



2016

How Google Could Rig the 2016 Election

Google has the ability to drive millions of votes to a candidate

Google's search algorithm can easily shift the voting preferences of undecided voters by 20 percent or more—up to 80 percent in some demographic groups—with virtually no one knowing they are being discovered. Our [comprehensive new study](#), just published in the *Proceedings of the National Academy of Sciences* (PNAS), includes the results of five experiments we conducted with more than 4,500 participants in two countries. Because SEME is virtually invisible as a form of social influence, because the effect is so large and because there are currently no specific regulations anywhere in the world that would prevent Google from using and abusing this technique, we believe SEME is a serious threat to the democratic system of government.

The search engine manipulation effect (SEME) and its possible impact on the outcomes of elections

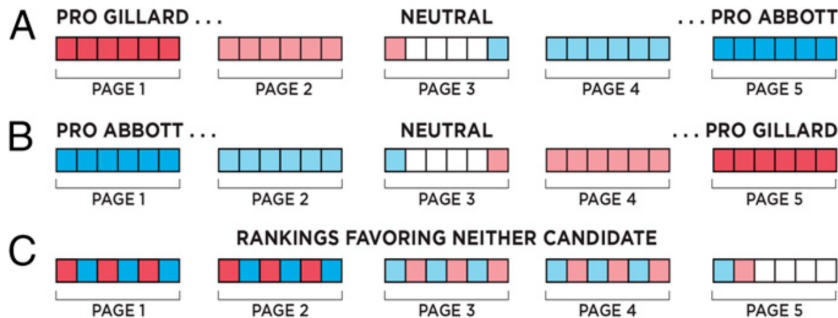
Robert Epstein¹ and Ronald E. Robertson

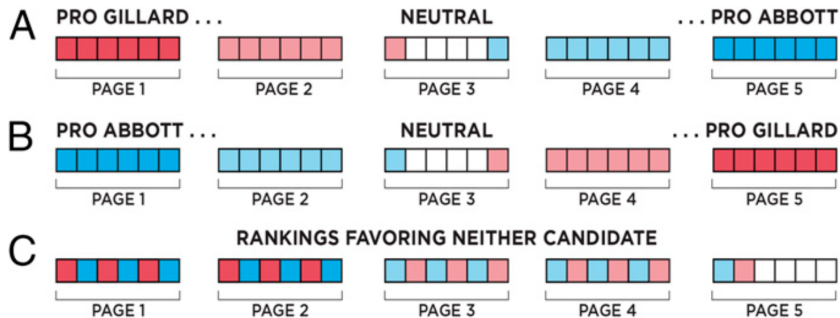
American Institute for Behavioral Research and Technology, Vista, CA 92084

Edited by Jacob N. Shapiro, Princeton University, Princeton, NJ, and accepted by the Editorial Board July 8, 2015 (received for review October 16, 2014)

Internet search rankings have a significant impact on consumer choices, mainly because users trust and choose higher-ranked results more than lower-ranked results. Given the current nature

Primacy effects in particular have been shown to have a favorable influence on the formation of attitudes and beliefs (18–20), enhance perceptions of corporate performance (21), improve rat-

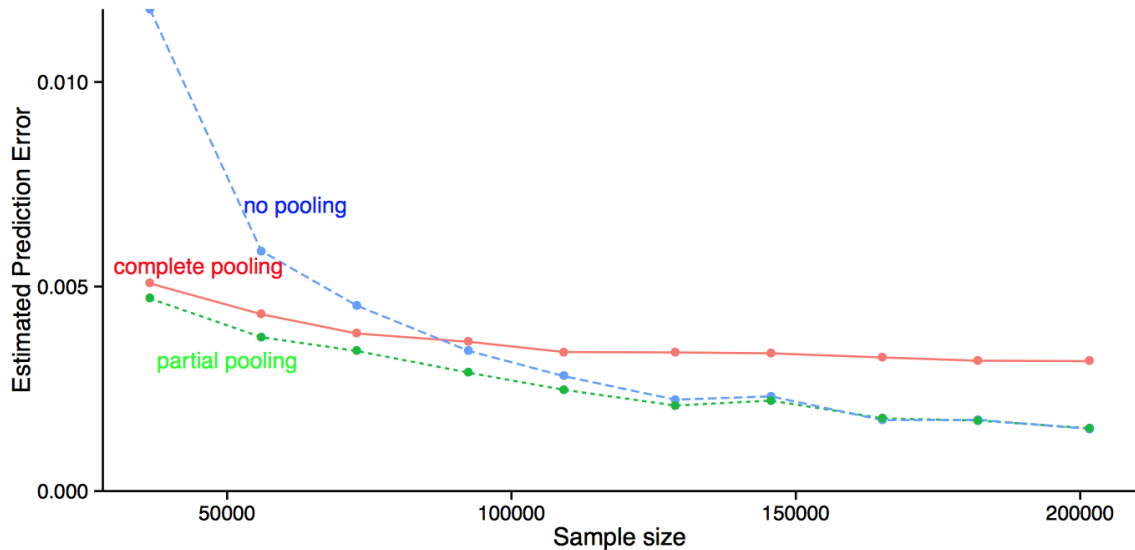




Mean deviation from control (SE)

Candidate	Rating	Gillard bias	<i>u</i>	Abbott bias	<i>u</i>
Gillard	Impression	0.65 (0.10)***	288,299.5	-1.25 (0.12)***	168,203.5
	Trust	0.61 (0.10)***	283,491.0	-1.21 (0.11)***	167,658.5
	Like	0.50 (0.10)***	279,967.0	-1.25 (0.11)***	166,544.0
Abbott	Impression	-0.96 (0.13)***	189,290.5	1.35 (0.12)***	326,067.0
	Trust	-1.09 (0.14)***	183,993.0	1.31 (0.12)***	318,740.5
	Like	-0.85 (0.13)***	195,088.5	0.94 (0.11)***	302,318.0

Evaluating models using prediction error



Back-of-envelope calculation

- ▶ Consider a cell with true probability 0.4 and three fitted models:
 - ▶ $\hat{p} = 0.41$
 - ▶ $\hat{p} = 0.44$
 - ▶ $\hat{p} = 0.38$
- ▶ Predictive log loss under each model:
 - ▶ $-[0.4 \log(0.41) + 0.6 \log(0.59)] = 0.6732$
 - ▶ $-[0.4 \log(0.44) + 0.6 \log(0.56)] = 0.6763$
 - ▶ $-[0.4 \log(0.38) + 0.6 \log(0.62)] = 0.6739$
- ▶ The per-observation improvement in predictive loss is between 0.0006 and 0.003

Anti-Abortion Democrats, Jimmy Carter Republicans, and the Missing Leap Day Babies: Living with Uncertainty but Still Learning

Andrew Gelman
Department of Statistics and Department of Political Science
Columbia University

Amazon Research Scientist Summit
26 Aug 2015

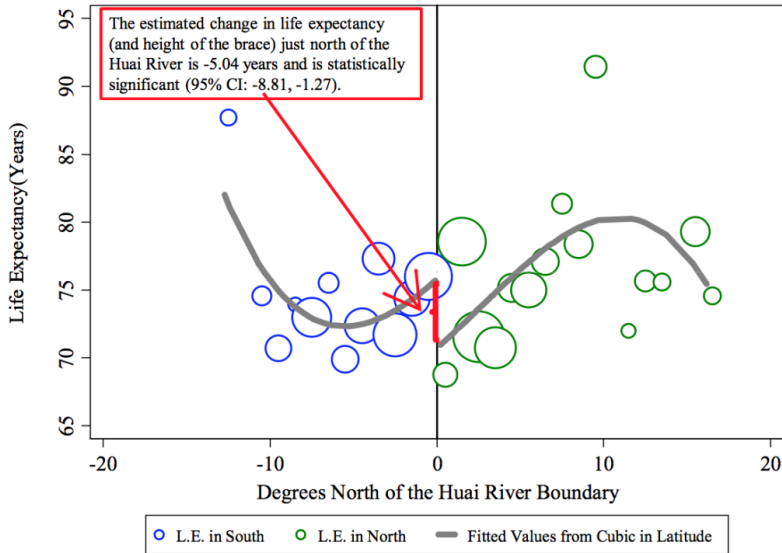


Fig. 3. The plotted line reports the fitted values from a regression of life expectancy on a cubic in latitude using the sample of DSP locations, weighted by the population at each location.

