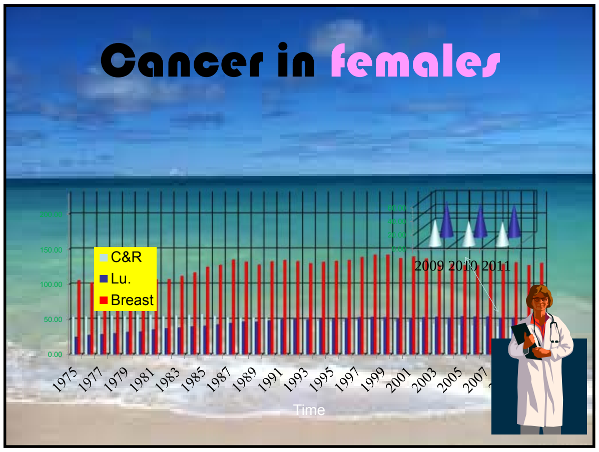
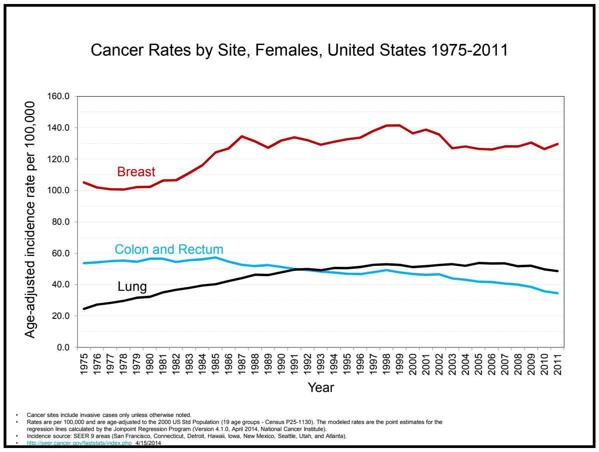
Visual Display of
Public Health Data

Michael C. Samuel, Dr. P.H.
CA DHS STD Control Branch



Cancer in females



Cancer Rates by Site, Females, United States 1975-2011

- Cancer sites include invasive cases only unless otherwise noted.
- Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130). The modeled rates are the point estimates for the regression lines calculated by the Joinpoint Regression Program (Version 4.1.0, April 2014, National Cancer Institute).
- Incidence source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).
- http://seer.cancer.gov/faststats/index.php 4/15/2014

Outline

- Key Issues
  - The Big picture
  - Tufte
  - Sponge Bob
- History (les…)
- Software
  - R, PowerPoint, Excel, et. al. (more R…)
  - Big data
- **Type of Displays**
- **Technical Issues**
  - Scale
  - “Nut and Bolts”
    - color, fonts, lines/grids, labels/legends, 3D
  - Production and reproduction (less…)
  - Chart junk, Human touch
- Infographics, query systems
- Interactive Displays and R-Shiny
- “Great Graphs”
- Conclusion

- Note: The example figures in this talk are to discuss form, not the actual substance of these data.

Data

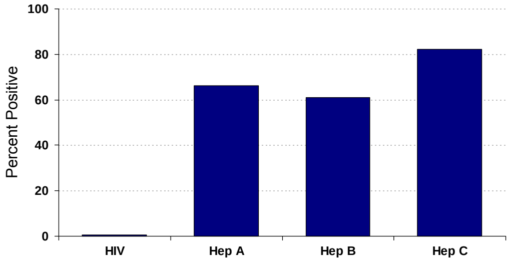
Action

- Program
  - New program
  - Revised program priorities
- New guidelines
- New policy
- New hypothesis (may lead to new action)
- More (or less) money!

HIV and Hepatitis among Injection Drug Users
New Mexico, 1997

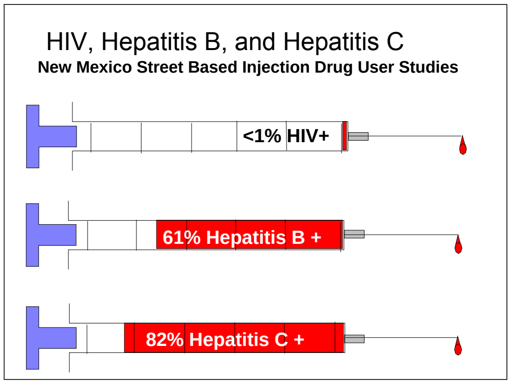
	N tested	% Positive	95% C.I.
HIV	1002	0.5	.16-1.6
Hep A	696	66.1	62.4-69.6
Hep B	950	61.1	57.9-64.2
Hep C	945	82.2	79.6-84.6

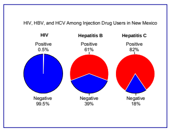
HIV and Hepatitis Among Injection Drug Users New Mexico, 1997



HIV, Hepatitis B, and Hepatitis C

New Mexico Street Based Injection Drug User Studies





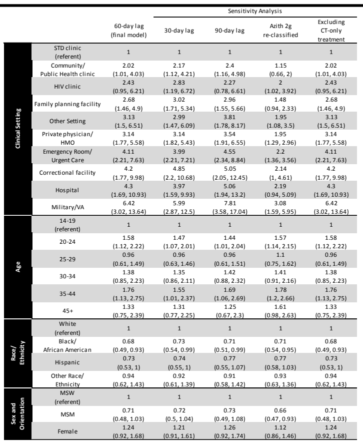
Data

Action

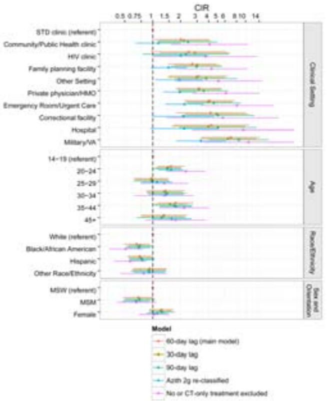
KEEPING IT CLEAN
New Mexico is leading the way when it comes to its drug addicts.

Guidelines for Effective Visual Display

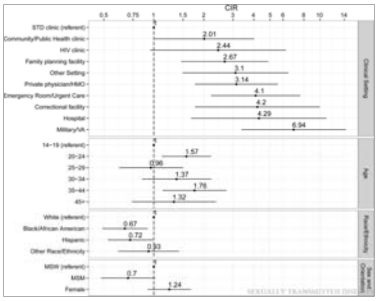
- Communicate important information
- Complexity is good, and…
- Keep it simple, stupid
- Know your audience
- Oral presentation vs. written material
- Data integrity
- Clear labels and annotations
- Use appropriate scale(s)
- Use appropriate type of chart
- Pay attention to details
- Avoid extraneous “Chart Junk”



			Sensitivity Analysis			
		60-day lag (final model)	30-day lag	90-day lag	Azith 2g re-classified	Excluding CT-only treatment
Clinical Setting	STD clinic (referent)	1	1	1	1	1
	Community/ Public Health clinic	2.02 (1.01, 4.03)	2.17 (1.12, 4.21)	2.4 (1.16, 4.98)	1.15 (0.66, 2)	2.02 (1.01, 4.03)
	HIV clinic	2.43 (0.95, 6.21)	2.83 (1.19, 6.72)	2.27 (0.78, 6.61)	2 (1.02, 3.92)	2.43 (0.95, 6.21)
	Family planning facility	2.68 (1.46, 4.9)	3.02 (1.71, 5.34)	2.96 (1.55, 5.66)	1.48 (0.94, 2.33)	2.68 (1.46, 4.9)
	Other Setting	3.13 (1.5, 6.51)	2.99 (1.47, 6.09)	3.81 (1.78, 8.17)	1.95 (1.08, 3.5)	3.13 (1.5, 6.51)
	Private physician/ HMO	3.14 (1.77, 5.58)	3.14 (1.82, 5.43)	3.54 (1.91, 6.55)	1.95 (1.29, 2.96)	3.14 (1.77, 5.58)
	Emergency Room/ Urgent Care	4.11 (2.21, 7.63)	3.99 (2.21, 7.21)	4.55 (2.34, 8.84)	2.2 (1.36, 3.56)	4.11 (2.21, 7.63)
	Correctional facility	4.2 (1.77, 9.98)	4.85 (2.2, 10.68)	5.05 (2.05, 12.45)	2.14 (1, 4.61)	4.2 (1.77, 9.98)
	Hospital	4.3 (1.69, 10.93)	3.97 (1.59, 9.93)	5.06 (1.94, 13.2)	2.19 (0.94, 5.09)	4.3 (1.69, 10.93)
	Military/VA	6.42 (3.02, 13.64)	5.99 (2.87, 12.5)	7.81 (3.58, 17.04)	3.08 (1.59, 5.95)	6.42 (3.02, 13.64)
Age	14-19 (referent)	1	1	1	1	1
	20-24	1.58 (1.12, 2.22)	1.47 (1.07, 2.01)	1.44 (1.01, 2.04)	1.57 (1.14, 2.15)	1.58 (1.12, 2.22)
	25-29	0.96 (0.61, 1.49)	0.96 (0.63, 1.46)	0.96 (0.61, 1.51)	1.1 (0.75, 1.62)	0.96 (0.61, 1.49)
	30-34	1.38 (0.85, 2.23)	1.35 (0.86, 2.11)	1.42 (0.88, 2.32)	1.41 (0.91, 2.16)	1.38 (0.85, 2.23)
	35-44	1.76 (1.13, 2.75)	1.55 (1.01, 2.37)	1.69 (1.06, 2.69)	1.78 (1.2, 2.66)	1.76 (1.13, 2.75)
	45+	1.33 (0.75, 2.39)	1.31 (0.77, 2.25)	1.25 (0.67, 2.3)	1.61 (0.98, 2.63)	1.33 (0.75, 2.39)
Race/ Ethnicity	White (referent)	1	1	1	1	1
	Black/ African American	0.68 (0.49, 0.93)	0.73 (0.54, 0.99)	0.71 (0.51, 0.99)	0.71 (0.54, 0.95)	0.68 (0.49, 0.93)
	Hispanic	0.73 (0.53, 1)	0.74 (0.55, 1)	0.77 (0.55, 1.07)	0.77 (0.58, 1.03)	0.73 (0.53, 1)
	Other Race/ Ethnicity	0.94 (0.62, 1.43)	0.92 (0.61, 1.39)	0.91 (0.58, 1.42)	0.93 (0.63, 1.36)	0.94 (0.62, 1.43)
Sex and Orientation	MSW (referent)	1	1	1	1	1
	MSM	0.71 (0.48, 1.03)	0.72 (0.5, 1.04)	0.73 (0.49, 1.08)	0.66 (0.47, 0.93)	0.71 (0.48, 1.03)
	Female	1.24 (0.92, 1.68)	1.21 (0.91, 1.61)	1.26 (0.92, 1.74)	1.12 (0.86, 1.46)	1.24 (0.92, 1.68)



.tiff ~ 6.9 MB
Lectenberg, Samuel, et al.



