



The power of prediction

Dr. Eric Haseltine

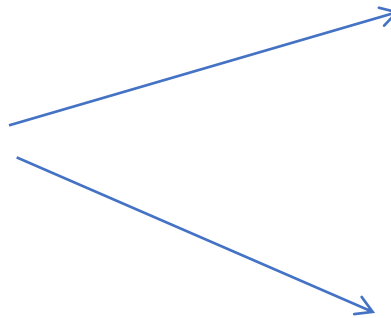
Bottom line up front

- Web and mobile connections have “instrumented” most of the global population, permitting predictive insights never before possible
- Behavioral and data scientists are using these insights to make ever more accurate sociological, technological and economic predictions, such as future stock market moves
- Sophisticated new prediction tools are fast becoming available and affordable to everyone, not just data scientists

Topics

- The old discovery paradigm
- The new paradigm
- Where the numbers come from
- Diverse examples
- Where this is going

Exploration used to be sole province of governments & big organizations



This is still true of science



National Institutes
of Health



But a new realm of discovery has just emerged alongside traditional realms



The realm of... data



The home of the U.S. Government's open data

Here you will find data, tools, and resources to conduct research, develop web and mobile applications, design data visualizations, and [more](#).

GET STARTED

SEARCH OVER **191,674** DATASETS



BROWSE TOPICS



Agriculture



Business



Climate



Consumer



Ecosystems



Education



Energy



Finance



Health



Local
Government



Manufacturing



Ocean

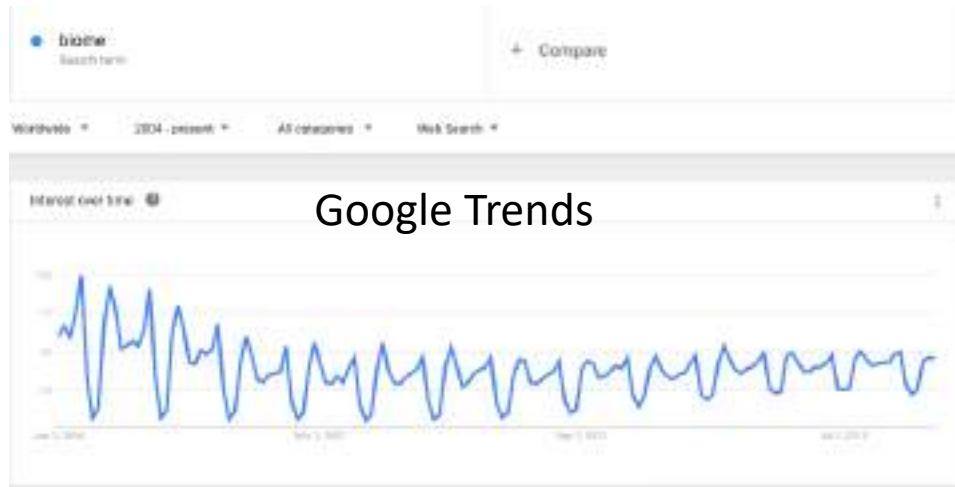


Public Safety

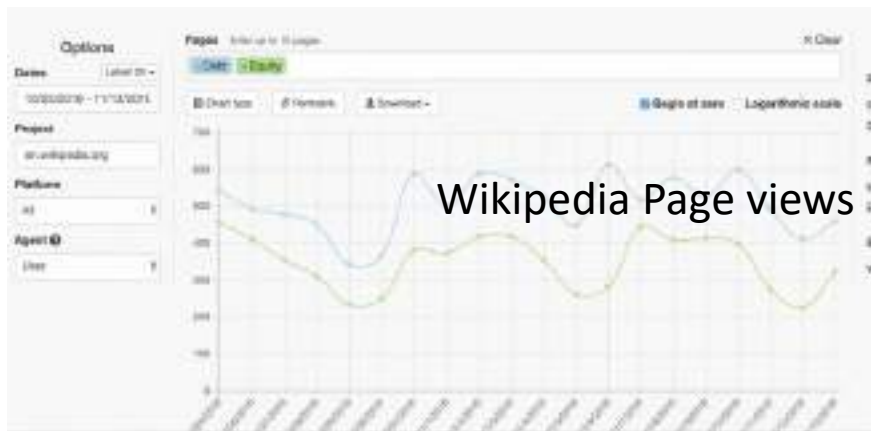


Science &
Research

Free tools



Google Trends



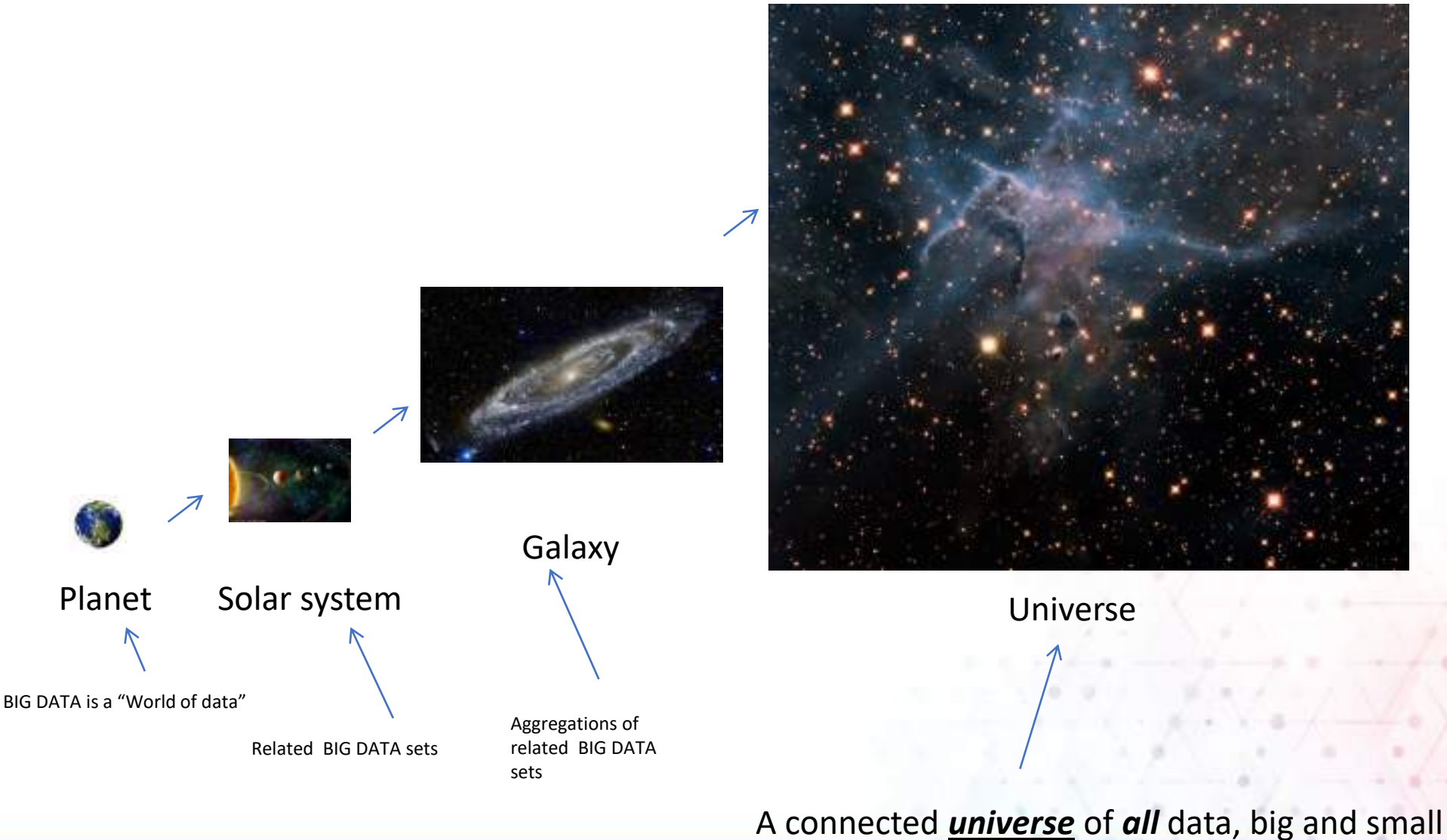
Wikipedia Page views



We're talking about an enormous,
connected *Dataverse*



We're not talking about just "Big data"