WORLD

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HEALTH

SPORTS

OPINION

AFRICA

AMERICAS

ASIA PACIFIC

EUROPE

MIDDLE EAST

Pollution Leads to Drop in Life Span in Northern China, Research Finds



Evidence on the impact of sustained exposure to air pollution on life expectancy from China's Huai River policy

Yuyu Chen^{a,1}, Avraham Ebenstein^{b,1}, Michael Greenstone^{c,d,1,2}, and Hongbin Li^{e,1}

This paper's findings suggest that an arbitrary Chinese policy that greatly increases total suspended particulates (TSPs) air pollution is causing the 500 million residents of Northern China to lose more than 2.5 billion life years of life expectancy. The quasi-experimental empirical approach is based on China's Huai River policy, which provided free winter heating via the provision of coal for boilers in cities north of the Huai River but denied heat to the south. Using a regression discontinuity design based on distance from the Huai River, we find that ambient concentrations of TSPs are about $184 \mu\text{g}/\text{m}^3$ [95% confidence interval (CI): 61, 307] or 55% higher in the north. Further, the results indicate that life expectancies are about 5.5 y (95% CI: 0.8, 10.2) lower in the north owing to an increased incidence of cardiorespiratory mortality. More generally, the analysis suggests that long-term exposure to an additional $100 \mu\text{g}/\text{m}^3$ of TSPs is associated with a reduction in life expectancy at birth of about 3.0 y (95% CI: 0.4, 5.6).

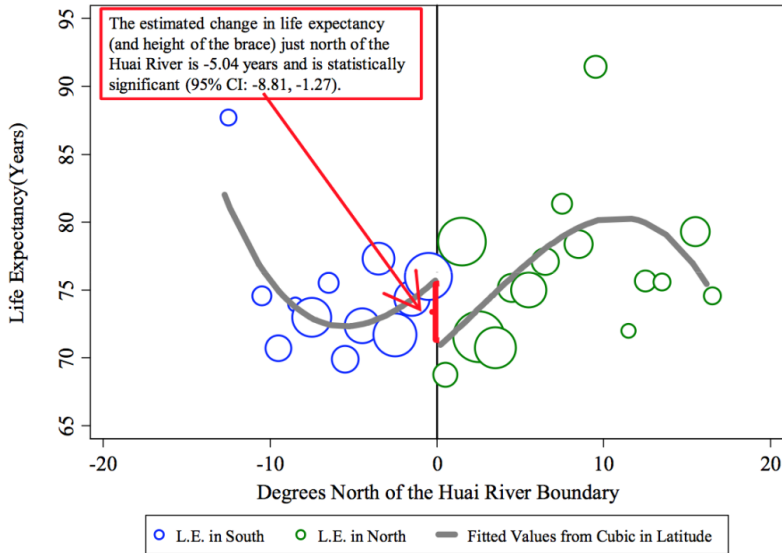


Fig. 3. The plotted line reports the fitted values from a regression of life expectancy on a cubic in latitude using the sample of DSP locations, weighted by the population at each location.

What really happened during Barack Obama's reelection campaign?



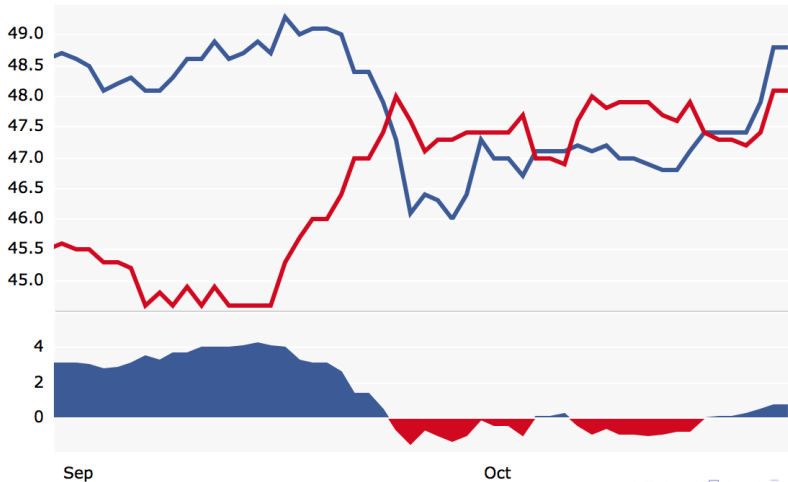
Public opinion during the 2012 campaign



RCP POLL AVERAGE

General Election: Romney vs. Obama

48.8 Obama (D) +0.7
48.1 Romney (R)



Romney winning the debate on 3 Oct 2012



The pundits speak



- ▶ Karl Rove, *Wall Street Journal*, 7 Oct: “Mr. Romney’s bounce is significant.”
- ▶ Nate Silver, *New York Times*, 6 Oct: “Mr. Romney has not only improved his own standing but also taken voters away from Mr. Obama’s column.”

Xbox during the 2012 campaign

bing home social tv video games music apps settings



Election 2012

election 2012

news

rock the vote

polls

video



Xbox Poll Results



VP Poll Results



Debate#3 Results



About YouGov

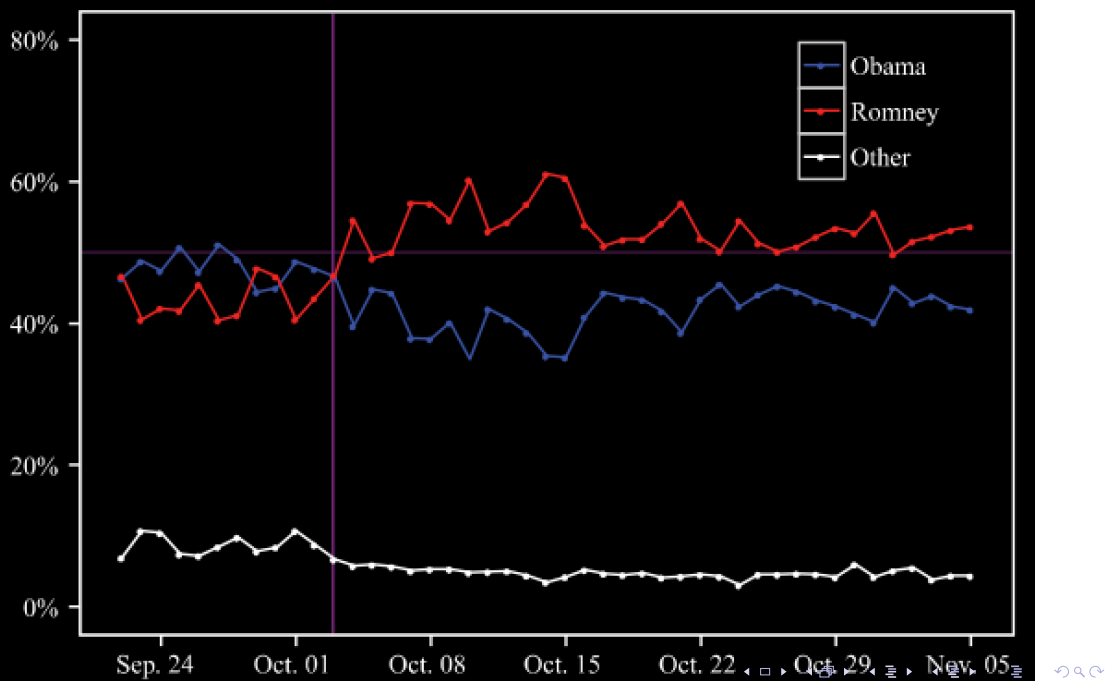
If the election were held today, who would you vote for?

