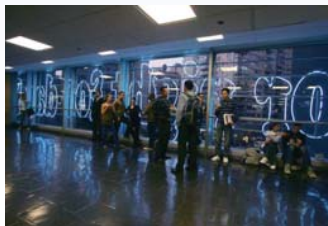


Statistics 706: General Linear Model I Kalman Filter and the Presidential Election

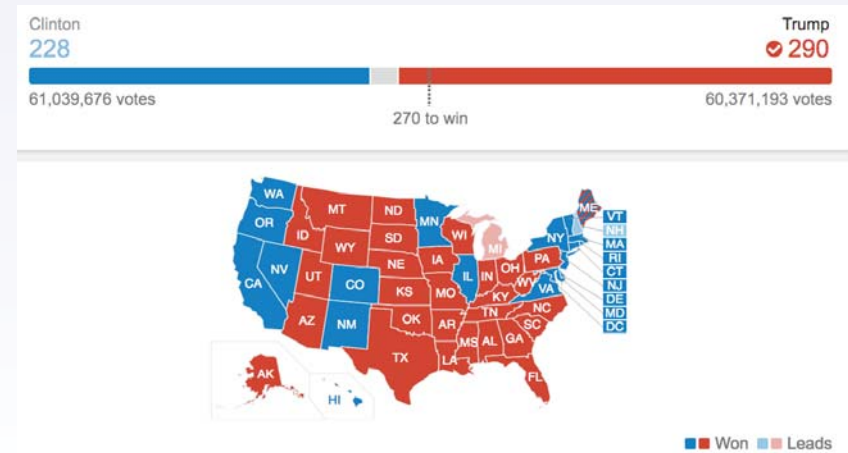
Jiangtao Gou

Department of Mathematics and Statistics, Hunter College

November 16, 2016



United States presidential election, 2016

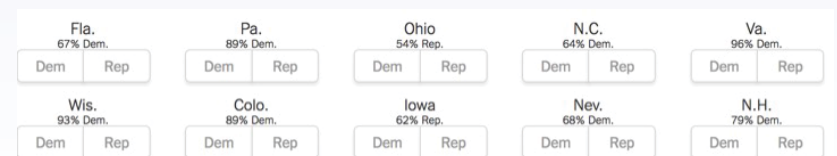
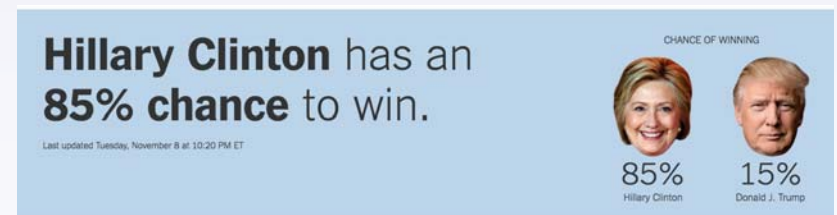


United States presidential election, 2016

	Clinton	Trump
Florida 29 electoral votes	48% 4,485,745	49% 4,605,515
Pennsylvania 20 electoral votes	48% 2,844,705	49% 2,912,941
Michigan 16 electoral votes	47% 2,267,373	48% 2,279,210
North Carolina 15 electoral votes	47% 2,162,074	51% 2,339,603
Virginia 13 electoral votes	50% 1,916,845	45% 1,731,156
Colorado 9 electoral votes	47% 1,212,209	44% 1,137,455
Ohio 18 electoral votes	44% 2,317,001	52% 2,771,984
Wisconsin 10 electoral votes	47% 1,382,210	48% 1,409,467
Nevada 6 electoral votes	48% 537,753	46% 511,319
New Hampshire 4 electoral votes	48% 348,521	47% 345,789
Iowa 6 electoral votes	42% 650,790	52% 798,923

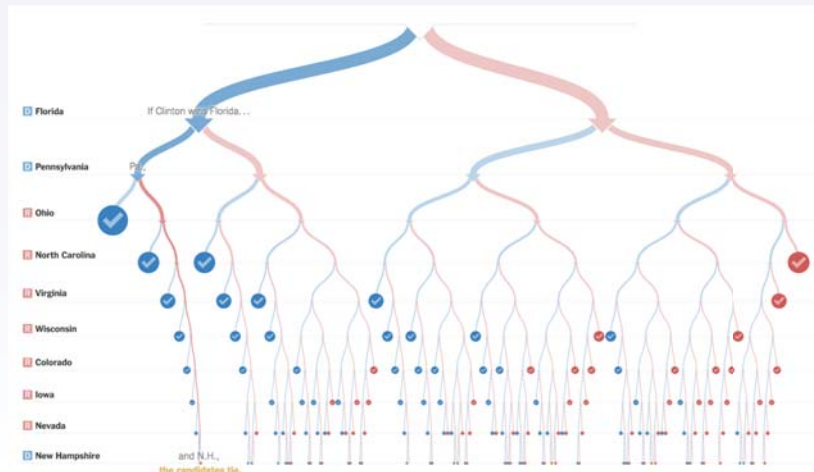
The New York Times

"Mrs. Clinton's chance of losing is about the same as the probability that an N.F.L. kicker misses a 37-yard field goal."