[Variation in Adherence to the Treatment Guidelines for Neisseria gonorrhoeae by Clinical Practice Setting, California, 2009 to 2011]

Lechtenberg, Richard J.; Samuel, Michael C.; Bernstein, Kyle T.; Lahiff, Maureen; Olson, Nicole; Bauer, Heidi M.

Sexually Transmitted Diseases. 41(5):338-344, May 2014.

Figure 2 Results of multivariable statistical modeling. This plot shows cumulative incidence ratios (CIR) and 95% CIs for receiving a non–CDC-recommended treatment of gonorrhea by clinical setting, age, race/ethnicity, and sex and sexual orientation. MSW indicates men who have sex with women only; MSM, men who have sex with men.

Wolters Kluwer | Lippincott Williams & Wilkins

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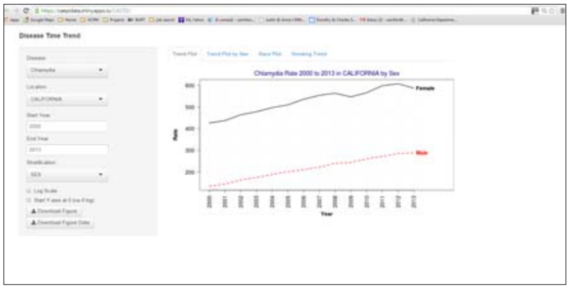

Disease Time Trend
Chlamydia Rate 2000 to 2013 in CALIFORNIA by Sex
Female
Male
Rate
Year

https://caepidata.shinyapps.io/CASTD/

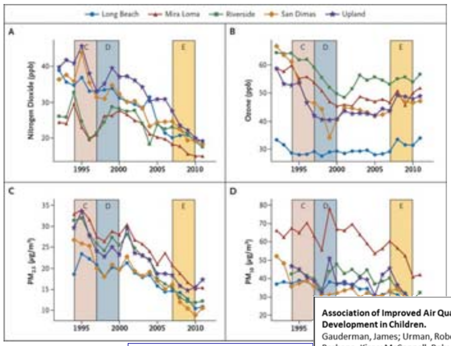


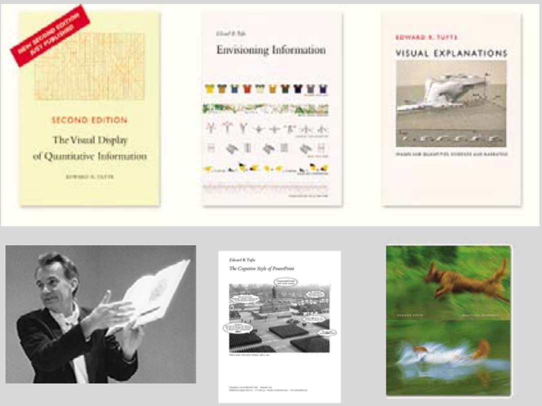
Figure 1 Levels of Four Air Pollutants from 1994 to 2011 in Five Southern California Communities. Colored bands represent the relevant 4-year averaging period for the analysis of lung-function growth in each of the three cohorts, C, D, and E. PM2.5 denotes particulate matter with an aerodynamic diameter of less than 2.5 [mu]m, and PM10 particulate matter with an aerodynamic diameter of less than 10 [mu]m.

Association of Improved Air Quality with Lung Development in Children.
Gauderman, James; Urman, Robert; Avol, Edward; Berhane, Kiros; McConnell, Rob; Rappaport, Edward; Chang, Roger; Lurmann, Fred; Gilliland, Frank

New England Journal of Medicine. 372(10):905-913, March 5, 2015.
DOI: 10.1056/NEJMoa1414123

Edward Tufte

- Look at his books!
- Graphical Excellence
- The Lie Factor
- Data Density
- Less is more
- Small Multiples / Parallelism


NEW SECOND EDITION JUST PUBLISHED
SECOND EDITION
The Visual Display of Quantitative Information
EDWARD R. TUFTE
Envisioning Information
EDWARD R. TUFTE
VISUAL EXPLANATIONS
The Cognitive Style of PowerPoint

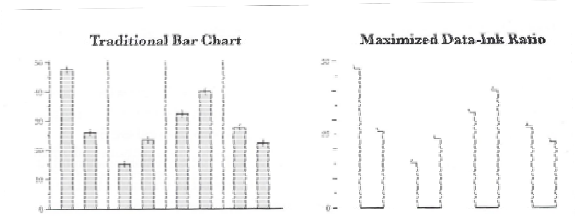
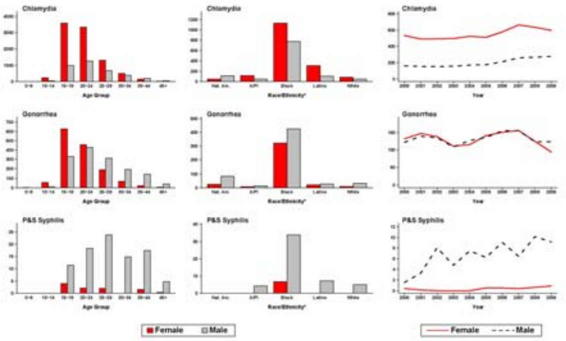


Figure 3.14 Which chart would you prefer?

Alameda County – Chlamydia, Gonorrhea, and P&S Syphilis
Rates by Age Group (2009), Race/Ethnicity (2009), and Year



* Race data may be missing for a substantial number of cases. See the 'Data Limitations' page for further information.
Note: Rates are per 100,000 population. Alameda County includes Berkeley City Health Jurisdiction.
Source: California Department of Public Health, STD Control Branch

http://www.epiresearch.org/experts/

Software

sas
+ a b l e a u
EPI INFO 7
PREZI
STATA
OpenOffice.org

Software

- Stand alone graphics packages
  - PowerPoint; Open Office Impress
  - Great for presentations; easy to use
- Spreadsheets
  - Excel
  - Easy to use
  - Can be difficult to modify or share
  - Direct integration of data and figures
- Stat packages with graphics
  - SAS; SPSS; Stata; Epi Info
  - Integrate data and graphics
  - Some "point and click", some programming
  - Not as ideal for presentations
- R (S-plus)
  - Free
  - Complete integration of data and graphics
  - Completely flexible graphics
  - Harder to learn/use
- Specialized Software
  - Eg. NodeEX, "NetDraw" Network analysis

Display Types

- Tables

- Line Charts
- Bar Charts
- Pie Charts
- Scattergrams
- Statistical Charts
  - Box Plots
- Maps
- Others
- Hybrid

Tables

Been in a jail or prison in the past 12 months
CA Gonorrhea Cases - 2004

Jurisdiction	Yes
	%
Alameda	18.8%
Fresno	20.9%
Kern	20.5%
Long Beach	8.5%
Orange	22.2%
San Bernardino	9.0%
Total	100.0%

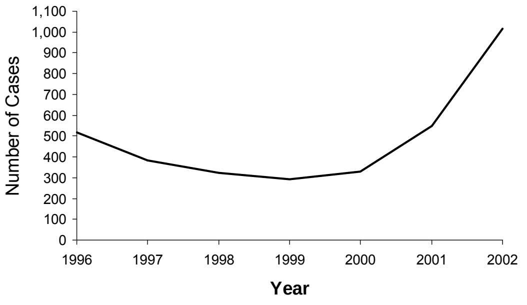
Been in a jail or prison in the past 12 months
CA Gonorrhea Cases - 2004

Jurisdiction	N	%
Alameda	207	21.3%
Fresno	203	24.1%
Kern	199	24.1%
Long Beach	201	10.0%
Orange	432	12.0%
San Bernardino	84	25.0%
Total	1326	17.6%

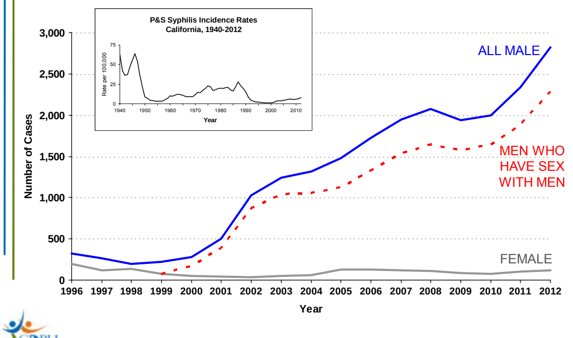
Line Graph

- X-axis truly or close to continuous
- Simple
- Complex: multi-line, 2-axis, logarithmic

Primary & Secondary Syphilis Cases
California, 1996–2002



Primary & Secondary Syphilis, Cases by Gender
California, 1996–2012



Rev. 8/2013

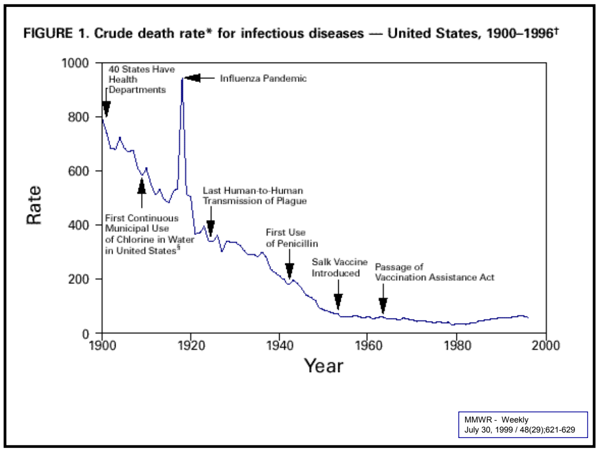
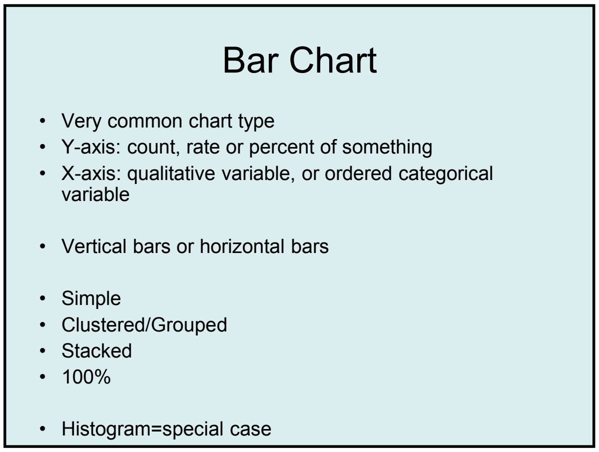