Barack Obama

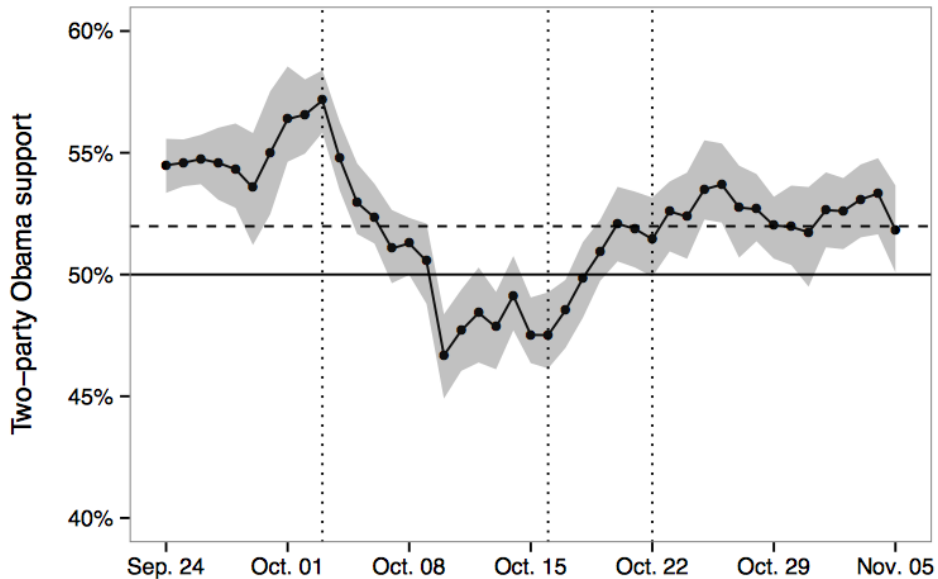
Mitt Romney

Other

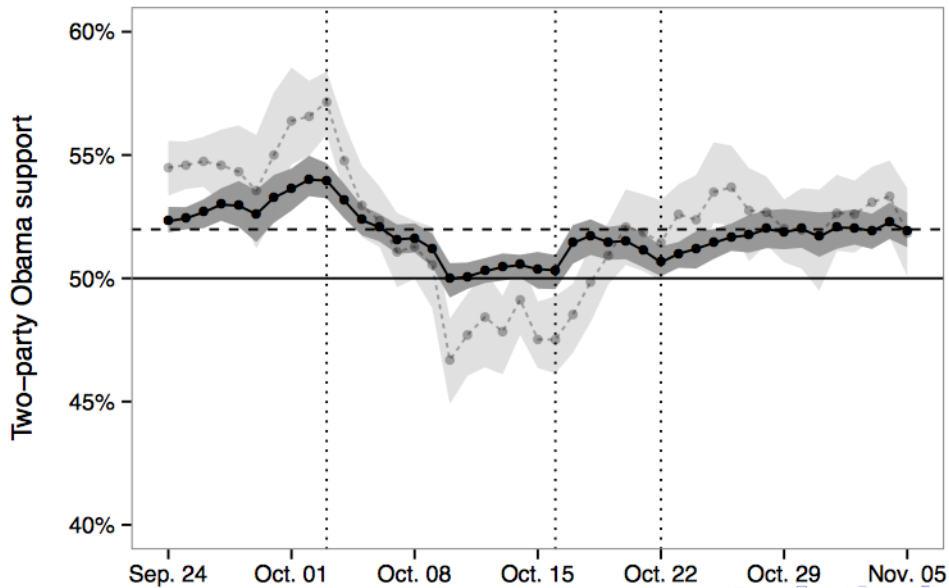
Not sure



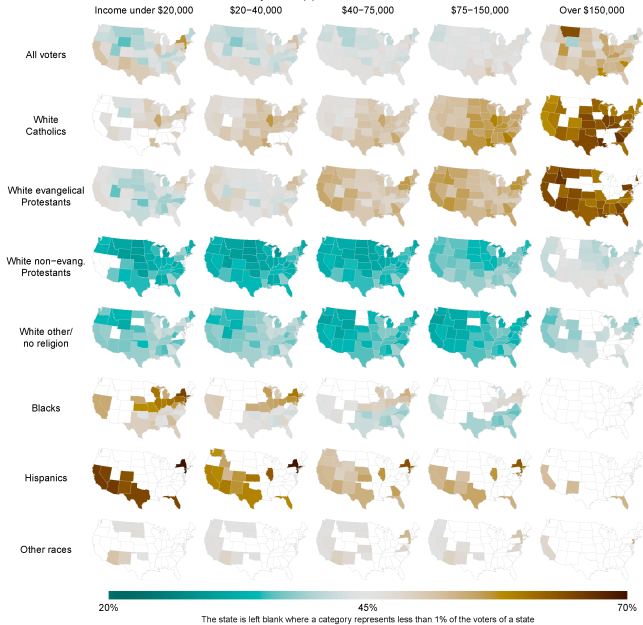
Xbox estimates, adjusting for demographics



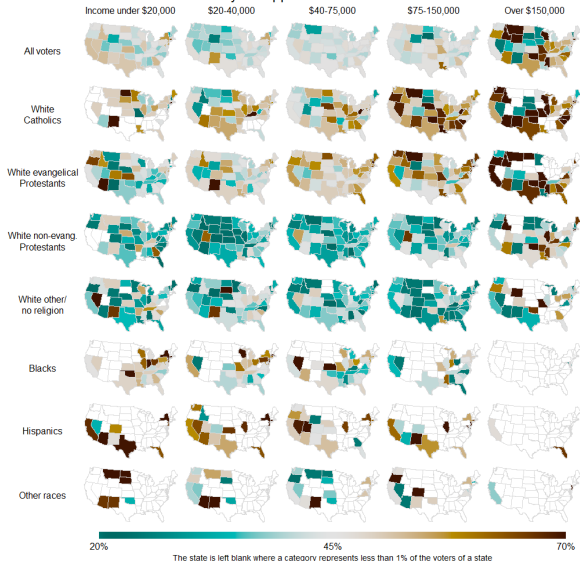
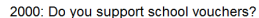
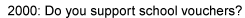
Xbox estimates, adjusting for demographics and partisanship



2000: Do you support school vouchers?



Compare to the raw data



Stan is a probabilistic programming language implementing full Bayesian statistical inference with

- MCMC sampling (NUTS, HMC)

and penalized maximum likelihood estimation with

- Optimization (BFGS)

Stan is coded in C++ and runs on all major platforms (Linux, Mac, Windows).

Stan is freedom-respecting, open-source software (new BSD core, GPLv3 interfaces).