Where the numbers come from

- 3.6 billion Internet users
 - Search (Google, Wikipedia, etc.)
 - Social media (Facebook, Twitter, Instagram, Snapchat)
- 4.7 billion mobile users
 - Geolocation data
 - Call, messaging volume
- Open data from governments, universities, NGO's

Regions of the Dataverse explored

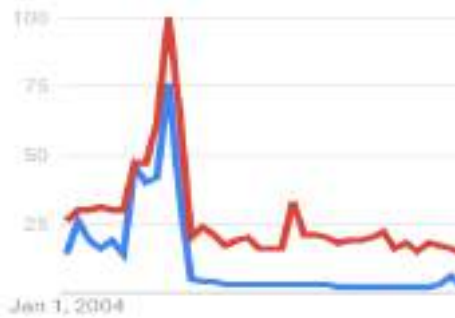
- Elections
- Technology forecasting
- Investing and financial markets
- Marketing

Elections

Predicting elections

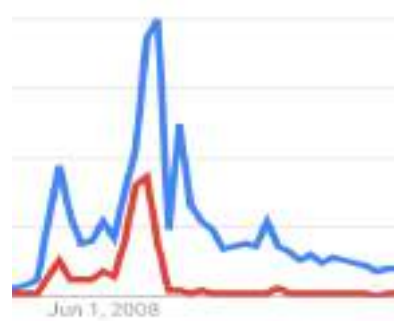
2004

Bush Kerry



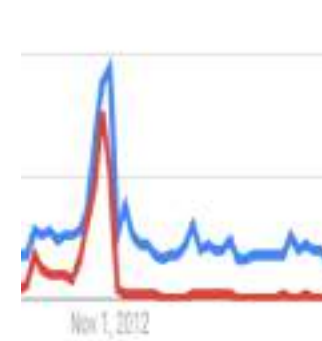
2008

McCain Obama



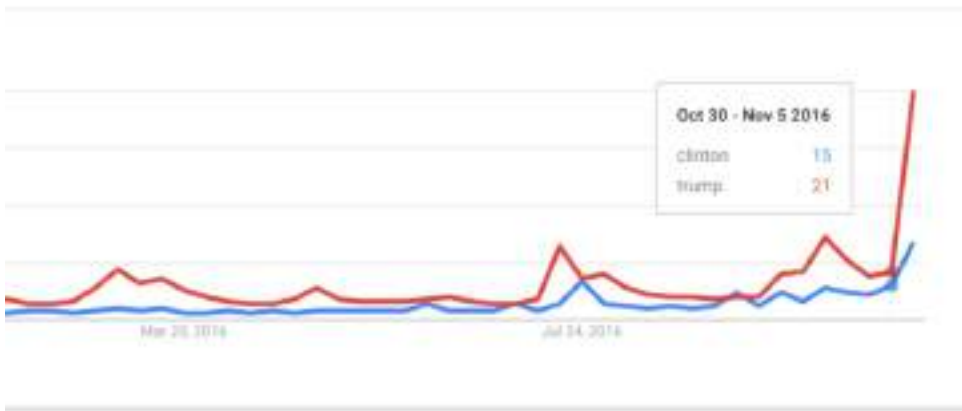
2012

Romney Obama



2016

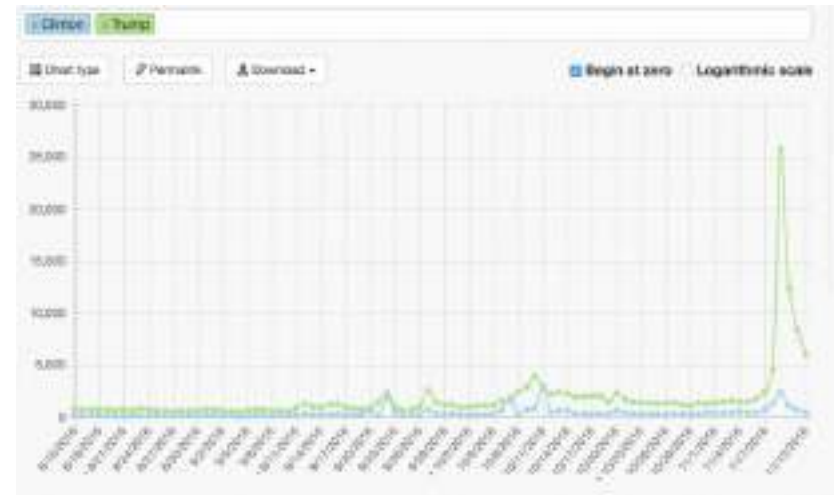
Google search



Trump

Clinton

Wikipedia page views



France 2007 & 2012

● François Hollande
President of the French R...

● Nicolas Sarkozy
Former President of France

● Ségolène Royal
Minister of Ecology

+ Add comparison

France ▾ 2004 - present ▾ All categories ▾ Web Search ▾

Interest over time ?



