

PLANET DATA

IN THE BLINK OF AN EYE,
BIG DATA HAS GONE FROM
THE NEXT BIG THING TO
THE WAY OF THE WORLD

THERE'S A REASON YOU SOMETIMES FEEL AS IF YOU'RE DROWNING IN DATA. YOU ARE. WE ALL ARE.

Today we have access to more information from more sources than ever before. And it's being collected and mined, analyzed and applied in ways we couldn't even begin to fathom until recently – effectively changing the way we look at the world and ourselves. Some call it a digital Big Bang. Others worry that it could become a virtual Big Brother. Either way, we've crunched some numbers to give you a glimpse of the big picture.

Definition NASA researchers coined the term Big Data in 1997 to describe the massive amounts of information generated by supercomputers. It has since evolved to include all the data streaming from such sources as cell phones, tablets, satellites, Google, Amazon, Facebook and Twitter, as well as the waves of patterns flowing within these data streams.

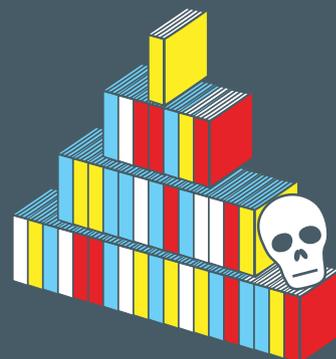
HOW BIG IS BIG?

Let's put this into perspective. A bit is a single unit of digital information – either 1 or 0 – and a byte is typically a sequence of eight bits. It takes roughly one byte to form a character and 10 bytes to spell out one word. Together, all those zeros and ones speak incredible volumes.

MEGABYTE

1,000,000 bytes

1 megabyte: a small novel
5 megabytes: the complete works of Shakespeare



GIGABYTE

1,000,000,000 bytes

10 gigabytes: Gmail storage limit
20 gigabytes: collected works of Beethoven on CD

TERABYTE

1,000,000,000,000 bytes

10 terabytes: the printed collection of the US Library of Congress in 2000
422 terabytes: the US Library of Congress Web archive as of May 2013



EXABYTE

1,000,000,000,000,000,000 bytes

2 exabytes: total volume of information generated worldwide annually in 2000
15 exabytes: the amount of data we now collectively create in two days



FRIENDLY FEEDING FRENZY

We generate traceable data every time we search a term or post a photo, make a mobile call or an online purchase, “friend” someone or “like” something. And while we’re connecting, others are collecting.