Interfaces

Download and getting started instructions, organized by interface:

- [RStan v2.5.0](#) (R)
- [PyStan v2.5.0](#) (Python)
- [CmdStan v2.5.0](#) (shell, command-line terminal)
- [MatlabStan](#) (MATLAB)
- [Stan.jl](#) (Julia)

Manual & Examples

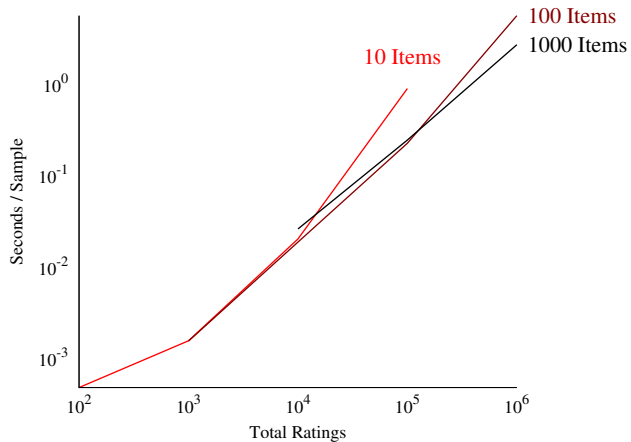
Models are portable across interfaces, so these are cross-platform:

- [Modeling Language Manual](#)
- [Example Models](#)

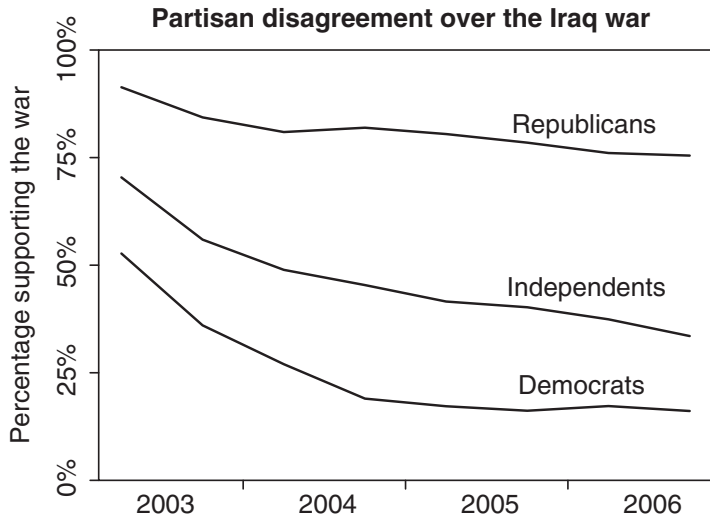
[Home](#)[RStan](#)[PyStan](#)[CmdStan](#)[MatlabStan](#)[Stan.jl](#)[Manual](#)[Examples](#)[Groups](#)[Issues](#)[Contribute](#)[Source](#)[Citations](#)[Team](#)[Shop](#)

Stan overview

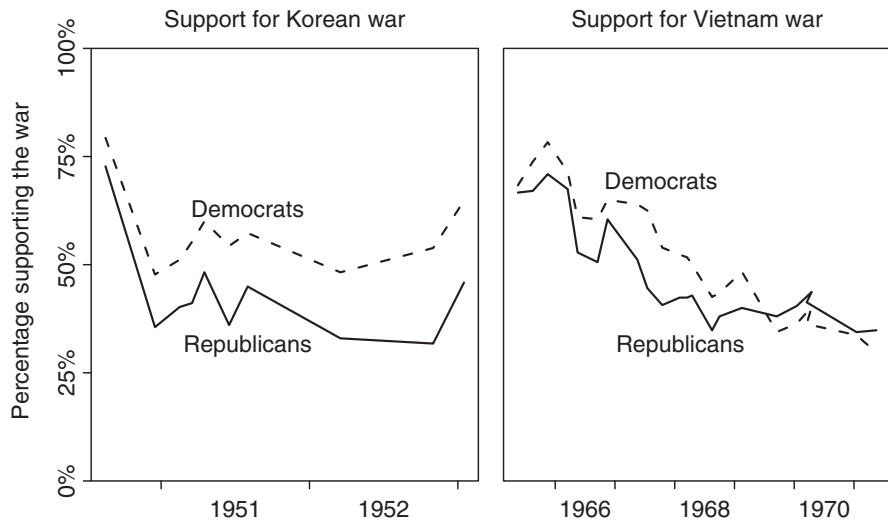
- ▶ Fit open-ended Bayesian models
- ▶ Specify log posterior density in C++
- ▶ Hamiltonian No-U-Turn sampler
- ▶ Autodiff
- ▶ Runs from R/Python/Matlab/...



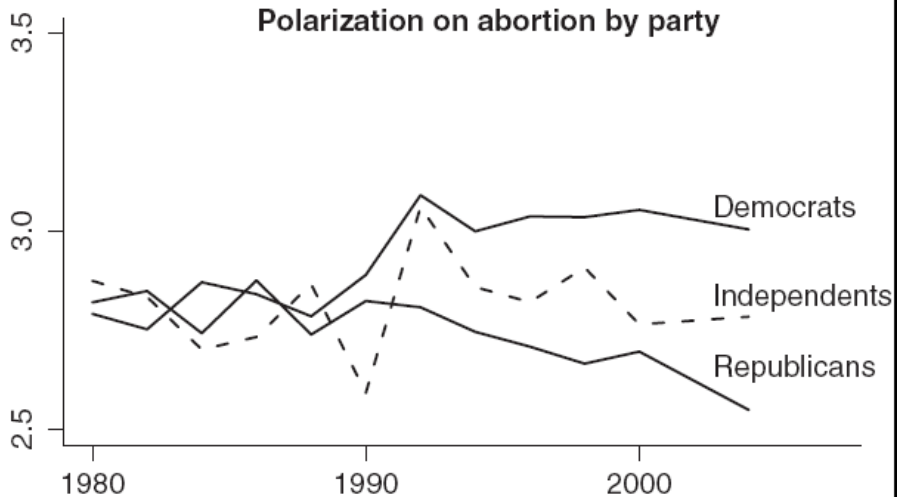
Polarized Parties: Foreign Policy



Polarized Parties: Foreign Policy



Polarized Parties: Domestic Policy



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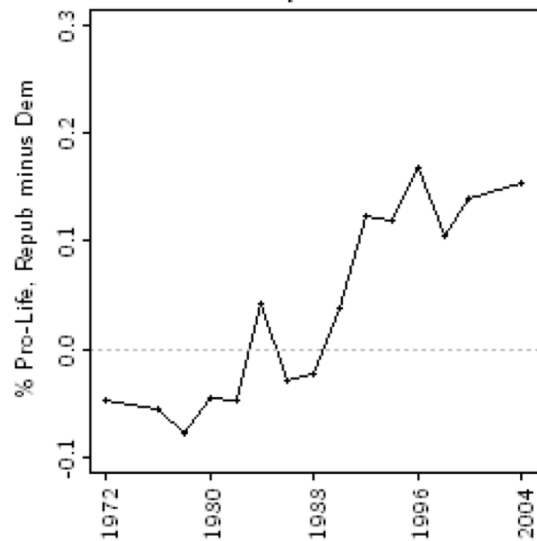
OPINION

POLITICS EDUCATION TEXAS

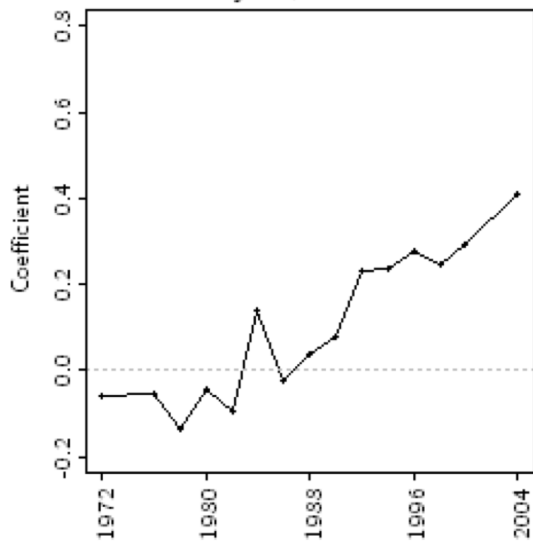
G.O.P. Pursues Hispanic Votes With Abortion Stance



