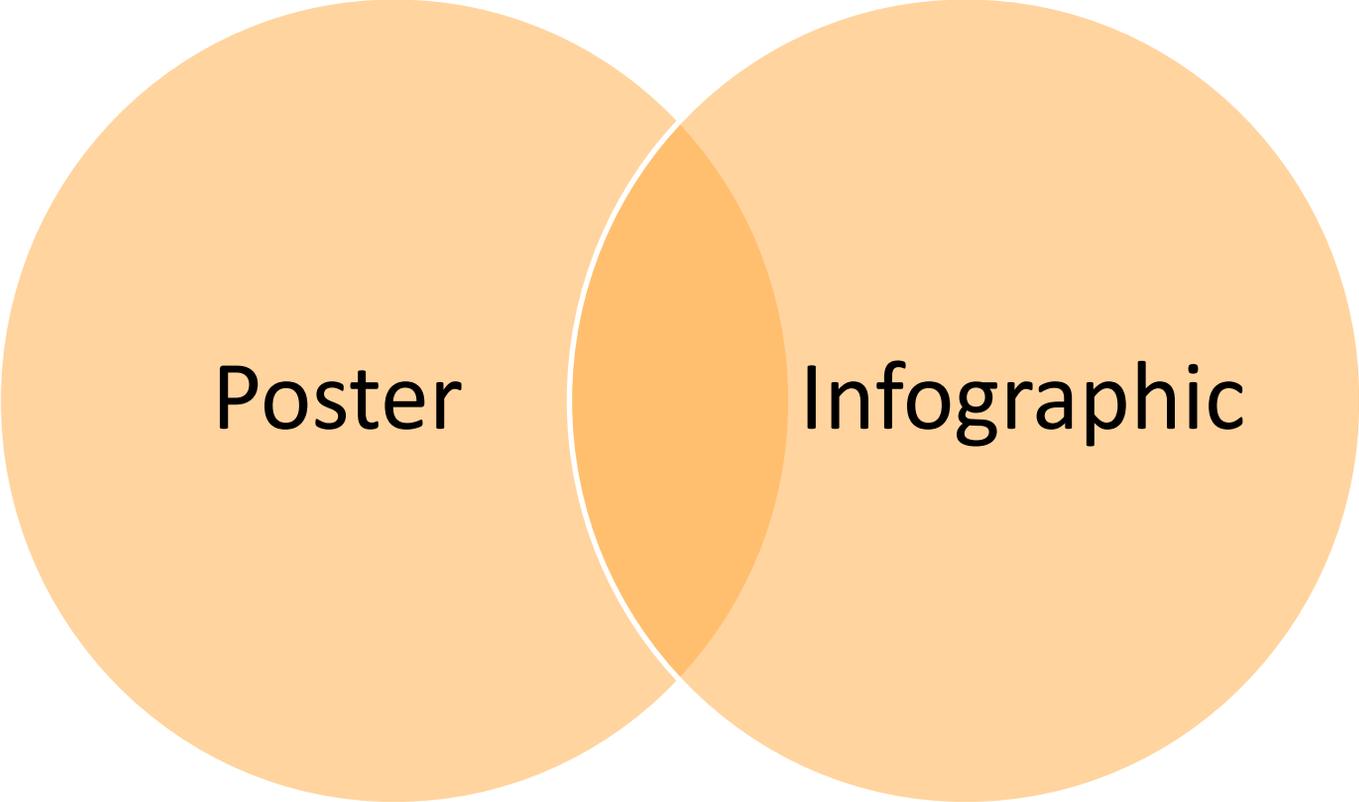
Data literacy instruction is an unmet need even at the college and graduate level\*

Learning analysis vs. infographic *tools*\*\*

\*Frank, Emily P., and Nils Pharo. "Academic Librarians in Data Information Literacy Instruction: A Case Study in Meteorology." *Association of College and Research Libraries* 77, no. 4 (July 2016): 536-52. Accessed July 7, 2016. doi:10.5860.

\*\*Carlson, Jake, and Lisa Johnston. *Data Information Literacy: Librarians, Data, and the Education of a New Generation of Researchers*. Purdue Information Literacy Handbooks. West Lafayette, IN: Purdue University Press, 2015.

# How do they differ...?



Poster

A Venn diagram consisting of two overlapping circles. The left circle is labeled 'Poster' and the right circle is labeled 'Infographic'. The overlapping area in the center is shaded a darker orange than the non-overlapping areas.

Infographic

# California: Voting in the **GOLDEN** State

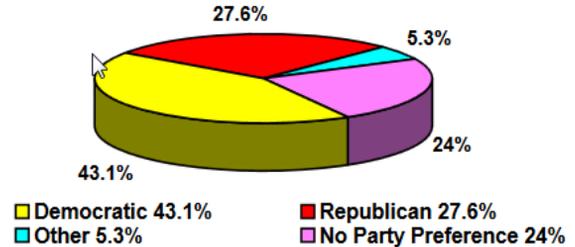


## Did you know...

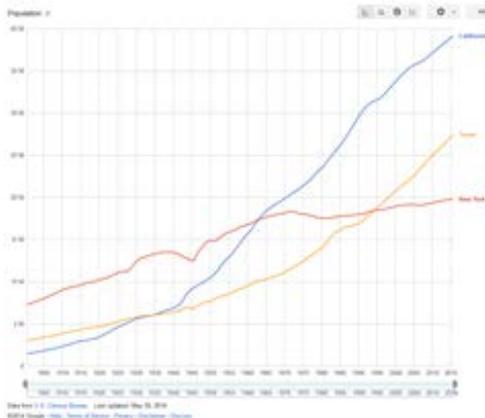


California has  
58 counties  
The capital is  
Sacramento

### Political Party Registration Percentages



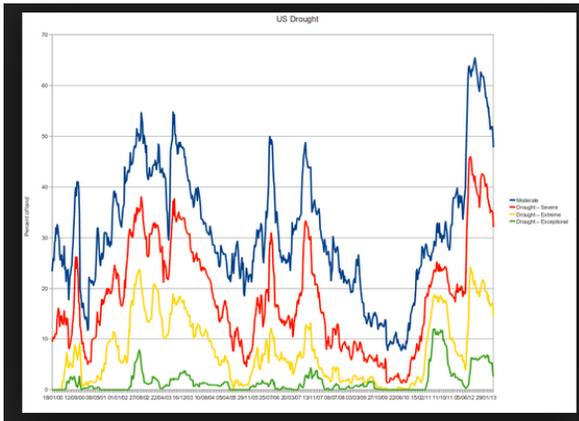
There are  
38,802,500  
people  
living in  
California –  
more than  
Texas or  
New York



Gold Rush Fever  
brought  
Thousands of settlers  
eager to stake their  
Claim starting in 1849  
After discovery at  
Sutter's Mill



# The infographic equation...



=

Thoughtful  
visual  
argument

“...allowing viewers to quickly grasp the essential insights the data contains.”

"Information Graphic (Infographic)." In *Technopedia*. Accessed July 9, 2016  
<https://www.techopedia.com/definition/27808/information-graphic-infographic>.



# What is an argument?

***Claim*** (thesis) backed up with ***evidence*** and ***reasoning*** about why the evidence supports the claim.

Every argument has counters:  
***alternatives to the claim....***

The key is the evidence. Unlock it with story.



# Argument v. Persuasion

**Argument** makes a case:

**Persuasion** makes a case:

Based on the perceived **merit and logic** of the claims and proofs

Based on the **credibility, character, or authority** of the writer

*Requires* evidence

*Maybe* has evidence

May include personal experience as evidence

May appeal to the audience's self-interest and sense of identity

Includes emotional appeal



## Election time: is California relevant?

There are 38,802,500 people living in California – more than Texas or New York

More people = more votes = more CA opinions in Congress



yes

# 55

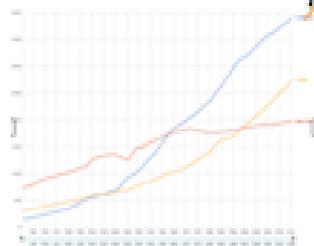
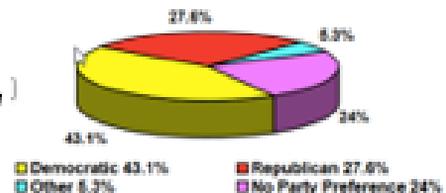
No. of electoral college votes

This is 20% of the total needed to win the nat'l election!

yes

CA brings a Democratic party block to a Conservative government

Political Party Registration Percentages





# STRONG SCHOOL LIBRARIES BUILD STRONG STUDENTS



## STUDENT ACHIEVEMENT

↑ ↑ ↑  
**WHEN SPENDING FOR SCHOOL LIBRARIES RISES, BETTER READING SCORES FOLLOW.**

Test scores tend to be significantly higher for schools that have full-time certified school librarians as well as for those that have such a librarian with support staff.

Achterman 2008

**STATE STUDIES CONFIRM SCHOOL LIBRARIANS SUPPORT STUDENT ACHIEVEMENT.**

## CAREER AND COLLEGE READINESS

“School libraries are essential learning resources and librarians are the essential ‘guides inside’ our schools, leading everyday teaching and learning toward methods and outcomes that best prepare our students for the challenges of the 21st century.”

Bernie Trilling, Global Director, Oracle Education Foundation, 2010



“INFORMATION RETRIEVAL AND EVALUATION IS A LIFELONG SKILL THAT ALL WORKFORCE STUDENTS NEED. SCHOOL LIBRARIANS PROVIDE THAT INSTRUCTION.”

Bill Cullifer, Exec Director, WebProfessionals.org/WhyTnow.org Initiative, 2013

DESIGNED BY: SAMANTHA LAMOS, 10TH GRADE, PETALUMA HIGH GRAPHIC DESIGN PROGRAM



37%

OF ALL AMERICANS DO NOT HAVE ACCESS TO HIGH-SPEED BROADBAND CONNECTIVITY AT HOME.  
FEW 2012

**STRONG SCHOOL LIBRARIES BRIDGE THAT GAP**

Student work / Graphic Design Program

Lamos, Samantha. "Strong School Libraries Build Strong Students." Infographic. AASL. ALA, 2013. Web. 8 Dec. 2015. <[http://www.ala.org/aasl/sites/ala.org/aasl/files/content/aaslissues/advocacy/AASL\\_infographic.pdf](http://www.ala.org/aasl/sites/ala.org/aasl/files/content/aaslissues/advocacy/AASL_infographic.pdf)>. Used with permission.



Members of the media and public are welcome to post the downloadable PDF of this infographic provided that no alterations are made and that the posting is for educational, noncommercial purposes only. ©2013 AASL. All rights reserved.

Sources: Achterman, Doug. "Haves, Halves and Have-Not: School Libraries and Student Achievement." University of North Texas, December, 2008.  
Cullifer, Bill. Conversation by telephone February 2013.  
Breves, Joanne, Barrie Lee. Few Internet Broadband Few Internet and American Life Project. Pew Research Center. May 24, 2012. <http://pewinternet.org/Commentary/2012/May/Few-Internet-Broadband.aspx>  
Bernie Trilling's quote: School Library Monthly/Volume XXVII, Number 1/September-October 2010 From Libraries to Learning "Libraries" The New ABC's of 21st-Century School Libraries. by Bernie Trilling

**progress**

area

every

distance

many

fewer

trend

none

light

heavy

much





**If you're reading a design, then  
“think like a designer”**

“Every designer makes moral  
and intellectual choices in the  
creation of an infographic”

-Edward Tufte

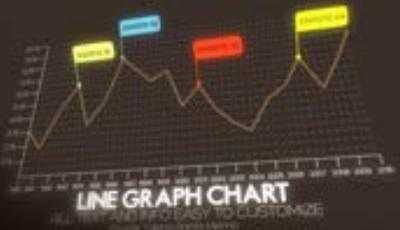


# Beware of Big Beautiful "Nothings"

**SEGMENTED  
PIE CHART**  
EIGHT CUSTOMIZABLE  
SECTIONS



# INFOCHARTS



# Graphical excellence means...



- ✓ Greatest number of ideas
- ✓ In the shortest time
- ✓ With the least ink
- ✓ In the smallest space

Show data variation *not decoration*



# Components of an infographic

1. Visual
2. Content
3. Argument / Thesis

Let's try using this. . . . .

Grais, Stuart. "Infographics: Part II." DePaul University COLlege of Computing and Digital Media. [http://facweb.cs.depaul.edu/sgrais/infographics\\_part\\_ii.htm](http://facweb.cs.depaul.edu/sgrais/infographics_part_ii.htm).



The following slides use the image and critique from:  
Dullaert, Michael. "#Lieggrafiek Week 14: Changing Face of America." *DePerfectedGrafiek.nl* (blog).  
Entry posted April 1, 2015. <http://deperfectegrafiek.nl/?p=226>

# CHANGING FACE OF AMERICA

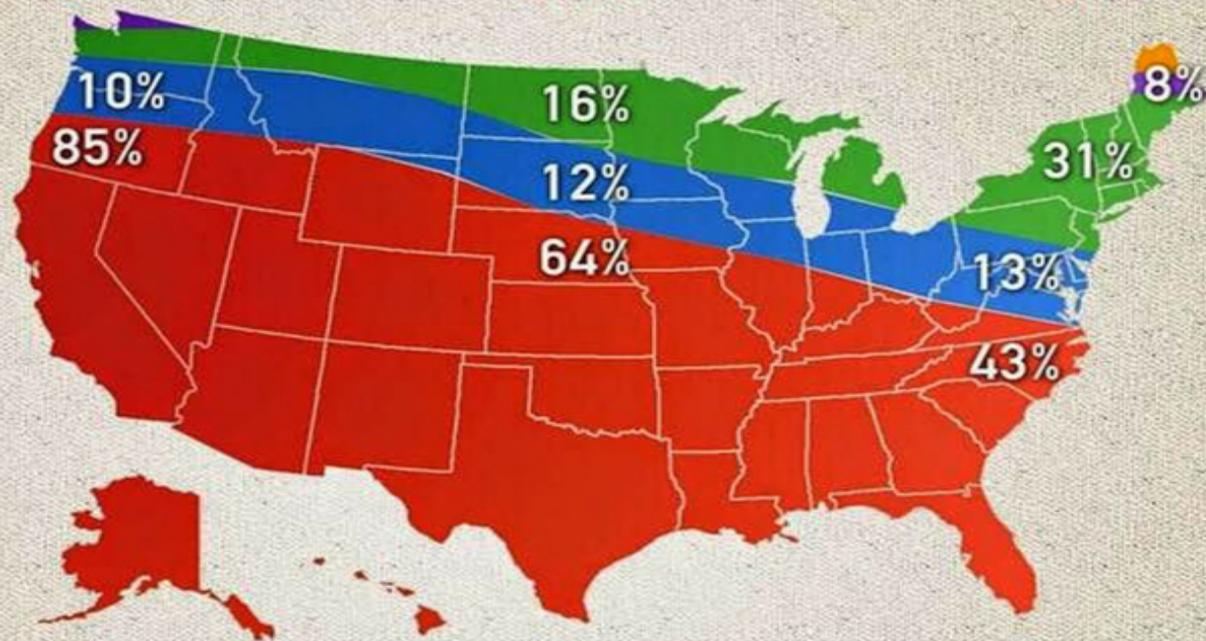
Percent of total U.S. population by race and ethnicity, 1960-2060