↑
May 15 2007

↑
May 15 2012

France 2017

Alain Juppé
Former Prime Minister of France

François Fillon
Former Prime Minister of France

+ Add comparison

France Past 12 months All categories Web Search

Interest over time



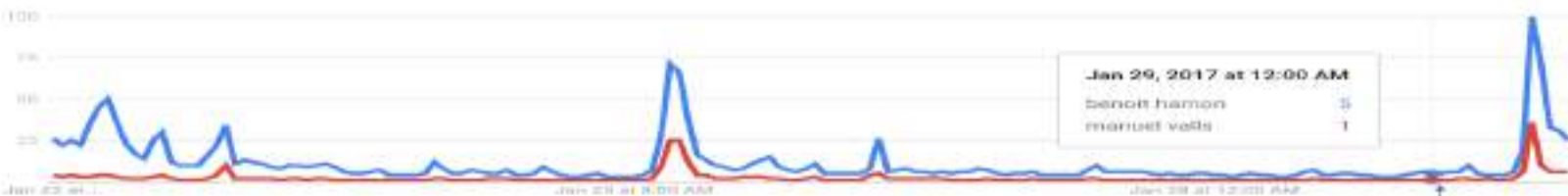
benoit hamon
Search term

manuel valls
Search term

+ Add comparison

France Past 7 days All categories Web Search

Interest over time



Polls open

Brexit

● for brexit
Search term

● against brexit
Search term

+ Add comparison

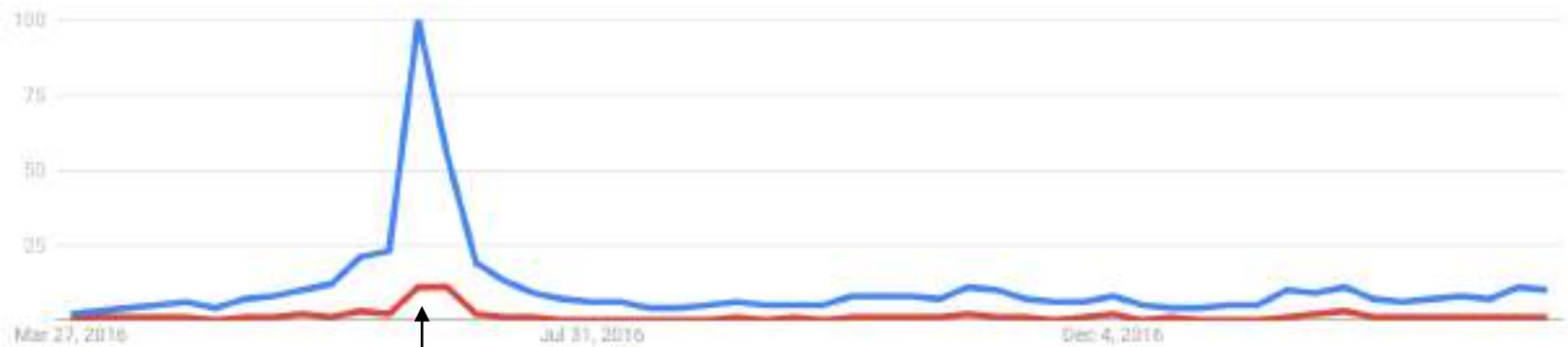
United Kingdom ▾

Past 12 months ▾

All categories ▾

Web Search ▾

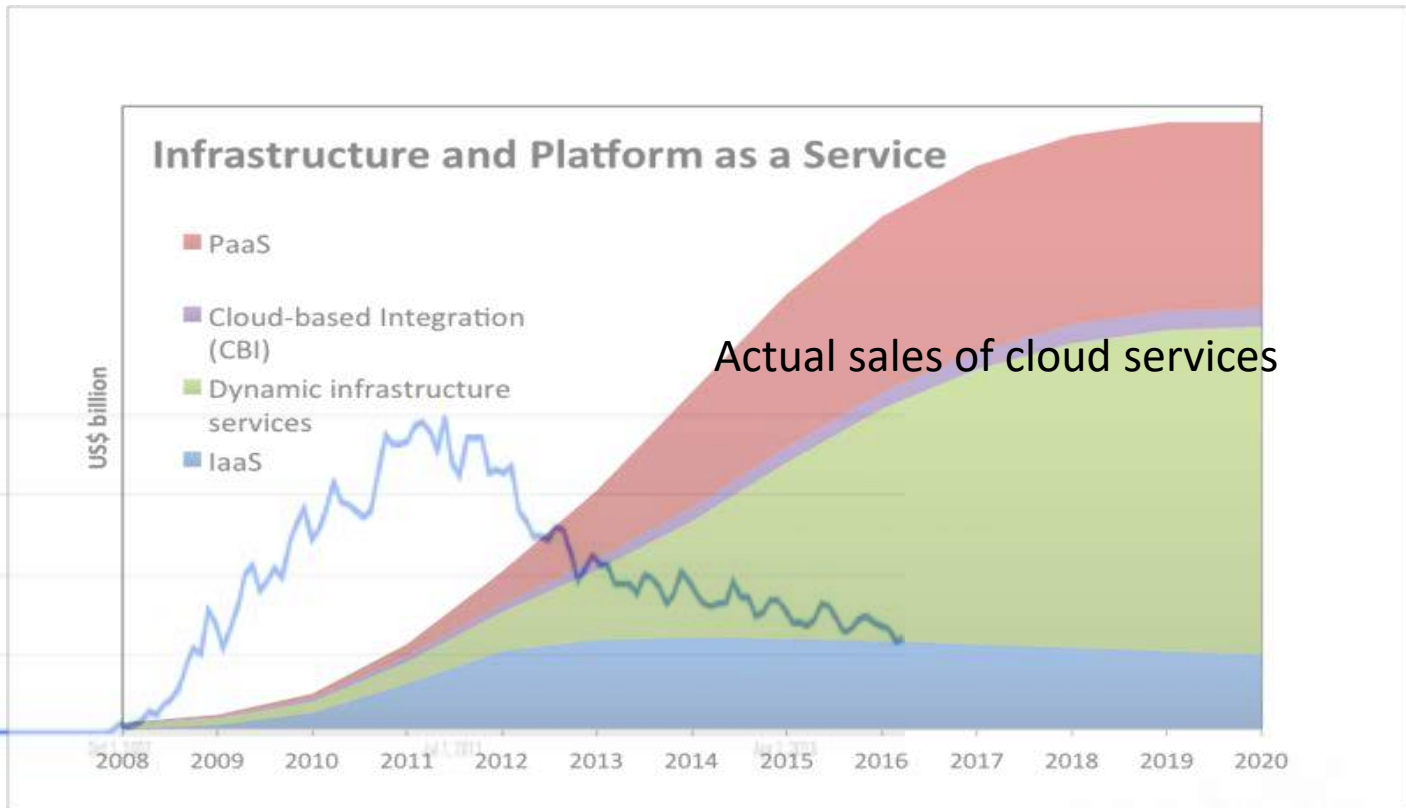
Interest over time ?