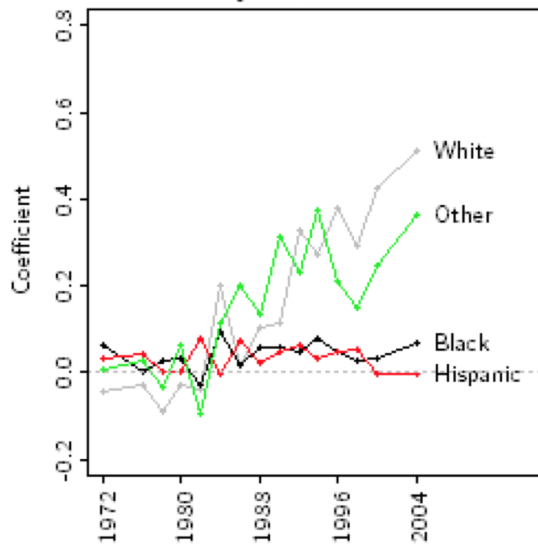
Pro-Life Tendency of
R's Compared to D's



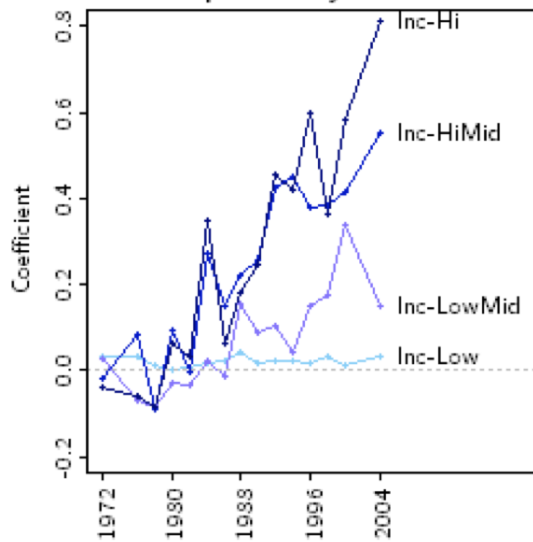
Coef of Abortion Opinion
on Party ID, fit with HLM



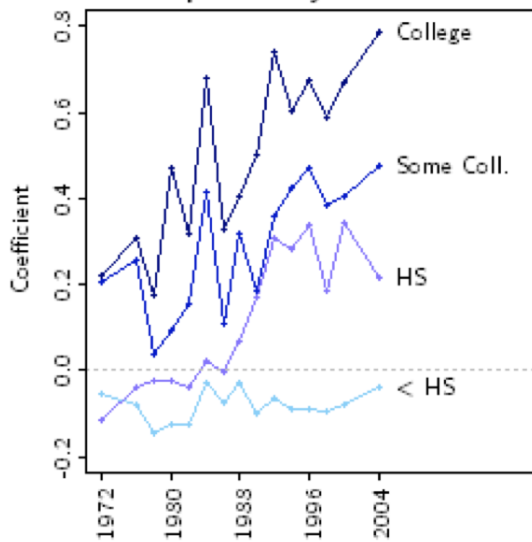
Coef of Abortion Opinion
on Party ID, fit with HLM



Coef for Whites Only,
Separated by Income



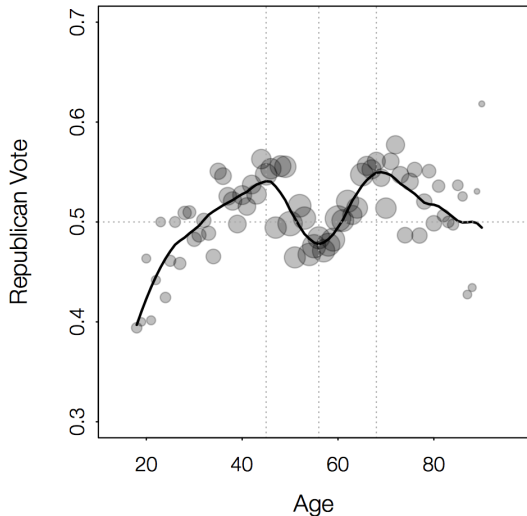
Coef for Whites Only,
Separated by Education



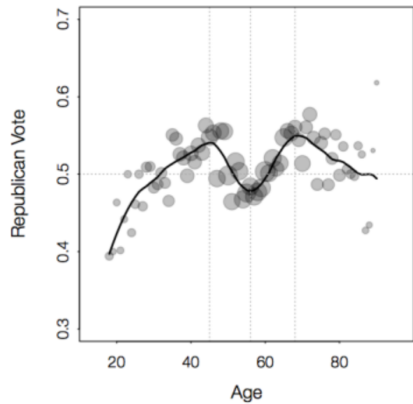
Jimmy Carter Republicans and George W. Bush Democrats



