

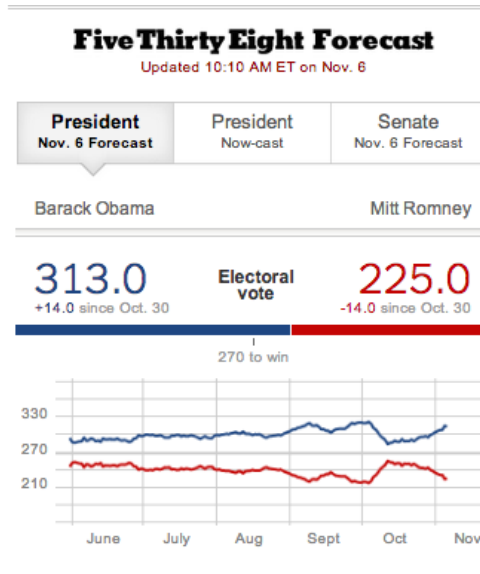


# What data should you use?

Jeffrey Leek

Johns Hopkins Bloomberg School of Public Health

# A successful predictor



[fivethirtyeight.com](http://fivethirtyeight.com)

# Polling data

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One in Four U.S. Uninsured Plan to Remain That Way



December 3, 2013

Twenty-eight percent of uninsured Americans say they are more likely to pay the fine for not having health insurance than to obtain insurance, as required by the healthcare law. Politics appear to be a major factor in that decision.

U.S. Economic Confidence Rises in November

December 3, 2013

U.S. Economic Confidence Index, Monthly Averages



Month	Index
Jan '12	-26
May '12	-22
Sep '12	-27
Jan '13	-16
May '13	-7
Sep '13	-25

Inside Strategic Consulting

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<http://www.gallup.com/>

3/12

# Weighting the data



6.06.2010

## Pollster Ratings v4.0: Methodology

by Nate Silver

Rating pollsters is at the core of FiveThirtyEight's mission, and forms the backbone of our forecasting models. But, it has been two years since we **last revised our ratings**. Here, at last, is an update. We have both substantially increased the amount of data that we are evaluating, and significantly refined our methodology.

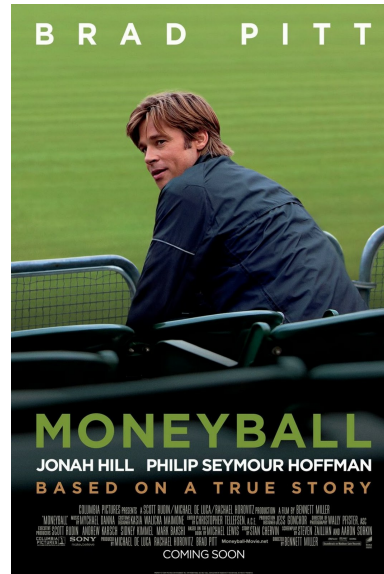
<http://www.fivethirtyeight.com/2010/06/pollster-ratings-v40-methodology.html>

# Key idea

To predict  $X$  use data related to  $X$

# Key idea

To predict player performance use data about player performance



# Key idea

To predict movie preferences use data about movie preferences

NETFLIX

## Netfix Prize

COMPLETED

Home Rules Leaderboard Update

### Leaderboard

Showing Test Score. [Click here to show quiz score](#)

Display top  leaders.

Rank	Team Name	Best Test Score	% Improvement	Best Submit Time
Grand Prize - RMSE = 0.8567 - Winning Team: BellKor's Pragmatic Chaos				
1	<a href="#">BellKor's Pragmatic Chaos</a>	0.8567	10.06	2009-07-26 18:16:28
2	<a href="#">The Ensemble</a>	0.8567	10.06	2009-07-26 18:36:22
3	<a href="#">Grand Prize Team</a>	0.8582	9.90	2009-07-10 21:24:40
4	<a href="#">Opera Solutions and Vandelay United</a>	0.8588	9.84	2009-07-10 01:12:31
5	<a href="#">Vandelay Industries I</a>	0.8591	9.81	2009-07-10 00:32:20
6	<a href="#">PragmaticTheory</a>	0.8594	9.77	2009-06-24 12:06:56
7	<a href="#">BellKor in BigChaos</a>	0.8601	9.70	2009-05-13 08:14:09
8	<a href="#">Dace</a>	0.8612	9.59	2009-07-24 17:18:43
9	<a href="#">Feeds2</a>	0.8622	9.48	2009-07-12 13:11:51
10	<a href="#">BigChaos</a>	0.8623	9.47	2009-04-07 12:33:59

# Key idea

To predict hospitalizations use data about hospitalizations



**Improve Healthcare,  
Win \$3,000,000.**

#### COMPETITION GOAL

Identify patients who will be admitted to a hospital within the next year, using historical claims data.



