

“... a hypothesis test tells us whether the observed data are consistent with the null hypothesis, and a confidence interval tells us which hypotheses are consistent with the data.”

William C. Blackwelder

“You must be ready to give up even the most attractive ideas when experiment shows them to be wrong.”

Alessandro Volta

A study shows a clear positive association between the size of a hospital, measured by the number of beds, and the average number of days patients remain in the hospital. Are large hospitals padding their bills by keeping patients longer?

“When a coincidence seems amazing, that’s because the human mind isn’t wired to naturally comprehend probability and statistics.”

Neil deGrasse Tyson

“The president, he’s not focused on statistics as much as he is on whether or not the American people are doing better as a whole.”

Sean Spicer, then-White House Press Secretary

From an 1840s letter from Charles Babbage to Alfred, Lord Tennyson, about two lines in a Tennyson poem: "Every minute dies a man, / Every minute one is born." :

"I need hardly point out to you that this calculation would tend to keep the sum total of the world's population in a state of perpetual equipoise, whereas it is a well-known fact that the said sum total is constantly on the increase. I would therefore take the liberty of suggesting that in the next edition of our excellent poem the erroneous calculation to which I refer should be corrected as follows: 'Every moment dies a man / And one and a sixteenth is born.' I may add that the exact figures are 1.167, but something must, of course, be conceded to the laws of metre."

“I showed all the data together, which helped disguise the bimodal distribution. Nothing wrong with that. All the data is there. Every piece.” [But then he suggested using] “thick and thin lines to try and dress it up, or changing colors to divert attention.”

Bob Schubert (Takata airbag engineer) Quoted in: *Takata emails show brash exchanges about data tampering*, New York Times, 4 January 2016

Powerball 1.3 Billion
÷ U.S. Pop 300 Million

Everyone receives 4.33 mil

@Esteyban

Poverty Solved!!

- Philippe Andolini

“The statistics bureau also released its new count of the population of mainland China, saying it grew by 6.8 million people last year, to ‘1,374.62 million.’ We’re not sure how to account for that decimal point; if any statisticians or demographers are reading, please enlighten the rest of us.”

in: *China reports slowest economic growth In 25 years*, NPR (National Public Radio), 19 January 2016.

“You can, for example, never foretell what any one man will do, but you can say with precision what an average number will be up to. Individuals vary, but percentages remain constant. So says the statistician.”

Sherlock Holmes, *The Sign of Four*

“Airspace experiencing severe turbulence could increase from 36 percent to 188 percent, the study found.”

From Fasten your seat belts: Climate change could increase air turbulence, The Boston Globe, April 6, 2017

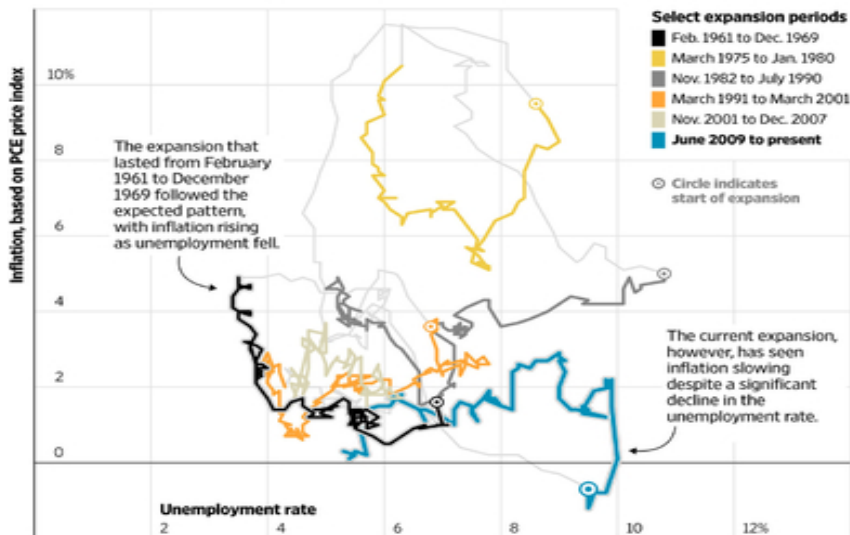
**317 MILLION PEOPLE IN AMERICA AND YOU
SPEND 360 MILLION ON JUST INTRODUCING
OBAMACARE?**



JUST GIVE EACH CITIZEN A MILLION BUCKS

Throwing a Curve

In theory, lower unemployment generates higher inflation, a relationship described by the Phillips curve. But the link has been unsteady over the past half-century.