June 23 2016

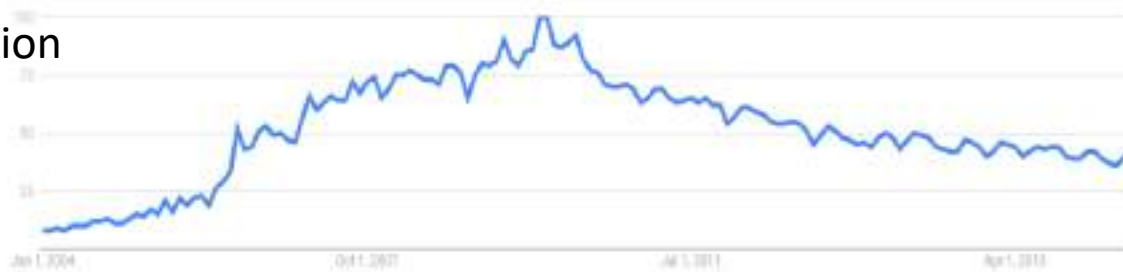
Technology forecasting

Predicting the past: winners

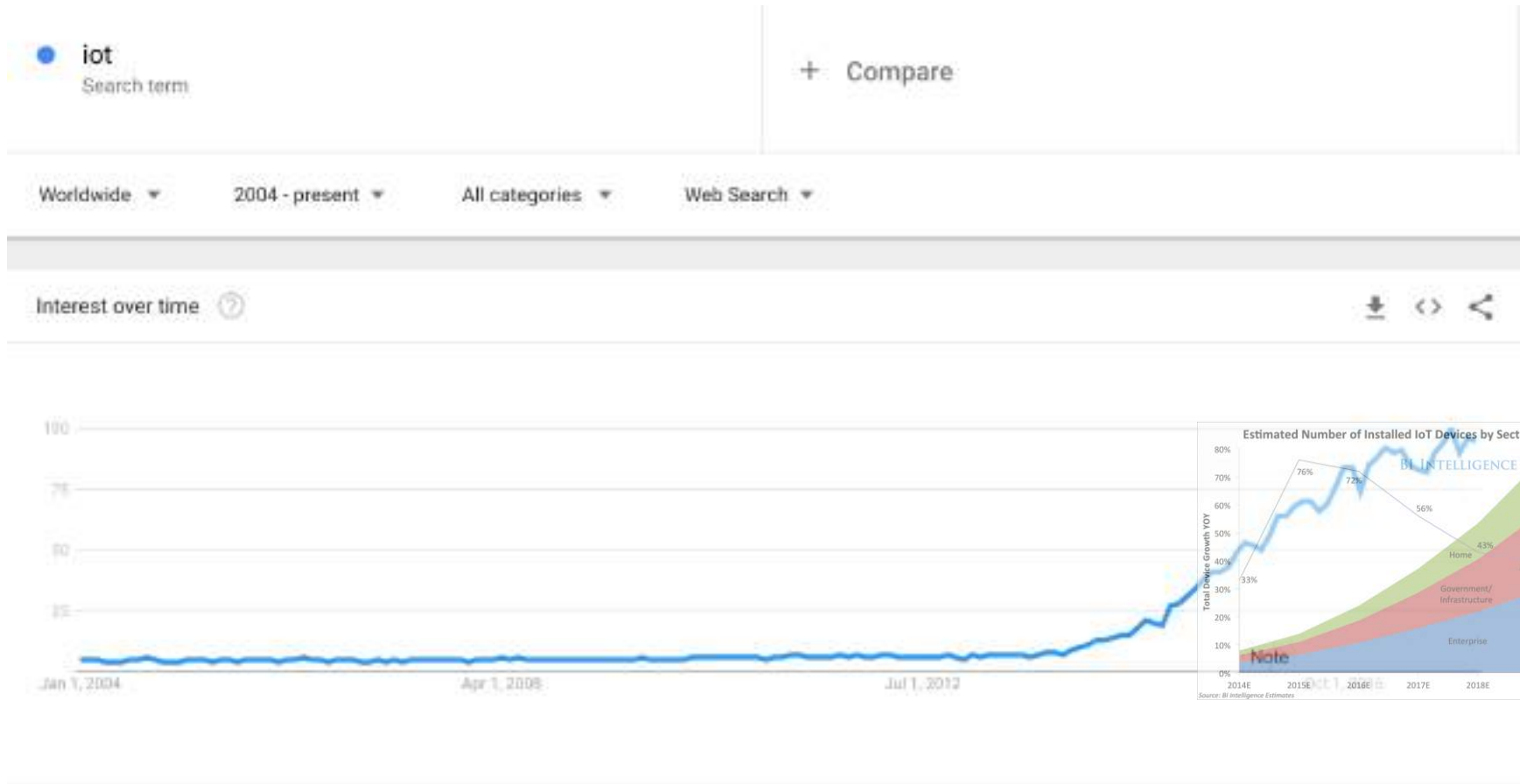


Cloud

Virtualization



Internet of Things

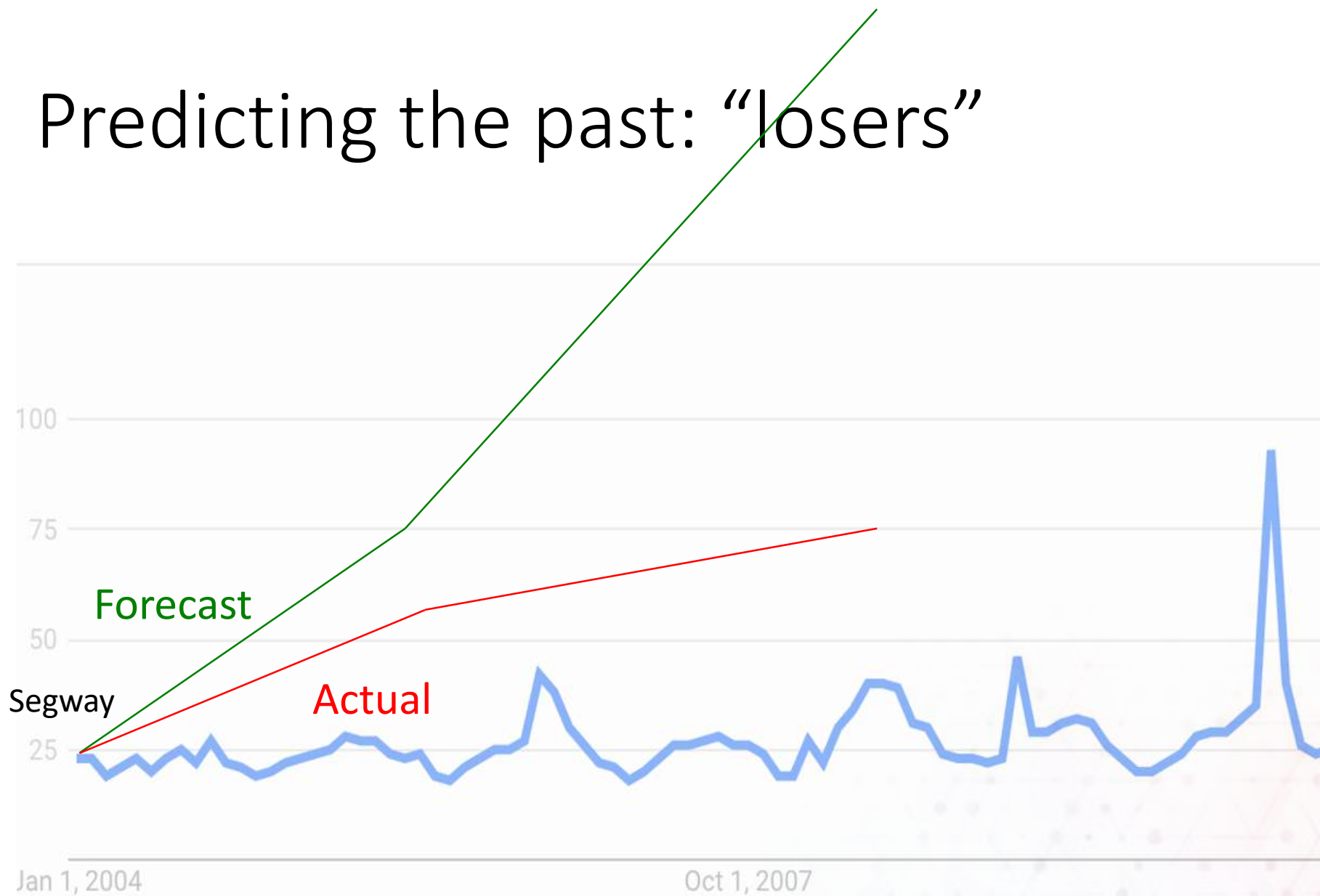


Predicting the past: “losers”

Ebooks

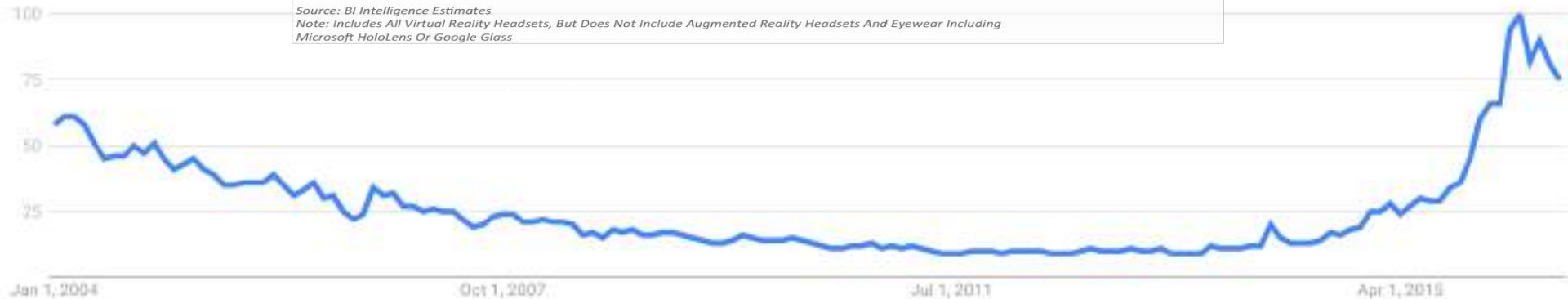
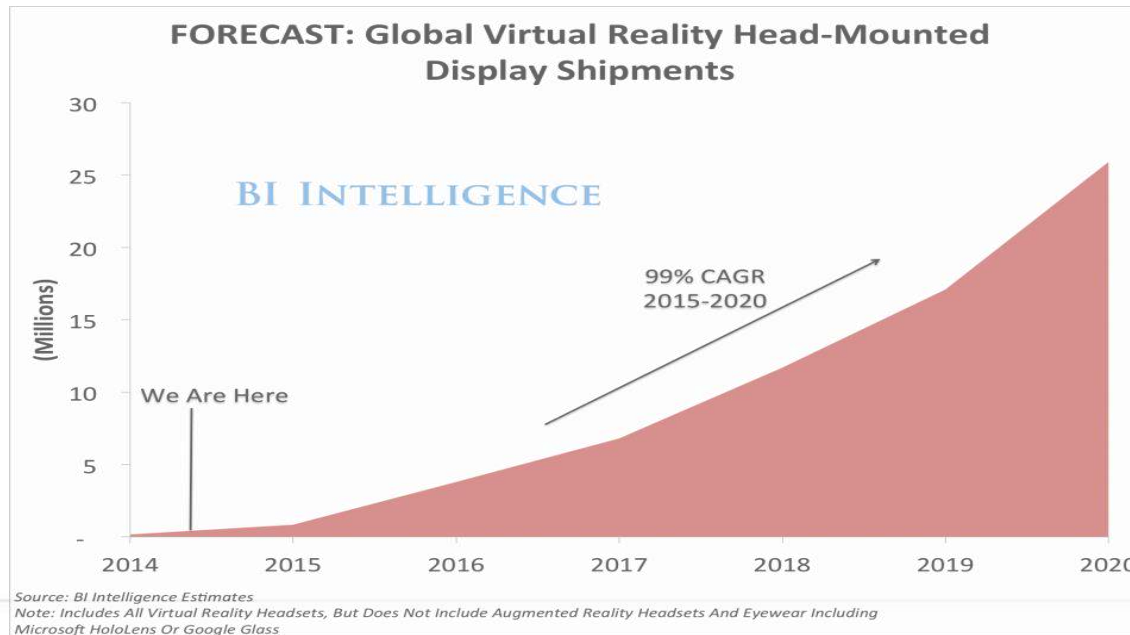


