## The Economy, Big Data, and #PredictingTheFuture

Isha Togare

On November 9th, the day after the unprecedented election of Donald Trump over the predicted win of Hillary Clinton, the top five searches on Google included "How did…" followed by "…Trump win", "…this happen", "…Clinton lose", "…Michigan vote", and most notably, "…the polls get it so wrong".

So how *did* the polls get it so wrong?

Maybe the fact that polls predicted the election so inaccurately suggests that current polling methods do not allow for a truthful representation of the modern population – a population that largely looks to social media for both news and engagement. In fact, Google searches from the weeks leading up to the election often contrasted poll data. Within all candidate search interests, searches for Hillary Clinton were leading per state until November 6th, after which Donald Trump became the lead search interest, claiming 55% of candidate searches across the nation.

With the advent of the 21st century comes the era of data. We can't imagine a world without technology; individuals born in the 2000s probably can't even imagine a world without social media.
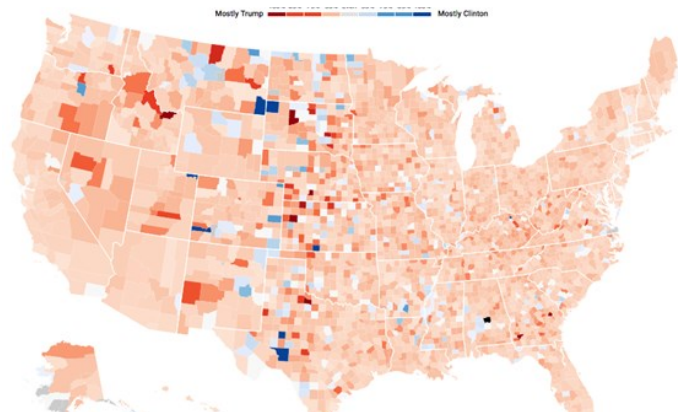


Regardless of whether or not we embrace the technological change, our day-to-day movements can be reconstructed with our electronic footprints. More specifically, our opinions can be mapped out through our usage of social networking platforms.

## Sound Transit 3

Andrew Whan

Congestion, public transit, ride-sharing: all are buzzwords heard in both public discourse and private conversation throughout the Seattle area. Residents here are exposed to what is considered the second-worst rush hour traffic in the nation (second only to Los Angeles), costing individuals who work downtown hundreds of man hours while stuck in traffic.

From an economic standpoint, the wasted time translates to a loss in the efficiency of the work force and thus a decrease in productivity. Therefore, this issue is at the forefront Seattle's psyche. Recently passed by area voters in November's election, Sound Transit 3 (ST3) seeks to alleviate some of the gridlock that plagues the city through a massive expansion of public transit, specifically light rail.

Projected to take $54 billion and 25 years to complete, ST3 is one of the largest transit projects in the history of both Seattle and the United States as a whole. Its proponents argue that similar light rail systems such as those of Vancouver, Canada and San Francisco, California have been successful in increasing

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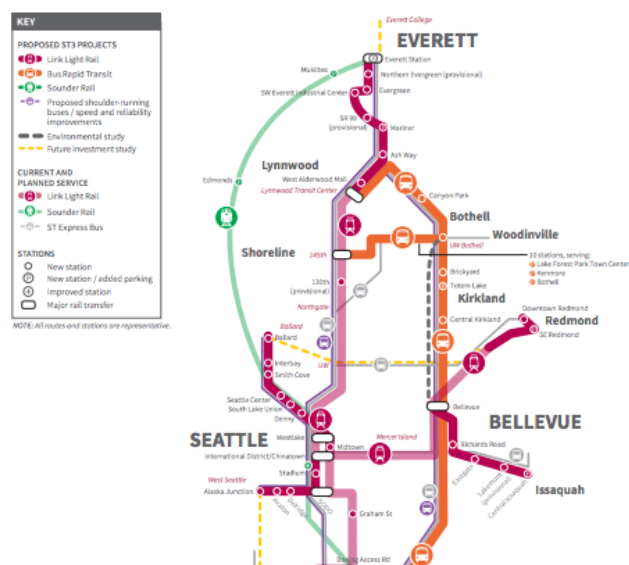
# Continued: #PredictingTheFuture

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Social media and search analytics can be used for more than just understanding the past or visualizing live reactions to major events. We can use such data to highlight consistent patterns, and further, predict human behavior.

