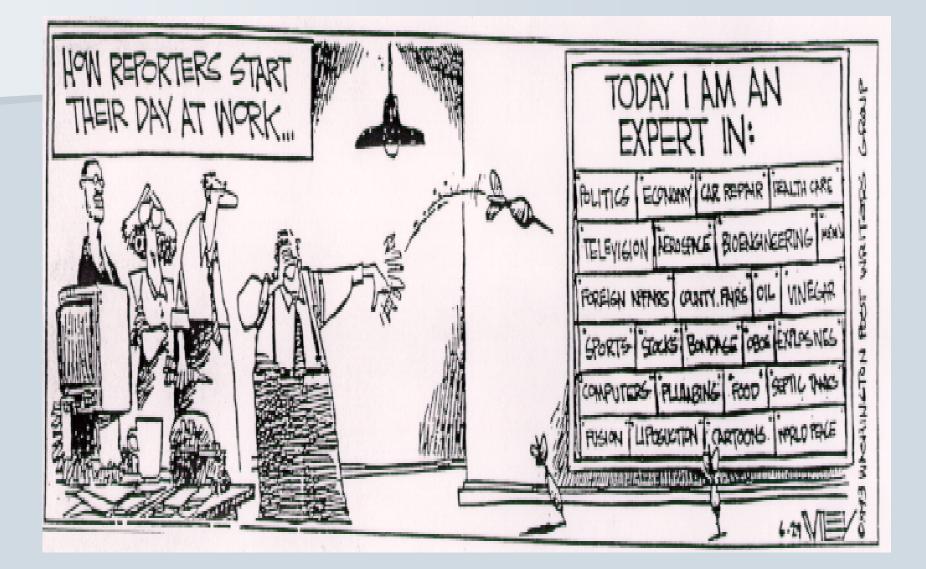
Data-driven journalism

Bay Area R Users Group, Dec 14 2010

Peter Aldhous, San Francisco Bureau Chief



A disclaimer



From the ashes of the news industry, a phoenix?

Journalism in the Age of Data

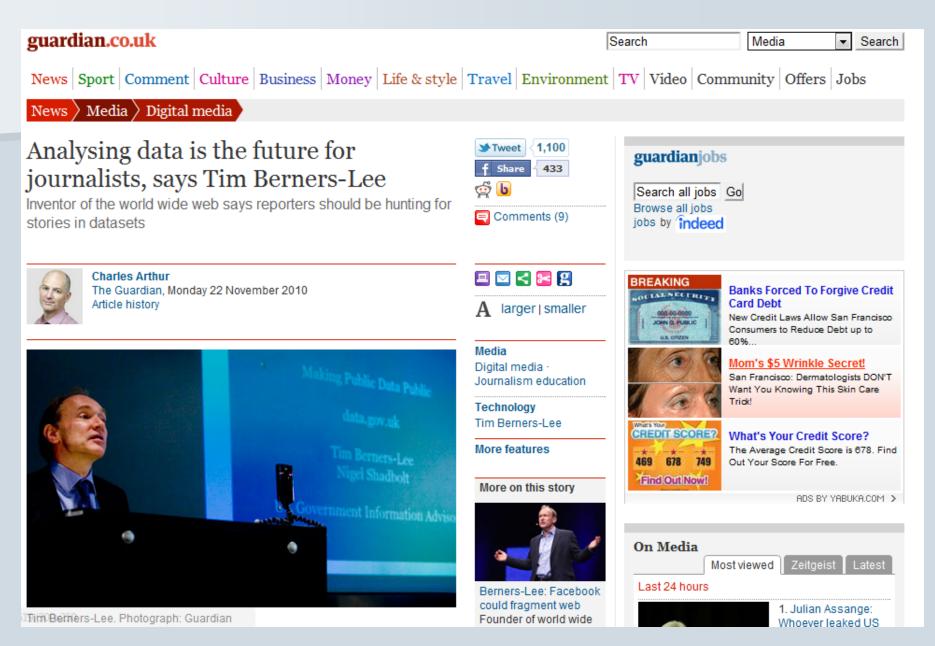
A video report on data visualization as a storytelling medium Produced during a 2009-2010 Knight Journalism Fellowship Total Running Time: 54 Minutes; with related information and links

Iow Different Groups Spend Their Day							CHAPTERS
The American Time Use Survey asks thousands of American residents to recall every minute of a day. Here is how people over age 15 spent their time in 2008. Related article							I. Introduction
Everyone Sleeping, eating, working and watching television take up about two-thirds of the average day.	Mon	Employed Unemployed Not in tub	White Black	Agn 15-34 Age 25-64	H.S. grads. Dechelor's	No dilaten One itili Teo+ chidan	II. Data Vis in Journalism
	Women	Nor II like .	Hapone	Age 65+	Advanced	Two+ diaden	III. Telling "Data Stories"
Editory -		~					IV. A New Era in Infographics
	PLAY	hold activities			/		V. Life as a Data Stream
II. Data Vis in Journalism		-	/ TV and me		Siee	oma	VI. Exploring Data
How data reporting and presentation are start		J	TV and m				VII. Technologies and Tools
change the face of newsrooms.						-	

Watch the video.



Words from the wise ...





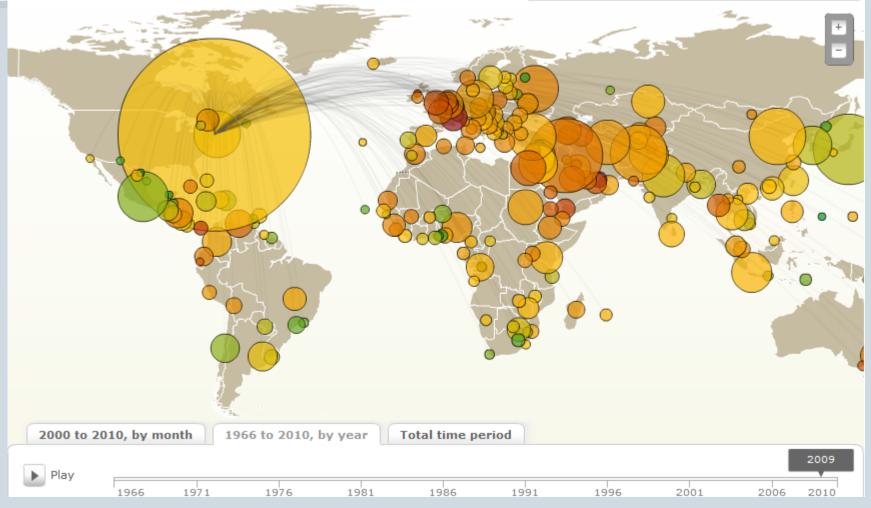
The US Embassy Dispatches

Interactive Atlas

Dossiers A-Z

The map shows **where** the dispatches originated in the chosen time period. The more dispatches, the larger the **circle**. The relative quantity of classified documents from a given location is indicated according to the **color scale** on the right. Click on a US Embassy location to see **statistics** for each representation,