FIGURE 1. Crude death rate* for infectious diseases — United States, 1900–1996†

MMWR - Weekly
July 30, 1999 / 48(29);621-629



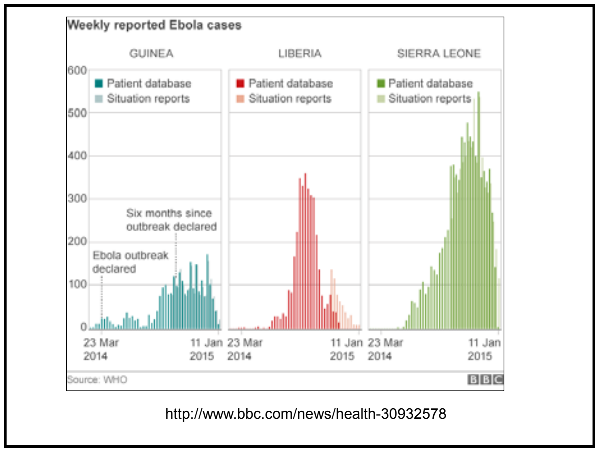
Bar Chart

- Very common chart type
- Y-axis: count, rate or percent of something
- X-axis: qualitative variable, or ordered categorical variable

- Vertical bars or horizontal bars

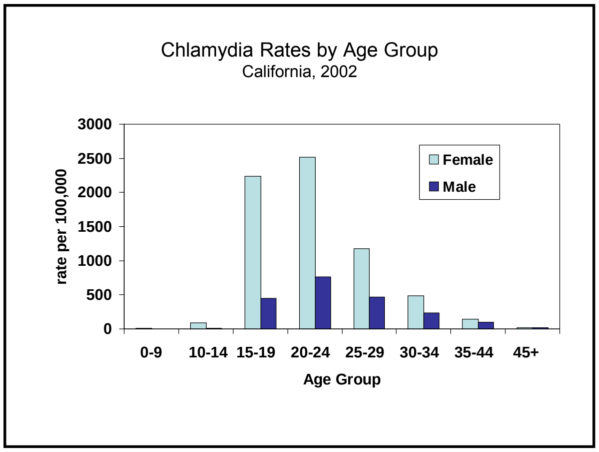
- Simple
- Clustered/Grouped
- Stacked
- 100%

- Histogram=special case

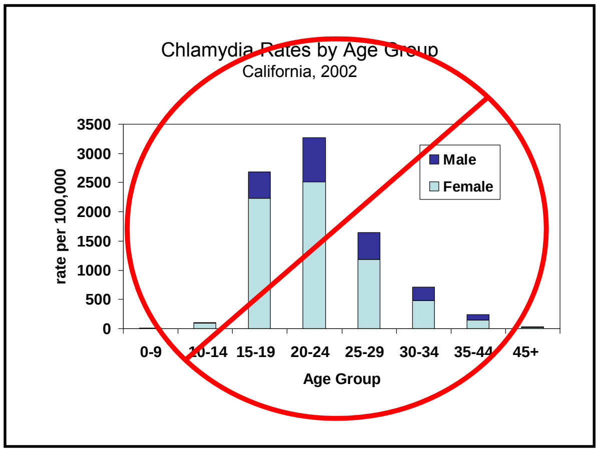


Weekly reported Ebola cases

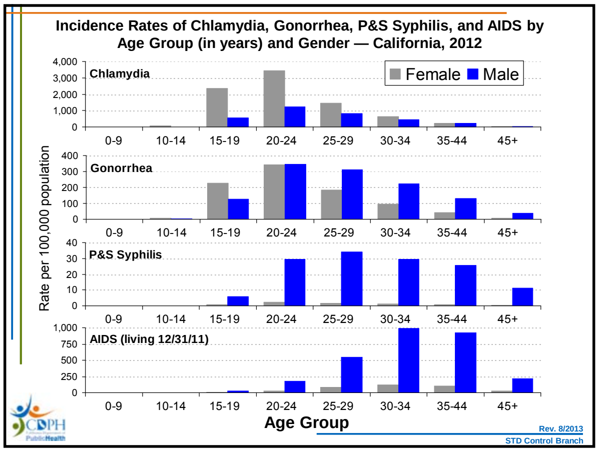
http://www.bbc.com/news/health-30932578



Chlamydia Rates by Age Group
California, 2002



Chlamydia Rates by Age Group
California, 2002



Incidence Rates of Chlamydia, Gonorrhea, P&S Syphilis, and AIDS by Age Group (in years) and Gender — California, 2012

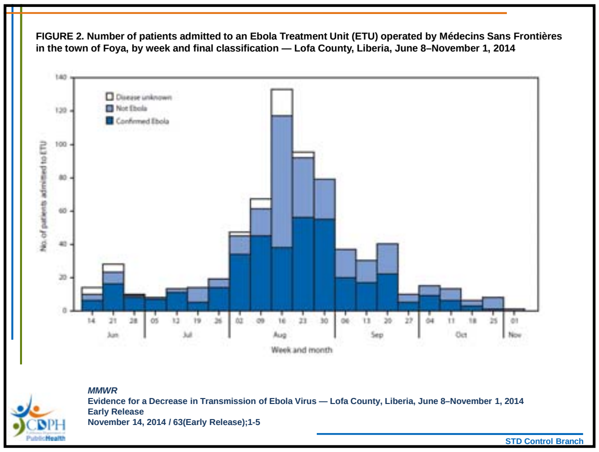


FIGURE 2. Number of patients admitted to an Ebola Treatment Unit (ETU) operated by Médecins Sans Frontières in the town of Foya, by week and final classification — Lofa County, Liberia, June 8–November 1, 2014

MMWR
Evidence for a Decrease in Transmission of Ebola Virus — Lofa County, Liberia, June 8–November 1, 2014
Early Release
November 14, 2014 / 63(Early Release);1-5

STD Control Branch

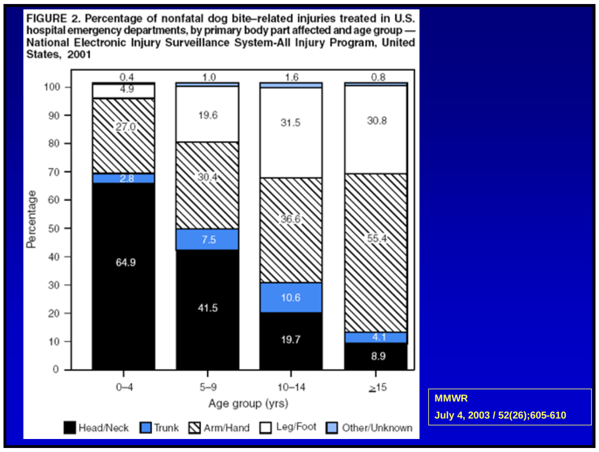
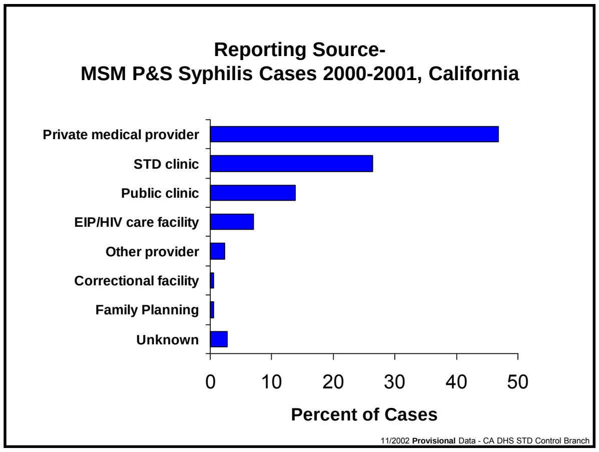


FIGURE 2. Percentage of nonfatal dog bite–related injuries treated in U.S. hospital emergency departments, by primary body part affected and age group — National Electronic Injury Surveillance System-All Injury Program, United States, 2001

MMWR
July 4, 2003 / 52(26);605-610

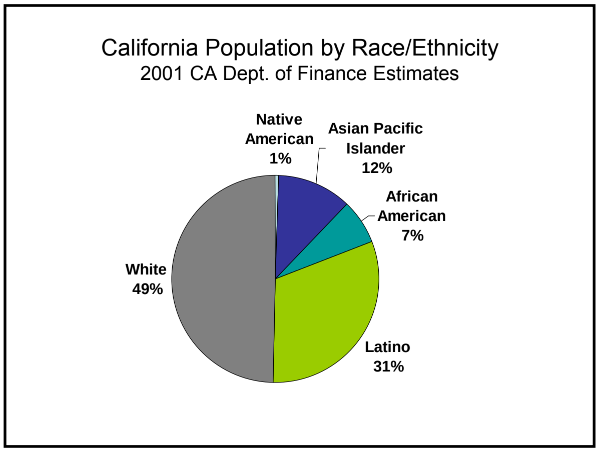


Reporting Source- MSM P&S Syphilis Cases 2000-2001, California

11/2002 **Provisional** Data - CA DHS STD Control Branch

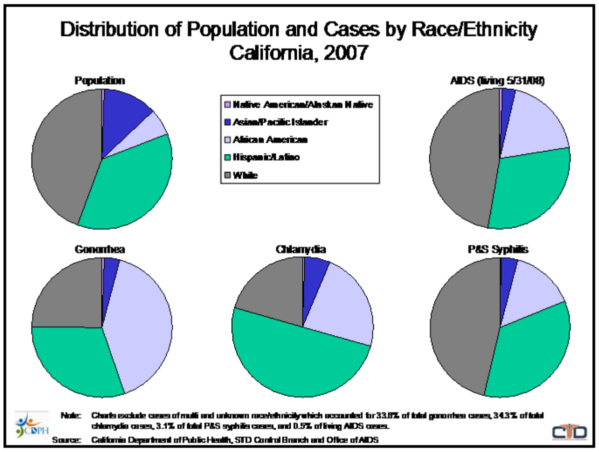
Pie Chart

- Tufte says they should never be used
- But
  - Very familiar to most people
  - Easy to understand
  - Effective if used carefully and sparingly



California Population by Race/Ethnicity

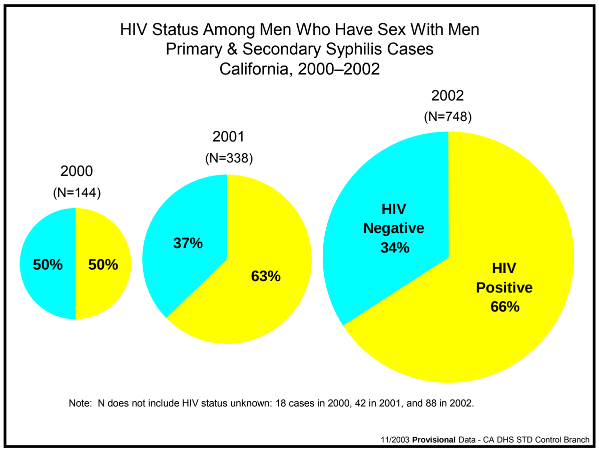
2001 CA Dept. of Finance Estimates



Distribution of Population and Cases by Race/Ethnicity California, 2007

Note: Charts exclude cases of multi and unknown race/ethnicity which accounted for 33.8% of total gonorrhea cases, 34.3% of total chlamydia cases, 3.1% of total P&S syphilis cases, and 0.5% of living AIDS cases.