We can already see the power of social media for polling from the recent election. Twitter conversations from September 2015 through May 15, 2016 accurately predicted the subsequent July nominations of Hillary Clinton and Donald Trump as the Democratic and Republican party nominees respectively following candidate buzz surrounding '#Election2016'.

So what are the implications of data gleaned from sites like Google, Twitter, and Facebook in regards to the field of Economics?

Unlike searches based on "buzz" or popularity, such as those surrounding an individual where interest is indicative of support, economic trends are an aggregate of multiple factors and are not as easily modeled or predicted.

Even so, searches, mentions, hashtags, and posts can still provide a wealth of data for economists. While Twitter and Facebook offer data derived from public engagement and interaction, data from the Internet search giant is largely latent. That is, honest and uncensored. By combining existing economic models with the active and passive data provided by these sources, we can improve the accuracy of economic models and their predictions.
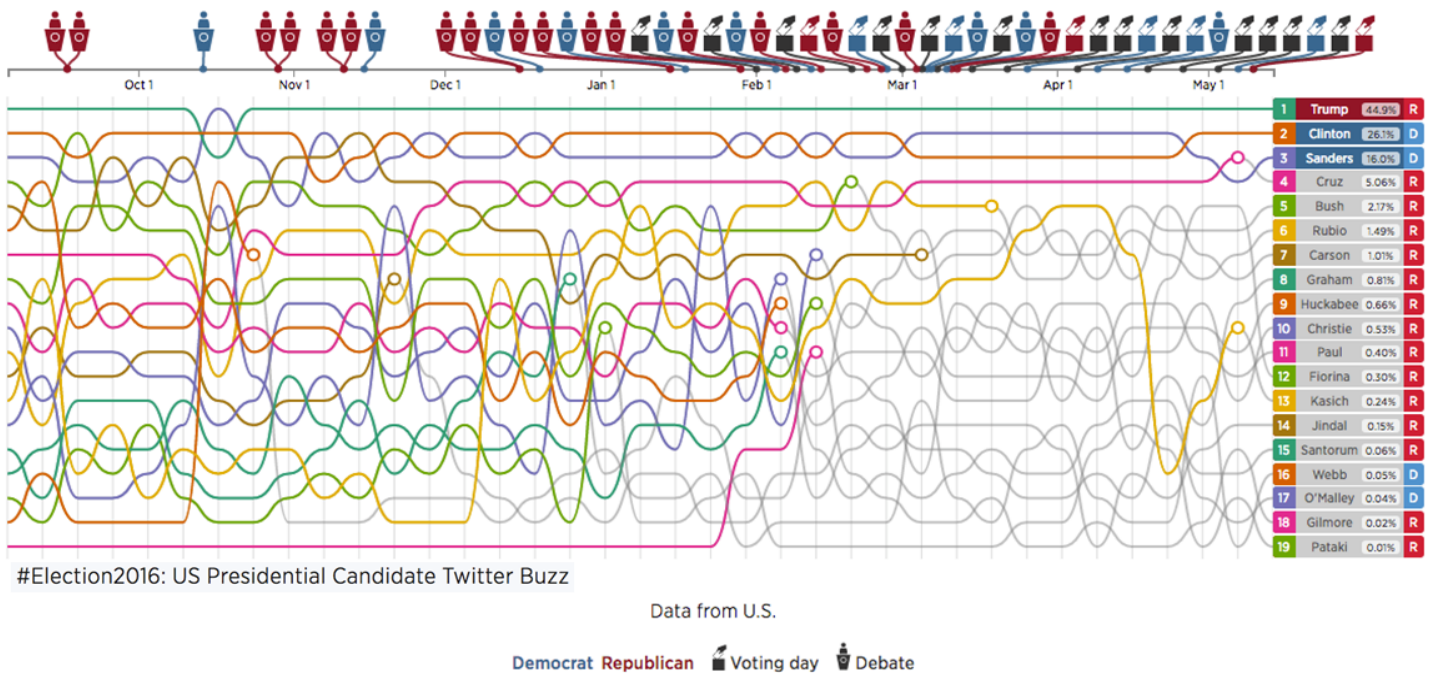
In this regard, researchers have found correlations between Google trends and financial economics. For example, there is a strong relationship between the term "debt" and stock prices.

Researchers found that a hypothetical portfolio could be increased by 326 percent versus a hypothetical buy-and-hold portfolio by selling when the search volume for "debt" increased, and buying when the search volume for the term dropped.