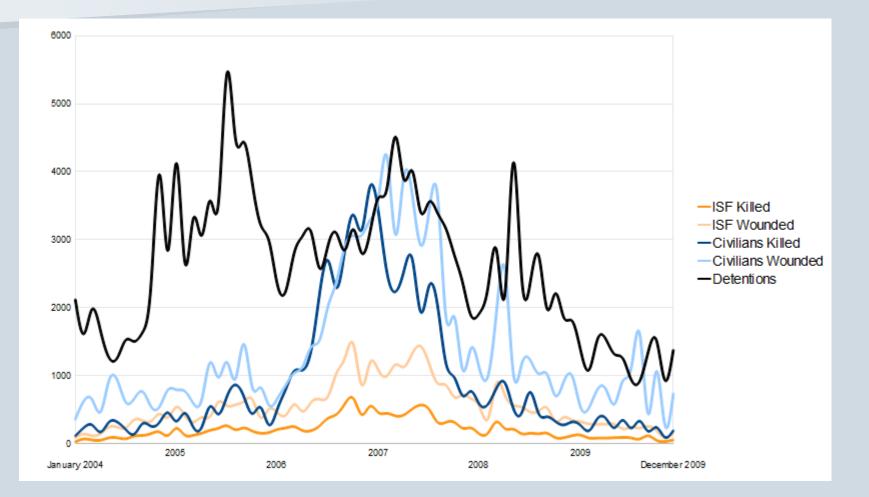






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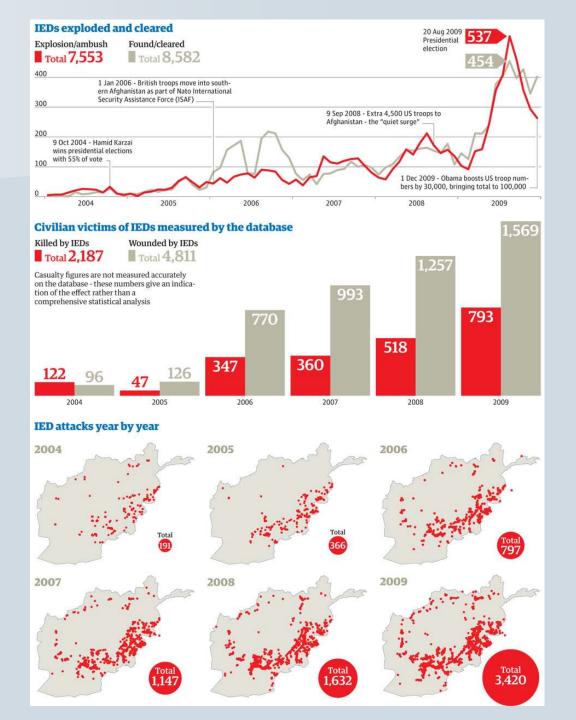