1960

2010

2060



OTHER

ASIAN

HISPANIC

BLACK

WHITE

SOURCE: PEW RESEARCH CENTER

NIGHTLY NEWS  
with BRIAN WILLIAMS

# CHANGING FACE OF AMERICA

Percent of U.S. population by race and ethnicity, 1960-2060

1960

2010

2060



Title

Dates

Stats

Legend

OTHER

ASIAN

HISPANIC

BLACK

WHITE



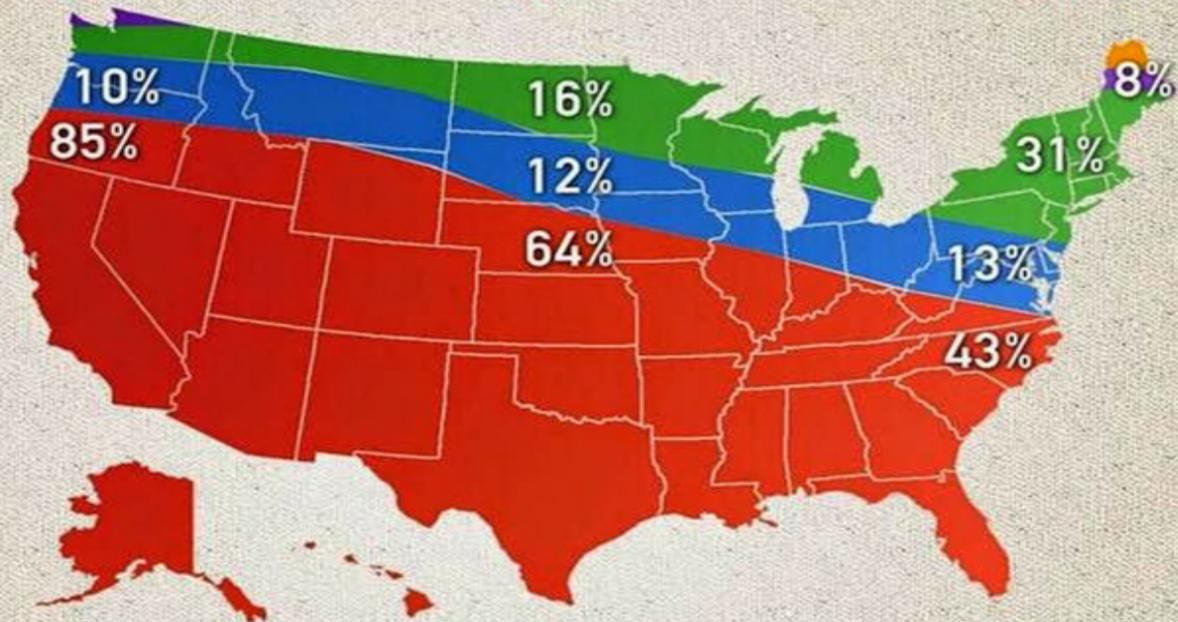
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Percent of total U.S. population by race and ethnicity, 1960-2060

1960

2010

2060



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ASIAN

HISPANIC

BLACK

WHITE

SOURCE: PEW RESEARCH CENTER

 NIGHTLY NEWS  
with BRIAN WILLIAMS



# “Reading” an infographic

Students need critical thinking practice “in the wild” using:

- **Information literacy** skills to evaluate data and the argument
- **Visual literacy** skills to evaluate graphics



What are the sources of this info? ... Thinking critically

Belluz, Julia. "The Truth about the Ice Bucket Challenge: Viral Memes Shouldn't Dictate Our Charitable Giving." Vox. Accessed August 20, 2014. <http://www.vox.com/2014/8/20/6040435/als-ice-bucket-challenge-and-why-we-give-to-charity-donate>.

## WHERE WE DONATE VS. DISEASES THAT KILL US



Source: Death statistics from 2011 CDC report, Money raised from listed charities



# CHANGING FACE OF AMERICA

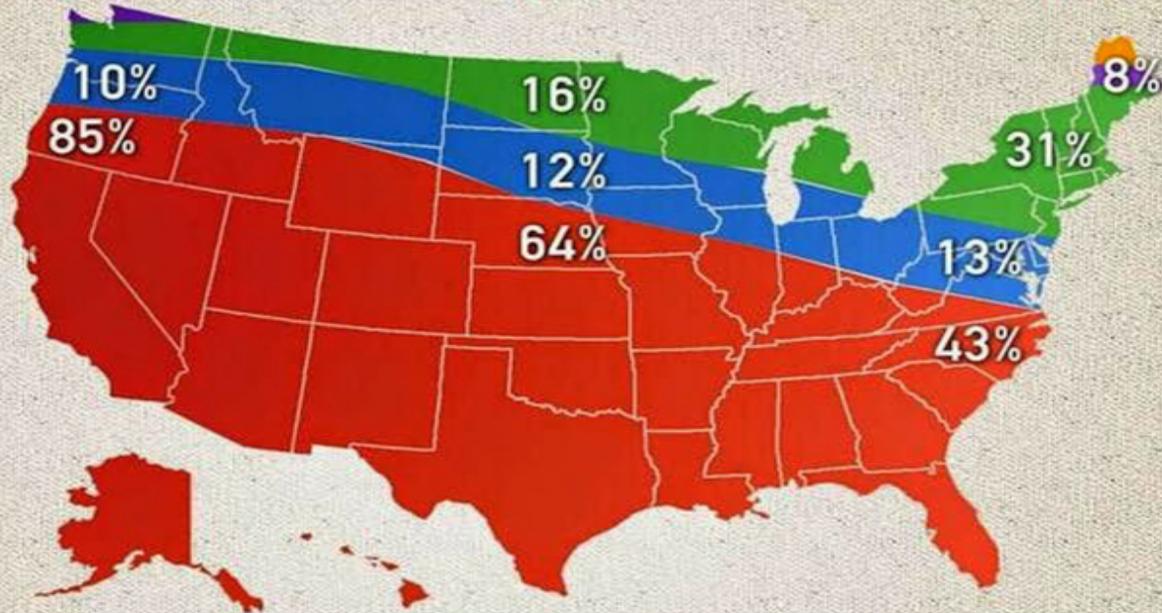
Percent of total U.S. population by race and ethnicity, 1960-2060



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OTHER

ASIAN

HISPANIC

BLACK

WHITE

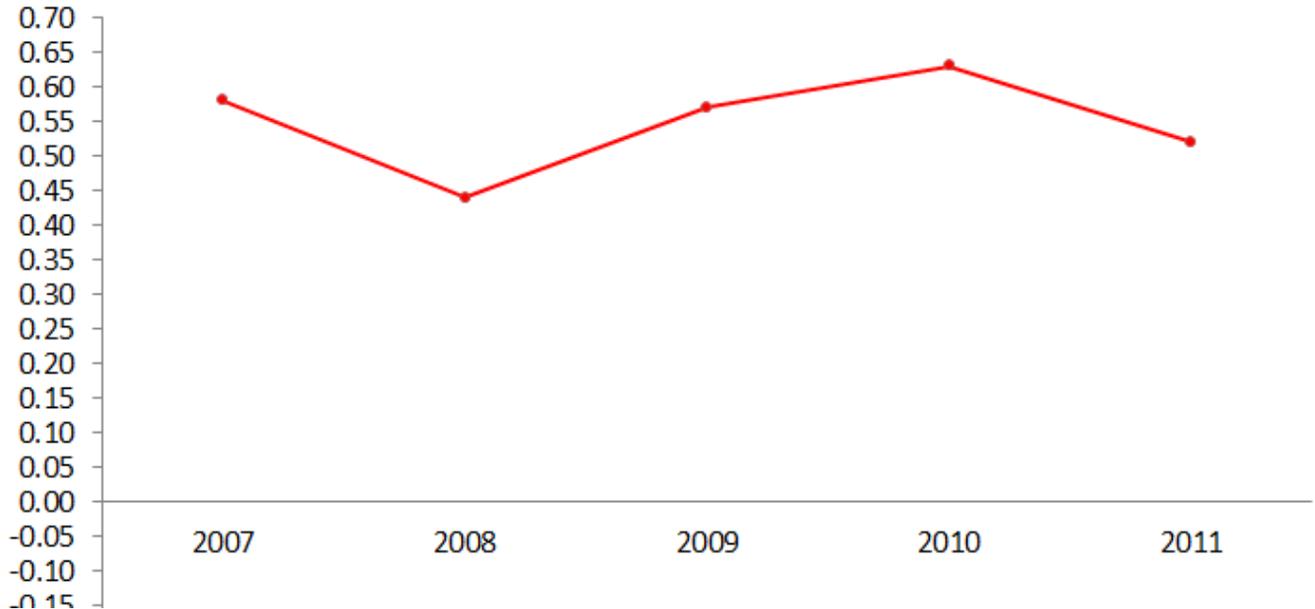
SOURCE: PEW RESEARCH CENTER

 **NIGHTLY NEWS**  
with BRIAN WILLIAMS

# Does the data match what I know?



**Global Temperature Anomalies from 20th Century  
Average 2007 to 2011 (degrees C)**



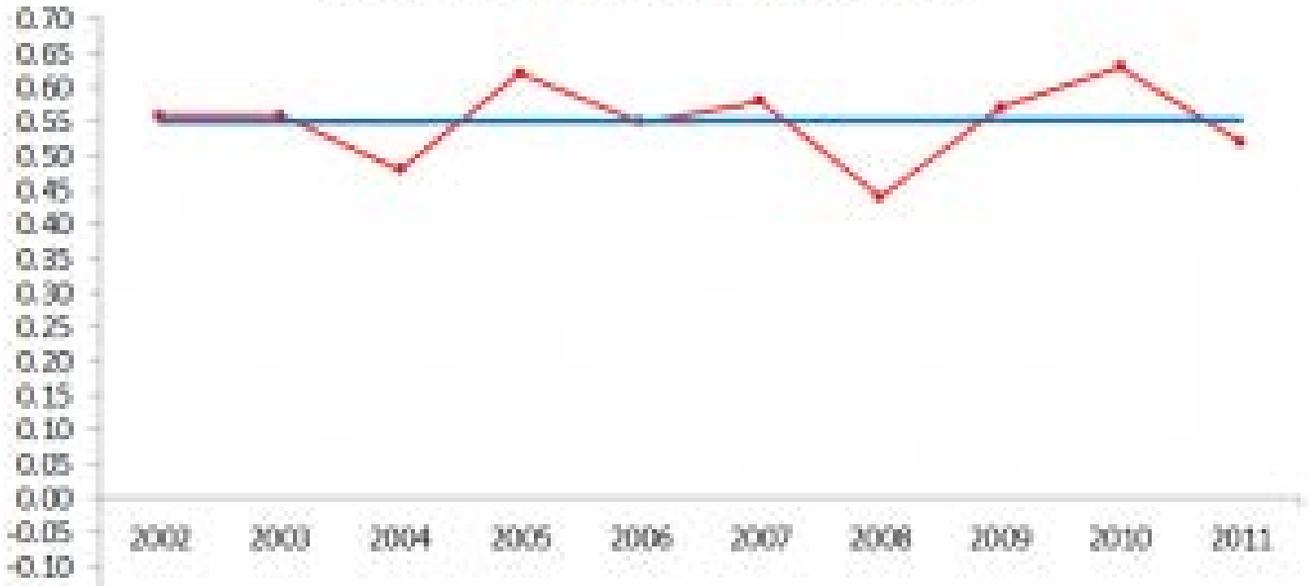
Gleik, Peter. "Global Warming Has Stopped'? How to Fool People Using 'Cherry-Picked' Climate Data." Forbes / Energy. Last modified February 5, 2012. Accessed July 11, 2016.

<http://www.forbes.com/sites/petergleick/2012/02/05/global-warming-has-stopped-how-to-fool-people-using-cherry-picked-climate-data/#79a2070832f1>.



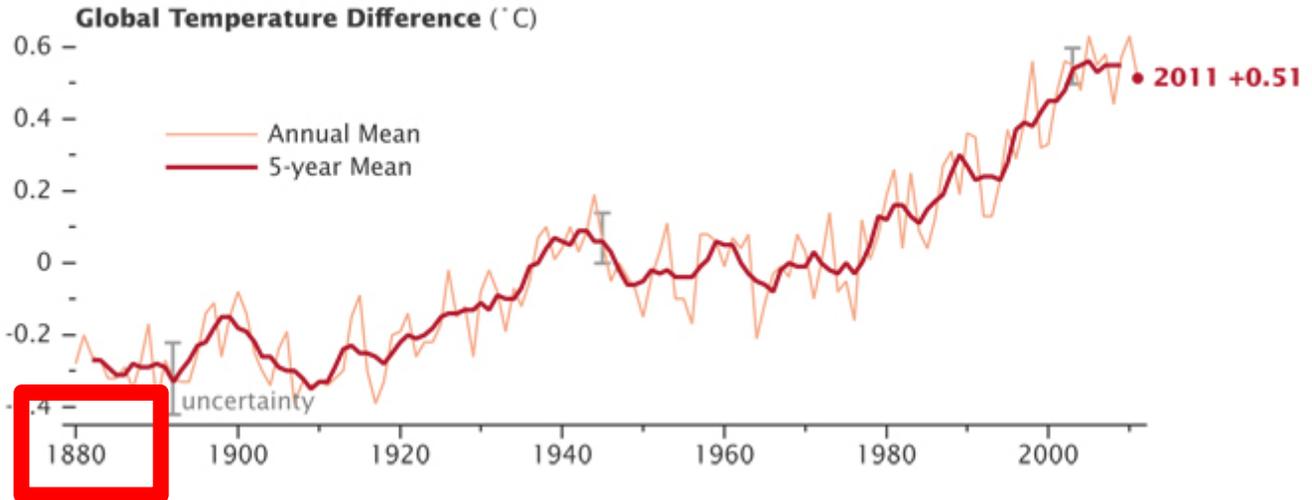
# Over What Period of Time?

Global Temperature Anomalies from 20th Century Average. Past decade (degrees C)



Gleik, Peter. "Global Warming Has Stopped'? How to Fool People Using 'Cherry-Picked' Climate Data." Forbes / Energy. Last modified February 5, 2012. Accessed July 11, 2016.  
<http://www.forbes.com/sites/petergleick/2012/02/05/global-warming-has-stopped-how-to-fool-people-using-cherry-picked-climate-data/#79a2070832f1>.