Predicting the past: “losers”

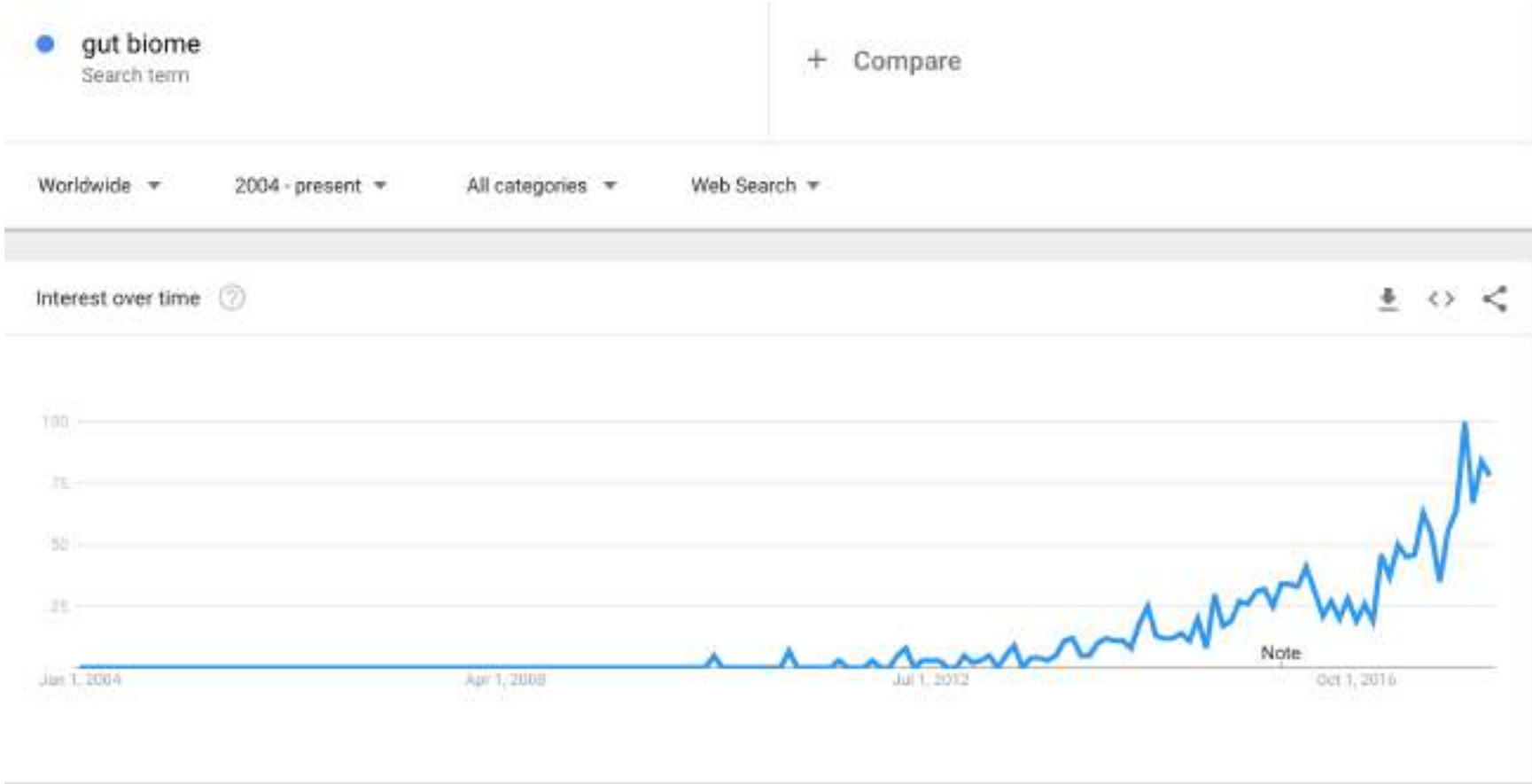


Looking ahead to the future

Predicting the future?