theguardian

AFGHANISTAN THE WAR LOGS





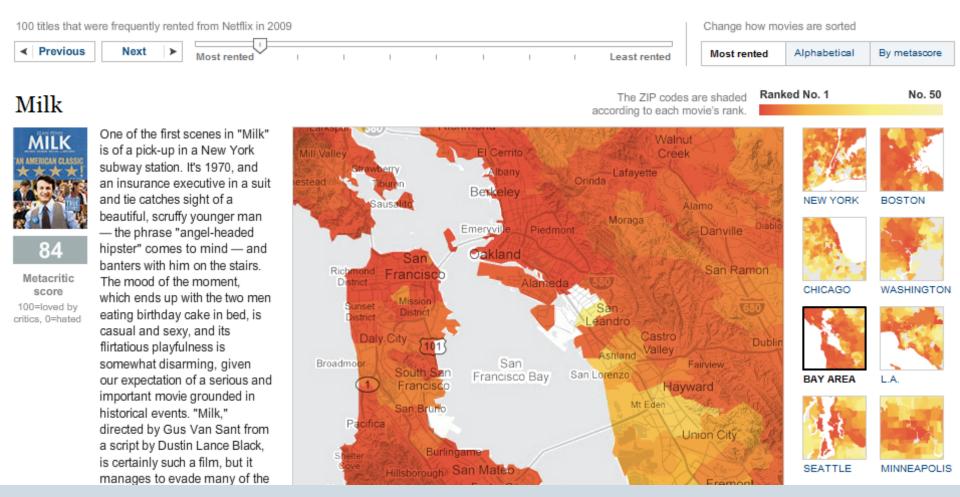


Ehe New York Eimes

Published: January 8, 2010

A Peek Into Netflix Queues

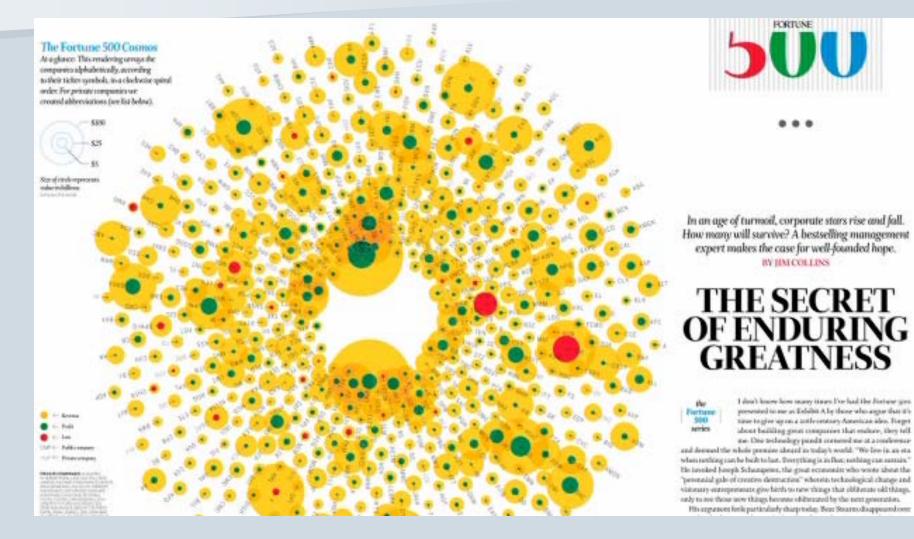
Examine Netflix rental patterns, neighborhood by neighborhood, in a dozen cities. Some titles with distinct patterns are Mad Men, Obsessed and Last Chance Harvey. 📮 Comments (135)



Explore the interactive.

Beauty is not enough

FORTUNE



You need to tell a story

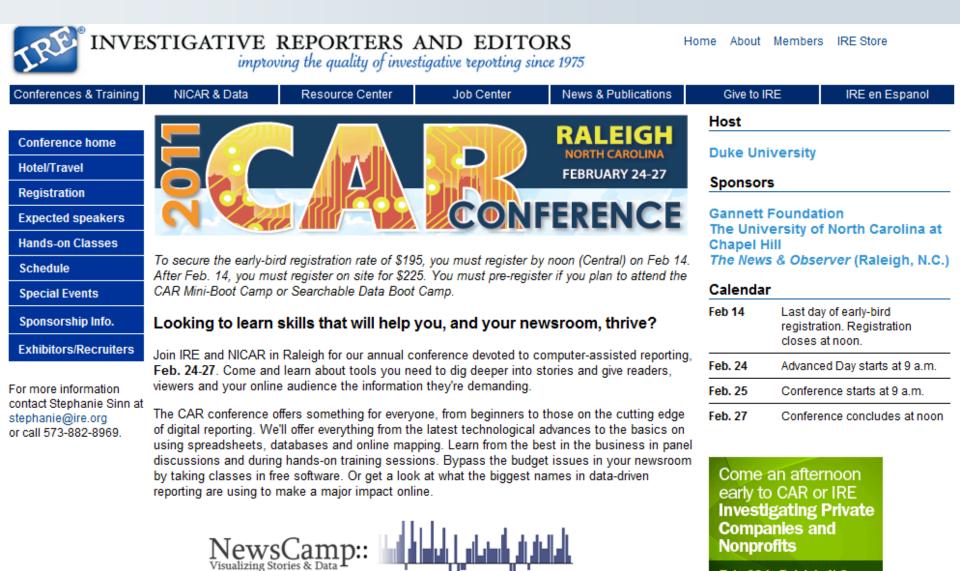


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Watch the video.

Who are the data journalists?



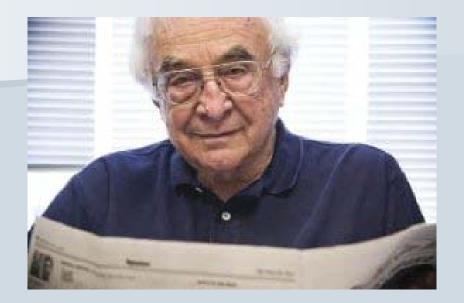
Feb. 23 in Raielgh, N.C., and June 8 in Orlando, Fla.

And what are their skills/interests?

10 days on the NICAR listserv, Nov-Dec 2010



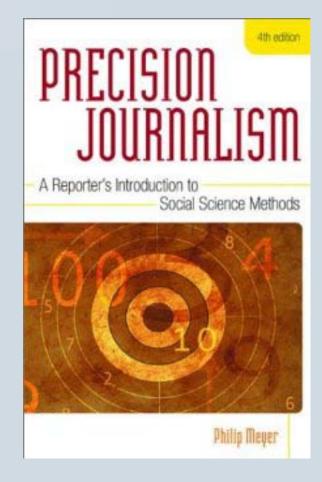
The pioneer: Philip Meyer



Now emeritus professor of journalism, University of North Carolina at Chapel Hill.

Pioneered use of quantitative methods in journalism with Knight Newspapers in 1960s.

Author of *Precision Journalism*, first published 1973.



A Pulitzer for data journalism: 1967 Detroit riot



Data: Survey conducted in the immediate aftermath of the riot.

Findings: One theory held that the rioters were stuck at the foot of the economic ladder with no other means of expression. Another argued that southern blacks who had moved to Detroit were venting years of pent-up rage. But Philip Meyer showed that college graduates were as likely to have rioted as high-school dropouts, and that those born in the South were less likely to have participated.

Attention turned instead to pervasive racial discrimination in policing and housing in Detroit.

43 dead
467 injured
7231 arrests



Tools and stories: relational databases





Insurers Say They Screen Out Doctors With Troubled Histories, But Dozens Have Made It Into Their Directories **Data:** HMO doctor directories and state records of disciplinary actions taken against doctors.

Findings: Despite promises of high quality and rigorous screening, New York's biggest managed health care networks offered their customers dozens of doctors disciplined for serious – even fatal – wrongdoing.

Even though the health insurers were fully aware that the state punished these doctors for such offenses as botched surgery, sexual misconduct, drug abuse or cheating government insurance plans, they never told their customers.

Tools and stories: GIS

The Seattle Times

Logging and landslides: What went wrong?

When Weyerhaeuser began clear-cutting the Douglas firs on the slopes surrounding Little Mill Creek, local water officials were on edge. Some of these lands had slid decades ago, after an earlier round of logging. They worried new slides could dump sediments into the mountain stream and overwhelm a treatment plant. Those fears came true last December.