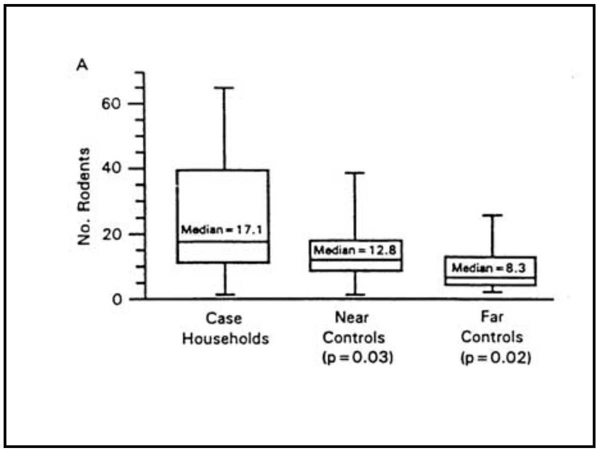
Source: California Department of Public Health, STD Control Branch and Office of AIDS


HIV Status Among Men Who Have Sex With Men
Primary & Secondary Syphilis Cases
California, 2000–2002

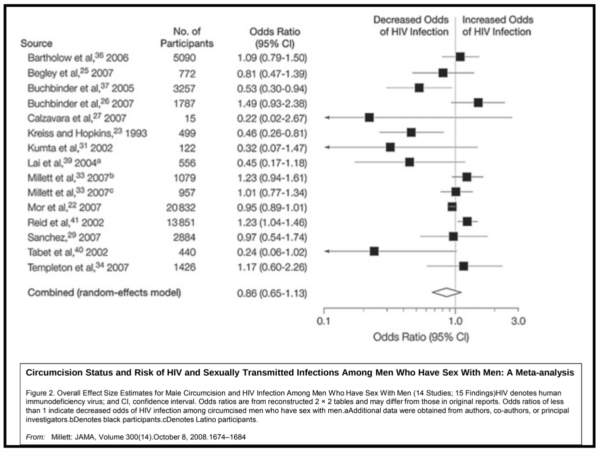
Note: N does not include HIV status unknown: 18 cases in 2000, 42 in 2001, and 88 in 2002.

11/2003 **Provisional** Data - CA DHS STD Control Branch

Box Plots



Other Statistical Graphics


Source	No. of Participants	Odds Ratio (95% CI)
Bartholow et al,[36] 2006	5090	1.09 (0.79-1.50)
Begley et al,[25] 2007	772	0.81 (0.47-1.39)
Buchbinder et al,[37] 2005	3257	0.53 (0.30-0.94)
Buchbinder et al,[26] 2007	1787	1.49 (0.93-2.38)
Calzavara et al,[27] 2007	15	0.22 (0.02-2.67)
Kreiss and Hopkins,[23] 1993	499	0.46 (0.26-0.81)
Kumta et al,[31] 2002	122	0.32 (0.07-1.47)
Lai et al,[39] 2004[a]	556	0.45 (0.17-1.18)
Millett et al,[33] 2007[b]	1079	1.23 (0.94-1.61)
Millett et al,[33] 2007[c]	957	1.01 (0.77-1.34)
Mor et al,[22] 2007	20832	0.95 (0.89-1.01)
Reid et al,[41] 2002	13851	1.23 (1.04-1.46)
Sanchez,[29] 2007	2884	0.97 (0.54-1.74)
Tabet et al,[40] 2002	440	0.24 (0.06-1.02)
Templeton et al,[34] 2007	1426	1.17 (0.60-2.26)
Combined (random-effects model)		0.86 (0.65-1.13)

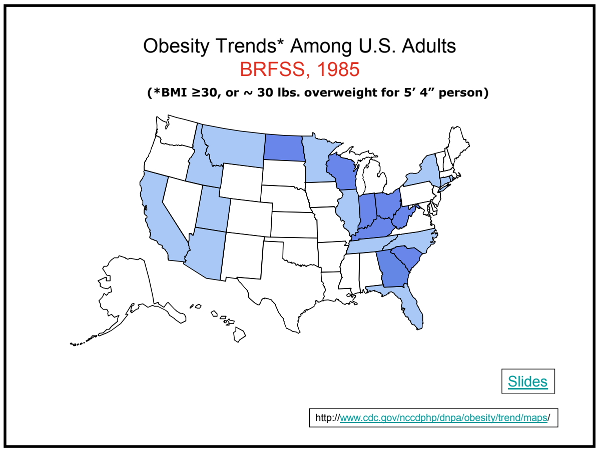
Decreased Odds of HIV Infection
Increased Odds of HIV Infection
0.1
1.0
3.0
Odds Ratio (95% CI)

Circumcision Status and Risk of HIV and Sexually Transmitted Infections Among Men Who Have Sex With Men: A Meta-analysis

Figure 2. Overall Effect Size Estimates for Male Circumcision and HIV Infection Among Men Who Have Sex With Men (14 Studies; 15 Findings)HIV denotes human immunodeficiency virus; and CI, confidence interval. Odds ratios are from reconstructed 2 × 2 tables and may differ from those in original reports. Odds ratios of less than 1 indicate decreased odds of HIV infection among circumcised men who have sex with men.aAdditional data were obtained from authors, co-authors, or principal investigators.bDenotes black participants.cDenotes Latino participants.

From: Millett: JAMA, Volume 300(14).October 8, 2008.1674–1684

Maps



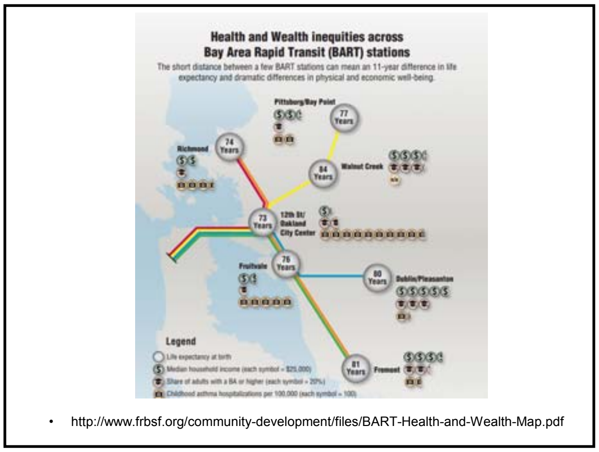
Obesity Trends* Among U.S. Adults

BRFSS, 1985

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)

Slides

http://www.cdc.gov/nccdphp/dnpa/obesity/trend/maps/



Health and Wealth inequities across Bay Area Rapid Transit (BART) stations

The short distance between a few BART stations can mean an 11-year difference in life expectancy and dramatic differences in physical and economic well-being.

Pittsburg/Bay Point
77 Years
Richmond
74 Years
Walnut Creek
84 Years
73 Years
12th St/ Oakland City Center
Fruitvale
76 Years
80 Years
Dublin/Pleasanton
81 Years
Fremont

Legend

- Life expectancy at birth
- Median household income (each symbol = $25,000)
- Share of adults with a BA or higher (each symbol = 20%)
- Childhood asthma hospitalizations per 100,000 (each symbol = 100)

- http://www.frbsf.org/community-development/files/BART-Health-and-Wealth-Map.pdf

Many Other Types

and

Hybrids

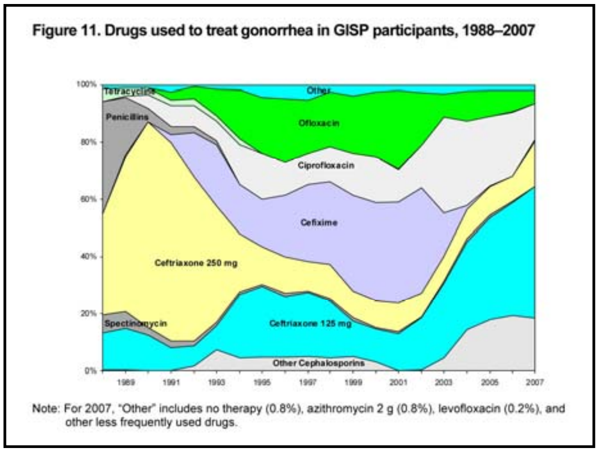
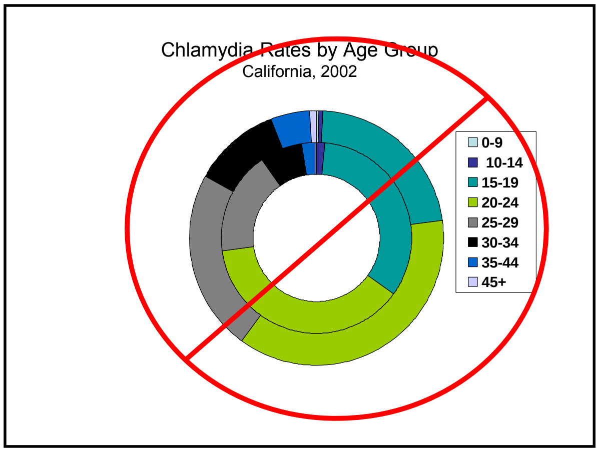


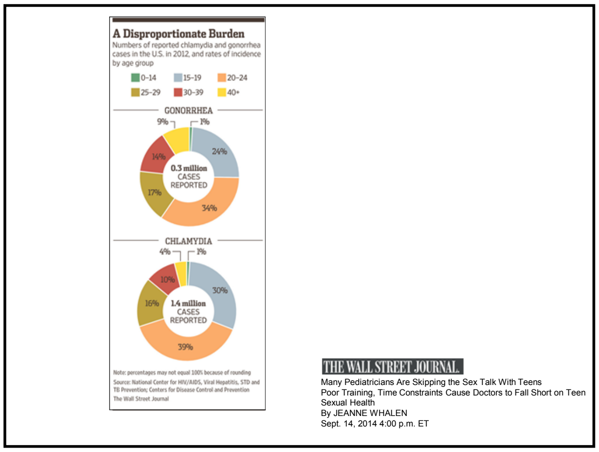
Figure 11. Drugs used to treat gonorrhea in GISP participants, 1988–2007

Note: For 2007, “Other” includes no therapy (0.8%), azithromycin 2 g (0.8%), levofloxacin (0.2%), and other less frequently used drugs.