Note: All data are seasonally adjusted.

Sources: Labor and Commerce Departments via Federal Reserve Bank of St. Louis (unemployment, PCE); National Bureau of Economic Research (expansion dates)

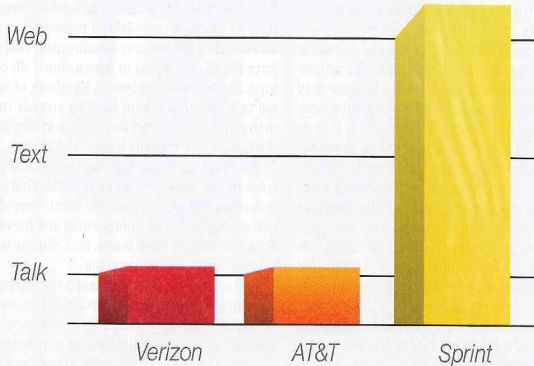
Randy Veip/THE WALL STREET JOURNAL

Sprint



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From label for 'Crème fraîche' (Sainsbury's) 2006

Overall spending on
pets is close to \$40
billion, more than
double what it was in
1994.



By Anne R. Carey and Keith Carter, USA TODAY
Source: appma.org



3/20

News

Sports

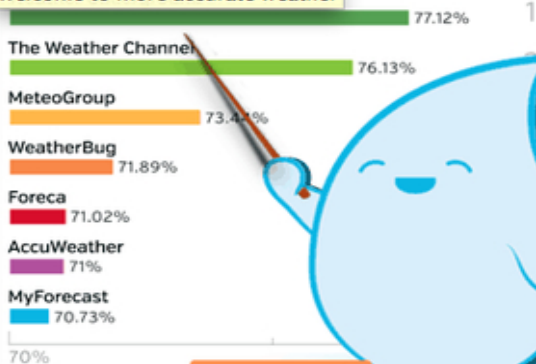
Money

Life

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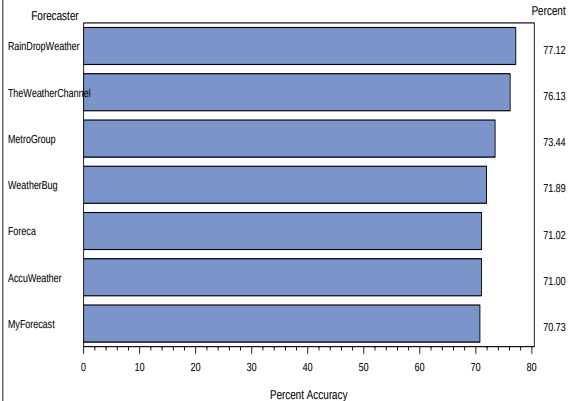
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Source: ForecastAdvisor.com. City averages taken from May-June 2014.

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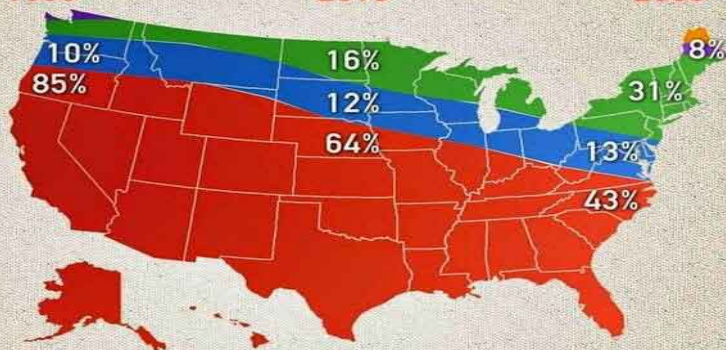
CHANGING FACE OF AMERICA

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

Rufus lives in a section of the country known as “tornado alley”. Each day, the chance of Rufus’s house being hit by a tornado is 0.001, independent of what will happen or has happened on any other day. Given that today is just beginning, on which of the following days does Rufus have the greatest chance of his house being hit by a tornado:

- (a) Today
- (b) Tomorrow
- (c) A week from next Wednesday
- (d) All of the above

If you choose one of (a)-(d) at random, what is the chance you will be correct?