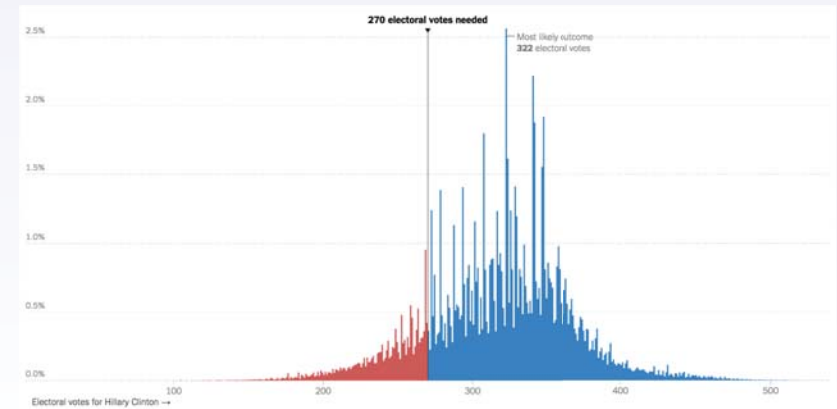
The New York Times

“This diagram illustrates how important Florida and Pennsylvania are to both candidates.”

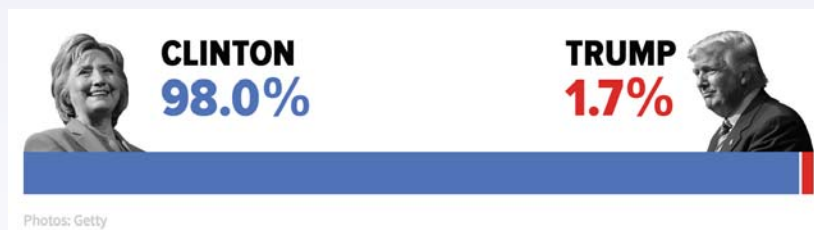


The New York Times

“We assume that Mr. Trump and Mrs. Clinton win the other states in which they are favored.”

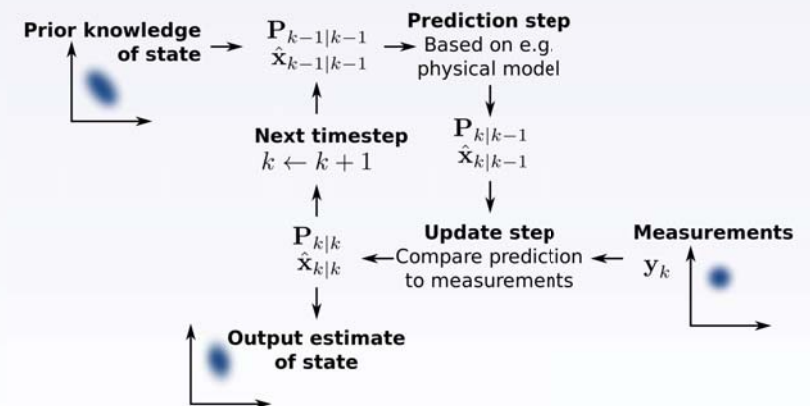


Huffington Post



“We estimate the likely outcome in each state using publicly available polls in the HuffPost Pollster database. We use Pollster’s **Bayesian Kalman filter model** to simulate 100,000 populations whose voting intentions correspond to the poll results. (We sample 5,000 of those simulations in our calculations, for speed.)”

Huffington Post Kalman Filter



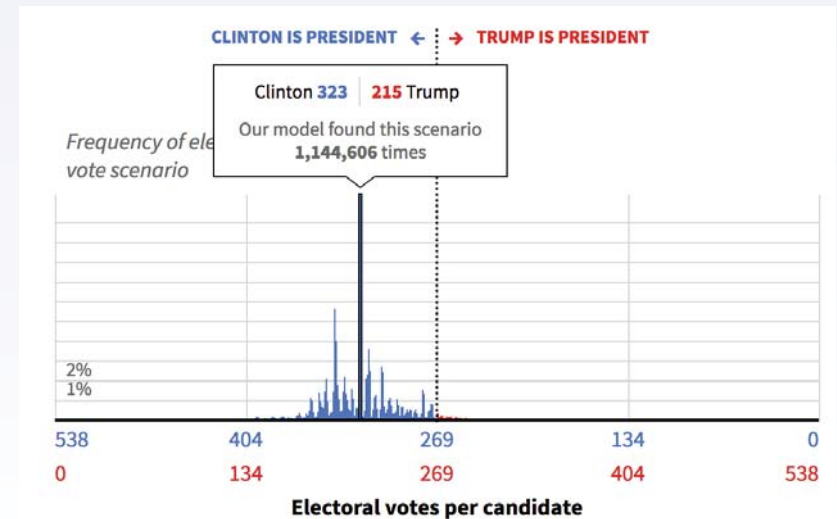
Huffington Post

“The model also estimates what proportion of voters in each state is currently undecided, according to the polls. We assume one-third of undecided voters won’t vote; one-third will gravitate nationally toward either candidate; and the remaining one-third will add to this state’s margin of error.”