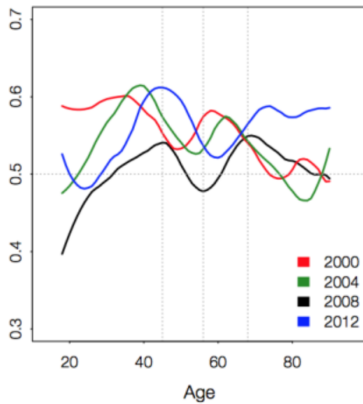
Non-Monotonic Age Curve in 2008



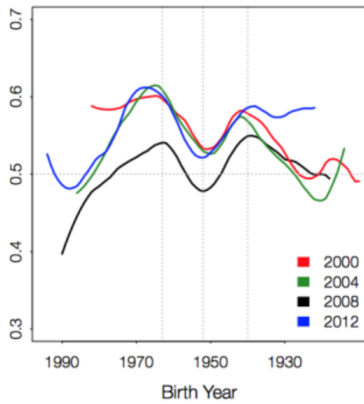
Non-Monotonic Age Curve in 2008



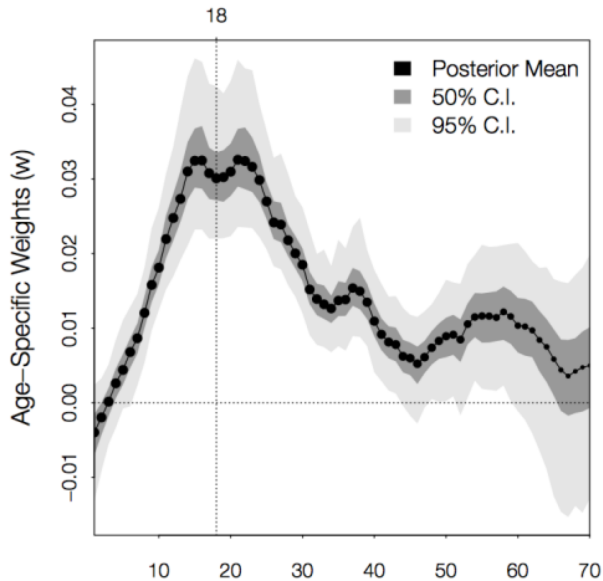
Non-Monotonicity in Other Elections



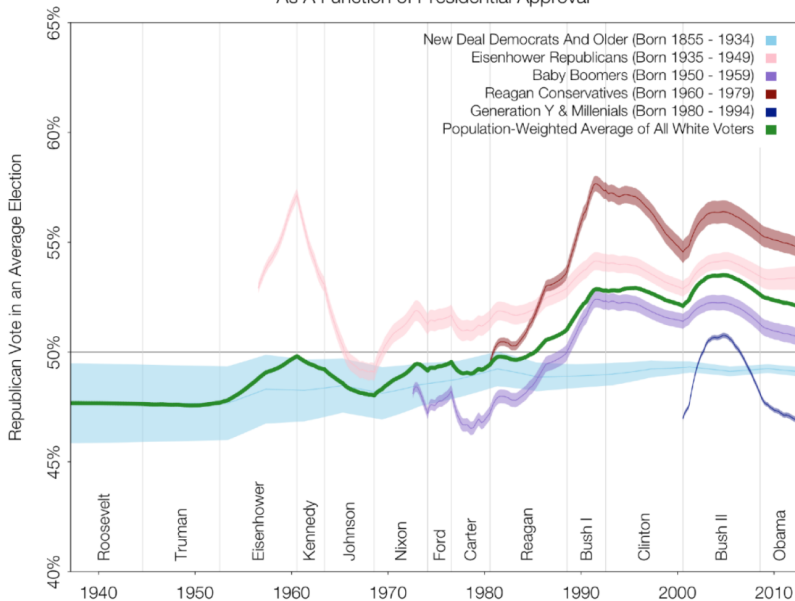
Lining up by Birth Year



The Formative Years



The Changing White Electorate As A Function of Presidential Approval





Contents lists available at [SciVerse ScienceDirect](#)

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed



Short report

Influence of Valentine's Day and Halloween on Birth Timing

Becca R. Levy*, Pil H. Chung, Martin D. Slade

Yale University, School of Public Health, Division of Social & Behavioral Sciences, 60 College Street, New Haven, CT 06520-8034, United States

ARTICLE INFO

Article history:

Available online 28 July 2011

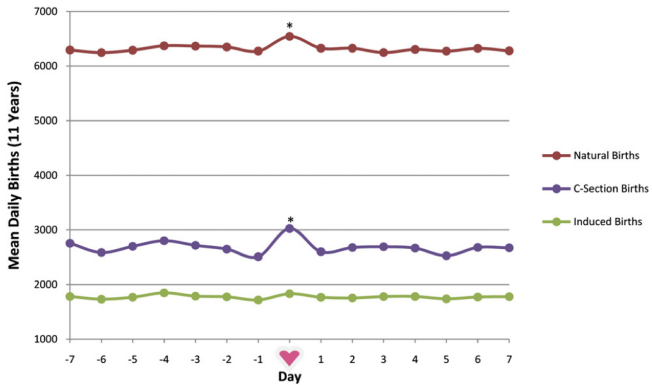
Keywords:

United States

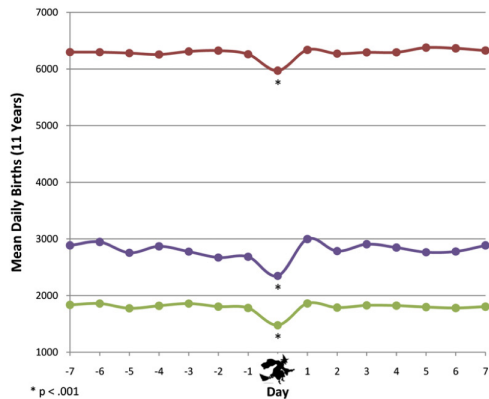
ABSTRACT

It is known that cultural representations, in the form of stereotypes, can influence functional health. We predicted that the influence of cultural representations, in the form of salient holidays, would extend to birth timing. On Valentine's Day, which conveys positive symbolism, there was a 3.6% increase in spontaneous births and a 12.1% increase in cesarean births. Whereas, on Halloween, which conveys negative symbolism, there was a 5.3% decrease in spontaneous births and a 16.9% decrease in cesarean

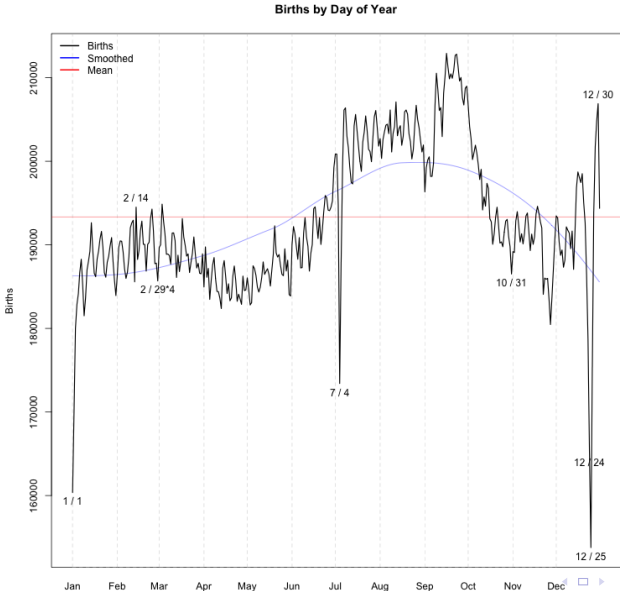
Valentine's Day: Two-Week Window



Halloween: Two-Week Window

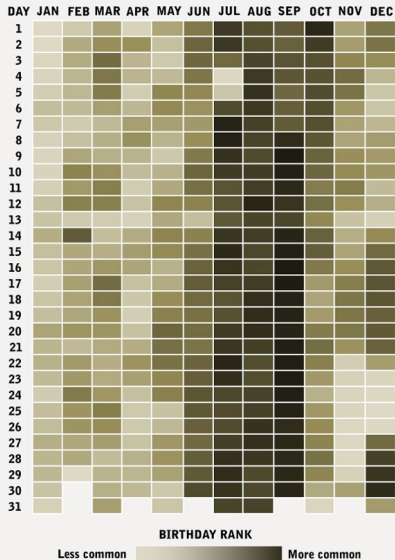


Chris Mulligan's data graph

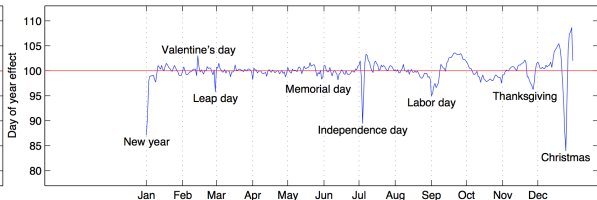
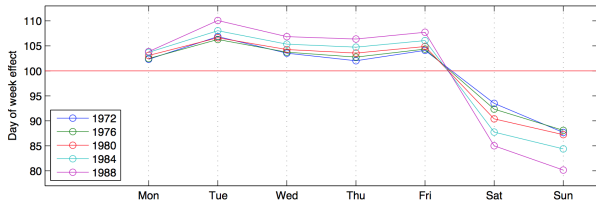
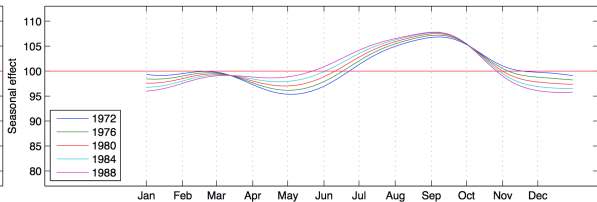
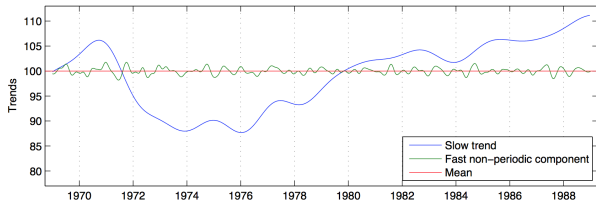


Matt Stiles's heatmap

Which Birth Dates Are Most Common?