What is important to note is that data found on Google and Twitter are high-frequency, real-time, and most of all, constantly expanding. The sheer volume and speed of available data combined with standard economic models offer an extremely valuable indicator of behavior. Some examples of combined models include traffic at e-commerce sites as proxies for retail sales, and analyzing tweets for terms related to job changes as predictive of jobless claims ahead of the weekly figures released by the U.S. Bureau of Labor and Statistics

As more social platforms are established, questions are googled, tweets are tweeted, posts are made, and most of all, as a larger demographic is raised alongside technology, we will see online data become a crucial supplement – even a foundation – to fundamental economic models. It wouldn't be a stretch to say that we are entering an age where our online activity will soon be able to predict our thoughts and behaviors as consumers more accurately than we ourselves can.

Looking back at this election, let us again reconsider the popular question, "how did the polls get it so wrong?". Perhaps we are already at a point where analog methods of polling focus groups are ineffective. Instead, it's possible that the next time around, we will enter Tuesday, November 3rd, 2020 looking at the millions and billions of tweets, posts, and searches made every day to predict the outcome of our next presidential election.



#Election2016: US Presidential Candidate Twitter Buzz

Data from U.S.

Democrat  Republican  📱 Voting day  🏺 Debate

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**Math/Stats Review:** In early Winter quarter the EUB will be hosting a Math and Statistics Review Seminar to help students brush up on the math used in ECON 200/201, as well as ECON 300/301.

**Economics Tutoring:** The EUB offers free tutoring every weekday at various times every quarter! Check the schedule on the EUB website to see tutoring times. If you need help with an upper level class, however, make sure you check the website to see which tutor can help.

# Continued: Sound Transit 3

transportation efficiency. Furthermore, supporters of ST3 argue for the job creation potential of such a large public works project, as well as its positive impact on the environment, as it is said that each train can help remove hundreds of cars from the road.

However, although it was passed by popular vote, Sound Transit 3 is not without its detractors. The first application of light rail in the Puget Sound area ran years behind schedule and billions over budget, so many argue that ST3 will be no exception. With a timeline already extending to 2041 and delays likely, there is concern that the project will be obsolete before it is even completed. With the advent of ride-sharing services such as Uber and Lyft, and the proliferation of driverless car technology, many people think that an extensive light rail system will be nothing more than a money pit by 2041.

Whatever its results, Sound Transit 3 represents a huge effort by the government to alleviate one of the major problems in one of the United States' fastest growing cities. Its success could serve as a positive example of the benefits of public transit, while its failure could be the death knell of similar massive transit projects.

# Markets React to Trump Win

Tyler Ames

Donald Trump pulled off a momentous and largely unforeseen electoral upset on November 8, claiming nearly all battleground states despite the vast majority of polls predicting a Hillary Clinton presidency. We have seen a myriad of political reactions from across the globe following this unconventional election, ranging from despairing "not my president" protests in major cities to hopeful jubilation from Trump supporters at home and abroad (e.g. from Nigel Farage and Marine Le Pen), but as scholars in economics we also seek to understand how world markets received the news of America's president-elect, and why.

Once it became evident that the anti-establishment Republican would emerge victorious, the world immediately scrambled away from risk, selling stocks and taking refuge in gold and government debt. Stock market downswings in the U.S. occur more often than not on the day following a presidential election, but the magnitude and scope of Tuesday night's selloff remain noteworthy. Futures on the Dow Jones Industrial Average, S&P 500, and NASDAQ-100 all fell between 4 and 5% as election night news came in, and markets in Asia, Oceania, and Europe responded with similar gloom. Japan's Nikkei 225 plunged over 5%, Hong Kong's Hang Seng Index dipped nearly 3%, and Britain's FTSE 100 Index fell by 2%, all while gold climbed over 3% and Ten-year U.S. Treasury yields fell (indicating higher demand for U.S. bonds). These investors' fear likely stemmed from a feeling of uncertainty, particularly after Trump made renegotiating and scrapping free trade agreements like NAFTA and TPP- along with imposing hefty tariffs on nations like China and Mexico which he claimed harmed America's economy- some of his key campaign promises. World trade growth has already decelerated this year to its slowest pace since the global financial crisis of 2009, according to the WTO.

The Mexican peso proved one of the biggest losers of the night, plummeting over 10% against the dollar, more in one day than during any other since 1995. When Mexico exports less (clearly the expectation if Trump follows through on his statements), foreigners demand less pesos to buy Mexican products. One peso thus corresponds to less dollars than before (and vice-versa), i.e. the peso weakens.