~~Chlamydia Rates by Age Group~~

~~California, 2002~~



A Disproportionate Burden

Numbers of reported chlamydia and gonorrhea cases in the U.S. in 2012, and rates of incidence by age group

Note: percentages may not equal 100% because of rounding

Source: National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention; Centers for Disease Control and Prevention

The Wall Street Journal

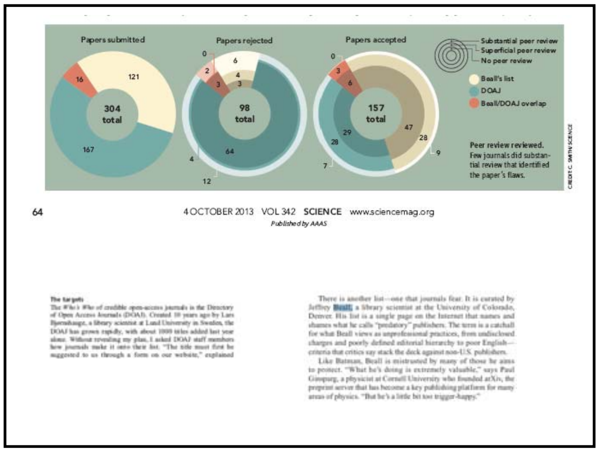
THE WALL STREET JOURNAL.

Many Pediatricians Are Skipping the Sex Talk With Teens

Poor Training, Time Constraints Cause Doctors to Fall Short on Teen Sexual Health

By JEANNE WHALEN

Sept. 14, 2014 4:00 p.m. ET


Papers submitted
16
121
304 total
167
Papers rejected
0
6
2
4
3
3
98 total
64
4
12
Papers accepted
0
3
6
157 total
29
28
47
28
9
7
Substantial peer review
Superficial peer review
No peer review
Beall's list
DOAJ
Beall/DOAJ overlap
CREDIT: C. SMITH/SCIENCE

Peer review reviewed. Few journals did substantial review that identified the paper's flaws.

64 4 OCTOBER 2013 VOL 342 SCIENCE www.sciencemag.org

Published by AAAS

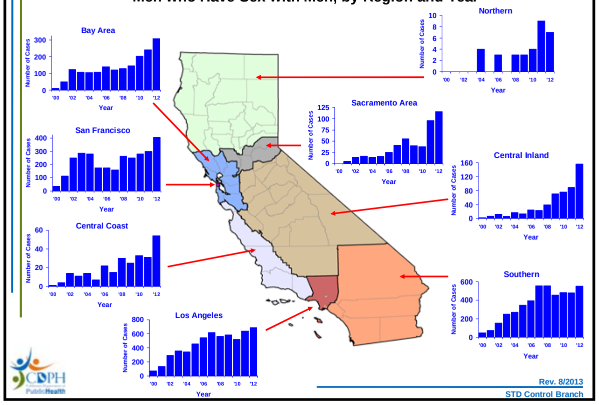
The targets

The *Who's Who* of credible open-access journals is the Directory of Open Access Journals (DOAJ). Created 10 years ago by Lars Bjørnshauge, a library scientist at Lund University in Sweden, the DOAJ has grown rapidly, with about 1000 titles added last year alone. Without revealing my plan, I asked DOAJ staff members how journals make it onto their list. "The title must first be suggested to us through a form on our website," explained

There is another list—one that journals fear. It is curated by Jeffrey Beall, a library scientist at the University of Colorado, Denver. His list is a single page on the Internet that names and shames what he calls "predatory" publishers. The term is a catchall for what Beall views as unprofessional practices, from undisclosed charges and poorly defined editorial hierarchy to poor English—criteria that critics say stack the deck against non-U.S. publishers.

Like Batman, Beall is mistrusted by many of those he aims to protect. "What he's doing is extremely valuable," says Paul Ginsparg, a physicist at Cornell University who founded arXiv, the preprint server that has become a key publishing platform for many areas of physics. "But he's a little bit too trigger-happy."

Number of Primary & Secondary Syphilis Cases among Men who Have Sex with Men, by Region and Year



CDPH Public Health

Rev. 8/2013

STD Control Branch

“Nut and Bolts”

- Scale and Proportion
- Labels and Legends
- Grid Lines
- Color
- Animation/”PowerPoint”
- Font
- 3D
- Production/Reproduction
- Chart Junk
- Software

Color

Color

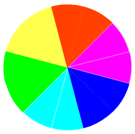
- Use for a reason
- Use nice colors
  - Shades of Blue
  - Shade of Yellow
  - Colors of Nature
- Use color sparingly
- RED can be good for Main Point, if used sparingly
- Red often does not project well with slides and LCDs
- Use consistent colors (and fonts, etc.)

Color/Pattern Choice

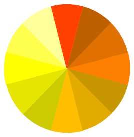
Classification Variable

Quantitative Variable

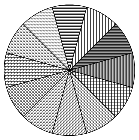
Hue palette



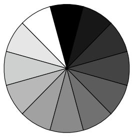
Light-dark palette



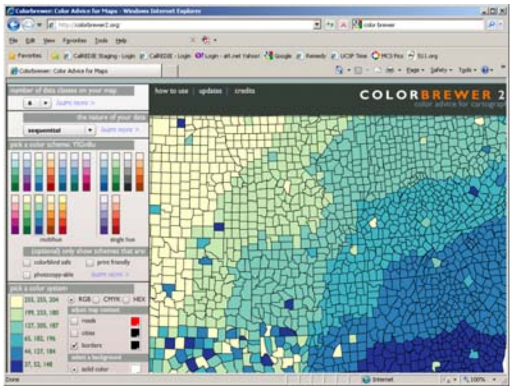
Pattern palette

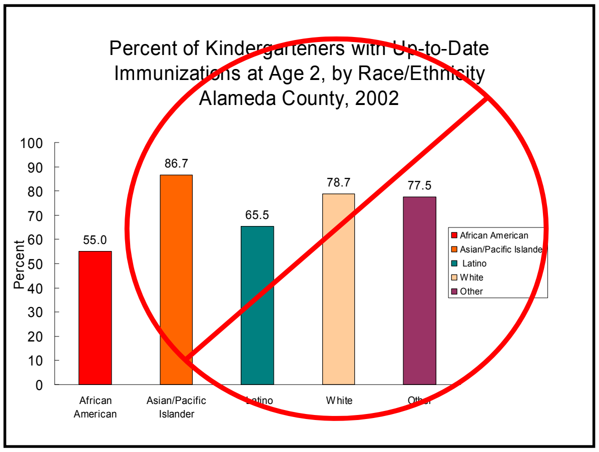


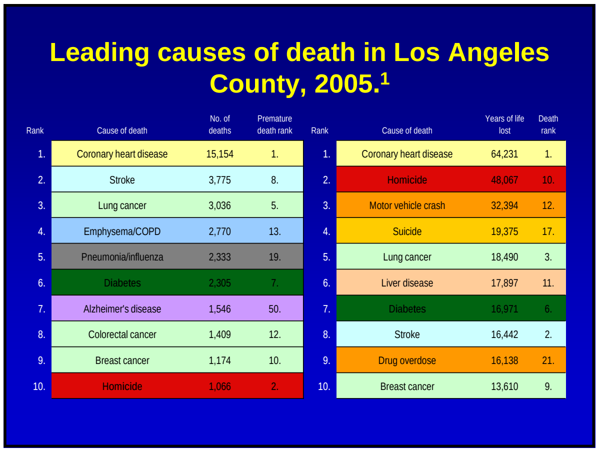
Gradient of grey



http://colorbrewer2.org/




Percent of Kindergarteners with Up-to-Date Immunizations at Age 2, by Race/Ethnicity
Alameda County, 2002

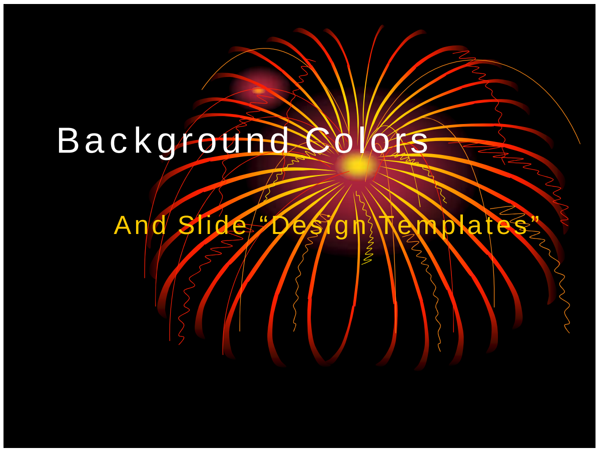


Leading causes of death in Los Angeles County, 2005.[1]

Rank	Cause of death	No. of deaths	Premature death rank	Rank	Cause of death	Years of life lost	Death rank
1.	Coronary heart disease	15,154	1.	1.	Coronary heart disease	64,231	1.
2.	Stroke	3,775	8.	2.	Homicide	48,067	10.
3.	Lung cancer	3,036	5.	3.	Motor vehicle crash	32,394	12.
4.	Emphysema/COPD	2,770	13.	4.	Suicide	19,375	17.
5.	Pneumonia/influenza	2,333	19.	5.	Lung cancer	18,490	3.
6.	Diabetes	2,305	7.	6.	Liver disease	17,897	11.
7.	Alzheimer's disease	1,546	50.	7.	Diabetes	16,971	6.
8.	Colorectal cancer	1,409	12.	8.	Stroke	16,442	2.
9.	Breast cancer	1,174	10.	9.	Drug overdose	16,138	21.
10.	Homicide	1,066	2.	10.	Breast cancer	13,610	9.