Aki Vehtari's decomposition



The blessing of dimensionality

- ▶ We learned by looking at 366 questions at once!
- ▶ Next, see what happens when you study one question at a time ...

Ovulation and the color of clothing

Psychol Sci. 2013 Sep 1;24(9):1837-41. doi: 10.1177/0956797613476045. Epub 2013 Jul 10.

Women are more likely to wear red or pink at peak fertility.

Beall AT, Tracy JL.

University of British Columbia.

Abstract

Although females of many species closely related to humans signal their fertile window in an observable manner, often involving red or pink coloration, no such display has been found for humans. Building on evidence that men are sexually attracted to women wearing or surrounded by red, we tested whether women show a behavioral tendency toward wearing reddish clothing when at peak fertility. Across two samples ($N = 124$), women at high conception risk were more than 3 times more likely to wear a red or pink shirt than were women at low conception risk, and 77% of women who wore red or pink were found to be at high, rather than low, risk. Conception risk had no effect on the prevalence of any other shirt color. Our results thus suggest that red and pink adornment in women is reliably associated with fertility and that female ovulation, long assumed to be hidden, is associated with a salient visual cue.

The Fluctuating Female Vote: Politics, Religion, and the Ovulatory Cycle

**Kristina M. Durante¹, Ashley Rae¹, and
Vladas Griskevicius²**

¹College of Business, University of Texas, San Antonio, and ²Carlson School of Management, University of Minnesota

Psychological Science

XX(X) 1–10

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DOI: 10.1177/0956797612466416

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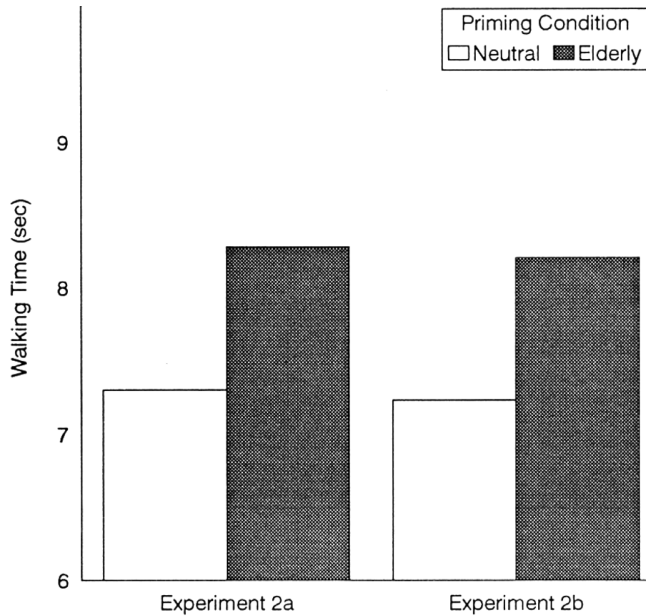
Abstract

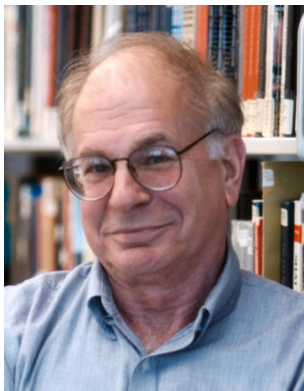
Each month, many women experience an ovulatory cycle that regulates fertility. Although research has found that this cycle influences women's mating preferences, we proposed that it might also change women's political and religious views. Building on theory suggesting that political and religious orientation are linked to reproductive goals, we tested how fertility influenced women's politics, religiosity, and voting in the 2012 U.S. presidential election. In two studies with large and diverse samples, ovulation had drastically different effects on single women and women in committed relationships. Ovulation led single women to become more liberal, less religious, and more likely to vote for Barack Obama. In contrast, ovulation led women in committed relationships to become more conservative, more religious, and more likely to vote for Mitt Romney. In addition, ovulation-induced changes in political orientation mediated women's voting behavior. Overall, the ovulatory cycle not only influences women's politics but also appears to do so

Results

Experiment 2a. A t test was computed to ascertain the effect of the priming manipulation on walking speed. Participants in the elderly priming condition ($M = 8.28$ s) had a slower walking speed compared to participants in the neutral priming condition ($M = 7.30$ s), $t(28) = 2.86$, $p < .01$, as predicted.

Experiment 2b. In the replication, analyses revealed that participants in the elderly priming condition ($M = 8.20$ s) again had a slower walking speed compared to participants in the neutral priming condition ($M = 7.23$ s), $t(28) = 2.16$, $p < .05$.





Daniel Kahneman (2011):

"When I describe priming studies to audiences, the reaction is often disbelief . . . The idea you should focus on, however, is that disbelief is not an option. The results are not made up, nor are they statistical flukes. You have no choice but to accept that the major conclusions of these studies are true."

Elderly-Related Words Prime Slow Walking (#15)

[Return to View Chart](#)

[How to Cite this Report](#)

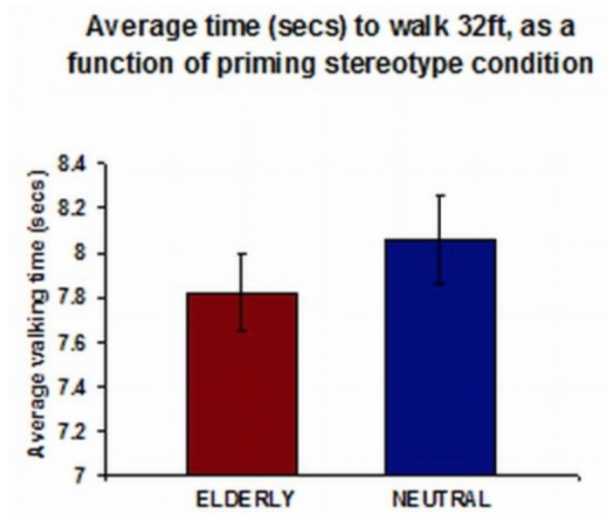
Reference to Original Report of Finding

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity. *Journal of Personality and Social Psychology*, 71, 230-244.

Title

Elderly-Related Words Prime Slow Walking

The attempted replication



Daniel Kahneman (2011):

“When I describe priming studies to audiences, the reaction is often disbelief . . . The idea you should focus on, however, is that disbelief is not an option. The results are not made up, nor are they statistical flukes. You have no choice but to accept that the major conclusions of these studies are true.”

Wagenmakers et al. (2014):

“[After] a long series of failed replications . . . disbelief does in fact remain an option.”



Alan Turing (1950):

"I assume that the reader is familiar with the idea of extra-sensory perception, and the meaning of the four items of it, viz. telepathy, clairvoyance, precognition and psycho-kinesis. These disturbing phenomena seem to deny all our usual scientific ideas. How we should like to discredit them! Unfortunately the statistical evidence, at least for telepathy, is overwhelming."

Psychological SCIENCE

Research, Theory, & Application in
Psychology and Related Sciences

A Journal of the Association for Psychological Science

October 22, 2013

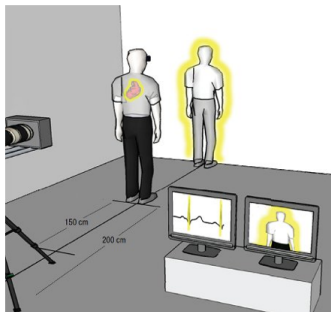
This Week in *Psychological Science* (TWiPS)



The links below take you to the journal via the APS website. If not already logged in, you will be redirected to log-in using your last name (Gelman) and Member ID (8167).