# Not a hard rule

To predict flu outbreaks use Google searches

google.org Flu Trends

L

[Google.org Home](#) (English)

[Dengue Trends](#)

Flu Trends

Home

Select a country / region

[How the Flu Trends](#)

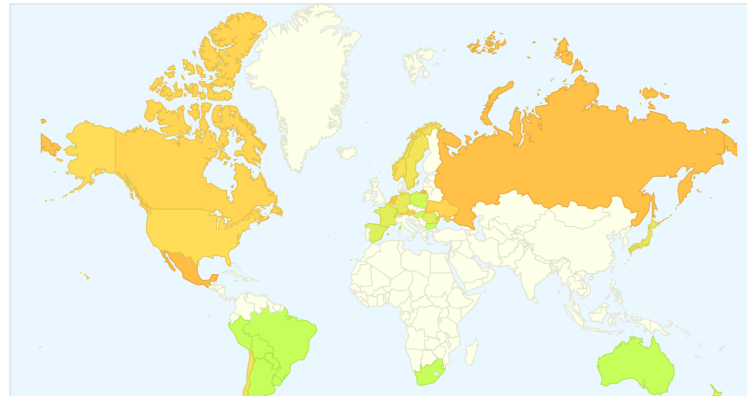
[Common question](#)

Epidemic of influenza

Very large  
Large-scale  
Mid-size  
Small scale  
Very small

## I explore the epidemic of influenza in the world

In Google, I found that the number of searches in the search for specific keywords is indicative of the epidemic of influenza. Predict the epidemic of influenza by using the aggregate data of Google search on Google Flu Trends. [More »](#)



<http://www.google.org/flutrends/>

# Looser connection = harder prediction

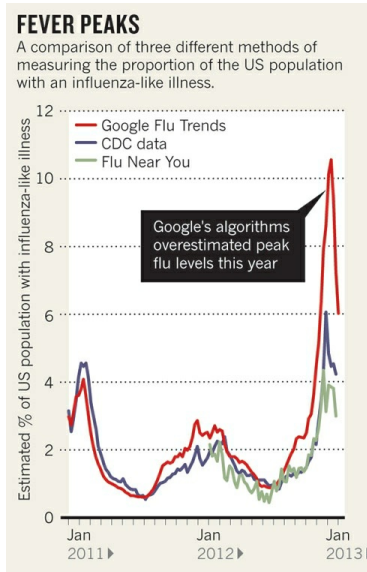
**Oncotype DX<sup>®</sup> reveals  
the underlying biology that  
changes treatment decisions  
37% of the time**

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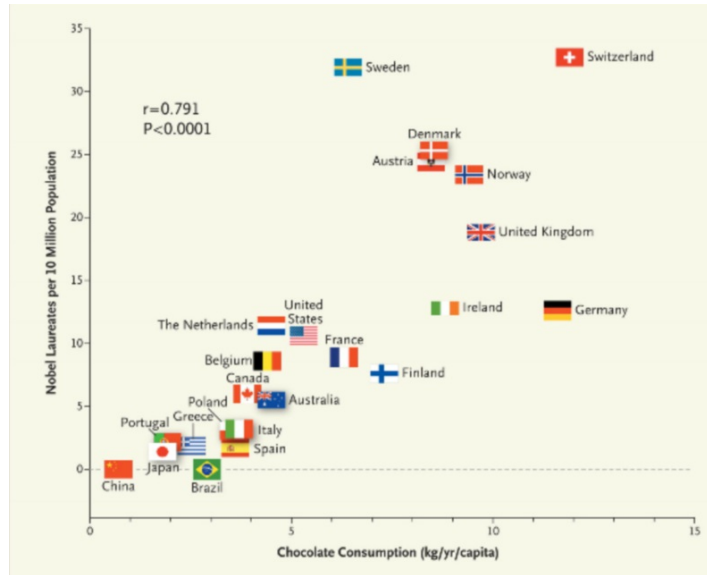
Uncover the Unexpected<sup>™</sup>



# Data properties matter



# Unrelated data is the most common mistake



<http://www.nejm.org/doi/full/10.1056/NEJMon1211064>