(a) 25%

(b) 50%

(c) 60%

(d) 25%

“... the null hypothesis is never proved or established, but is possibly disproved, in the course of experimentation. Every experiment may be said to exist only to give the facts a chance of disproving the null hypothesis”

– R. A. Fisher

“... a hypothesis test tells us whether the observed data are consistent with the null hypothesis, and a confidence interval tells us which hypotheses are consistent with the data.”

– William C. Blackwelder

“Science isn't about authority or white coats; it's about following a method. That method is built on core principles: precision and transparency; being clear about your methods; being honest about your results; and drawing a clear line between the results, on the one hand, and your judgment calls about how those results support a hypothesis.”

– Ben Goldacre

P-VALUEINTERPRETATION

0.001	}	HIGHLY SIGNIFICANT
0.01		
0.02		
0.03		
0.04	}	SIGNIFICANT
0.049		
0.050	}	OH CRAP. REDO CALCULATIONS.
0.051	}	ON THE EDGE OF SIGNIFICANCE
0.06		
0.07	}	HIGHLY SUGGESTIVE, SIGNIFICANT AT THE P<0.10 LEVEL
0.08		
0.09		
0.099	}	HEY, LOOK AT THIS INTERESTING SUBGROUP ANALYSIS
≥0.1		

“When all is said and done, science actually takes hard work and a willingness to sometimes find out that your most cherished hypothesis is wrong.”

– Alice Dreger

“It is absolutely essential that one should be neutral and not fall in love with the hypothesis. If the facts are contrary to any predictions, then the hypothesis is wrong no matter how appealing.”

–David Douglass

“One must credit an hypothesis with all that has had to be discovered to demolish it.”

–Jean Rostand

“Truth in science can be defined as the working hypothesis best suited to open the way to the next better one.”

–Konrad Lorenz

“I cannot give any scientist of any age better advice than this: the intensity of a conviction that a hypothesis is true has no bearing on whether it is true or not.”

–Peter Medawar

“You can’t prove any hypothesis, you can only improve or disprove it.”

–Christopher Monckton

“You have to test your hypothesis against other theories. Certainty in the face of complex situations is very dangerous.”

–Richard Holbrooke

“One finds the truth by making a hypothesis and comparing observations with the hypothesis.”

– David Douglass

NEW DELHI An Indian bride walked out of her wedding ceremony after the groom failed to solve a simple math problem, police said Friday. The bride tested the groom on his math skills and when he got the sum wrong, she walked out. The question she asked: How much is 15 plus six? His reply: 17. The incident took place late Wednesday near the industrial town of Kanpur in northern Uttar Pradesh state, police officer Rakesh Kumar said Friday. The groom's family tried persuading the bride to return, but she refused. She said the groom had misled them about his education.

-AP Report 3/14/15

There's still time to vote, but with forecasters giving Republicans anywhere from a 75% to 113% chance of capturing a Senate majority, it isn't too early to explain the result.

-From: Nothin' matters and what if it did, Wall Street Journal op/ed, 4 November 2014

There is no cure for Ebola. It kills everyone in its path. Only 3 out of 10 will survive.

-The Independent, 17 Oct 2000

In theory, if you were to buy 50 tickets and your neighbor bought one, neither of you would have a better or worse chance of winning. We like to say it only takes one ticket to win.

-Brian Rockey, Nebraska Lottery Spokesman

A diet rich in seafood is associated with good health. In Europe, Spanish adults eat the most fish – between 60g and 90g a day – and deaths from heart disease are three times fewer than in England where men eat under 40g of fish a day.

-The Independent, 1 November 1995

Single men are about 1.8 times as likely to die as comparable married men; single women are about 1.5 times as likely to die as comparable married women.

The Guardian, 7 September 2000

Rich celebrities can afford to go on shopping sprees at a whim; but one in ten of the population –and one in five women–are shopaholics and their bank accounts do not always stand the strain of that personality disorder.