Gut biome



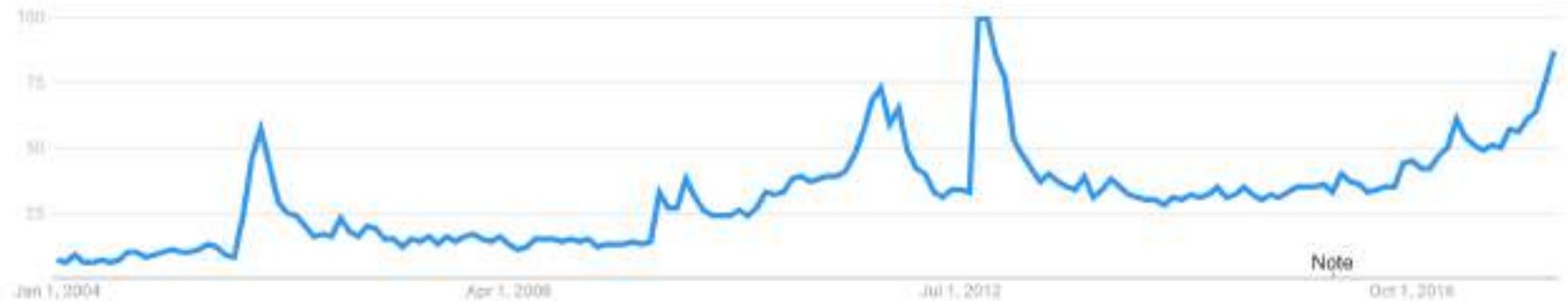
5G

● 5G
Search term

+ Compare

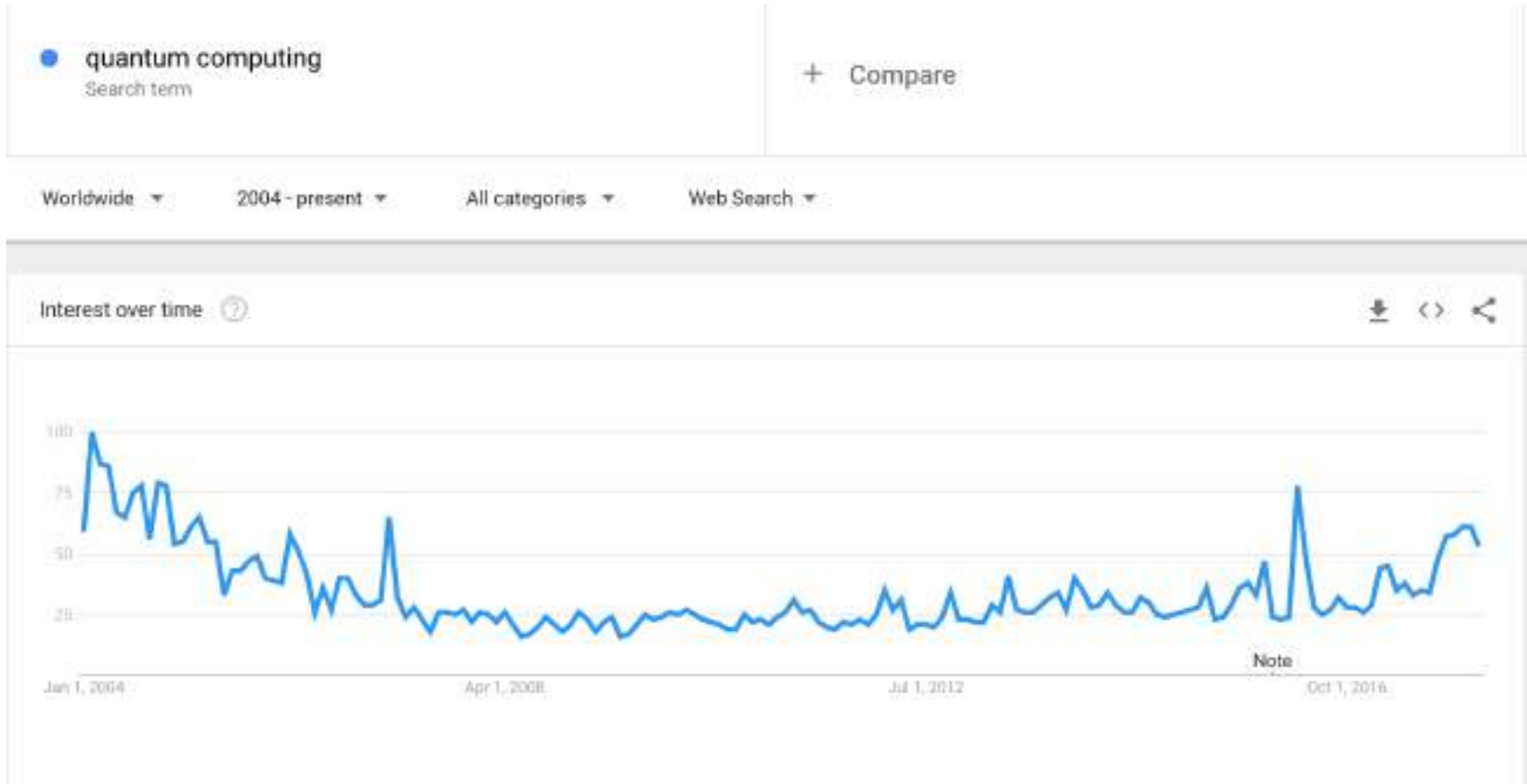
Worldwide ▾ 2004 - present ▾ All categories ▾ Web Search ▾