By Hal Bernton and Justin Mayo Seattle Times staff reporters

BOISTFORT VALLEY, Lewis County — When Weyerhaeuser began clear-cutting the Douglas firs on the slopes surrounding Little Mill Creek, local water officials were on edge.

Some of these lands had slid decades ago, after an earlier round of logging. They worried new slides could dump sediments into the mountain stream and overwhelm a treatment plant.

Those fears came true last December when a monster storm barreled in from the Pacific, drenching the mountains around the Chehalis River basin and touching off hundreds of landslides. Little Mill Creek, filled with mud and debris, turned dark like chocolate syrup.

More than three months passed before nearly 3,000 valley residents could drink from their taps again.

"I have never seen anything like this before, and I hope I never do again," said Fred Hamilton, who works for the Boistfort Valley Water Corp.

State forestry rules empower the Department of Natural Resources (DNR) to restrict logging on



Data: GIS data on clear-cuts and landslides from the Washington State Department of Natural Resources. Logging company Weyerhaeuser's logging permits.

Findings: With little scrutiny from state geologists, Weyerhaeuser was allowed to clear-cut unstable slopes.

Using mapping software, the reporters showed that clear-cut sites that had at least half of their acreage in a moderate- to high-hazard zone accounted for a disproportionate number of landslides in December 2007 storms.

Explore interactive graphic.

Tools and stories: social network analysis

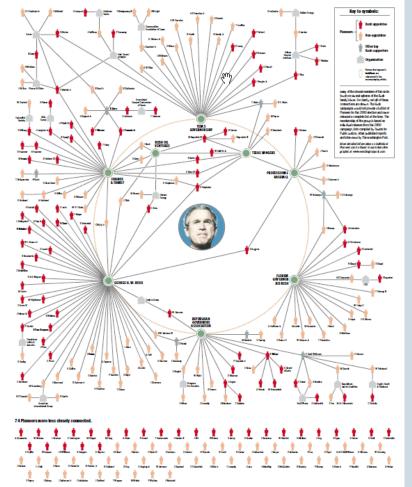
THE WASHINGTON POST

THE BUSH MONEY MACHINE | Fundraising's Rewards

Spheres of Influence

Gong W. Buch reached into each of the sphere surrounding his lifeto find pinduciurs of pick infort provided a biol. These Primers, who resuld a minimum of \$100,000 nuch in individual contributions of \$1,000 or leas in 2000, have dranged the face of national comparing frances. They helped him rules a record \$825 million and allowed him to bran doors faderal matching fund that would have limited his specified pairing the primary decision. For Buch, they in chales damate a from Yale and Illaward, hildihood frindels, uncert si his corfy buiness rotature and contact madethrough the Republican Converser Association and his partial count-his of the Toura Blanger backwall laum. He at an draw from his family's storied political life, tapping appointees and fundrations from his fault-or presidential bids, his brober 3 political importers in Harida and separt ers and appointees from his six-parts are Toura governor. The Post (and Asi a dout 170 of the 216 Piencers in 2000 fail his cone of these rotains. Of the Piencers, more don 100, er 40 porent, wan a falleria appointment after the doction.

SUNDAY, MAY 16, 2004 A17





Data: Built database of George W. Bush "Pioneers" – those who raised more than \$100,000 to his 2000 presidential campaign.

Findings: Social network analysis to show who were the key Pioneers in the Bush campaign, who they were connected to, and what each Pioneer gained, if anything, from his or her association with Bush, such as ambassadorships and other federal appointments. Bush raised \$96.3 million, a record at that time. More than 100, about 40%, of the Pioneers received some federal appointment after the election.

Tools and stories: statistical analysis

dallasnews The Dallas Morning News

Exclusive: Poor schools' TAKS surges raise cheating questions

09:42 PM CST on Sunday, December 19, 2004

By JOSHUA BENTON and HOLLY K. HACKER / The Dallas Morning News

A *Dallas Morning News* data analysis has uncovered strong evidence of organized, educator-led cheating on the TAKS test in dozens of Texas schools – and suspicious scores in hundreds more.

The analysis found a poor urban school where third- and fifth-graders are among the state's weakest readers - but the fourth-graders beat out the state's most elite schools. That's despite the fact that many of its students have trouble speaking English.

It found a desperately impoverished school where the fourth-graders have trouble adding and subtracting – but nearly all the fifthgraders got perfect scores on the math portion of the Texas Assessment of Knowledge and Skills.

And it found schools where in one year's time – if the scores are to be believed – children devolved from top students to barely being able to read.

The News' findings have led to cheating inquiries in three Texas school districts, including the state's two largest, Dallas and Houston. One of the schools under investigation is a National Blue Ribbon School that a year ago was touted by federal officials as an example of top academic achievement.

About this series

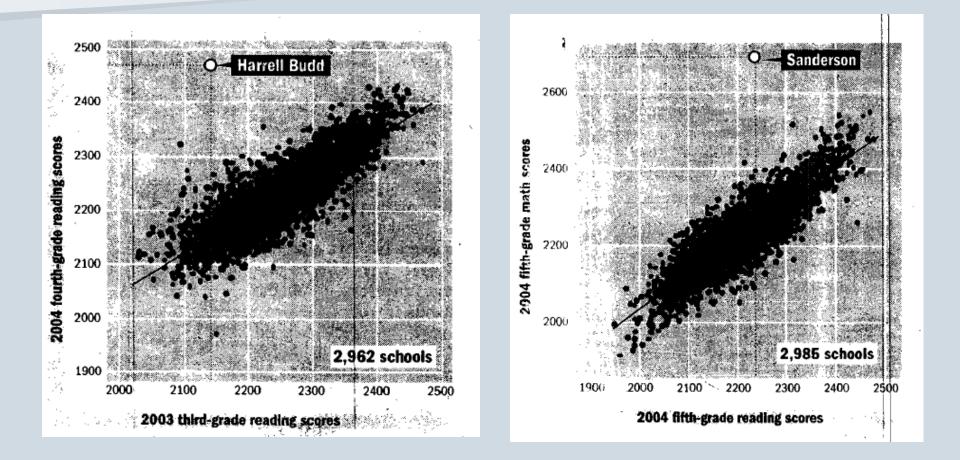
For this story, *The Dallas Morning News* analyzed school test scores on the Texas Assessment of Knowledge and Skills. Now in its second year, the exam is required for public-school students in grades three through 11.