However, investor sentiments seemed to improve drastically after Trump primarily emphasized infrastructure spending and American unity later that night in his relatively tame first speech after the election. Additionally, investors realized that the same party had won the Oval Office, the Senate, and the House, potentially signaling a welcome end to partisan gridlock in Washington. U.S. stocks actually climbed higher on Wednesday and kept that momentum going for the entire week after the election, led by the banking, construction, and defense sectors. The DJIA, for example, rose 3.2% in the three days following the election. Trump has expressed interest in dismantling Dodd-Frank, which Congress enacted in 2010 in order to increase financial regulation in the wake of the financial crisis. Doing away with the law would presumably lower banks' expenses and boost their profits, so it comes as no surprise that Goldman Sachs and Morgan Stanley both soared over 10% during the week after November 8. Shares of drug manufacturers and prison companies popped up on Wednesday as well , reflecting an awareness that Clinton's promised crackdown on the two industries would not come to fruition. Construction and defense rose because Trump and other Republicans appear keen on increasing infrastructure and defense spending.

The hardest-hit sectors following the election have been technology and hospitals. Tech firms rely heavily on international talent and foreign trade, and investors believe that Trump could reduce the number of H1-B visas issued and significantly reduce trade openness. Alphabet, Amazon, Apple, and Facebook all lost ground while most of the market rose. Hospitals had seen a lucrative increase in spending from newly-insured patients after the Affordable Care Act, and now markets fear that these profits would dissipate if Obamacare were nixed.

U.S. bonds, too, lost popularity following the initial post-election panic. Yields have spiked- 10-year Treasury notes rushed to a rate of above 2.2% and 30-year notes reached 3%- as Trump's promises of increased infrastructure spending and large tax cuts could provoke higher inflation and significantly increase America's debt level, both unattractive for bondholders. Yields may even continue to rise, as a December rate hike from the Fed remains a solid possibility. Higher inflation and growth from Trump's expansionary fiscal policy could cause the Fed to take a less cautious approach with its contractionary monetary agenda.

The expectation of prolonged higher rates in the developed world and a combination of infrastructure spending and tax

# Continued: Markets React

cuts in the U.S. hit emerging markets hard, as they witnessed a sudden reversal from significant capital inflows to pronounced outflows. Emerging markets saw roughly $2.4 billion gush out of their countries during the week of the election, with most of these losses occurring after Tuesday. Emerging market stocks and bond prices fell drastically, and their currencies weakened in an all-out selloff as America's election week came to a close. Negative capital flows and lower bond prices mean a higher cost of borrowing for emerging market governments and companies, making growth more difficult and defaults more likely.

No matter where one stands with respect to the upcoming Trump presidency, we can find common ground in recognizing that this election drastically changes where America- and indeed, the world- sees itself in the future. The U.S. appears to be on the verge of bucking the contemporary trend of austerity (in effect from Europe to Brazil) in favor of tax cuts and higher spending, and the foregone conclusion of further trade liberalization looks poised to give way to large-scale protectionism. Some even predict that the low-rate era could come to an end if the president-elect's wish list gains approval in Congress. Putting political affiliations aside, as economists we can look forward to following the effects of these policies, with whatever results they generate providing us with yet more evidence for evaluating economic phenomena.

*Exchange Rate of U.S. Dollar to Mexican Peso*



*Dow Jones Industrial Average*



*Source: Bloomberg*

# New Professor: Dong-Jae Eun



**What got you interested in Economics?**

It was just super fun to think about how people respond to economic incentives.

**What is Industrial Organization all about?**

Industrial Organization is an economic field that studies firms' incentives. Firms decide whether to enter/exit a market, deter an entry by a potential competitor, raise prices, introduce brand new products, bundle goods, merge with another firm, price-discriminate consumers, attract consumers by providing a big discount and then lock them in a long-term contract, etc. If you like to explore brilliant economic ideas to make money, you will definitely love to study IO.

**What drew you to the University of Washington?**

UW is a best research university in the world with lots of fantastic, friendly Economists. I am a very fortunate person to have a chance to become a member of UW Economics department.

**What suggestions do you have for undergraduates planning on attending graduate school?**

If you consider graduate school, it's likely that you are already good at economic thinking. Given that, I would recommend thinking harder about which particular topic you want to study in graduate school. Be it anything from the effect of Obamacare to the implications of negative interest rate era to measuring the degree of altruism. Read papers on that particular topic. Talk to professors about that.

**Who is your favorite Economist?**

Gary Becker. He used economic methodology to examine human behavior in many different setting: discrimination, crime, and even drug addiction. He is an extremely creative Economist. I truly admire him.