Interest over time ⓘ

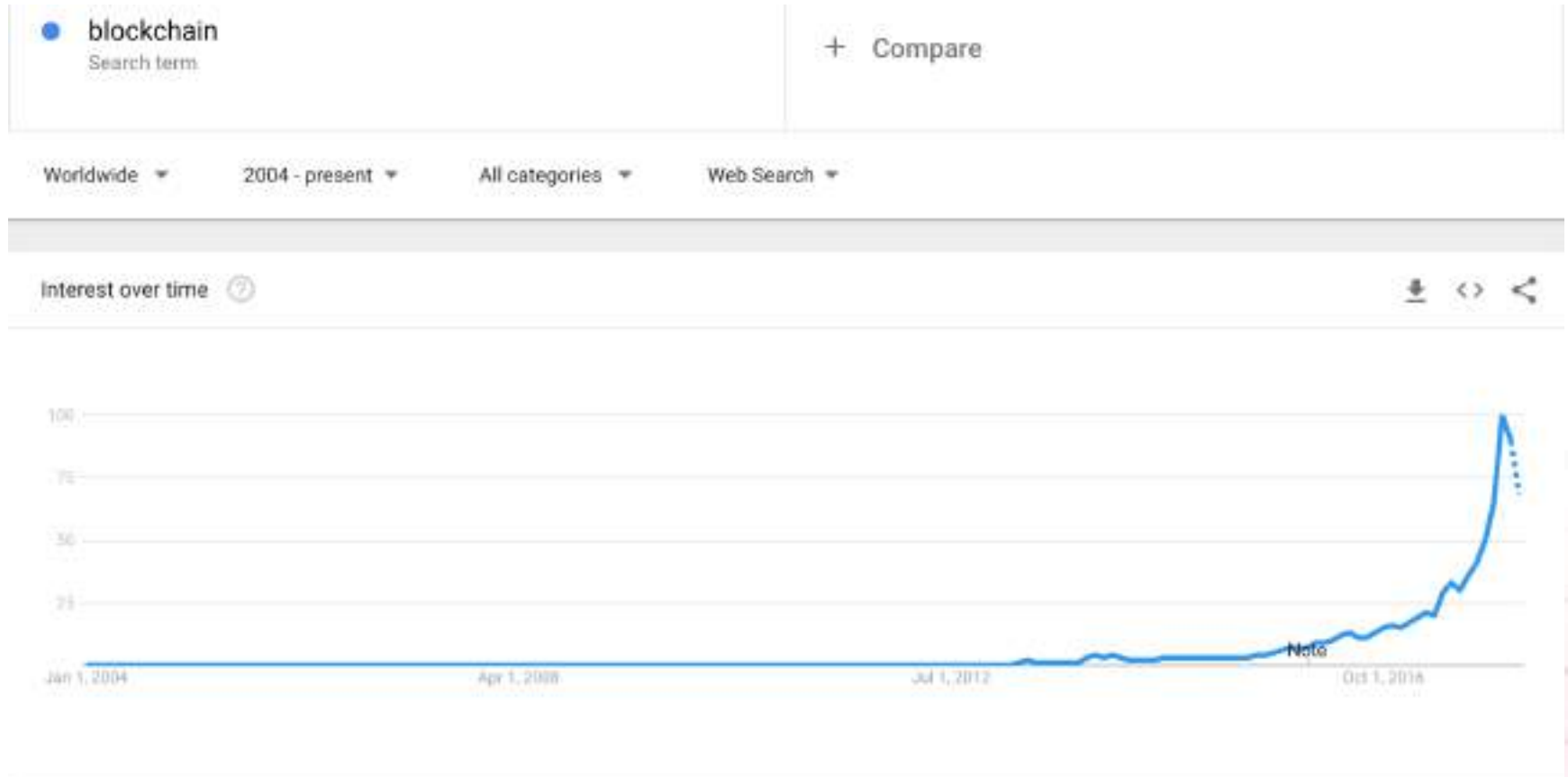


Note

Quantum computing



Block chain



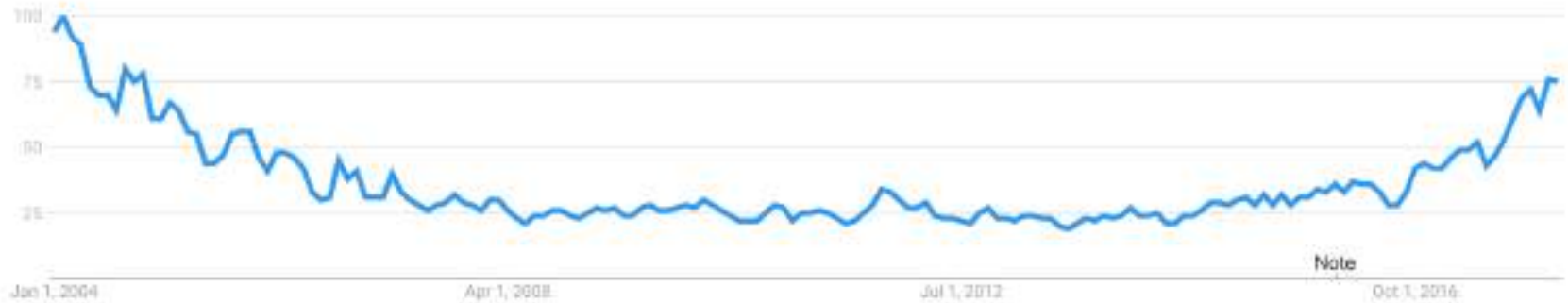
AI

● Artificial intelligence
Search term

+ Compare

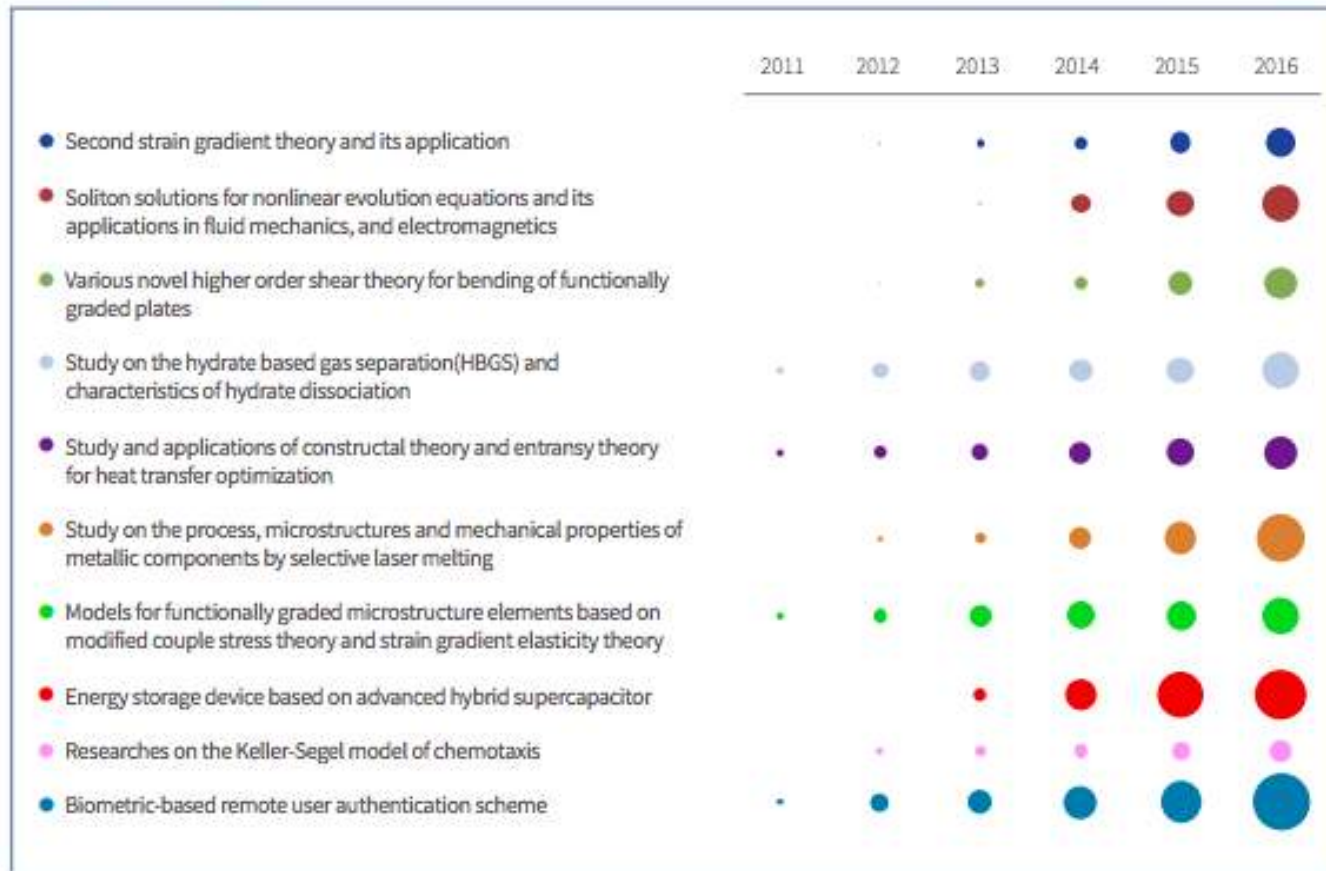
Worldwide ▾ 2004 - present ▾ All categories ▾ Web Search ▾

Interest over time ⓘ



Research Fronts

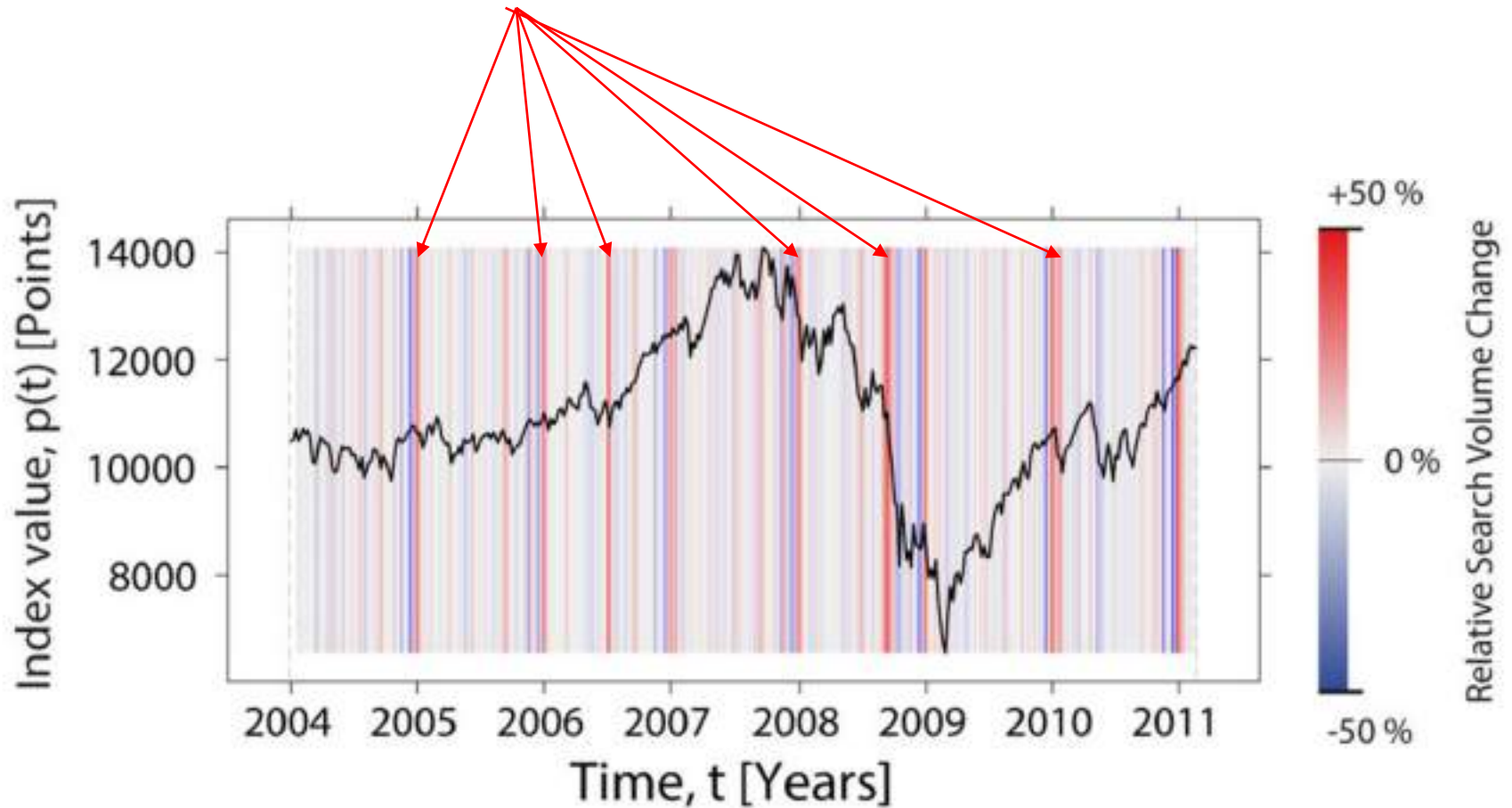
Figure 9: Citing papers of the Top 10 Research Fronts in mathematics, computer science and engineering