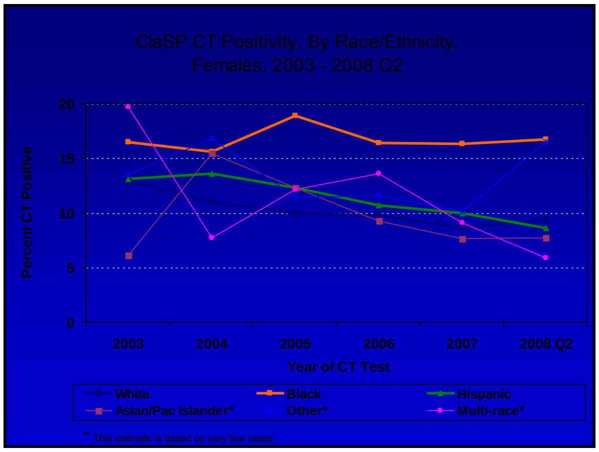
Background Colors

and oral presentations



Background Colors

And Slide "Design Templates"


ClaSP CT Positivity, By Race/Ethnicity, Females, 2003 - 2008 Q2

* This estimate is based on very few cases

Fonts / Fonts

- Use San Serif Fonts, Like Arial
- Not Serif Fonts, Like Times Roman
  - They Are Harder to Read
    - Particularly in Oral Presentations
      - When the Font Is Small
      - See, Isn't This Better
- ALSO, ALMOST NEVER USE ALL CAPS
  - IT'S HARD TO READ TOO
- Big Enough to read

Production / Reproduction

- Test printers, laptops, LCDs before full production is necessary
- Often different colors and styles for:
  - PowerPoint oral presentation
  - Written report or manuscript
- Color
  - May not photocopy (or print) well
  - Can be expensive to reproduce
- Posters made on plotters require special consideration

Line Type

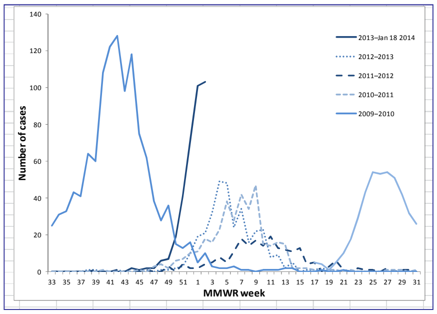
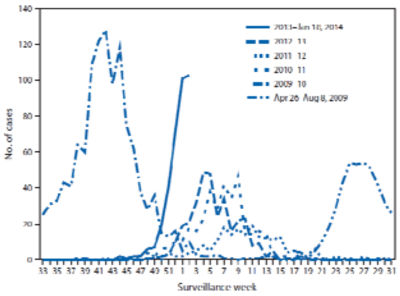


FIGURE 1. Number of cases of severe influenza,* by week of symptom onset — California, April 26, 2009–January 11, 2014†



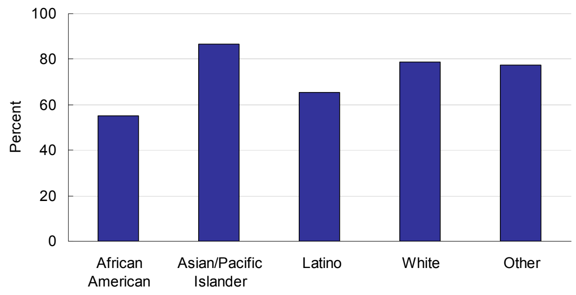
- Severe cases of influenza are defined as influenza infections resulting in intensive care unit (ICU) admission or death.

† ICU cases from three large local health jurisdictions have not been fully reported yet for the 2013–14 influenza season; for comparability, their ICU data are excluded from all years in this figure. Only cases occurring through January 11, 2014, are included because reporting for the cases with onset in the week ending January 18, 2014 was incomplete at the time of this report.

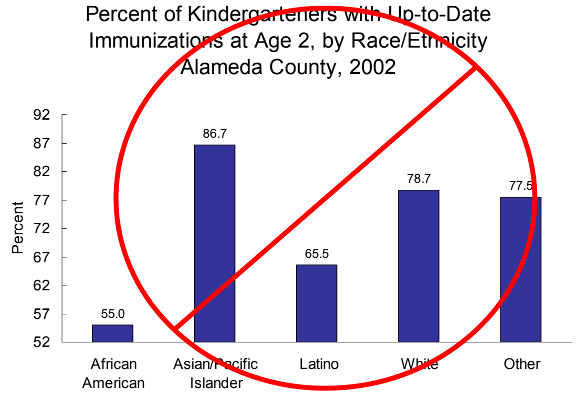
Alternate Text: The figure above shows the number of cases of severe influenza, by week of symptom onset in California during April 26, 2009–January 11, 2014. The 405 severe influenza cases were reported from 41 of 61 local health jurisdictions (67%) in California and had onset dates of October 20, 2013– January 15, 2014. The largest number of severe cases (103) by week of symptom onset occurred during the week ending January 11, 2014. These represent both the highest cumu¬lative number of severe cases at this point in the influenza season and the highest number of new cases in a single week since the 2009 H1N1 pandemic.

Grid Lines

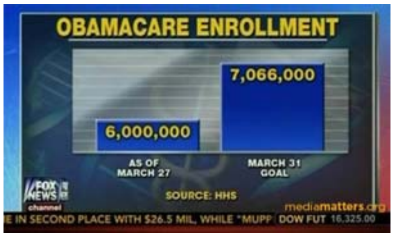
Percent of Kindergarteners with Up-to-Date Immunizations at Age 2, by Race/Ethnicity
Alameda County, 2002



Scale



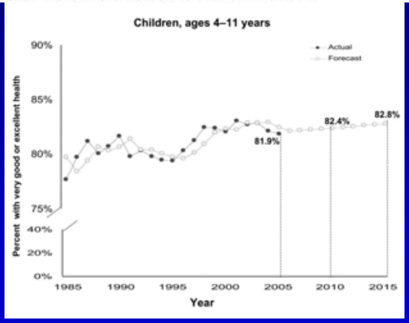
Percent of Kindergarteners with Up-to-Date Immunizations at Age 2, by Race/Ethnicity
Alameda County, 2002



OBAMACARE ENROLLMENT
7,066,000
6,000,000
AS OF MARCH 27
MARCH 31 GOAL
SOURCE: HHS
FOX NEWS channel
mediamatters.org
E IN SECOND PLACE WITH $26.5 MIL, WHILE "MUPP DOW FUT 16,325.00

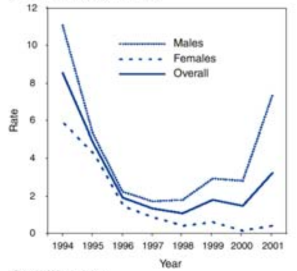
http://flowingdata.com/category/statistics/mistaken-data/

Figure 2. Proportion of the population reporting "very good" or "excellent" health, by life stage, United States, 1985–2015, actual[a] and forecast[b]



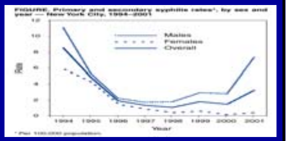
Monitoring Progress Toward CDC's Health Protection Goals:
Health Outcome Measures by Life Stage
Kakoli Roy, Anne C. Haddix, Robin M. Ikeda, Cecilia W. Curry, Benedict I. Truman, Stephen B. Thacker
Public Health Reports / March–April 2009 / Volume 124

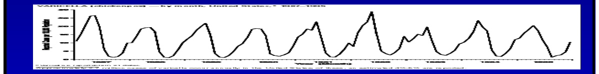
FIGURE. Primary and secondary syphilis rates*, by sex and year — New York City, 1994–2001



* Per 100,000 population.

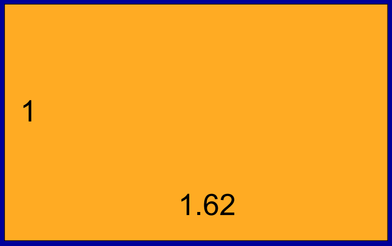
MMWR September 27, 2002 / 51(38);853-856

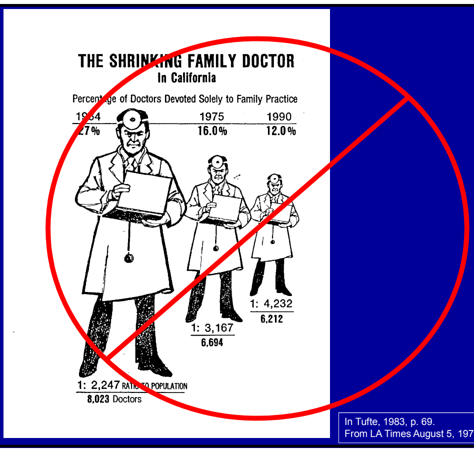




"Bank to 45 degrees"

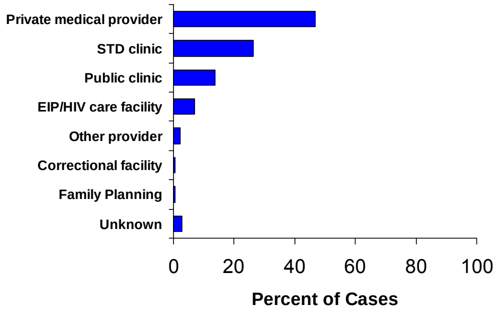
"Golden Rectangle"




THE SHRINKING FAMILY DOCTOR
In California
Percentage of Doctors Devoted Solely to Family Practice
1964
27%
1975
16.0%
1990
12.0%
1: 4,232
6,212
1: 3,167
6,694
1: 2,247 RATIO TO POPULATION
8,023 Doctors

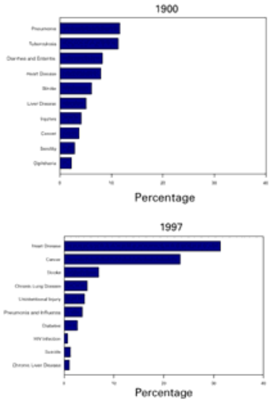
In Tufte, 1983, p. 69.
From LA Times August 5, 1979, p.3.