# Get the Whole Story



Gleik, Peter. "Global Warming Has Stopped'? How to Fool People Using 'Cherry-Picked' Climate Data." *Forbes / Energy*. Last modified February 5, 2012. Accessed July 11, 2016.  
<http://www.forbes.com/sites/petergleick/2012/02/05/global-warming-has-stopped-how-to-fool-people-using-cherry-picked-climate-data/#79a2070832f1>.



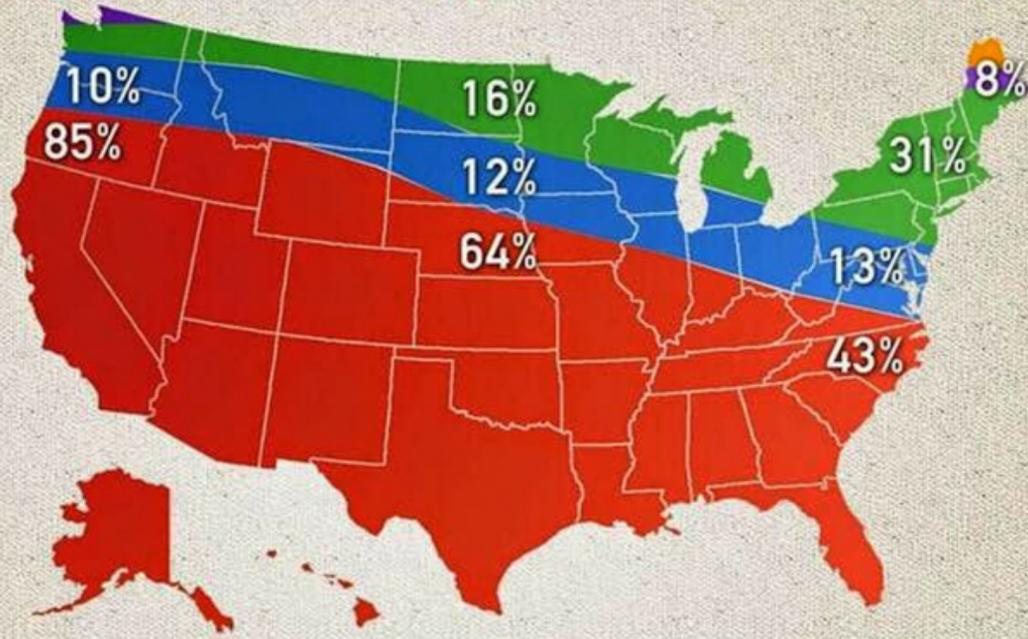
# CHANGING FACE OF AMERICA

Percent of total U.S. population by race and ethnicity, 1960-2060

1960

2010

2060



OTHER

ASIAN

HISPANIC

BLACK

WHITE

SOURCE: PEW RESEARCH CENTER

NIGHTLY NEWS  
with BRIAN WILLIAMS

What argument is being made?

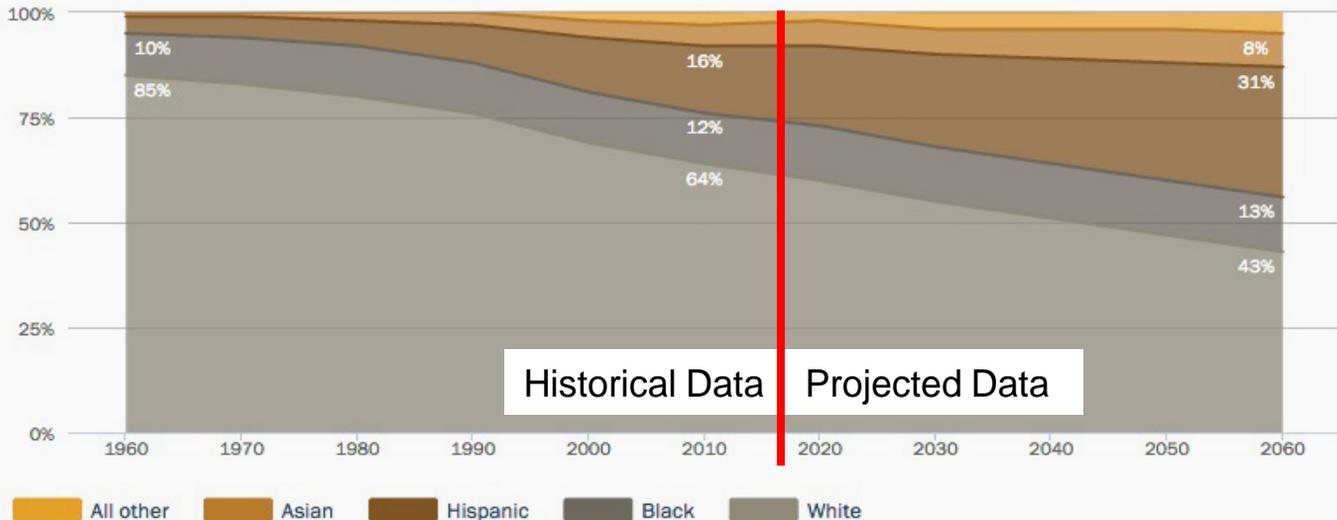


# Original Infographic from Pew

(minus my red line and note)

## *Changing Face of America*

Percent of total U.S. population by race and ethnicity, 1960-2060



Taylor, Paul. "The Next America." Pew Research Center. Last modified April 10, 2014.  
<http://www.pewresearch.org/next-america/#Two-Dramas-in-Slow-Motion>.

# Color confusion



## READING, WRITING, AND EARNING MONEY

The latest data from the U.S. Census's American Community Survey paints a disconcerting picture of the United States as this country's best score is based on the educational attainment and the median income of the entire nation, to see where people are going to school, where they're earning money, and if there's a large correlation.

### HS Ed

① HIGH SCHOOL GRADUATES 40% 50% 60% 70%

### College

② COLLEGE GRADUATES 10% 20% 30% 40%

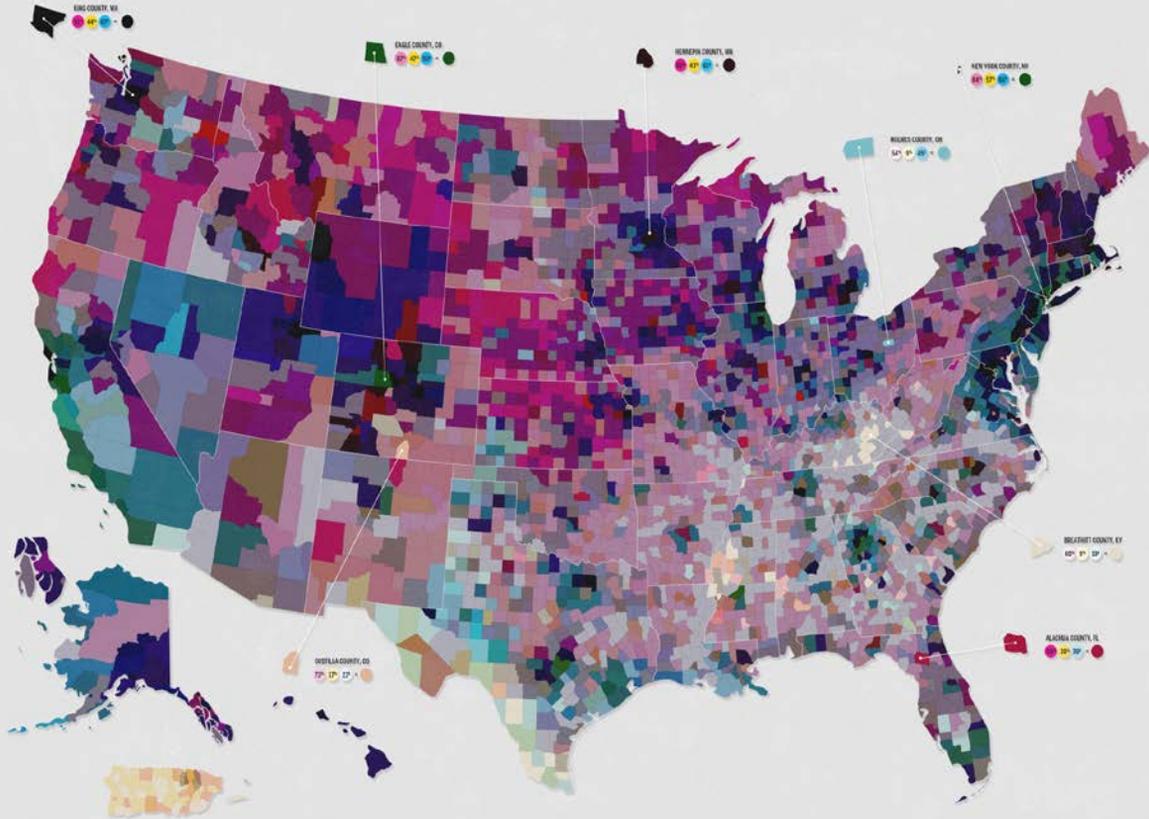
### Income

③ MEDIAN HOUSEHOLD INCOME 20K 40K 60K 80K 100K

The map at right is a graphic tool overlaying the three sets of data. The variables of that map and other maps have been analyzed from data to have shown to general, color-coded variables represent a clear visual aid for the good population since higher grade attainment is correlated with lower of all others and lower education.



A collaboration between GOOD and Gregory Mottola © MOTTOLA, VEGAS

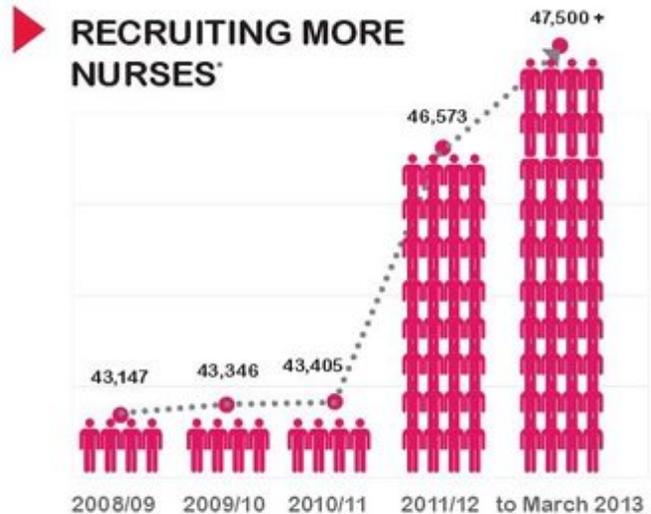


Norén, Laura. "Reading, Writing, Earning: Bad GOOD Graphic." *Graphic Sociology* (blog). Entry posted April 5, 2011. <https://thesocietypages.org/graphicsociology/2011/04/05/reading-writing-earning-bad-good-graphic/>.

# Icons: Do they accurately represent the numbers?

Das, Abhimanyu, and Diana Biller. "11 Most Useless and Misleading Infographics on the Internet." *Gizmodo* (blog). Entry posted February 26, 2015. <http://io9.gizmodo.com/11-most-useless-and-misleading-infographics-on-the-inte-1688239674>.

## The NSW Health system is...



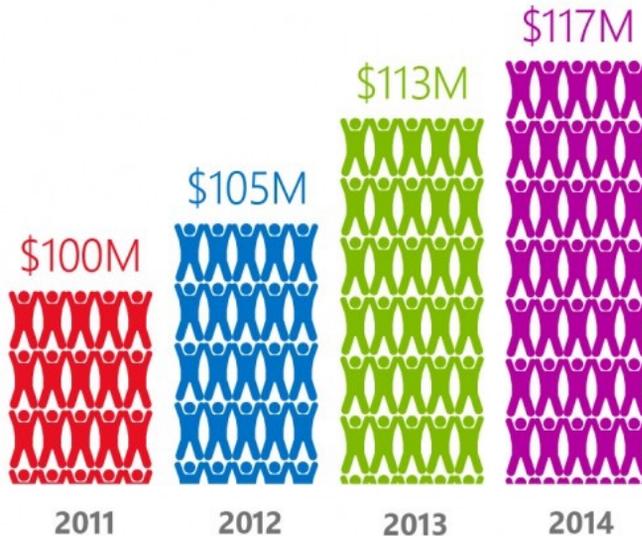
\* Nursing headcount figures at June includes non casual staff and 3rd schedule



# Did 2014 contributions double over 2011?

## Microsoft Employees Raise \$117 Million

In 2014, Microsoft employees raised a record-breaking \$117 million for nearly 20,000 nonprofits and schools around the world



"Microsoft Launches Tech Talent for Good as Employees Raise Record-breaking \$117 Million." *Official Microsoft Blog*. Entry posted February 26, 2015.

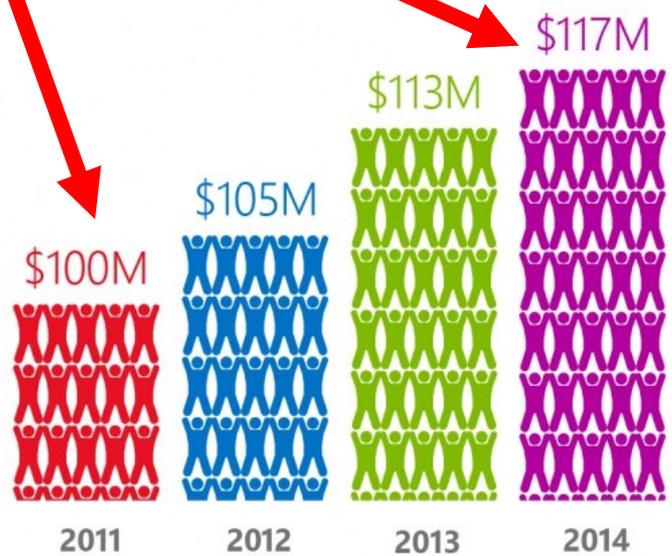
<http://blogs.microsoft.com/blog/2015/02/26/microsoft-launches-tech-talent-for-good-as-employees-raise-record-breaking-117-million/#sm.00018aqc7lkqcto10i21dd4pw7sx1>.



# Visually the bar says 2 x

## Microsoft Employees Raise \$117 Million

In 2014, Microsoft employees raised a record-breaking \$117 million for nearly 20,000 nonprofits and schools around the world



**\$233M**



CC0 Public Domain

# 3 Stories about context





# **WORLD BANK GROUP**

- End extreme poverty
- Promote shared prosperity

A population story...

Beegle, Kathleen, Luc Christiaensen, Andrew Dabalen, and Isis Gaddis. *Poverty in a Rising Africa*. Washington: World Bank, 2016. <http://hdl.handle.net/10986/22575>.