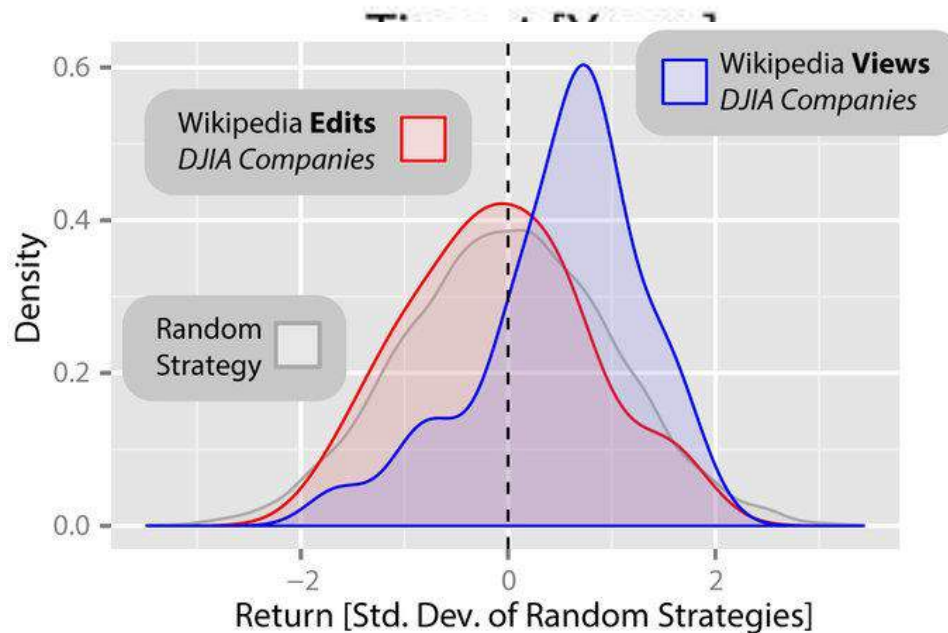
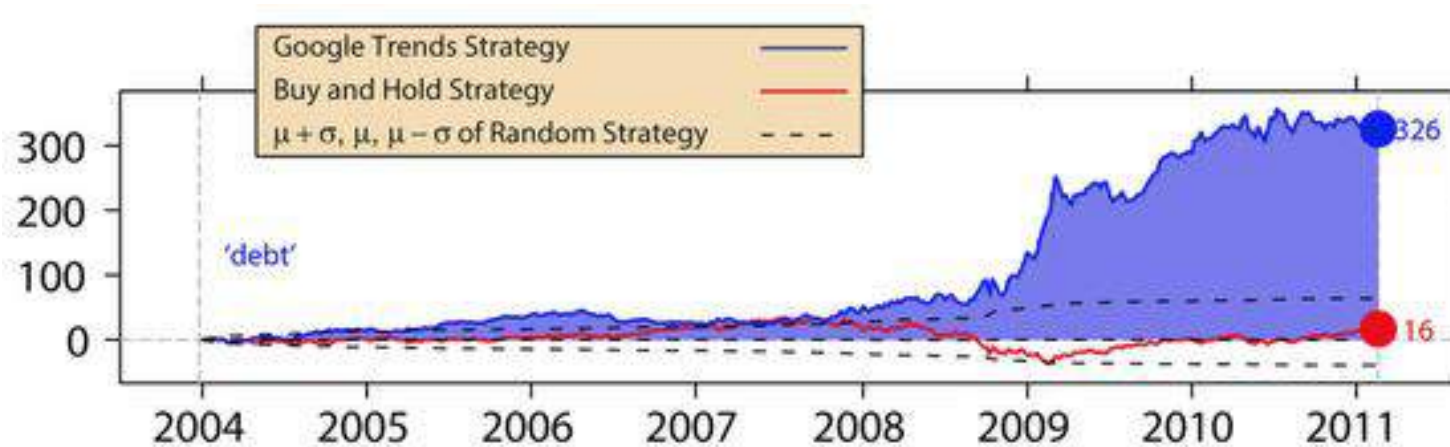
Investing



Google search peaks for “debt” precede market downturns



Portfolio strategy



<http://www.nature.com/articles/srep01801>

<https://www.quantopian.com/posts/google-search-terms-predict-market-movements>

Economic forecasting

Correlated with Drawn Series

0.9647 happy belated birthday

0.9634 happy belated

0.9622 funny happy birthday

0.9596 my.

0.9547 captions

0.9537 08 bmw

0.9532 happy birthday

0.9512 2008 f350

0.9506 2008 f250

0.9500 cummins 6.7

Show more

Export data as CSV

Share:    

User uploaded activity for Drawn Series and United States Web Search activity for happy belated birthday ($r=0.9647$)

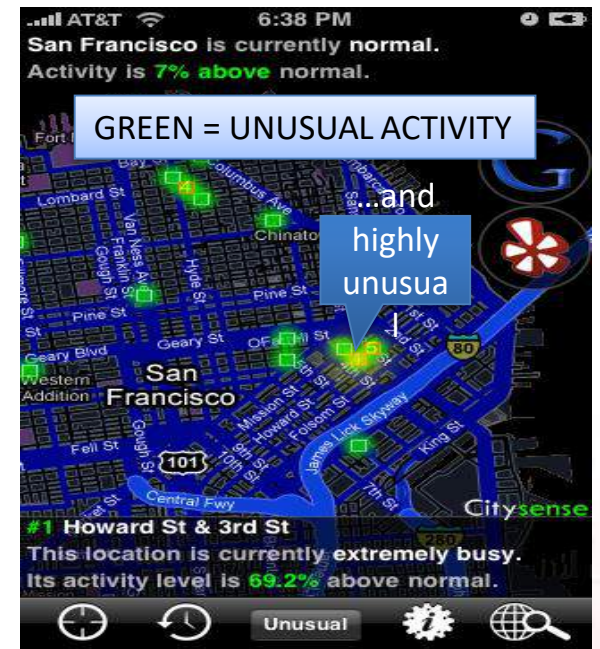
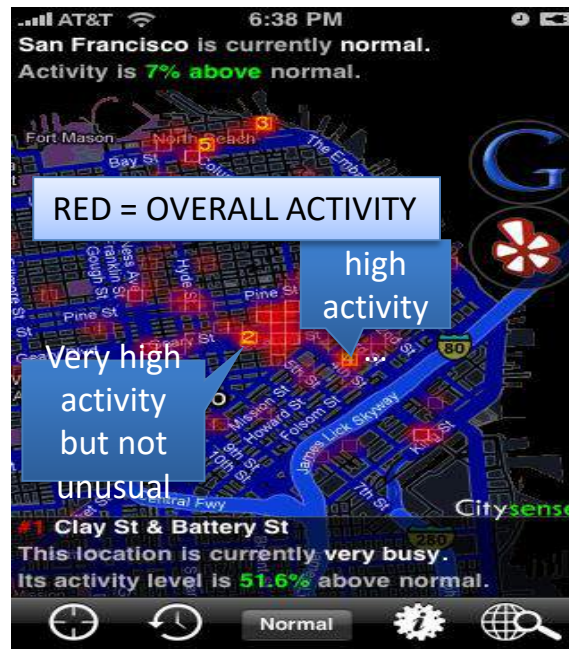
 Line chart  Scatter plot

— Drawn Series — happy belated birthday

Hint: Drag to Zoom, and then correlate over that time only.



Predicting moves in financial markets from Unusual City Activity with Spatiotemporal Mobile Data Scanning



Source: Thasos Group

Marketing

A case study in publishing



When to heavily promote book?

Promote in January!



What else does our audience care about?

Google correlate

Cover diet and nutrition!



Conclusion

- Our ability to predict certain future trends & events from extremely High N samples is rapidly improving



- Some of these insights, particularly for financial markets and technology forecasting are actionable today
- Use of these powerful new tools will be essential to remain competitive, especially for finance/investing

Where all this is going *Psychohistory*