The state focuses on school passing rates on the TAKS – that is, the percentage of students who met state standards. *The News* analysis used average scale scores, a more specific **Data:** Results from Texas standardized assessment tests.

Findings: Reporters turned a story about one school's alleged cheating on standardized tests into a piece about cheating across the state. They used regression analysis to show some suspicious improvements among historically low-performing schools, including a "desperately impoverished school where the fourth-graders have trouble adding and subtracting – but nearly all the fifth-graders got perfect scores on the math portion of the Texas Assessment of Knowledge and Skills."

The *Morning News* also found that the Texas Education Agency doesn't use perform similar analyses.





So, are any journalists using R?

Revolutions

News about R, statistics and the world of open source from the staff of Revolution Analytics

« R 2.9.1 released | Main | Map of abortion rates in US »

June 26, 2009

NYT charts Michael Jackson's pop hits with R (updated)

The New York Times has an interesting graphic today charting the late <u>Michael Jackson's</u> <u>musical career</u>. The chart superposes the Billboard rankings of each of his hits over time as sparklines, and compares his output to that of The Beatles, U2, Mariah Carey, Usher and, perplexingly, Boyz II Men.

Information

About this blog Comments Policy About Categories About the Authors R Community Calendar Local R User Group Directory

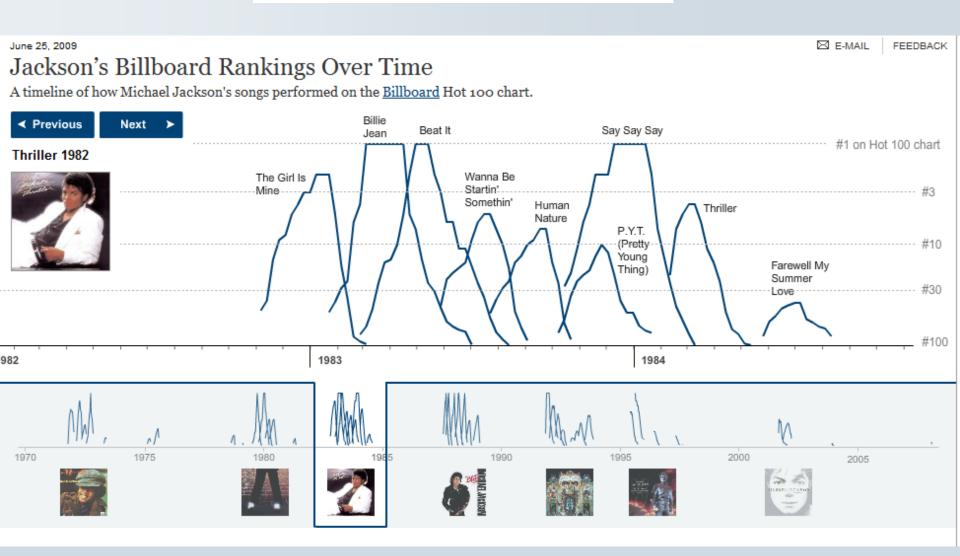
Got comments or suggestions for the blog editor? Email <u>David Smith</u>.



I saw your blog post on the Michael Jackson chart in the New York Times today. I thought it might amuse you to know that the charts were made in R. (Then cleaned up in Illustrator and moved into Flash, but they started life in R.)

Amanda Cox, graphics department, The New York Times

The New York Times

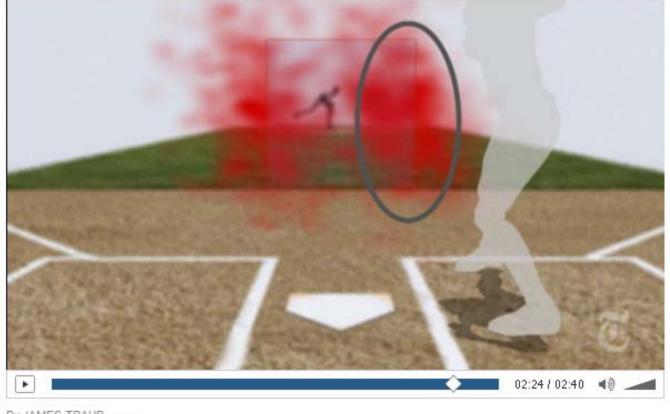


Explore the interactive.



The New York Times

Mariano Rivera, King of the Closers



By JAMES TRAUB Published: June 29, 2010

Watch the video.

The New York Times

Fight Leaves Democrats Questioning Prospects



Emmanuel Dunand/Agence France-Presse — Getty Imag

Senator Barack Obama, a Democratic presidential candidate, meeting with veterans on Tuesday in Washington, Pa., one week before the primary there.

By JEFF ZELENY Published: April 16, 2008

The battle between Senators <u>Hillary Rodham Clinton</u> and <u>Barack</u> <u>Obama</u> over whether Mr. Obama belittled voters in small towns appears to have hardened the views of both candidates' supporters and stirred anxiety among many Democrats about the party's prospects in the fall.

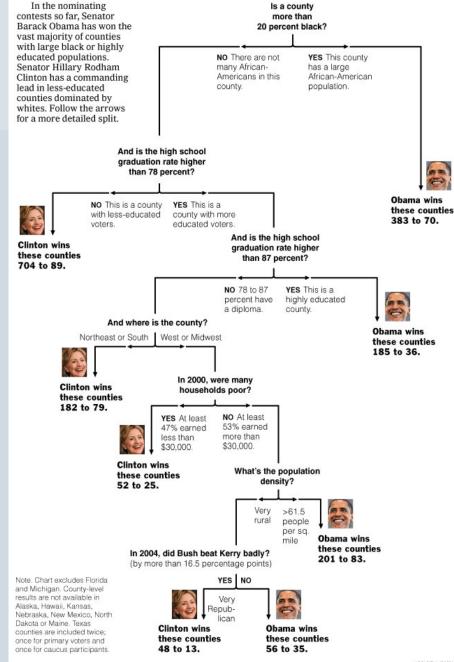
6	TWITTER
×	E-MAIL
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Data: Results from 2008 primaries and 2004 presidential election; US Census.