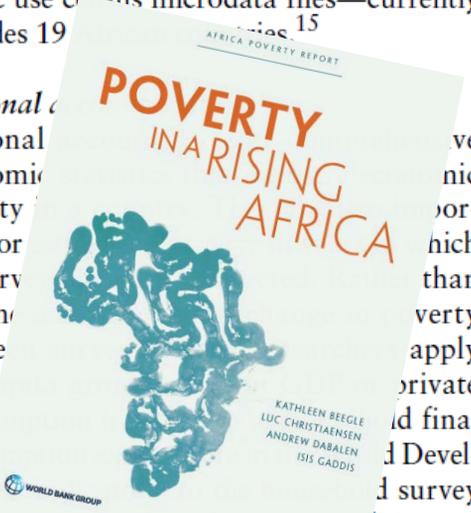
(or any measures from household surveys) (World Bank 2015a). Second, census data have been used to estimate poverty rates and poverty counts at the smallest possible jurisdiction, through poverty mapping techniques (Elbers, Lanjouw, and Lanjouw 2003). Third, census data are useful for understanding a number of nonmonetary dimensions of living standards, such as housing conditions and educational attainment.

Because of the enormous financial, personnel, and managerial demands of censuses, they are ideally conducted once every 10 years. The coverage of population censuses in Africa improved significantly in the last two rounds. In the 2000 round (1995–2004), 33 of 47 countries participated; only 8 countries had no census in the 2010 round (2005–14).<sup>14</sup> The eight countries represent about 13 percent of Africa’s population. The Democratic Republic of Congo has not conducted a census since 1984. Because it is estimated to be the third most populous country in Africa, obtaining the

correct count of the poor there is critical for regional estimates.

Only a handful of countries make their census data sets available to the public. The Integrated Public Use Microdata Series (IPUMS)—the world’s largest collection of public use census microdata files—currently includes 19

National economic activity is important for no survey assumptions between per cent consist opr means between the survey range (when no other survey is





# Brainstorm in chat...

## What might influence the reliability of population data?

United States...

China...

Middle East....?



# How Reliable is the World Population Forecast?

*Short answer — Very reliable*



## ABOUT THIS VIDEO

In this short video Professor Hans Rosling shows that already back in the 1950's the UN population experts were able to predict very precisely the population growth for the next 50 years. The forecasts made today predict that by the end of the century, there will be around 11 billion people in the world. The track record of the UN statisticians shows that their global forecasts have been very accurate historically.

SHARE



THANKS TO



# 93,482,000 AMERICANS OUT OF LABOR FORCE IN MARCH

f SHARE

✉ EMAIL

g+ SHARE

43

TWEET



Justin Sullivan/Getty Images

## Precision vs. Accuracy

May, Caroline. "93,482,000 Americans out of Labor Force in March." Last modified April 1, 2016 Breitbart.

<http://www.breitbart.com/big-government/2016/04/01/93482000-americans-workforce-march/>.



# 93,482,000 AMERICANS OUT OF LABOR FORCE IN MARCH

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# Hint



# 93,482,000 AMERICANS OUT OF LABOR FORCE IN MARCH

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EMAIL

g+ SHARE

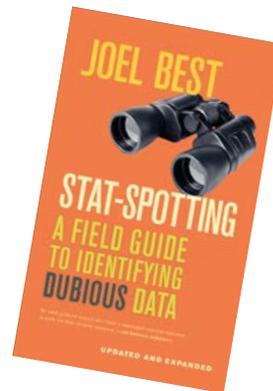
43

TWEET



Justin Sullivan/Getty Images

US pop. =  
350 million  
("benchmark" number)



May, Caroline. "93,482,000 Americans out of Labor Force in March." Last modified April 1, 2016  
Breitbart.

<http://www.breitbart.com/big-government/2016/04/01/93482000-americans-workforce-march/>.

# 2 Story about context





# Student's context: Heuristics

Students use cognitive shortcuts that rely on little information and use less cognitive resources (heuristics) when they're "thinking fast"



## The Internet's Own Boy: The Story of Aaron Swartz

2014 NR 1hr 45m



Our best guess for you: **4.6 stars**

Average of 15016 ratings: **4.2 stars**

Aaron Swartz was a programming prodigy who helped shape the digital landscape we all use today. He helped develop the internet protocol RSS and was a co-founder of Reddit. Chronicling his pioneering efforts crusading for open access and free speech and the resulting legal nightmare and tragedy that ensued, *The Internet's Own Boy* is a dynamic and moving portrait of a brilliant tech millionaire who renounced the values of Silicon Valley startup culture and used technology to tirelessly fight for social justice, no matter what the cost.

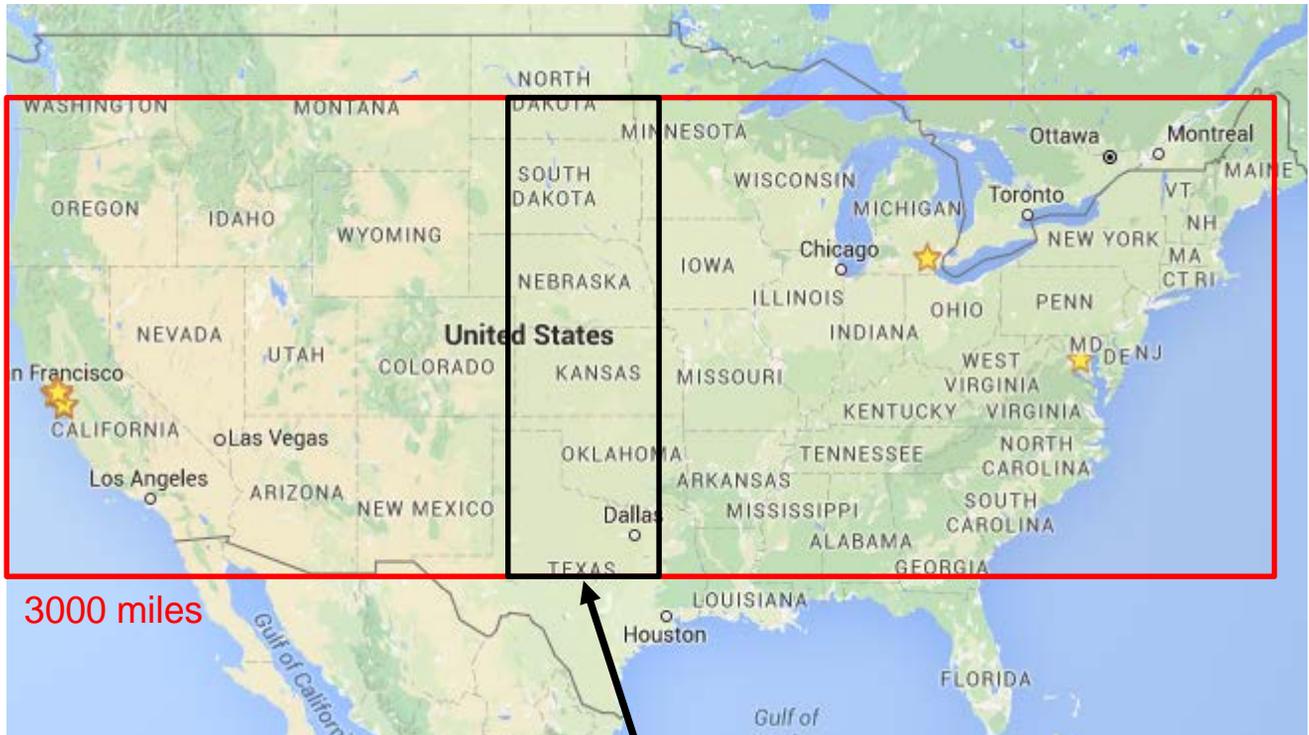
**Cast:** Aaron Swartz, Tim Berners-Lee, Cindy Cohn

DVD disc returned on 7/13/2015

[Add to DVD Queue](#)

# Benchmark for US area:

1000 mi. x 3000 mi = 3,000,000 sq. miles



1000 miles x 400 miles = 400,000 sq. miles



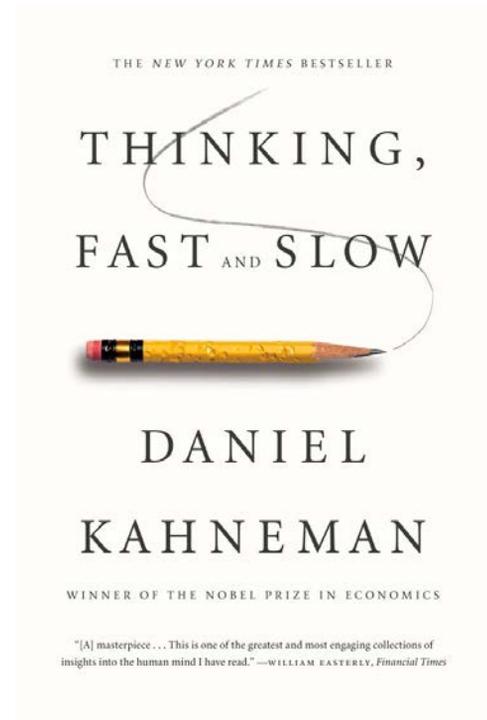
1

# Student's context: Cognitive Biases



Students make systematic but flawed decisions or judgments (cognitive biases) when they're "thinking fast"

(e.g. **FEAR**)



### Ebola-infected Americans to be evacuated

The Peace Corps said 340 of its volunteers in 3 west Africa nations will be removed due to the Ebola threat.

cnn.com

## EBOLA Tweets



**Samuel Philip** @chizzydmm · 31 Jul 2014

stop **Ebola** is to stop it from passing to new victims. NOTE: Once infected your chances of survival is almost zero. SIGNS OF **EBOLA** INFECTION:



**politicalquest** @poliquest · 31 Jul 2014

W. **#Africa #Ebola** outbreak tops 700 deaths via @6ABC 6abc.com/health/w-afric



**TopGyn Noticias** @portaltopgyn · 31 Jul 2014

VIDA/ESTILO - Serra Leoa e Libéria tomam medidas drásticas contra epidemia de **Ebola** fb.me/1et2254q3



**Marc Ha** @marcha265bhp · 31 Jul 2014

Just a plane ride away! MT@WSJ: In 4 days, the **Ebola** epidemic in West Africa claimed 57 more lives and 122 new cases



### The Ebola Virus in West Africa – The Numbers

More than 1,300 people have been infected in what's expected to be the worst outbreak of Ebola.



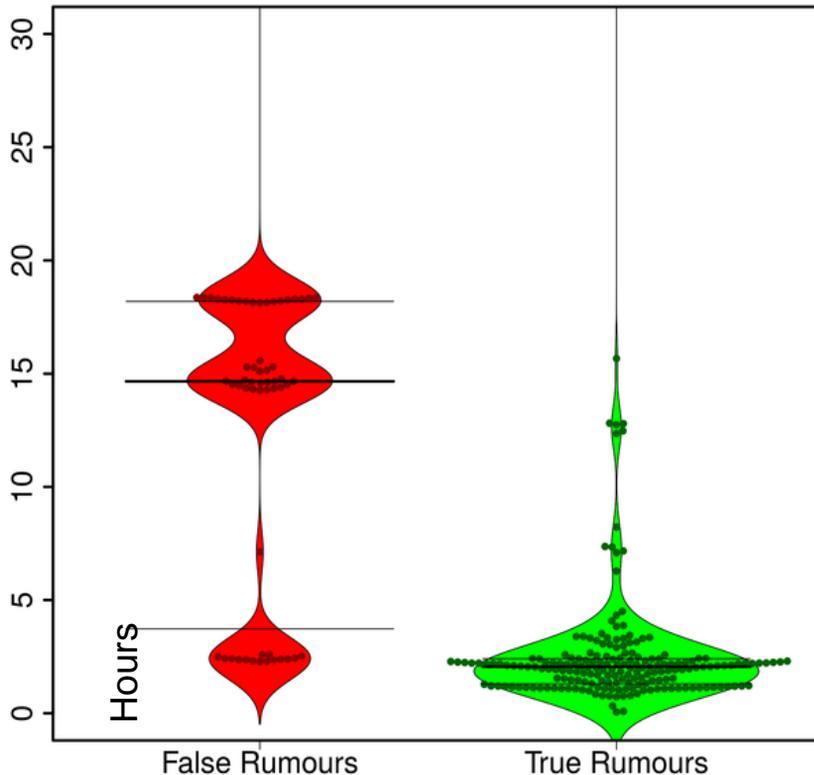
“Our analysis shows that tweets reporting unverified rumours spark a sudden burst of retweets within the very first minutes, showing that users tend to share early, unverified reports rather than later confirmations or debunks.”

Zubiaga, Arkaitz, Maria Liakata Liakata, Rob Procter, Geraldine Wong Sak Hoi, and Peter Tolmie. "Analysing How People Orient to and Spread Rumours in Social Media by Looking at Conversational Threads." *PLOS One* 11, no. 3 (March 4, 2016): 1-29.  
doi:10.1371/journal.pone.0150989.

Fig 6. Rumor resolution delays. **Anchoring Bias =**



Students  
over-rely on  
the first bit  
of data  
evidence  
they find



Zubiaga, Arkaitz, Maria Liakata Liakata, Rob Procter, Geraldine Wong Sak Hoi, and Peter Tolmie. "Analysing How People Orient to and Spread Rumours in Social Media by Looking at Conversational Threads." *PLOS One* 11, no. 3 (March 4, 2016): 1-29. doi:10.1371/journal.pone.0150989.

# Zika as a Potential Cause of Microcephaly

Barry, Michele. "Zika." Lecture, Stanford Law School, Stanford University, Palo Alto, May 17, 2016.



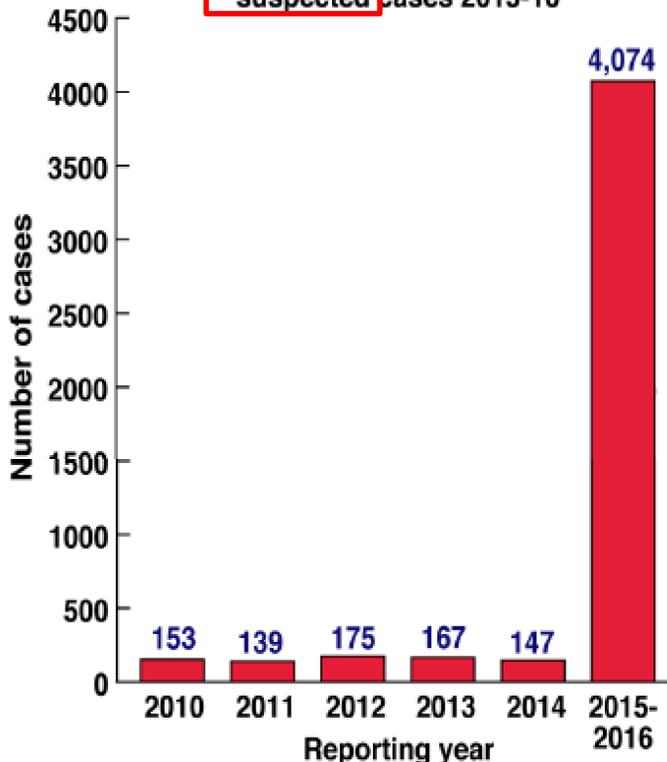
Associated Press

November 30, 2015

## Brazil Links Mosquito-Borne Zika Virus to Microcephaly Birth Defect

Nine states with Zika infections see surge in babies born with small heads

Microcephaly cases in Brazil 2010-14; suspected cases 2015-16



Source: Brazilian MOH; data as of 01/30/2016.