-Dr Thomas Stuffaford (The Times), 27 November 2000

Since 1997 Freightliner's failure rate has fallen by 325

-Freightliner Southampton, 26 November 2000

“..., while the majority of students who enter doctoral programs have the academic ability to complete the degree, on average only 50-60 percent of those who enter doctoral programs in the United States complete their degrees.”

-From a recent report of the Council of Graduate Schools, titled: Graduate Education The Backbone of American Competitiveness and Innovation.

“I realize I don’t have a chance, but nobody’s got a chance. So the way I look at it, I have a 50-50 chance – either I win it or someone else wins it,” reasoned Barrie Green, 60, after buying a single ticket Monday afternoon at the Merritt Restaurant and Bakery near his home in Oakland.

-From the San Francisco Chronicle, March 5, 2007

The other kind of variable is called a quantitative variable in which numbers are used to order or to represent increasing levels of that variable. The simplest example of a quantitative variable is a dichotomous variable such as sex or genre, where one category is seen as representing more of that quality than the other. For example, if females are coded as 1 and males as 2, then this variable may be seen as reflecting maleness in which the higher score indicates maleness. The next simplest example is a variable consisting of three categories such as social class, which may comprise the three categories of upper, middle and lower. Upper class may be coded as 1, middle as 2 and lower as 3, in which case lower values represent higher social statuses. These numbers may be treated as a ratio measure or scale. Someone who is coded as 1 is ranked twice as high as someone who is coded as 2 giving a ratio of 1 to 2.

-From Advanced Quantitative Data Analysis, Open University Press, 2003

“So, all you’ve gotta do is set up a null hypothesis and try and prove it. And when you can’t prove it, well that means your original hypothesis must be true. . You said you believe Cassius returns to the scene of the crimes. And you’ve got photos of every murder. So set up a hypothesis of, say, Stephen Hawking is Cassius... which gives you a null hypothesis of Stephen Hawking is not Cassius. So, go through the photos and try and prove the null... that Rolling Thunder is not Cassius. If you can, that means your hypothesis is incorrect. If you can’t... then depending on your ‘P’ value of course... you’ve statistically proven your hypothesis must be true. Or that Stephen Hawking is Cassius. Yeah. Some of us didn’t sleep our way through Logic and Stats at Harvard.”

-Doubt, The Movie Script, 2011

NEW CUYAMA

Population 562

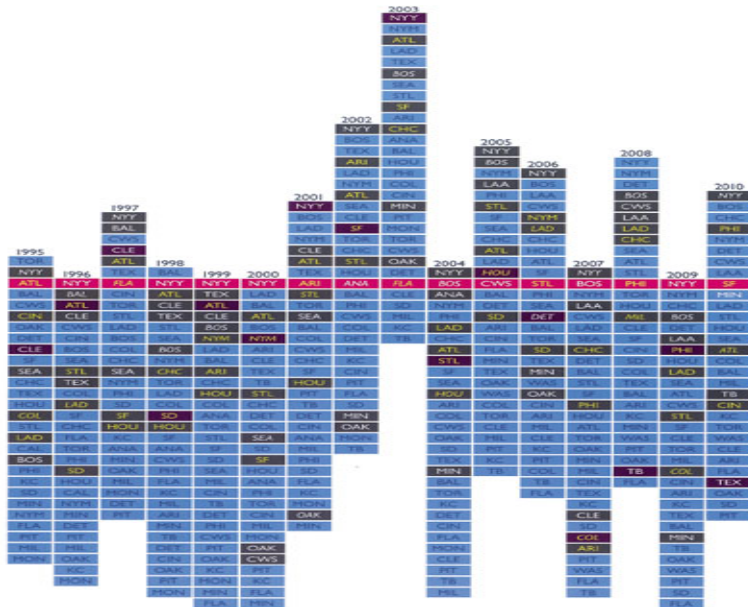
Ft above sea level 2150

Established 1951

TOTAL 4663

THE BIGGEST PAYROLL IN BASEBALL

HOW OFTEN DOES THE MOST EXPENSIVE TEAM WIN THE WORLD SERIES?



Courtesy of a MA 2611 Student