Method: Classification and Regression Trees algorithm (Brieman, Friedman, Olshen & Stone, 1984).

R package: rpart (recursive partitioning).

Decision Tree: The Obama-Clinton Divide



Sources: Election results via The Associated Press; Census Bureau; Dave Leip's Atlas of U.S. Presidential Elections

AMANDA COX, THE NEW YORK TIMES



MONDAY, AUGUST 20, 2007 BARRON'S COVER

Shorting Cramer

By BILL ALPERT | MORE ARTICLES BY AUTHOR

Jim Cramer puts on a great show, but his Mad Money stock picks have underperformed the market over the past two years. A careful look at the maven's track record -- and one way to win. Reader's comments: Check out what our readers think.

Article

Comments

THANKS TO HIS NIGHTLY CNBC SHOW Mad Money, Jim

Cramer has become the chief cheerleader for the bull market, or what was the bull market until a few weeks ago. Last spring, he was giddily exhorting the Dow Jones Industrial Average toward 15,000, with no troubles in sight. Earlier this month, as the Dow tumbled in the direction of 13,000, he had an on-air meltdown, complete with screaming, sobs and predictions of financial doom. The clip quickly made the rounds on YouTube. Friday, after the Fed cut the



discount rate, he said that the Dow's run to 14,500 had begun. With

dramatic pronouncements like that, it's no wonder that more than 100,000 viewers tune in each weeknight for his antic mashup of sound effects, Streetwise advice and stock picks.



BARRON'S

Data: Performance of Cramer's stock picks versus market indices.

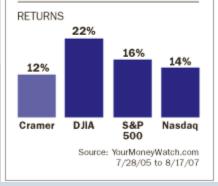
Findings: CNBC claimed that Cramer's picks beat the S&P 500, but they did not.

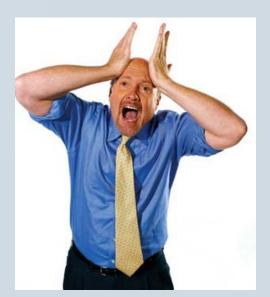
Cramer's picks did jump in value the day after broadcast, as his followers rushed to buy, but then slowly slid relative to the market. This points to a viable alternative investment strategy: short Cramer's picks to cash in on this trend.

Methods: Read more from Bill Alpert's statistical adviser <u>Patrick</u> <u>Burns</u>, and from Bill himself at at the <u>*R Journal*</u>.

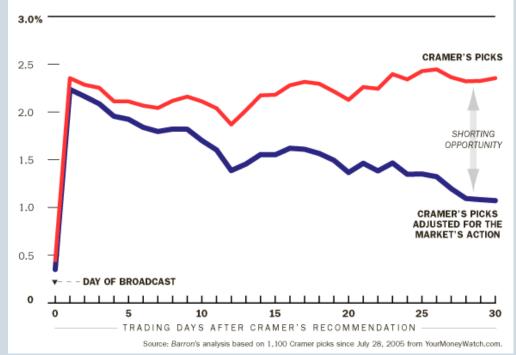
Punk Performance

Jim Cramer's stock picks on CNBC's Mad Money have lagged the market over the past two years.

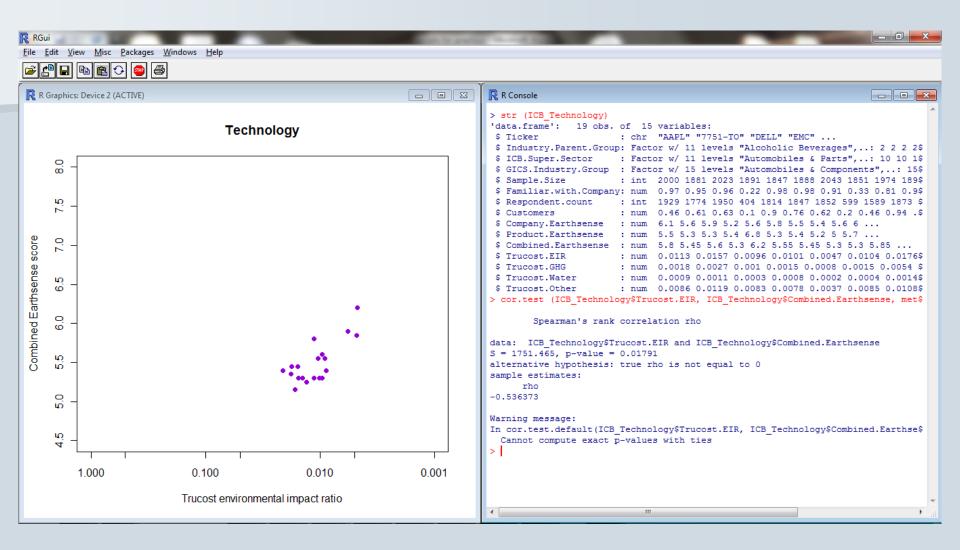




CUMULATIVE PERCENT RETURN FOR BUY RECOMMENDATION



My own first steps with R ...



NewScientist

SPECIAL INVESTIGATION Do our ideas of which companies are eco-friendly live up to reality? Peter Aldhous and Phil McKenna investigate 6 NewScientist 20 February 2010

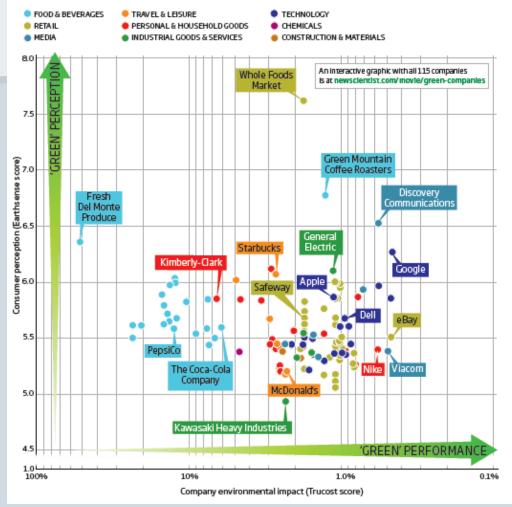
Data: Survey data on US public perceptions of corporate "greenness" from company called Earthsense. Quantitative assessment of same companies' environmental impacts, from a company called Trucost.