## Zika can cause microcephaly even if moms have no symptoms, report says

By Lena H. Sun June 15



Danielle Santos, 29, with her three-month-old son, who was born with microcephaly, during a doctor's appointment in Brazil on March 4. (Lianne Milton/Panose Pictures)

Pregnant women who become infected with the Zika virus are at risk of having babies

Sun, Lena H. "Zika Can Cause Microcephaly Even If Moms Have No Symptoms, Report Says." *Washington Post*, June 15, 2016. <https://www.washingtonpost.com/news/to-your-health/wp/2016/06/15/zika-can-cause-microcephaly-even-if-moms-have-no-symptoms/>.

# Help students think through fear-based data

Teaching Tip



ScienceDaily. "New Doubts on Zika as Cause of Microcephaly." ScienceDaily. Last modified June 24, 2016.

<https://www.sciencedaily.com/releases/2016/06/160624150813.htm>.

## Science News

from research organizations

### New doubts on Zika as cause of microcephaly

**Date:** June 24, 2016

**Source:** New England Complex Systems Institute

**Summary:** Brazil's microcephaly epidemic continues to pose a mystery -- if Zika is the culprit, why are there no similar epidemics in other countries also hit hard by the virus? In Brazil, the microcephaly rate soared with more than 1,500 confirmed cases. But in Colombia, a recent study of nearly 12,000 pregnant women infected with Zika found zero microcephaly cases. If Zika is to blame for microcephaly, where are the missing cases?

Share:



# Slow thinking, bite-sized

Teaching Tip



## OUTBREAK

### Deadliest Pandemics in History

Because a virus doesn't care about state lines or national borders, it can wipe out millions and span multiple continents rapidly. Here is a look at the infectious diseases the world has battled throughout history.

#### What is a Pandemic?

Derived from the Greek word *pandemos* meaning "pertaining to all people," a pandemic is a widespread disease that affects humans over a wide geographic area.

Key:

PANDEMIC YEAR DEATH TOLL



A halo is an abnormal swelling of the lymph nodes.

#### Honorable Mentions

Although the following viruses do not have a figure for total amount of lives claimed, they continue to terrorize various areas around the world.

##### MALARIA 1600 - Today

###### Common Symptoms

Chills, Headache, Fever, Jaundice, Muscle Pain, Nausea, Vomiting, Seizures

###### Death Toll

According to the World Health Organization's 2010 "World Malaria Report," an estimated 781,000 people are killed by the virus every year.

##### TUBERCULOSIS 700 BC - Today

###### Common Symptoms

Chest Pain, Cough, Fever, Chills, Fatigue

###### Death Toll

There are almost 2 million tuberculosis-related deaths worldwide every year.

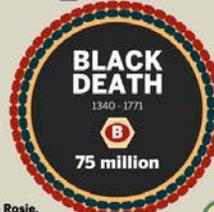
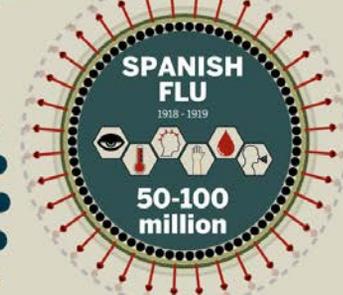
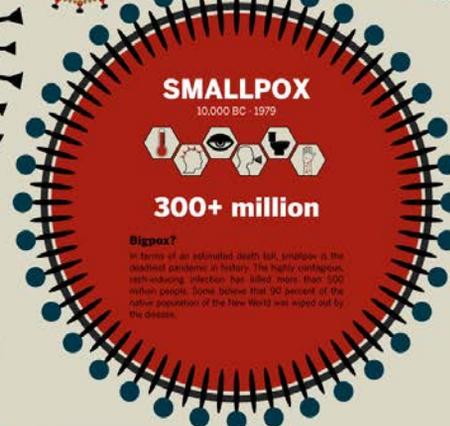
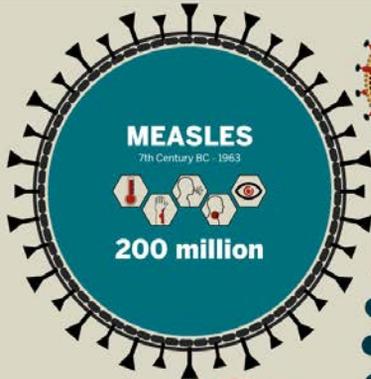
##### YELLOW FEVER 16th Century - Today

###### Common Symptoms

Bleeding, Fever, Nausea, Vomiting, Delirium, Seizures, Jaundice

###### Death Toll

Worldwide, 30,000 deaths are caused by the infection every year.



#### Ring Around the Rosie, a Pocket Full of Plague

Legend says the Black Death plague inspired the children's rhyme "Ring Around The Rosie," which alluded to the rash-like rings and ashes of the deceased victims.





# Were these the deadliest pandemics in history?



## OUTBREAK

### Deadliest Pandemics in History

Because a virus doesn't care about state lines or national borders, it can wipe out millions and span multiple continents rapidly. Here is a look at the infectious diseases the world has battled through history.

#### What is a Pandemic?

Derived from the Greek word *pandemos* meaning "pertaining to all people," a pandemic is a widespread disease that affects humans over a wide geographic area.

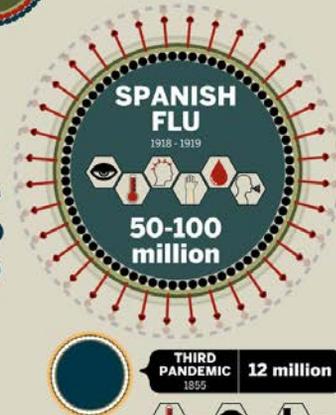
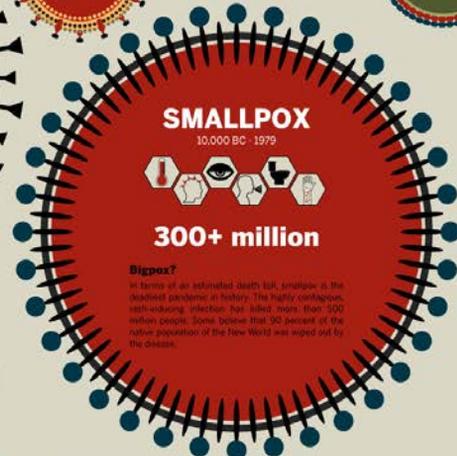
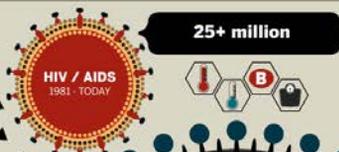
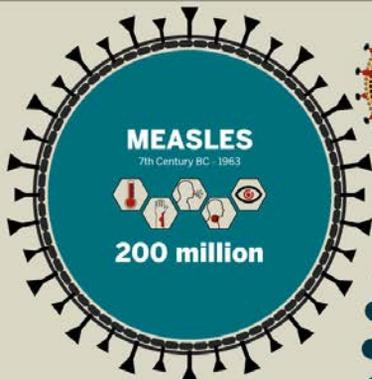
Key:



PANDEMIC YEAR DEATH TOLL

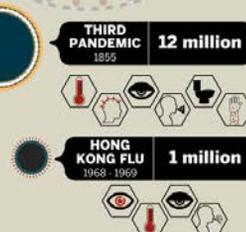


A **hobo** is an abnormal swelling of the lymph nodes.



#### Ring Around the Rosie, a Pocket Full of Plague

Legend says the Black Death plague inspired the children's rhyme "Ring Around the Rosy," which alluded to the rash-like rings and ashes of the deceased victims.



#### Honorable Mentions

Although the following viruses do not have a figure for total amount of lives claimed, they continue to terrorize various areas around the world.

**MALARIA 1500 - Today**

**Common Symptoms**  
Chills, Headache, Fever, Jaundice, Muscle Pain, Nausea, Vomiting, Seizures

**Death Toll**  
According to the World Health Organization's 2010 "World Malaria Report," an estimated 761,000 people are killed by the virus every year.

**TUBERCULOSIS 700 BC - Today**

**Common Symptoms**  
Chest Pain, Cough, Fever, Chills, Fatigue

**Death Toll**  
There are almost 2 million tuberculosis-related deaths worldwide every year.

**YELLOW FEVER 16th Century - Today**

**Common Symptoms**  
Bleeding, Fever, Nausea, Vomiting, Delirium, Seizures, Jaundice

**Death Toll**  
Worldwide, 30,000 deaths are caused by the infection every year.



# Yufuin



Yufuin is located in the almost center of Oita Prefecture, about 128km in area. And hot springs abound in the Yufuin basin at the base of the magnificent Yufu mountain with 1584m high. Many other mountains over 100m in height range around the town.



D

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© Debbie Abilock

# Build you own background

Teaching  
Tip



Library / SJSU Research Guides / Meteorology & Climate Sciences / Weather & Climate Data

## Meteorology & Climate Sciences: Weather & Climate Data

Enter Search Words

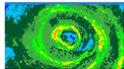
Resources for meteorology & climate sciences, including Meteorological & Geostrophysical Abstracts, journals, and how to obtain help.

- Help!
  - Get the Big Picture
  - Articles
  - Books & Dissertations
  - Technical Reports
  - Weather & Climate Data**
  - Online Resources
- Citing & Managing References    Tutorials and Tools

### Cal-Adapt Announcement

- [Visualizing California Climate Change](#)  
Cal Adapt: An engrossing one-stop shop for California's climate future goes online.

### Atlantic Oceanographic & Meteorologic Laboratory



Tropical cyclone information for the Western Pacific.

### Data Sources

- [Cal-Adapt](#)  
Cal-Adapt has been designed to provide access to data and information that has been, and continues to be, produced by the State's scientific and research community. The data available in this site offer a view of how climate change might affect California at the local level. Here you can work with visualization tools, access data, and participate in community sharing to contribute your own knowledge.
- [NOAA Climate.gov](#)  
NOAA Climate.gov is a source of timely and authoritative scientific data and information about climate. Our goals are to promote public understanding of climate science and climate-related events, to make our data products and services easy to access and use, to provide climate-related support to the private sector and the Nation's economy, and to serve people making climate-related decisions with tools and resources that help them answer specific questions.
- [Climate Reanalyzer](#)  
Climate Reanalyzer is being developed by the Climate Change Institute at the University of Maine to provide an intuitive platform for visualizing a variety of weather and climate datasets and models.

Investigate climate using interfaces for reanalysis and historical station data. Plot maps, timeseries, and correlations; export timeseries data to a text file for later use in spreadsheet software; export map layers to Google Earth.

- [World Data Center for Paleoclimatology](#)  
Mission: To provide the paleoclimate data and information needed to understand and model inter-annual to centennial-scale environmental variability
- [Goddard Space Flight Center. Global Change Master Directory](#)  
Climate indicator datasets.
- [Weather Underground](#)  
Commercial weather service that provides real-time weather information via the Internet.

### KQED Climate Watch Reports

- [Climate Watch Joins New KQED Science Unit](#)
  - [Autumn Makes a Sultry Entrance](#)
  - [Reality Check: California's Ultra-Low-Greenhouse Gas Future](#)
  - [Oysters May Foreshadow Acidic Oceans' Effects](#)
  - [California's Farm Belt Didn't Dodge the Summer at Wave](#)
- [Website](#) | [Feed](#)



# Which is most helpful to the student?

1

[NOAA Climate.gov](https://www.noaa.gov)

2

[NOAA Climate.gov](https://www.noaa.gov) is a source of timely and authoritative scientific data and information about climate. Our goals are to promote public understanding of climate science and climate-related events, to make our data products and services easy to access and use, to provide climate-related support to the private sector and the Nation's economy, and to serve people making climate-related decisions with tools and resources that help them answer specific questions.



# Of these...?



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"[National Oceanic and Atmospheric Administration \(NOAA\)](https://www.noaa.gov) conducts research and gathers data about the global oceans, atmosphere, space and sun, and applies this knowledge to science and service that touch the lives of all Americans."

The National Oceanic and Atmospheric Administration has created a [climate portal](#) as an attempt to organize the sources and kinds of climate information. It opens onto "ClimateWatch", an online magazine. Other tabs are "Data & Services", "Understanding Climate" and "Education". Here is a good summary: [About NOAA Climate Services Portal](#)

# When I deconstructed these...



## Unquoted NOAA

<https://www.climate.gov/about>

[NOAA Climate.gov](https://www.climate.gov/about) is a source of timely and authoritative scientific data and information about climate. Our goals are to promote public understanding of climate science and climate-related events, to make our data products and services easy to access and use, to provide climate-related support to the private sector and the Nation's economy, and to serve people making climate-related decisions with tools and resources that help them answer specific questions.

## Quotes NOAA

"[National Oceanic and Atmospheric Administration \(NOAA\)](https://www.noaa.gov) conducts research and gathers data about the global oceans, atmosphere, space and sun, and applies this knowledge to science and service that touch the lives of all Americans."

## Original thinking

The National Oceanic and Atmospheric Administration has created a [climate portal](#) as an attempt to organize the sources and kinds of climate information. It opens onto "ClimateWatch", an online magazine. Other tabs are "Data & Services", "Understanding Climate" and "Education". Here is a good summary: [About NOAA Climate Services Portal](#)



金山寺味噌・いりこもろろ  
香りの絶妙な味噌は  
お酒・お刺身・お漬物・  
お肉・お魚・お豆腐・  
お野菜・お豆腐・お味噌汁  
株式会社 田味味噌店

金山寺  
200g 500g 1000g  
（税込）

麦もろろ  
200g 500g 1000g  
（税込）

いりこもろろ  
200g 500g 1000g  
（税込）

柚子  
200g 500g 1000g  
（税込）

赤だし  
200g 500g 1000g  
（税込）

白味噌  
200g 500g 1000g  
（税込）

ごま味噌  
120g  
三・五・月  
（税込）

酢  
200g 500g 1000g  
（税込）

# Three-part curation: Curate, **describe** & **evaluate**



## 1. **What's the relevance of the data for the project?**

- Primary source for data on climate in the U.S (and the world)
- Climate.gov: keyword search, browse
- Datasets for geographic areas and types of data

## 2. **What's tricky?**

- ...but date ranges vary
- ...and the data sets are clunky to download

**Teach this!**

# Scientist's writing: Dispassionate, present tense, conditional verbs

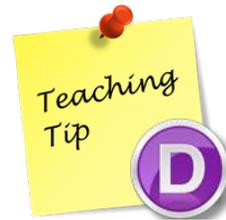
Teaching  
Tip



"These simulations **show** that reducing the place-based effect of obesity of students living (or attending school) in high obesity neighborhoods (or schools) to the level of observationally similar students living in (or attending school) in lower obesity neighborhoods (or schools) would have a **meaningful if modest effect** on the overall rate of obesity in NYC. If policies were able to reduce neighborhood (or school) effects to that of the median tract (school), we **estimate** a 1.5 to 1.7 point (or 8–12 percent) reduction in the obesity rate. More aggressive targets would yield greater reductions. There are two **important caveats** to keep in mind when interpreting these results, however. First, as noted above, even the median scenario is a **rather ambitious** target, requiring a 3–4 percentage point reduction in obesity among the highest obesity tracts (or schools). Second, students in NYC are unevenly distributed across neighborhoods and schools. A larger share of NYC students live (or attend school) in higher obesity neighborhoods (or schools). **On the one hand**, this means targeted, place-based interventions **may be** an efficient approach, since changing a high obesity neighborhood affects a larger number of students than changing a lower obesity neighborhood. **On the other hand**, lower obesity neighborhood (or school) effects **may be** particularly unrealistic targets, since they reflect a **relatively smaller** share of the population."