Reporting Source-
MSM P&S Syphilis Cases 2000-2001, California



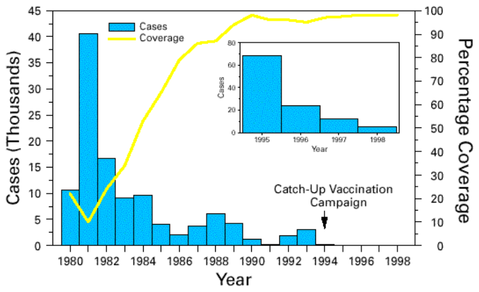
11/2002 **Provisional** Data - CA DHS STD Control Branch

FIGURE 2. The 10 leading causes of death as a percentage of all deaths — United States, 1900 and 1997



MMWR - Weekly
July 30, 1999 / 48(29);621-629

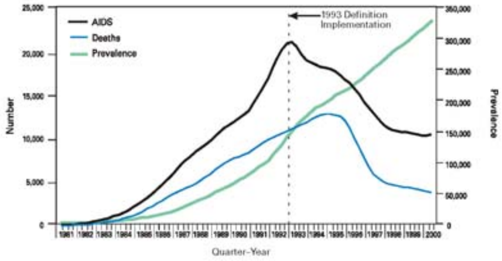
FIGURE 2. Reported number of measles cases and vaccination coverage, by year — Oman, 1980–1998



MMWR
Morbidity and Mortality Weekly Report

December 03, 1999 / 48(47);1081-6

FIGURE 1. Estimated AIDS incidence*, deaths, and prevalence, by quarter-year of diagnosis/death — United States, 1981–2000



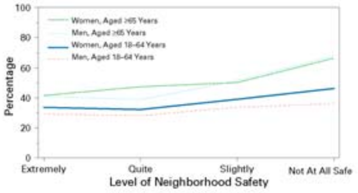
MMWR

HIV and AIDS --- United States, 1981--2000
June 01, 2001 / 50(21);430-4

Vol. 48 / No. 7 MMWR 145

Physical Inactivity — Continued

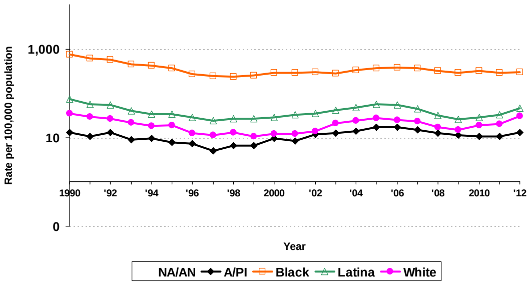
FIGURE 1. Percentage of respondents who reported physical inactivity, by sex, age group, and perceived neighborhood safety level — Maryland, Montana, Ohio, Pennsylvania, and Virginia, Behavioral Risk Factor Surveillance System, 1996



MMWR

Neighborhood Safety and the Prevalence of Physical Inactivity -- Selected States, 1996
February 26, 1999 / 48(07);143-146

Gonorrhea, Rates for Females by Race/Ethnicity
California, 1990–2012



Note: NA/AN = Native American/Alaskan Native, A/PI = Asian/Pacific Islander.
Race/ethnicity "Not Specified" ranged from 29.2% to 43.1% of cases for females in any given year.

Rev. 8/2013

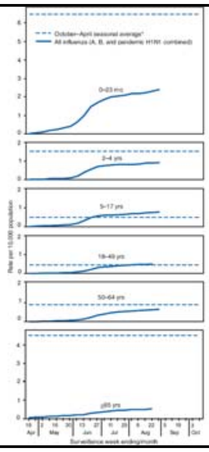


FIGURE 2. Laboratory-confirmed influenza hospitalization rates per 10,000 population, by age group and surveillance week --- Emerging Infections Program, United States, April--August 2009

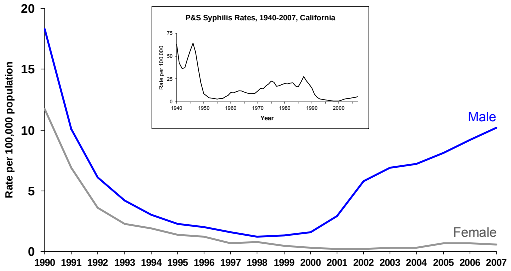
*Age group--specific average influenza rate, October--April, 2005--06, 2006--07, and 2007--08 influenza seasons.

Alternative Text: The above figure consists of six line graphs showing influenza hospitalization rates per 10,000 population by age group and surveillance week in the United States during April–August 2009 and comparing these rates with the October–April seasonal average for the 2005–06, 2006–07, and 2007–08 influenza seasons. The graphs indicate that the April–August 2009 rates, resulting from hospitalizations for 2009 pandemic influenza A (H1N1) were generally lower or similar to the seasonal average. The graphs also indicate that the rates for persons aged 0–23 months and ≥65 years were several times lower for pandemic H1N1 than for seasonal influenza.

MMWR - ***Early Release*** **September 10, 2009 / 58(Early Release);1-4**

Labels and Legends

Primary & Secondary Syphilis, Rates by Gender
California, 1990–2007



CA DPH STD Control Branch (rev 7/2008)

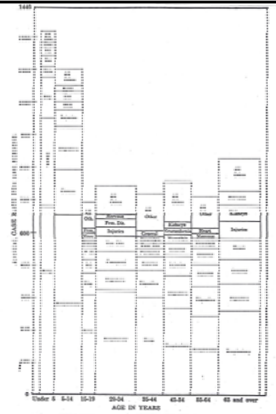
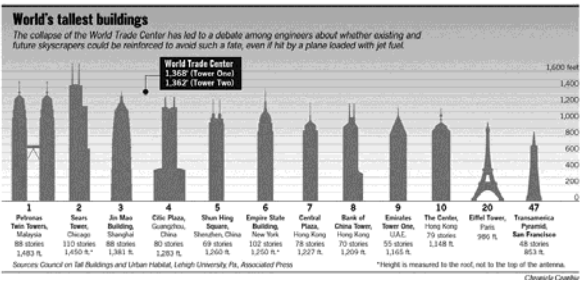


FIG. 8. THE PRINCIPAL CAUSES OF ILLNESS AT SPECIFIC AGES OF LIFE



World's tallest buildings

The collapse of the World Trade Center has led to a debate among engineers about whether existing and future skyscrapers could be reinforced to avoid such a fate, even if hit by a plane loaded with jet fuel.

Sources: Council on Tall Buildings and Urban Habitat, Lehigh University, Pa., Associated Press

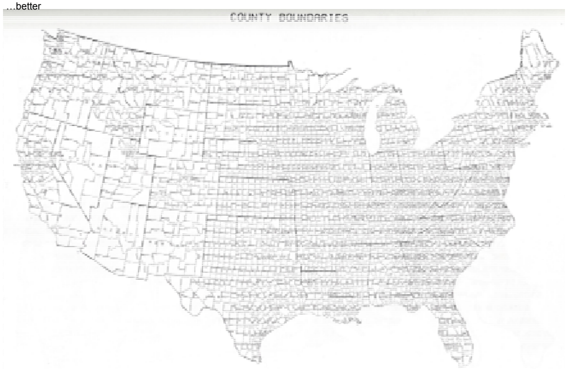
*Height is measured to the roof, not to the top of the antenna.

Chronicle Graphic

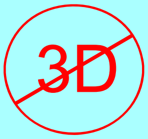
San Francisco Chronicle
21st century skyscrapers
Engineers say materials exist to build high-rises resistant to assault
Monday, October 1, 2001

Production and Reproduction

- Paper
- Transparency (from copy, back in the day)
- Transparency (now?)
- LCD (.jpg)
- …better

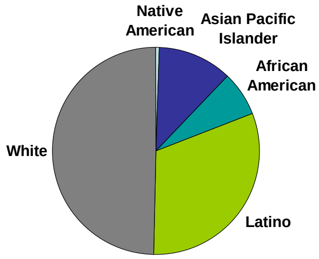


3D Charts

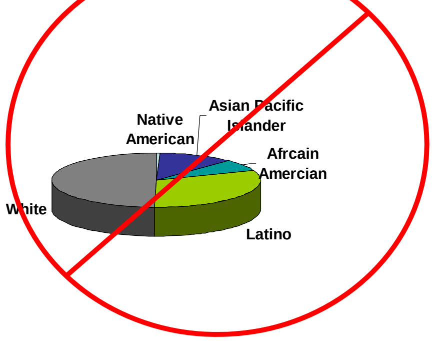


- Unless there are 3 dimensions and the audience can handle it!

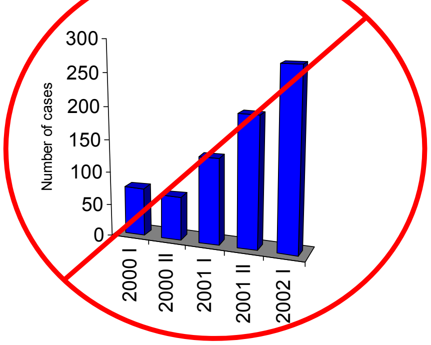
California Population by Race/Ethnicity
2001 CA Dept. of Finance Estimates



California Population by Race/Ethnicity
2001 CA Dept. of Finance Estimates

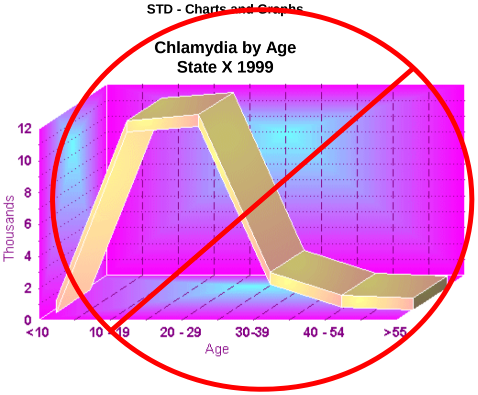


MSM P&S Syphilis Cases by Half-Year Interval
California, 2000-2002



State X Department of Health

STD - Charts and Graphs



http://www.dsf.health.state.XX.us/health/cwp/view.asp?a=178&q=198607

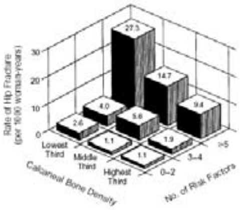
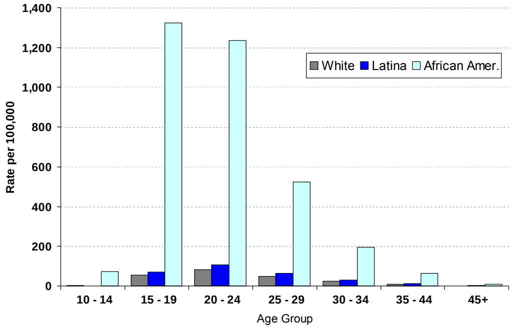


Figure 2. Annual Risk of Hip Fracture According to the Number of Risk Factors and the Age-Specific Calcaneal Bone Density.