[Turning Body and Self Inside Out: Visualized Heartbeats Alter Bodily Self-Consciousness and Tactile Perception](#)

Jane Elizabeth Aspell, Lukas Heydrich, Guillaume Marillier, Tom Lavanchy, Bruno Herbelin, and Olaf Blanke



Studies of body perception have mostly focused on manipulations of exteroceptive cues (e.g., vision and touch); however, interoceptive cues (i.e., representations of internal bodily states) may be just as important for self-perception. Participants viewed a virtual body or a rectangle, each of which had a flashing outline that was synchronous or asynchronous with the participant's own heartbeat. Self-identification was stronger for people viewing the virtual body with the synchronous flashing outline than for those viewing the body with the asynchronous flashing outline or for those viewing the rectangles. This suggests that both interoceptive and exteroceptive cues play

important roles in bodily self-perception.

This week in Psychological Science

- ▶ “Turning Body and Self Inside Out: Visualized Heartbeats Alter Bodily Self-Consciousness and Tactile Perception”
- ▶ “Aging 5 Years in 5 Minutes: The Effect of Taking a Memory Test on Older Adults’ Subjective Age”
- ▶ “The Double-Edged Sword of Grandiose Narcissism: Implications for Successful and Unsuccessful Leadership Among U.S. Presidents”
- ▶ “On the Nature and Nurture of Intelligence and Specific Cognitive Abilities: The More Heritable, the More Culture Dependent”
- ▶ “Beauty at the Ballot Box: Disease Threats Predict Preferences for Physically Attractive Leaders”
- ▶ “Shaping Attention With Reward: Effects of Reward on Space- and Object-Based Selection”
- ▶ “It Pays to Be Herr Kaiser: Germans With Noble-Sounding Surnames More Often Work as Managers Than as Employees”

This week in Psychological Science

- ▶ $N = 17$
- ▶ $N = 57$
- ▶ $N = 42$
- ▶ $N = 7,582$
- ▶ $N = 123 + 156 + 66$
- ▶ $N = 47$
- ▶ $N = 222,924$

Labor Market Returns to Early Childhood Stimulation: a 20-year Followup to an Experimental Intervention in Jamaica

Paul Gertler, James Heckman, Rodrigo Pinto, Arianna Zanolini, Christel Vermeersch, Susan Walker, Susan M. Chang, Sally Grantham-McGregor

We find large effects on the earnings of participants from a randomized intervention that gave psychosocial stimulation to stunted Jamaican toddlers living in poverty. The intervention consisted of one-hour weekly visits from community Jamaican health workers over a 2-year period that taught parenting skills and encouraged mothers to interact and play with their children in ways that would develop their children's cognitive and personality skills. We re-interviewed the study participants 20 years after the intervention. Stimulation increased the average earnings of participants by 42 percent. Treatment group earnings caught up to the earnings of a matched non-stunted comparison group. These findings show that psychosocial stimulation early in childhood in disadvantaged settings can have substantial effects on labor market outcomes and reduce later life inequality.

Childhood Intervention and Earnings



Andrew Gelman

Overall, I have no reason to doubt the direction of the effect, namely, that psychosocial stimulation should be good. But I'm skeptical of the claim that income differed by 42%, due to the reason of the [statistical significance filter](#). In section 2.3, the authors are doing lots of hypothesizing based on some comparisons being statistically significant and others being non-significant. There's nothing wrong with speculation, but at some point you're chasing noise and picking winners, which leads to overestimates of magnitudes of effects.

Labor market returns to an early childhood stimulation intervention in Jamaica

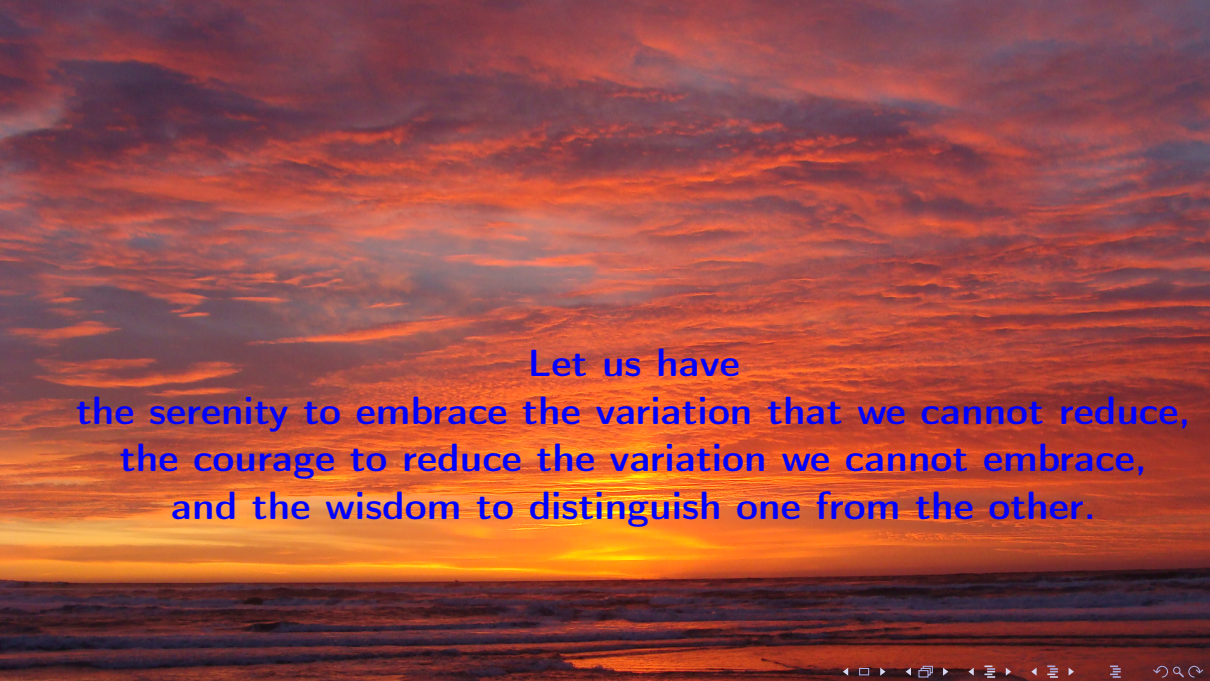
Paul Gertler^{1,2,*}, James Heckman^{3,4,5}, Rodrigo Pinto³, Arianna Zanolini³, Christel Vermeersch⁶, Susan Walker⁷, Susan M. Chang⁷, Sally Grantham-McGregor⁸

A substantial literature shows that U.S. early childhood interventions have important long-term economic benefits. However, there is little evidence on this question for developing countries. We report substantial effects on the earnings of participants in a randomized intervention conducted in 1986–1987 that gave psychosocial stimulation to growth-stunted Jamaican toddlers. The intervention consisted of weekly visits from community health workers over a 2-year period that taught parenting skills and encouraged mothers and children to interact in ways that develop cognitive and socioemotional skills. The authors reinterviewed 105 out of 129 study participants 20 years later and found that the intervention increased earnings by 25%, enough for them to catch up to the earnings of a nonstunted comparison group identified at baseline (65 out of 84 participants).

The larger discussion

Charles Murray: “To me, the experience of early childhood intervention programs follows the familiar, discouraging pattern . . . small-scale experimental efforts [$N = 123$ and $N = 111$] staffed by highly motivated people show effects. When they are subject to well-designed large-scale replications, those promising signs attenuate and often evaporate altogether.”

James Heckman: “The effects reported for the programs I discuss survive batteries of rigorous testing procedures. They are conducted by independent analysts who did not perform or design the original experiments. The fact that samples are small works *against* finding any effects for the programs, much less the statistically significant and substantial effects that have been found.”



Let us have
the serenity to embrace the variation that we cannot reduce,
the courage to reduce the variation we cannot embrace,
and the wisdom to distinguish one from the other.