Elbel, Brian, Sean B. Corcoran, and Amy Ellen Schwartz. "Neighborhoods, Schools and Obesity: The Potential for Place-Based Approaches to Reduce Childhood Obesity." *PLOS One* 11, no. 6 (June 16, 2016): 1-12. doi:10.1371/ journal.pone.0157479.

# Historian's writing: A narrative sequence punctuated by data



“Researchers will find significant variations in the recording of names for Native Americans in the census. Sometimes there are what appear to be names in an Indian language or the probable Indian name translated into English. In many cases, only a single name, either the given or surname, is recorded. Frequently, enumerators recorded an English given name without any surname or used "Indian" as a surname or given name. In the 1880 census, for example, there are 924 enumerations in which the surname is "Indian" and 560 entries in which "Indian" is recorded as the given name with no surname.<sup>12</sup> Occasionally, "papoose" or "squaw" is used for given names, or a number is used in place of the given name. One enumerator took the unusual step of making this note in the 1880 census: "Indians won't always give their names. When they do it is unsatisfactoryily [*sic*] given.”

# I promise you teaching strategies...



1. Teach data within a discipline
2. Model “in the ballpark” benchmarking
3. Curate – a few sources. Annotate critically.





# Infographics: An Instructional Lens

## Part 2:

*Understanding  
the story behind  
the design*



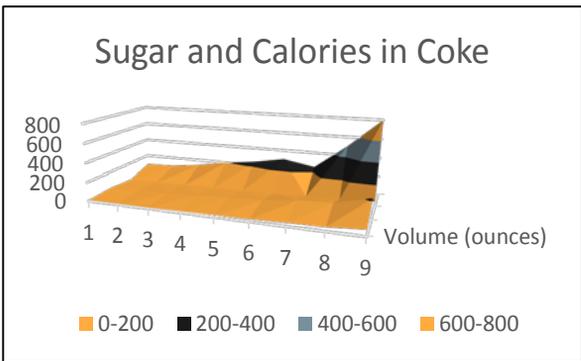
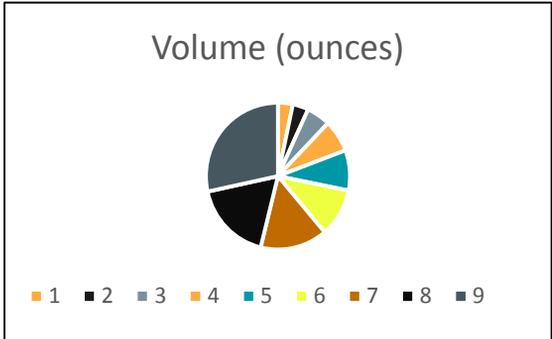
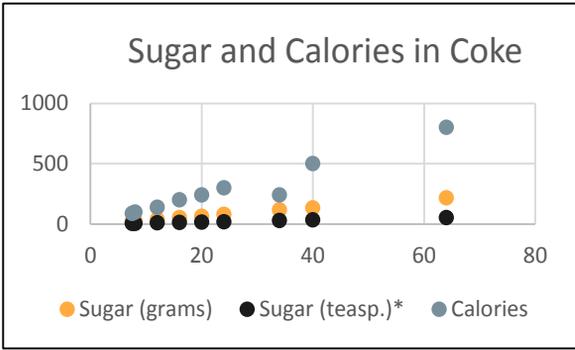
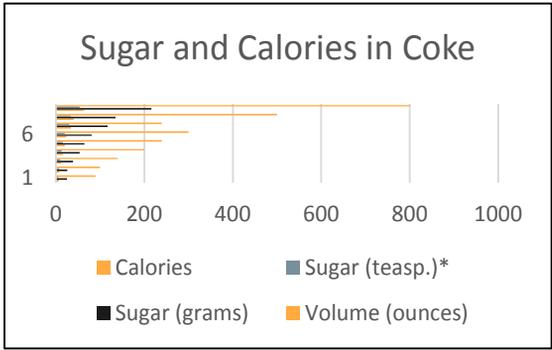
[https://commons.wikimedia.org/wiki/File:Hand\\_showing\\_lens\\_demonstration.jpg](https://commons.wikimedia.org/wiki/File:Hand_showing_lens_demonstration.jpg)



VIRTUAL CONFERENCE  
ON  
DATA LITERACY  
CREATING DATA LITERATE STUDENTS



# Reading vs. Creating



URUGUAY



Mintz, Tyler. "Tracing the Food Chain from Farm to Table." In *Infographic Designers' Sketchbooks*, by Steven Heller and Rick Landers. New York: Princeton Architectural Press, 2014. Used with permission.

# ENJAMIN FRANKLIN

1706-1790



In Benjamin Franklin's lifetime, he was engaged in political, scientific, and literary affairs that had contributions that affected American society up until at least the 1840's. Franklin was an American diplomat, who contributed to foreign affairs, and also was vital in the making of many influential U.S. documents that helped form the nation. Franklin made inventions that helped improve daily life for his fellow citizens, along with the scientific community. He also had great achievements in literature and journalism, being called one of America's great writers. Franklin was a Renaissance man, that used his talents to better the world around him. Although he made significant impact in his scientific and literary endeavors, his political achievements were his biggest legacy.

## Timeline

Important Dates

- 1728-1731 - Formed first printing partnership. Published first edition of the Pennsylvania Gazette.
- 1742 - Invented the Franklin Stove.
- 1752 - Invented the lightning rod.
- 1775 - Elected to the 2nd Continental Congress. Proposed Articles of Confederation.
- 1783 - Signed Treaty of Paris.
- 1787 - Signed Constitution.
- 1732 - Published the first edition of Poor Richard's Almanack.
- 1746 - Began experiments w/ electricity.
- 1771 - Started writing his Autobiography.
- 1776-1778 - Appointed to the committee drafting the Declaration of Independence. Negotiated alliance treaty w/ France.
- 1784 - Invented bifocals.
- 1790 - April 17 at age 84.




## POLITICS

Working Towards A New Nation

Franklin helped write and edit the Declaration of Independence, starting the move towards becoming a nation.

Franklin was well known in Europe, making him the US's choice for the negotiator of the treaty of alliance with France.

With this alliance the US was able to win the war for Independence.

Student work / History class

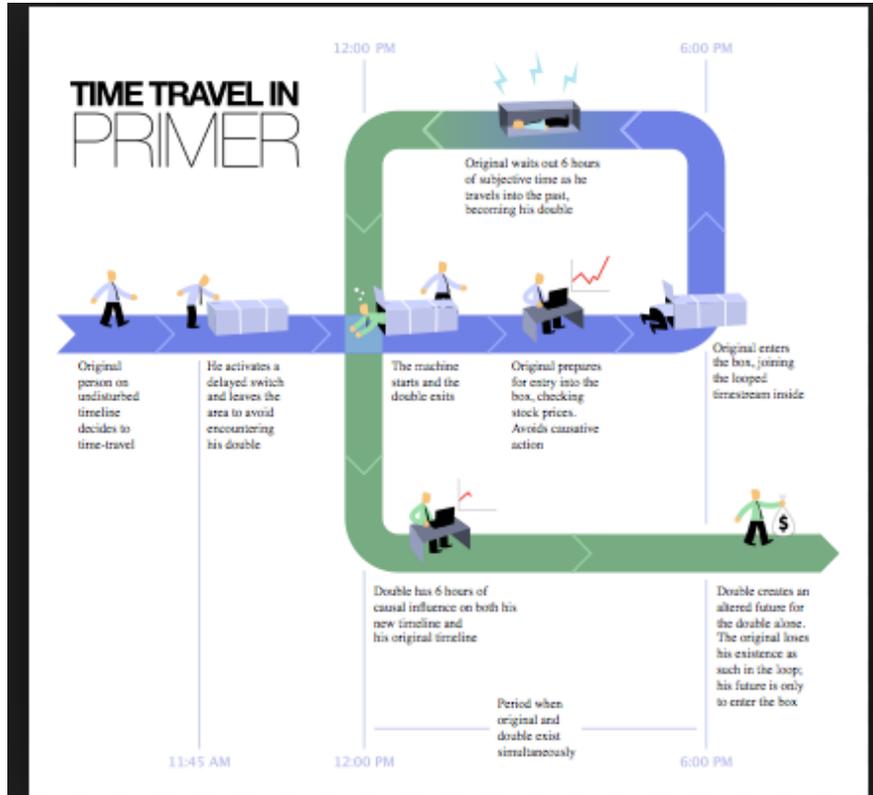
# THE LITTLE PILL THAT COULD

**THE Pill**

- If forgotten**
  - Doesn't back to early 1990s, because 95% of diaphragm are not used after about 70 hours of intercourse. Making the best tenderness.
- What it is/now to take it**
  - The pill/morning after pill can save it.
  - The pill is taken orally, therefore, it is important to take the right pill on the right day, if you're a girl, get your doctor.
  - There's several types of them, when you get after unprotected sex, you can get regular use.
- Good & Bad Side Effects**
  - Increased breast size
  - Brown "periods"
  - Headache, nausea, gain
  - Weight gain
  - Depression
  - Reduced sperm count
  - May prevent ovarian cysts
  - Reducing acne
  - Prevents menstrual bleeding
  - Prevents ovulation
  - Prevents ovulation
- How effective/if it prevents STIs?**
  - The pill prevents against STDs like gonorrhea, chlamydia
  - May increase risk having chlamydia
  - Does NOT provide protection against STIs, including HIV/AIDS
  - 80% Effective
- Where to find it/cost?**
  - The pill is now available over counter in the U.S.
  - Costs from \$50-110
  - Low over counter in Ontario except in Quebec
- History/Origin**
  - The pill is now available over counter in the U.S.
  - Costs from \$50-110
  - Low over counter in Ontario except in Quebec

Student work / Health class

# TIMELINE

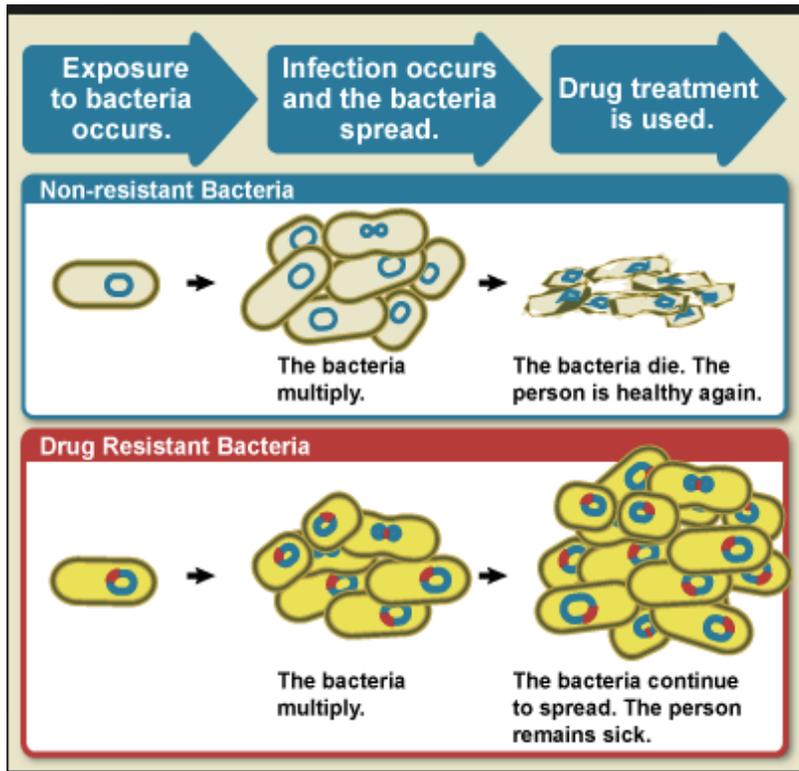


[https://commons.wikimedia.org/wiki/File:Time\\_Travel\\_Method-2.svg](https://commons.wikimedia.org/wiki/File:Time_Travel_Method-2.svg)



<http://www.doctorwho.tv/infographic/time-lord-timelines/>

Link no longer active



[https://en.wikipedia.org/wiki/Antimicrobial\\_resistance](https://en.wikipedia.org/wiki/Antimicrobial_resistance)

## COMPARE / CONTRAST

# PCP: THE HIDDEN DANGER



PCP comes in many different colored tablets, which have a bitter taste and can be dissolved in a liquid or directly ingested.

## NEGATIVE EFFECTS:

- ~blood pressure and pulse rate drop
- ~ respiration drop
- ~nausea
- ~vomiting
- ~blurred vision
- ~loss of balance
- ~dizziness
- ~become violent or suicidal
- ~seizures
- ~comas
- ~ hallucinations
- ~death in extreme cases



## POSITIVE EFFECTS:

- ~euphoria
- ~calmness
- ~feelings of being invulnerable
- ~feelings of being "on top of the world"
- ~heart rate increase
- ~positive hallucinations



These are examples of the many different forms, PCP can be used.

## SOCIAL EFFECT:

even after the drug leaves your system there can still be many long term effects such as

- ~memory loss
- ~depression
- ~weight loss
- ~difficulties speaking and thinking
- ~disturbed senses

## Legal Consequences:

### First Offense

~No more than \$2 million fine. 5-40 years in prison. If injury or death is involved: 20-life in prison.

### Second Offense

~10-life in prison. Fine: \$4 million. If injury or death is involved: life in prison

**When trafficking a larger amount, the legal consequence of amount of time and money increases.**

WHAT  
PCP IS  
LACED  
WITH ?

Cocaine  
Marijuana  
Heroin  
Mint  
Parsley  
Peanut Butter  
Alcohol

It is so potent that it can even be absorbed through the skin...