Findings: There are wide mismatches between public perceptions and reality. Some firms have undeserved "green" reputations, while others are not getting credit for fairly impressive efforts to reduce their environmental footprints. Greater disclosure of companies' environmental impacts, plus improved awareness of these impacts by investors and consumer alike, may be needed to push businesses in a genuinely green direction.

Consumer perception and environmental realities

There is very little correlation between how green a company is and how green it is perceived to be

Earth sense score - 2008 survey asking 30,000 US consumers to rate greenness of companies and products on a scale of 1 to 10 Trucost score - Estimated cost of the environmental impact of a company under a "polluter pays" system as a percentage of its annual revenue



NewScientist

Methods: Spearman rank correlation; Kruskal-Wallis tests and multiple comparisons. <u>More</u> <u>details</u> at newscientist.com.

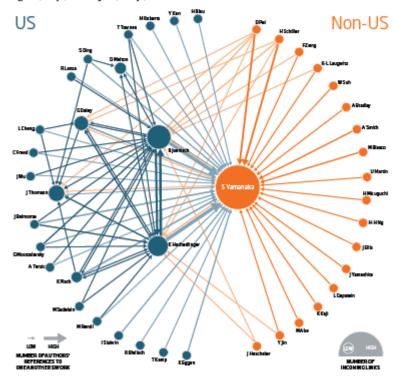
Explore interactive graphic.

SPECIAL REPORT

THE STEM CELL WARS

When a Nobel prize is up for grabs, do scientists across the globe compete on a level playing field? Peter Aldhous investigates

The mark influential players in callula response maning are revealed by recording how many cines chercians have references and not be transmit. Each il rich results are not an executive that another four or non-vines in papers in leading (or maily the mainly the The entropy part infl, below if ight)



For daily news stories, visit www.NewScientist.com/news

ALL'S fatr in love and way, they say, but actence is supposed to obey more noble tideals. New findings are submitted for publication, the studies are formed out to experts for objective" poer review" and the best research appears prompby in the most prestigious journals. Some stem cell biologistis are crying foul, however. Last year, I de researchers

In this actoriously competitive field wrote to leading journals compliaining of "unnascualle or obstructive reviews". The rosult, they claimed, is that" publication of truly original findings may be delayed or nejected". Triggered by this protest, New

Scientist scrutinised the dynamics of publication in the most exciting and competitive area of stem cell research, in which cells are "reprogrammed" to acquire the versatility of those of an early-stage embryo. In this fast-moving field, where a Nobel prize is arguably at stake, biologists are racing silvershily to stake, biologists.

publish their findings in top journals. Our analysis of more than 200 research papers from 2006 onwards reveals that US-based scientists are enjoying a significant advantage, getting their papers published faster and in more prominent ournals. The disparity is likely to spark debate when the International Society for Stem Cell Research (ISSCR) meets in San Francisco next week. There are several plausible and reasonable explanations, but feelings are running high nonetheless. With two of the most delayed papers coming from a language researcher who pioneered the field, and some of his rivals using controversial channels that give members of the USN ational Academy of Sciences an inside track to

Acasemple's connects an insiste trace to regist publication, it is easy to see why. The protont letter called for journals to publish the anonymised comments of researchers who ad as reviewers of papers, to express examples of potential obstruction. Just two of its signatories were from labs in the US. And when leaders of the protont talked to the media, unfair treatment of researchers outside the US was among the complaints. There does seem to be this bias against groups from the rest of the work? Robit LoveB ledge of the UKs National Institute for Modical Research the Incodential New Scient at.

Research on induced pluripotent stem (IPS) cells is the obvious place to kok for biases in publication, given the high stakes involved. One of the signatories of the letter was the pioneer of cellular reprogramming-Shinya Yamanaka of Kyoto University in Japan. Loss than four years after he first showed how to reprogram a mouse skin cell. Yamanaka is routinely mentioned as a candidate for a Nobel prize. He may be sharing that honour if other scientists make faster strides towards therapies based on cellular reprogramming. Our analysis of the citations between researchers reveals that Yamanaka is still the most influential figure in the field, but also shows that several well-connected USbased scientists are giving him a run for his money (see diagram, left, and "The strongest link", below).

New Scientife searched the Web of

Shinya Yamanaka of Kyoto and no links to them from any of the US-based researchers. University in Japanis the dominent scientist in cellular In the US, there is a richerweb reprogramming, but he has stiff of connections. competition from a well-linked Inlarge part, this reflects the group of US-based researchers. greater number of papers in our To map influence in the field. semple from accentists in the New Scientist constructed a US. But another tie links the social network diagram (left) best-connected researchers in based on citations, the the US: the Boston area, Rudolf references to each scientist's iserisch at the Magachusetts natitute of Technology is work by their peers. Citations Yemeneka's strongest rivel, and are a measure of a researcher's moect and influence, and are two of the other main players sometimes used to help make Konned Hochedlinger and decisions on promotions. They Kethrin Plath - used to work in can also provide a snapshot of his lab. Plath has moved to the who's who in a field.

who's who in a field. University of California. Los Anaitad by Henri Schildt Angeles, while Hochedinger entransmetypes Lendon, a specialistin citationanniy sin. We looked at mferences beats the late of George Dalay between 145 peper published in prominent journalisation. The outbidenia Jenses 2006 - down on links when the Manual Schemen Sch

2005 - drawing links where the authors itsed one another's work four ormose times. Yermaniku's measurch is statematiku's province and in 1928. He owes referred to by just about waynyone. Dut there are no such links between other statematiku's of the US. Hemanika's colls.

Of papers published in n leading journals: Advend lw Mait was Statewidthen of Fiscella, Advend lw Mait was Statewidthene of Fiscel

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recenting the datas such was submitted, accepted for publication, and published. Advased by Matthew Strickland of Emory University in Atlanta, Georgia, whose research employs a branch of statistics called survival analysis, we found that papers submitted by surthers outside the US took significantly longer to be accepted and published.