“In each simulation, we generate a result for each state based on:

- Our state-by-state averages,
- The uncertainty in our average of national polls,
- The way one-third of undecided voters may vote.”

Huffington Post

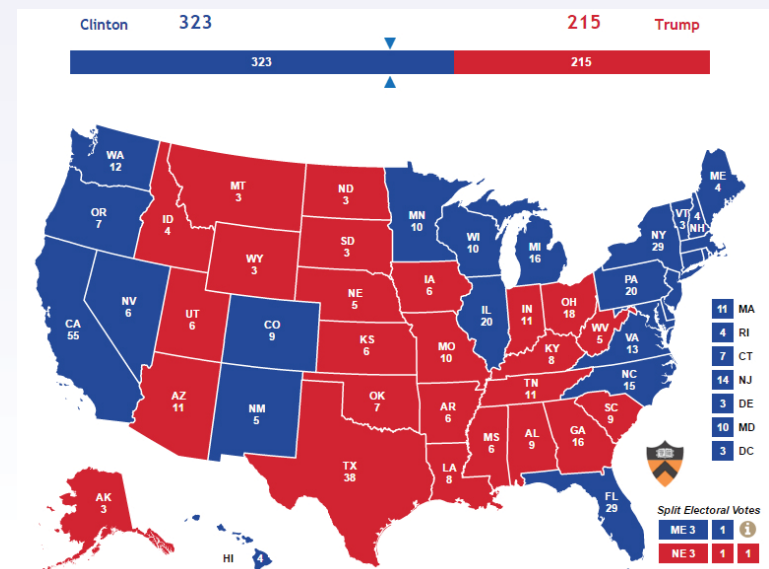


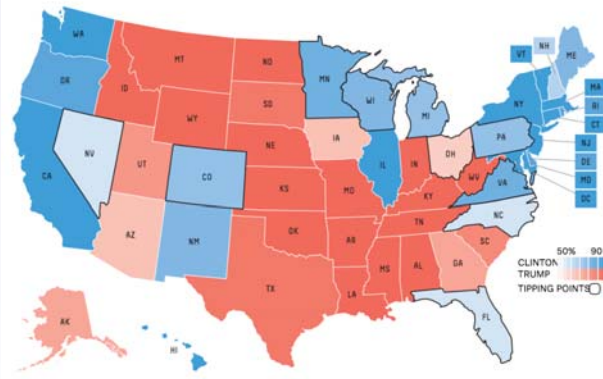
PredictWise

“Key data on this page includes: Prediction Markets (Betfair, PredictIt, Hypermind), Polling (HuffPost Pollster), Bookie (OddsChecker).”



Princeton Election Consortium Final Projections: Clinton 323





Electoral votes		Popular vote	
■ Hillary Clinton	302.2	■ Hillary Clinton	48.5%
■ Donald Trump	235.0	■ Donald Trump	44.9%
■ Evan McMullin	0.8	■ Gary Johnson	5.0%
■ Gary Johnson	0.0	■ Other	1.6%

"All forecasts were strongly implying a Clinton win. Fivethirtyeight had the smallest win chances for Clinton at about 71.4% on the eve of the election."

VIDEO: Nate Silver discusses the final presidential forecast
<http://www.espn.com/core/video/iframe?id=17999374>

FiveThirtyEight

Why FiveThirtyEight Gave Trump A Better Chance Than Almost Anyone Else

<http://fivethirtyeight.com/features/why-fivethirtyeight-gave-trump-a-better-chance-than-almost>

VIDEO: Nate Silver discusses the method to FiveThirtyEight's forecast

<http://www.espn.com/core/video/iframe?id=18025940>

The Washington Post

Trump is headed for a win, says professor who has predicted 30 years of presidential outcomes correctly.

<https://www.washingtonpost.com/news/the-fix/wp/2016/09/23/trump-is-headed-for-a-win-says-professor-whos-predicted-30>

VIDEO: Allan Lichtman, a distinguished professor of history at American University, created his "13 Keys to the White House" more than 30 years ago and he's ready to predict who will win in 2016.

www.washingtonpost.com/video/c/embed/2201823e-8108-11e6-9578-558cc125c7ba

Summary: 2016 Presidential Election

From ASA forum: "Election result and effect on data based decisions "

- "Polls need to be much more completely inclusive."
- "The "underdog" happened to win."
- "Those who design these polls typically live in the cities and do not appreciate the divide that exists in the mindset between the urban and rural voting populations."
- "Polls are written by idiots, mostly. They ask stupid questions. 'On a scale of 1-10, how much do you hate Hillary?'"
- "There is a large disconnect between area code and actual location."
- "People get annoyed by polls. They stopped answering the phone when it was a polling call."
- "Since many of my educated friends were for Hillary I felt somewhat embarrassed to say I'm for Trump. No one likes losing friends or being associated with the uneducated."