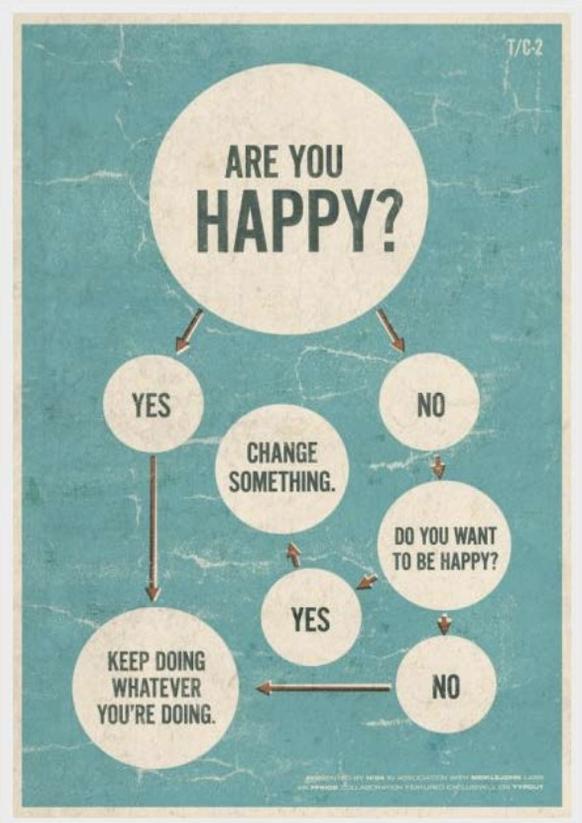
**Other Names**  
Zombie Weed  
Super Joint  
Angel Poke  
Rocket Fuel  
Crazy Coke  
Dummy Dust

## historical facts

1950-2014

~developed in the 1950s ~used as anesthetic ~originated as an animal tranquilizer ~ discontinued as an anesthetic due to negative side effects ~developed an array of names and ways to be taken

# DECISION OR FLOW CHART MODEL

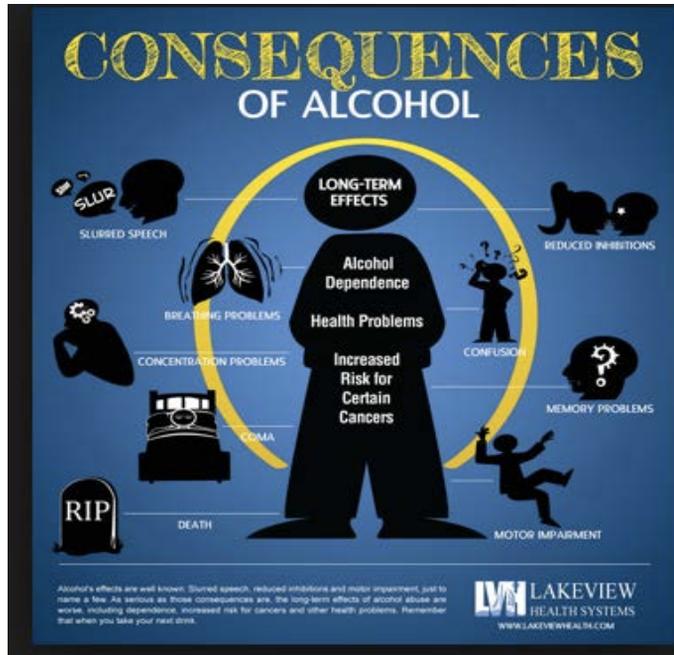


<http://poptimist.tumblr.com/post/196108799/infographic-a-simple-decision-flow-chart-s>



## CAUSE / EFFECT

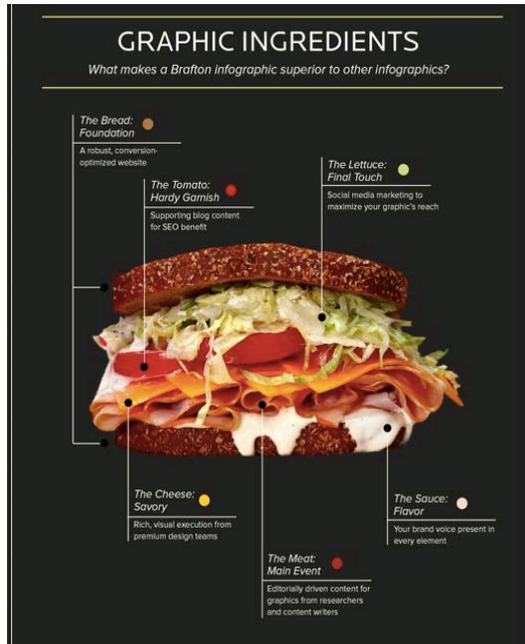
*shows how one thing affects another*



<http://www.loveinfographics.com/categories/education-infographics/alcohol-effects-on-the-body-alcohol-consequences-infographic>



# BEAUTIFUL DESIGN and photography



<http://www.brafton.com/business-model/infographic-marketing/>



On your own...

## Text organizers are maps of thinking

1. **Compare-Contrast** lays out similarities and differences, strengths and weaknesses
2. **Cause-Effect** outlines a causal relationship between an specific event, idea, or concept and what follows from it
3. **Describe, Define** provides a detailed description, definition, parts, types, characteristics
4. **Problem-Solution** looks at problem or issue, explains the solution, then discusses the consequences
5. **Sequence** uses a chronology, timeline, steps, order of importance, A-Z

<http://noodle.to/structures>



# Use a matrix like this to organize thoughts/ideas before storyframing]

Teaching  
Tip



+

INQUIRY QUESTION	AUDIENCE	ORGANIZING INFO	VISUALIZING THE INFORMATION	INFOGRAPHIC DESIGN (STORYframe)
What is the single driving question that my information answers?	Who is my audience	What key data bits answer my question, and create an "ah ha"	What design structure will help me tell my story??	What metaphor or image structure will help me tell my story?
1.				
2.				

# All types of evidence include data!



Experimental research

Informal research

Authorities

Statistics

Textual

Visual

**New Notepad**

**Title (Main Idea)**  
Famine 1994-1998

**Source**  
Tudor, Daniel, and James Pearson, North Korea Confidential

**URL**  
and%20three%20million%20North%20Koreans.%E2%80%9Dpg=FA18Fv=onepage&q&f=false

**My Tags**  
Select a tag...

**Tags**  
"population data" famine

**File**  
Select A File

**Direct Quotation**  
Paragraph Font Family 3 (12pt) B I U  
The economic situation was already extremely fragile, and North Korea was already entering a food deficit by 1993. Things were ultimately exacerbated by a series of devastating floods in 1994 and 1995, which destroyed around 1.5 million tons of grain and ruined much of the nation's infrastructure. Around 85% of North Korea's power generation capacity was lost as a result. The PDS came under unprecedented pressure: between 1994 and 1997, the basic ration was cut from 450 grams of food per day to a meager 128 grams. In the same period the PDS went from being the main food source for a majority of the people, to a resource that only six percent of the population could receive.

**Paraphrase or Summary**  
Paragraph Font Family 5 (18pt) B I U  
Estimated deaths during 1994-1998 were between 200,000 and 3 million - but not officially recorded by the UN.

**My Ideas**  
Paragraph Font Family 4 (14pt) B I U  
128 grams of food = 1 cup of peas

Tudor, Daniel, and James Pearson. *North Korea Confidential: Private Markets, Fashion Trends, Prison Camps, Dissenters and Defectors*. Tokyo: Tuttle Publishing, 2015.



Gilderlehrman.org/history-by-era/american-indians/essa

NAME

NOODLE TOOLS NOTE CARD

PER: 3  
Columbian-

NOTECARD TITLE #1 Weeds

SOURCE Gilderlehrman Exchange

TAGS: Lehman,

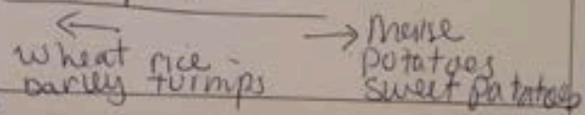
PILE: Weeds

DIRECT QUOTATION: write authors exact words (note the page #)

PARAPHRASE OR SUMMARY: explain it to yourself in words you understand

"Plantain (Plantago major) was named "Englishman's Foot" by the Amerindians of New England"

What was considered good food in England and brought to New World was a "weed" to the Native peoples.



KEY IDEAS: what I'm thinking, what I need to know. Partner conversation

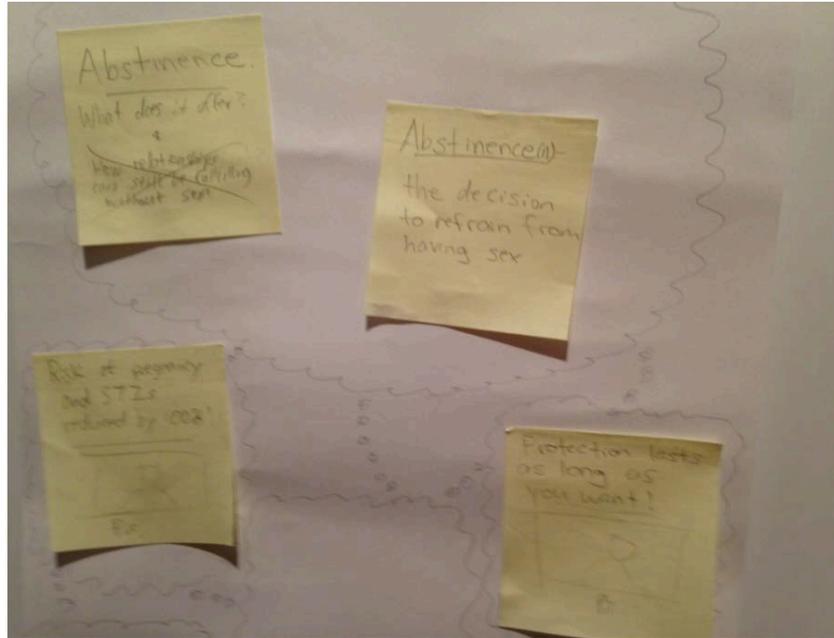
Are weeds really weeds? Are they bad? I once heard that a weed is a plant of out of place. What other weeds were brought & how many were bad? dandelion, sow thistle, chickweed - What did they take back to England?



# “Edit out” to show patterns

“The data shown in any infographic is, first and foremost, an exercise in editing out extraneous data – there are an infinite number of facts in the world about anything. What data is measured or recorded is a subjective choice, as is the editing of the recorded outcomes” (26).”

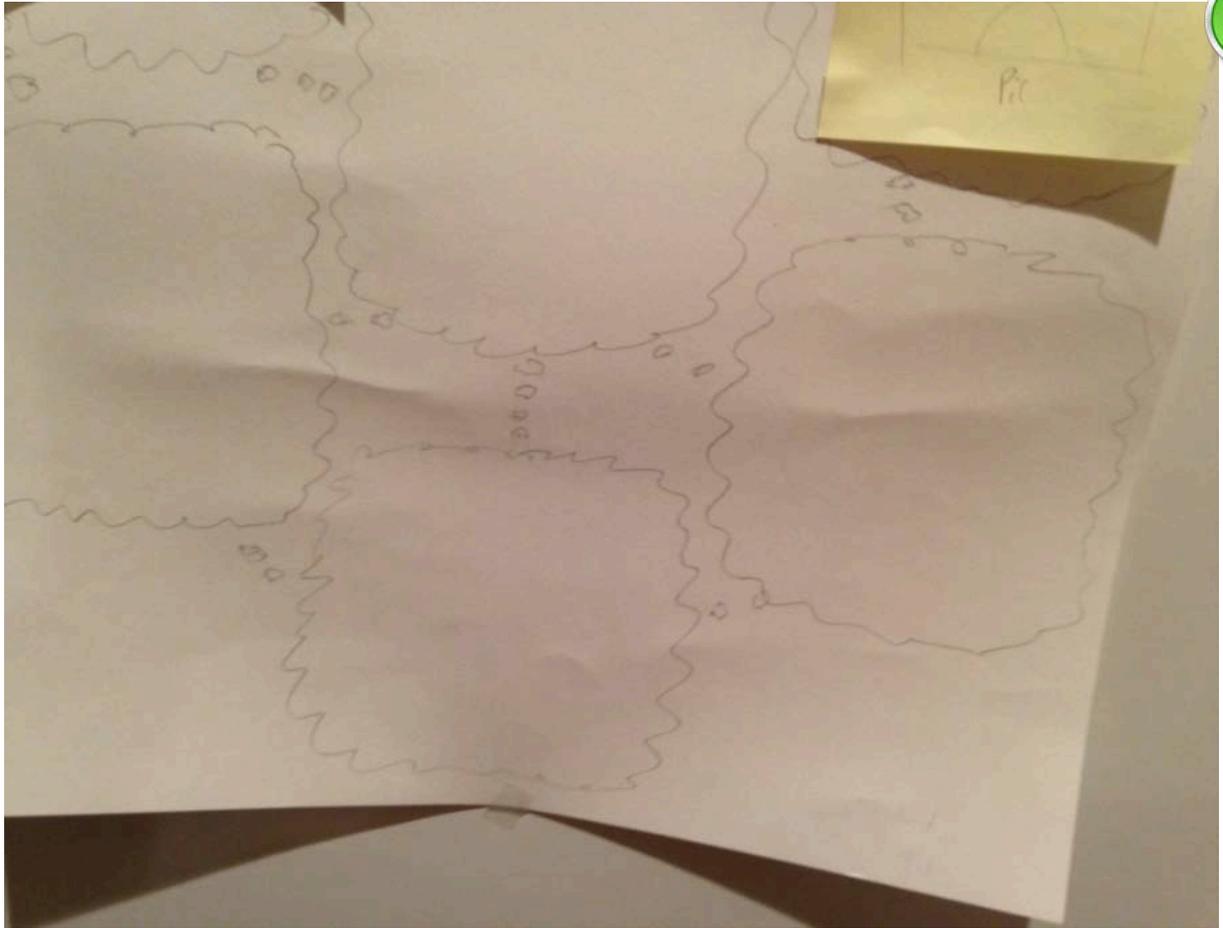
# “Storyframe”



**Story**board = a sequence of action/ideas

+

**Wireframe** = a framework that holds the big idea





# Genital Warts

What are g.w.  
 - type of HPV's caught during sex w/ infected person  
 - shows @ appearing  
 - can affect teen or adult

What are the national statistics of g.w?  
 - 500,000 - 2 million diagnosed w/ HPV each yr  
 - 2004, 4 billion dollars were accounted for cost of carrying for g.w.