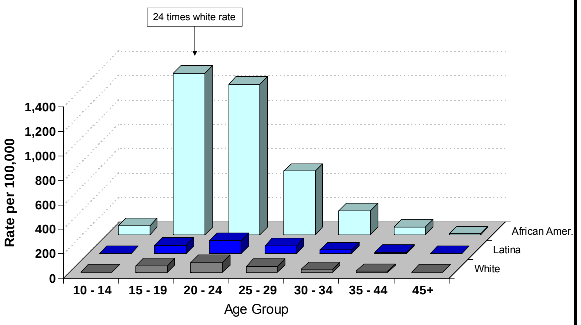
The risk factors (from Table 2) are as follows: age >80; maternal history of hip fracture; any fracture (except hip fracture) since the age of 50; fair, poor, or very poor health; previous hyperthyroidism; anticonvulsant therapy; current long-acting benzodiazepine therapy; current weight less than at the age of 25; height at the age of 25 >168 cm; caffeine intake more than the equivalent of two cups of coffee per day; on feet <4 hours a day; no walking for exercise; inability to rise from chair without using arms; lowest quartile (standard deviation >2.44) of depth perception; lowest quartile (<0.70 unit) of contrast sensitivity; and pulse rate >80 per minute.

Gonorrhea Rates, Females, by Race/Ethnicity and Age Group
California, 2009



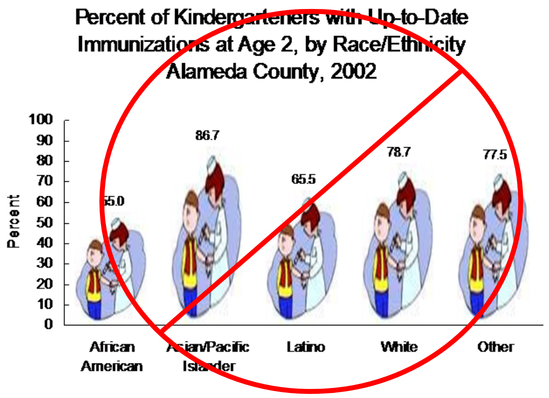
Note: Native American/Alaskan Native and Asian/Pacific Islander rates were excluded due to small case counts.
Source: California Department of Public Health, STD Control Branch

Gonorrhea Rates, Females, by Race/Ethnicity and Age Group
California, 2009

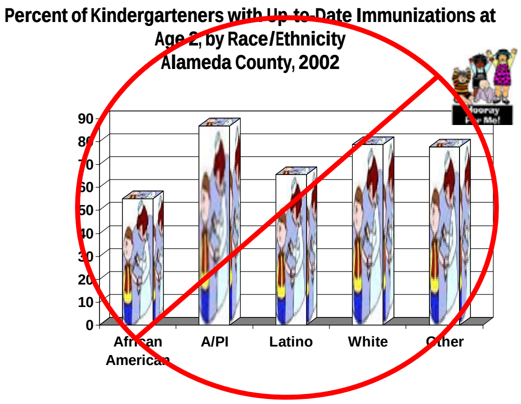


Note: Native American/Alaskan Native and Asian/Pacific Islander rates were excluded due to small case counts.
Source: California Department of Public Health, STD Control Branch

Chart Junk

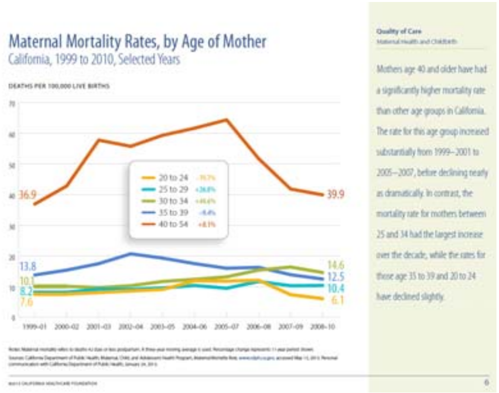


Percent of Kindergarteners with Up-to-Date Immunizations at Age 2, by Race/Ethnicity Alameda County, 2002



Percent of Kindergarteners with Up-to-Date Immunizations at Age 2, by Race/Ethnicity Alameda County, 2002

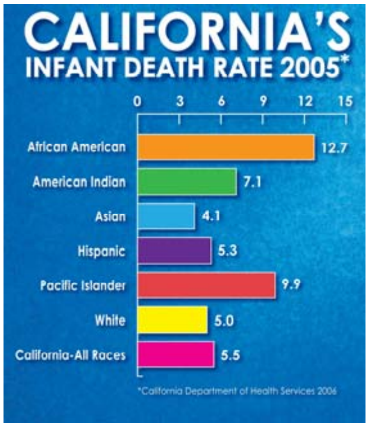
“Soften the Edges”
‘The Human Touch”



Maternal Mortality Rates, by Age of Mother

California, 1999 to 2010, Selected Years

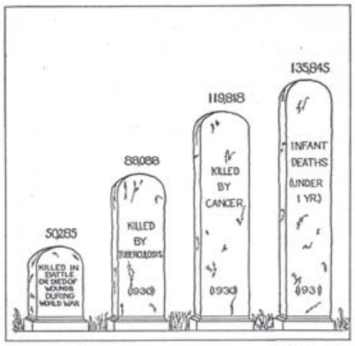
Mothers age 40 and older have had a significantly higher mortality rate than other age groups in California. The rate for this age group increased substantially from 1999–2001 to 2005–2007, before declining nearly as dramatically. In contrast, the mortality rate for mothers between 25 and 34 had the largest increase over the decade, while the rates for those age 35 to 39 and 20 to 24 have declined slightly.



CALIFORNIA’S INFANT DEATH RATE 2005*

*California Department of Health Services 2006

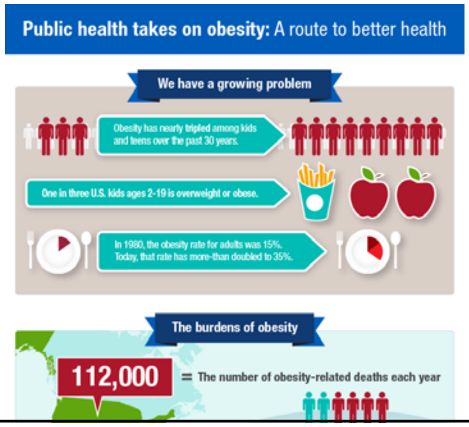
“Infographics”



135845
INFANT DEATHS (UNDER 1 YR)
1930
119818
KILLED BY CANCER
1930
88088
KILLED BY TUBERCULOSIS
1930
50285
KILLED IN BATTLE OR DIED OF WOUNDS DURING WORLD WAR

FIG. 18. “HUMAN LIFE IN THE UNITED STATES IS BEING WASTED AS RECKLESSLY, AS SURELY, IN TIMES OF PEACE AS IN TIMES OF WAR”

THE SANTA FE NEW MEXICAN



Public health takes on obesity: A route to better health

We have a growing problem

Obesity has nearly tripled among kids and teens over the past 30 years.

One in three U.S. kids ages 2-19 is overweight or obese.

In 1980, the obesity rate for adults was 15%. Today, that rate has more-than doubled to 35%.

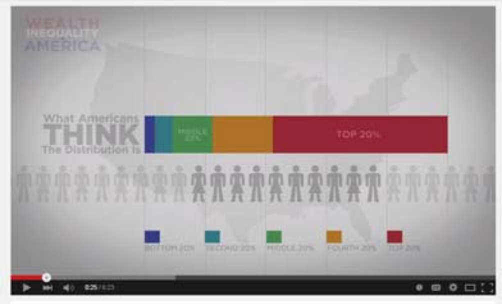
The burdens of obesity

112,000 = The number of obesity-related deaths each year

Stories…

$$$
$$$
% Obese vs. % Poverty

http://insight.livestories.com/countyhealthrankings/Data-With-Weight/


WEALTH INEQUALITY IN AMERICA
What Americans THINK The Distribution Is
MIDDLE 20%
TOP 20%
BOTTOM 20%
SECOND 20%
MIDDLE 20%
FOURTH 20%
TOP 20%

https://www.youtube.com/watch?v=QPKKQnijnsM

Almost done…

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http://www.bloomberg.com/dataview/2014-04-17/how-americans-die.html

How Americans Die

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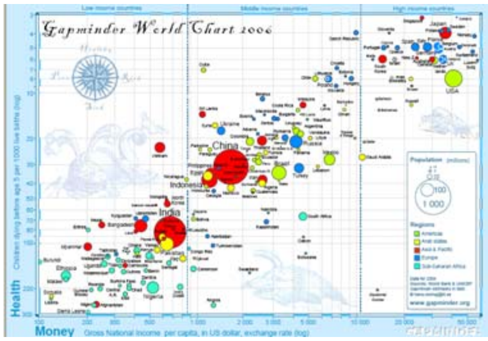
http://www.gapminder.org/

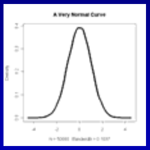


In Conclusion

- Make displays that matter
- Know your audience
- Simple ↔ Complex
- Less is more
- Pay attention to “nuts and bolts” details

For More Information:

- Michael.Samuel@cdph.ca.gov
- 510.620.3198



Presenting Health Data
Parts I and 2

Part 1 “General Concepts”
  Part 1a: http://youtu.be/1c41eMOjt_U
  Part 1b: http://youtu.be/XlKA2hgg-rY

Part 2 “Nuts and Bolts”
  Part 2a: http://youtu.be/pUDcGlulfW8
  Part 2b: http://youtu.be/YCRyVPpz-yk