This difference was particularly clear for papers in 20 high-profile journals with an "impact factor" of y or more (see" W has" the hold-up?, page 12). Impact factor has measure of the frequency with which a journal's articles are cited in the scientific literature. We chose this cut-off score to focus on journals that reactived the protect letter, or these with humilar promisence. "If a really very interesting," says Lowel Badge. "I didn't think it would be possible got quartitative data"

So what might explain the pattern? Obstruction of papers could happen if a reviewer delays their comments, or makes many demands for changes. The journals with the greatest lag between US and non-US papers deny that their reviews are biased, and say that the former explanation can be ruled out." The review process itself is quite short, and the majority of the intervening time is taken up by the authors performing revisions to address the criticisms that the reviewers rated," says Deborah Sweet, editor of Cell Stem Cell, which is the official journal of ISSCR-and to published by Elsevier, a sister company of the publisher of New Scientist.

Bigger, better?

Korrad Hochsellinger of the Harvard Stem Cell Institute, among the foremost in the field, suggests that leading US lahs can deal with revisions more easily because they are often larger and better funded. When asked to run extra experiments, for example, he can quickly deploy junior scientists or hire a commercial labto do them.

Could it also be that the US-based actiontists tend to produce better work? There's no simple way to measure the calibre of studies in our sample - and if papers are rejected by leading journals and end up lower down the

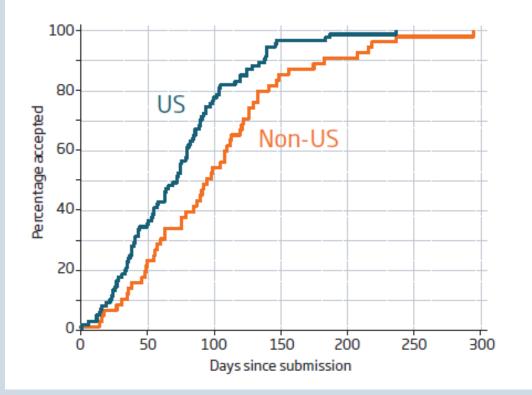
12 June 2010 New Scientist | 15

12 | New Scientist | 12 june 2010

NewScientist

What's the hold-up?

In a sample of 148 papers from high-profile journals, those from scientists outside the US took longer to be accepted for publication



Data: Time-to-acceptance for original research papers involving "iPS" cells – an exciting alternative to embryonic stem cells.

Findings: Papers from corresponding authors outside the US took significantly longer to be accepted for publication. USbased authors were also better at getting papers into high-impact journals.

Methods: Cox proportional hazards regression; Kaplan-Meier survival curves. <u>More details</u> at newscientist.com.

R package: <u>survival</u> (survival analysis).

Why aren't more data journalists using R?

Seen as difficult/arcane

"It's like nothing you've ever encountered." Experienced computer-assisted reporter and web developer

• A dangerous tool, in the hands of journalists?

"I'm concerned that you're giving them a chainsaw."

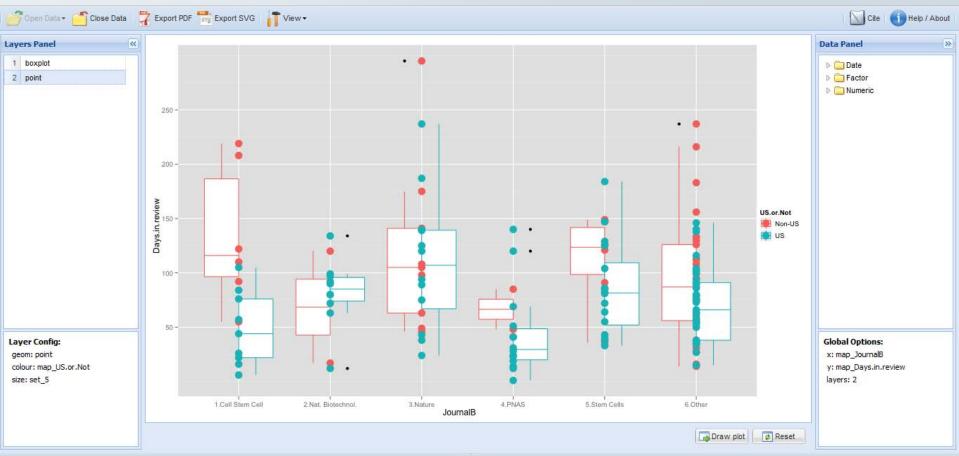
Professor of science journalism

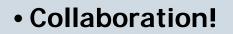




Breaking down the barriers

• User-friendly interfaces, e.g. Jeroen Ooms' gaplot2 application:







Collaboration: feature on predictive analytics

NewScientist

Revolutions

News about R, statistics and the world of open source from the staff of Revolution Analytics

« Because it's Friday: How Machines Work | Main | R is indispensable, because it's reproducible »

August 30, 2010

Wanted: R Analysis of New Scientist Covers

Peter Aldhous and Jim Giles -- from *New Scientist*'s San Francisco bureau -- are looking for a statistician and R user to take part in an interesting data analysis challenge, and also be part of a future article in the magazine. They were inspired by this rather tongue-in-cheek presentation where <u>Sebastian Wernicke</u> analyzed videos, transcripts and ratings of TED talks to conclude, for example, that a talk about how "French coffee spreads happiness in your brain" would be the "ultimate TED talk".

The challenge ...

Top sellers

Bottom sellers









and searches 200 (it)

VS

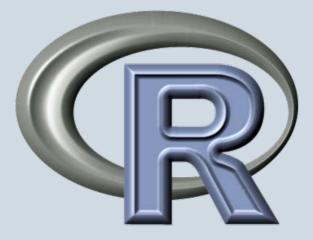




High-sheet highs







Data-driven journalism

Bay Area R Users Group, Dec 14 2010

Slides at: www.peteraldhous.com/CAR/R_Users_Dec2010.pdf

Peter Aldhous, San Francisco Bureau Chief