What are symptoms of g.w don't show many symptoms  
 - show warts on penis, vulva, opening @ anus, inside vagina or throat  
 - may be no symptoms if you could still have g.w/HPV

How to prevent g.w?  
 - get a vaccine (doctors recommend that ages 11-26 get it)  
 - condom, can help

Types of treatment  
 - podoflox - liquid or gel imiquimod cream  
 - cryotherapy - freezing w/ liquid nitrogen  
 - laser surgery w/ high intensity light  
 - electrosurgery - destroys warts w/ electrical

What are the effects on the body?  
 - form on genital area, or anal area  
 - can cause cervical cancer or other types if not treated



6



turkeys  
→  
Sweet potatoes

85-95%  
Native Am  
pop decimated  
w/in 1st 100 years  
  
Scholar.harvard.edu

Syphilis?  
**not good**  
→  
  
→  
Scholar.harvard.edu

Chickens  
  
←  
**good** cattle  
  
←  
Wheat  
barley  
rice

**good**  
Pumpkins  
peanuts →  
 

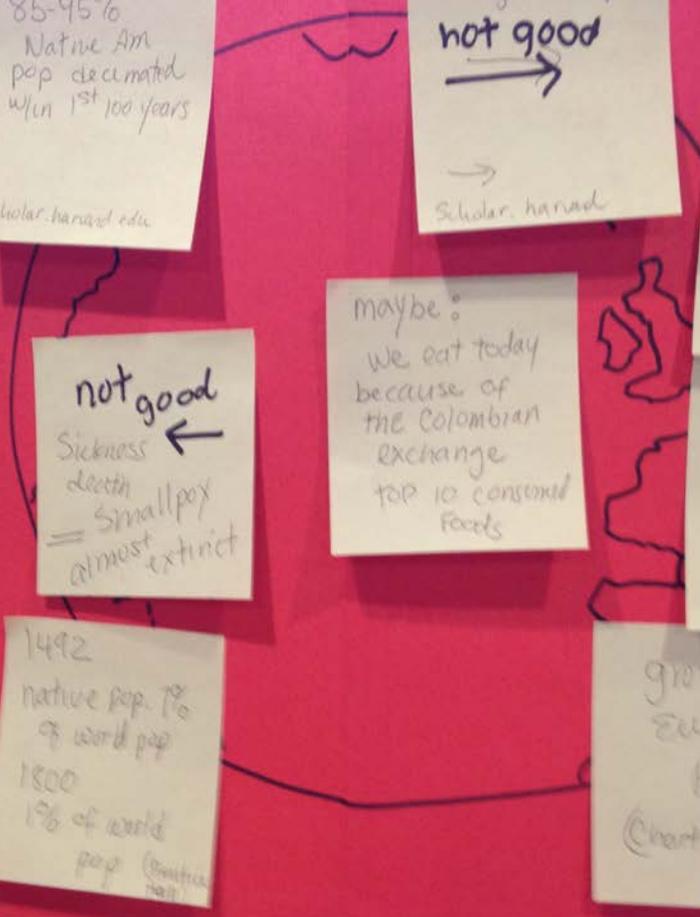
**not good**  
←  
Sickness  
death  
= Smallpox  
almost extinct

maybe:  
We eat today  
because of  
the Columbian  
exchange  
top 10 consumed  
foods

tomatoes  
  
→

1492  
native pop. 7%  
of world pop  
1800  
1% of world  
pop (Census  
200)

growth of  
European  
pop  
(chart)





I think my title will be...

Sticky notes

## Colombian Exchange

Fact

image

Fact 2

Fact

Fact 1

image

Fact

This is where connections are actually made



# After playing...

Sticky notes

Fact

Fact 1

image

Fact 3

Fact

Big idea fact- my argument  
metaphor

Fact

...things are going to change.



# Visual metaphors

“We have an inbuilt ability to manipulate visual metaphors in ways we cannot do with the things and concepts they stand for — to use them as malleable, conceptual Tetris blocks or modeling clay that we can more easily squeeze, stack, and reorder. And then — whammo! — a pattern emerges, and we’ve arrived someplace we would never have gotten by any other means.” - David Byrne

# What (again) is an argument?



**Claim** (thesis) backed up with **evidence** and **reasoning** about why the evidence supports the claim.

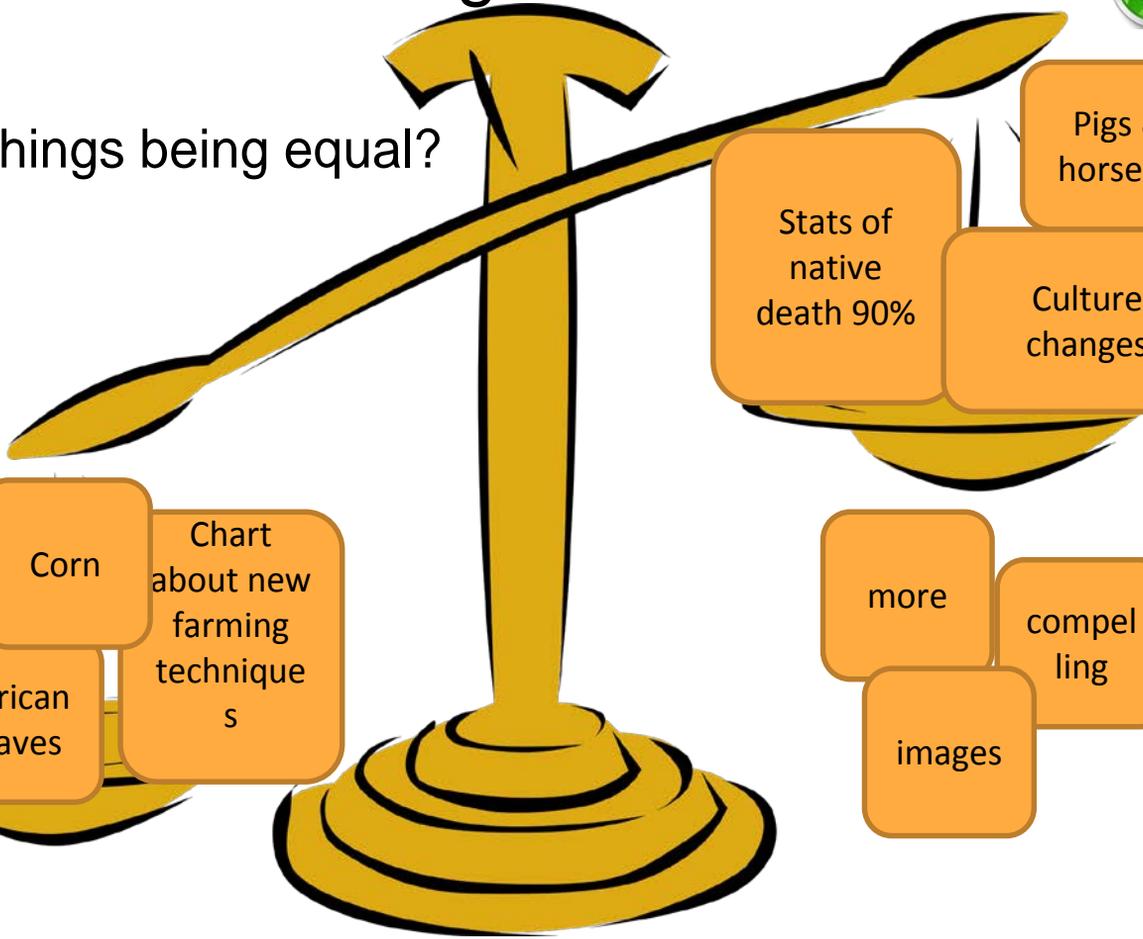
Every argument has counters: alternatives to the claim....

The key is the evidence. Unlock it with story.

# Columbian Exchange:



...all things being equal?



Pigs & horses!!

Stats of native death 90%

Culture changes

Syphilis?  
Data

Corn

Chart  
about new  
farming  
technique  
s

African  
slaves

more

compelling

images



**Teach subject content first**

*lets students dig & dive into the big ideas*



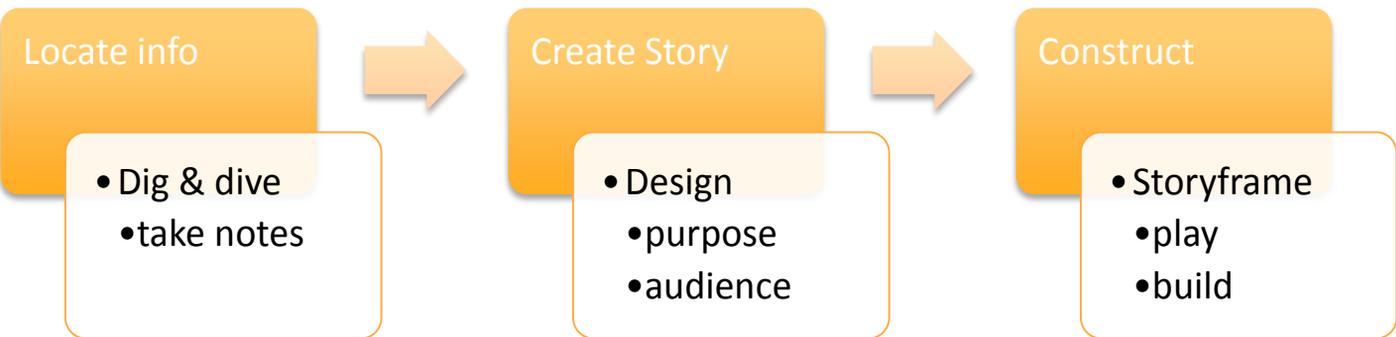
**Assess content knowledge [test, essay]**

*allows students to show content mastery*



**Assign infographic as synthesis**

*gives students opportunities to make connections with topic in a personal way*



# New additions to evaluation & sourcing



- Claim
- Links
- Audience
- Source
- Purpose
- Evidence
- Design

Teaching Tip



## Nobels no degrees

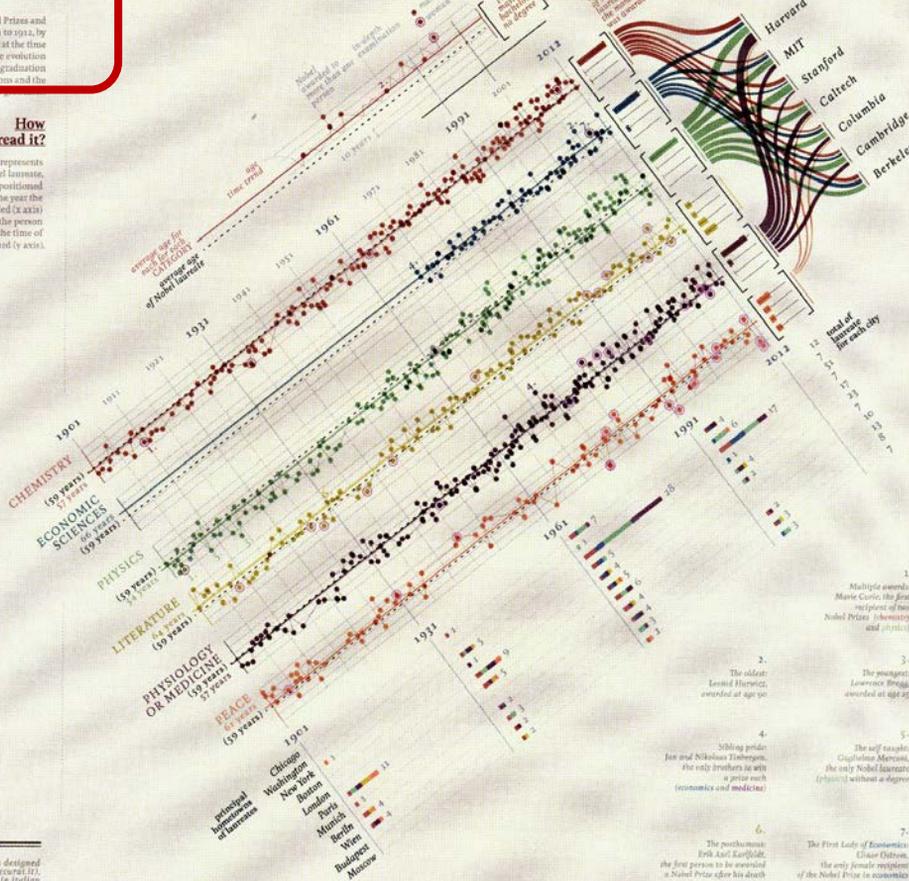
This visualization explores Nobel Prizes and graduate qualifications from 1903 to 1912, by analyzing the age of recipients at the time prizes were awarded, average age evolution through time and among categories, graduation grades, main university affiliations and the

“This visualization explains Nobel Prizes and graduate qualifications from 1903-1912 by analyzing the age of recipients at the time prizes were awarded, average age evolution through time and among categories, graduation grades, main university affiliations and the principal hometowns of the graduates.”

### How to read it?

The dot represents the Nobel Laureate, each dot is positioned according to the year the prize was awarded (x axis) and age of the person at the time of the award (y axis).

# Purpose statement



# Assessment



**How to read it?**

Each dot represents a Nobel laureate, each recipient is positioned according to the year the prize was awarded (x axis) and age of the person at the time of the award (y axis).

“Each dot represents a Nobel laureate, each recipient is positioned according to the year the prize was awarded (x axis) and age of the person at the time of the award.”



The visualization has been designed and produced by Accurat (www.accurat.it), and was originally published in Italian on *La Lettera* the Sunday cultural supplement of *Corriere della Sera*.



<b>Infographic: Teach</b>	<b>Assess</b>
An infographic story	Creates a meaningful and beautiful infographic story for an audience
Storyframe design	Develops a color scheme, fonts and visuals which use space effectively to communicate and amplify the story
Use of space	Organizes in a clear, logical and intriguing order.
Theme / argument	Choses a compelling, thoughtful and original argument
Metaphor / synthesis	Synthesizes the text, images, and data and uses metaphor or symbolism to unify them artistically.
Plan	Uses the checklist to guide her/his infographic creation.
Peer receiver	Uses peer comments to revise.
Peer reviewer	Understands peer's story and asks new questions.
Artist's purpose statement and explanation of visual	Describes the purpose of graphic elements in supporting the theme / argument which is succinctly summarized.
Theme / argument	Choses a compelling, thoughtful and original argument
Rebuttal	Considers alternative ideas or viewpoints honestly and accounts for biases in one's own argument and sources.
Visualized data as evidence	Curates strong data evidence for the argument and displays it effectively through appropriately chosen visuals / charts
Documentation	Attributes all information and images from sources.
Publishing conventions	Edits final infographic for correct spelling, grammar and punctuation.

# Thoughts on teaching infographics

*An infographic is an argument that synthesizes design and text into a story with a theme.*

- Begin the discussion – evaluate “in the wild”
- Curate specifics, not Google generalities
- Slow down teaching, less is more
- Deconstruct both good and poor models
- Play, play, play for Storyframe creation

# Recap:



- Data always represents a choice
- Different experts value different data
- The same data can support different arguments
- A simple number is never really simple
- Benchmarks are a sniff-test for credibility

# Questions?

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VIRTUAL CONFERENCE  
ON  
**DATA LITERACY**  
CREATING DATA LITERATE STUDENTS



*Thank you!*

*Our sources:*

<http://noodle.to/databib2016>  
(Our sources)