BIG DATA BY THE NUMBERS

100 HOURS

the amount of video YouTube receives every minute

400 MILLION

tweets handled by Twitter each day

1.1 BILLION

Facebook users

3 BILLION

Google page views each day

4 BILLION

YouTube video views each day

6 BILLION

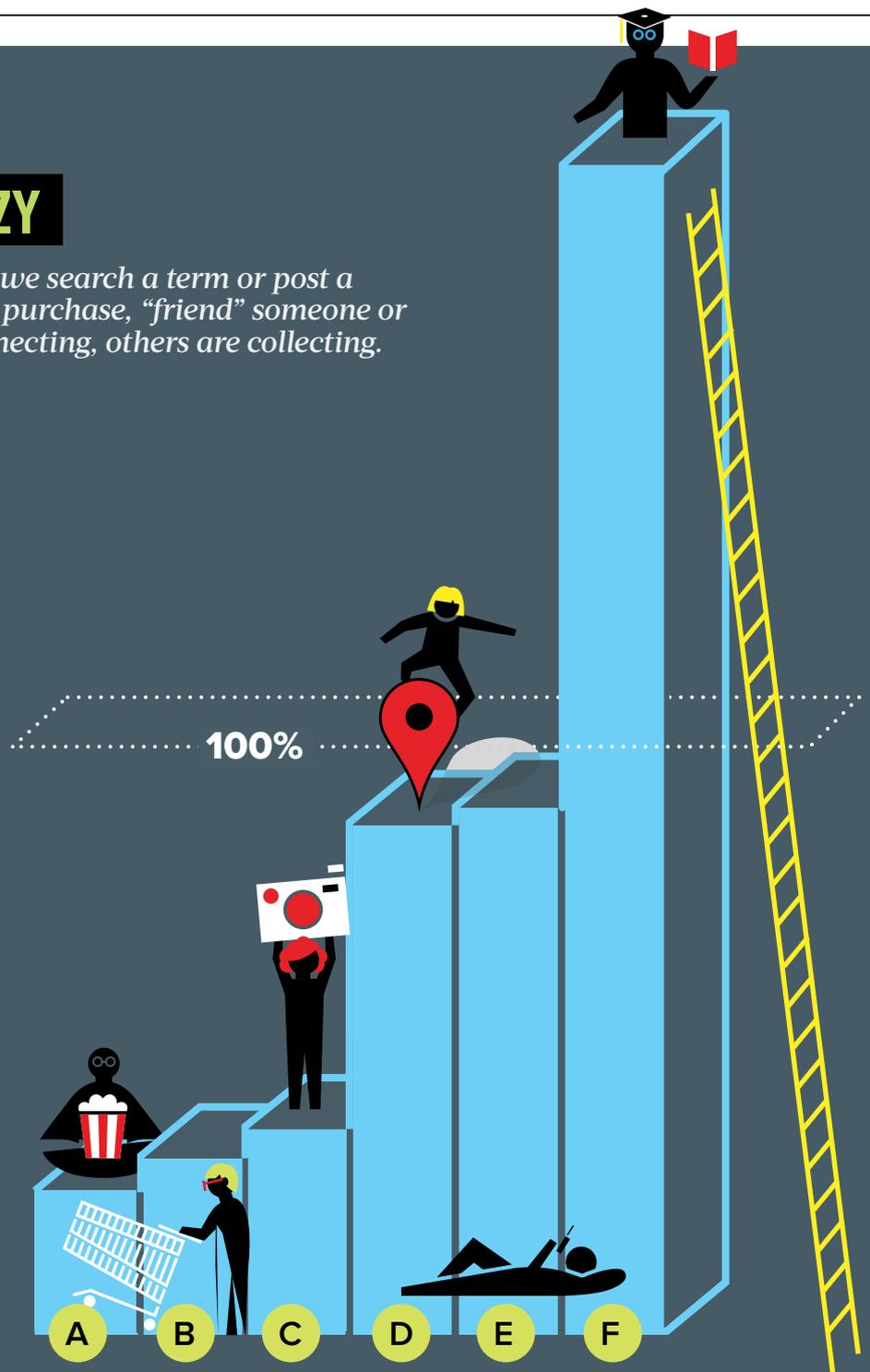
cell phones in use worldwide

154 BILLION

emails sent each day

240 BILLION

photos uploaded on to Facebook

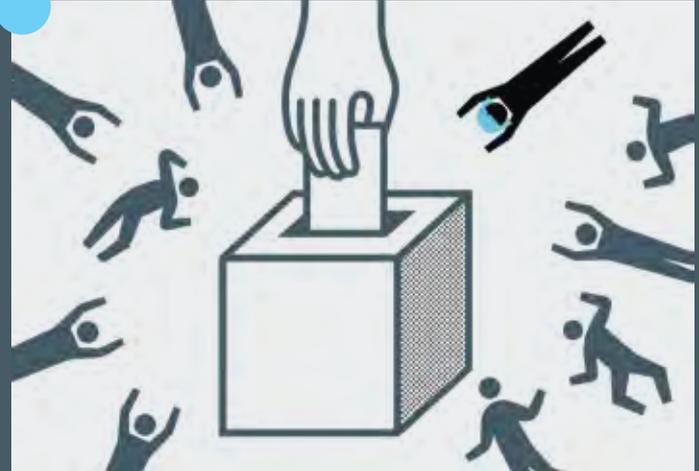


- A) 24%** of Facebook users post something about the movie they’re watching while in a theater
- B) 30%** of Amazon’s online sales are generated by its recommendation engine (“you may also like”)
- C) 35%** of the world’s photographs end up on Facebook
- D) 87%** of US adults reveal their location by their mobile phone
- E) 90%** of Gen Yers often check their smartphones for emails, texts and social media posts even before they get out of bed
- F) 200%** increase in graduation rates seen at the Howard School of Academics and Technology after IBM predictive analytics helped teachers identify at-risk students requiring extra attention

BIG DATA IN ACTION



TIME TRAVEL Google Now is a personal-assistant mobile app that uses data from your emails, calendar and searches to determine where you live and work and when you commute. The app produces personalized digital index cards with traffic and transit information, issues virtual boarding passes when they're required, and, based on your preferences, reports weather in the destinations you might be heading to next.



VOTER MOTIVATOR In an experiment involving more than 60 million Americans during the 2010 election, researchers motivated hundreds of thousands of people – who otherwise would have stayed home – to go out and vote. The researchers did this by letting these voters know via their Facebook newsfeeds that their friends had already cast their ballots.

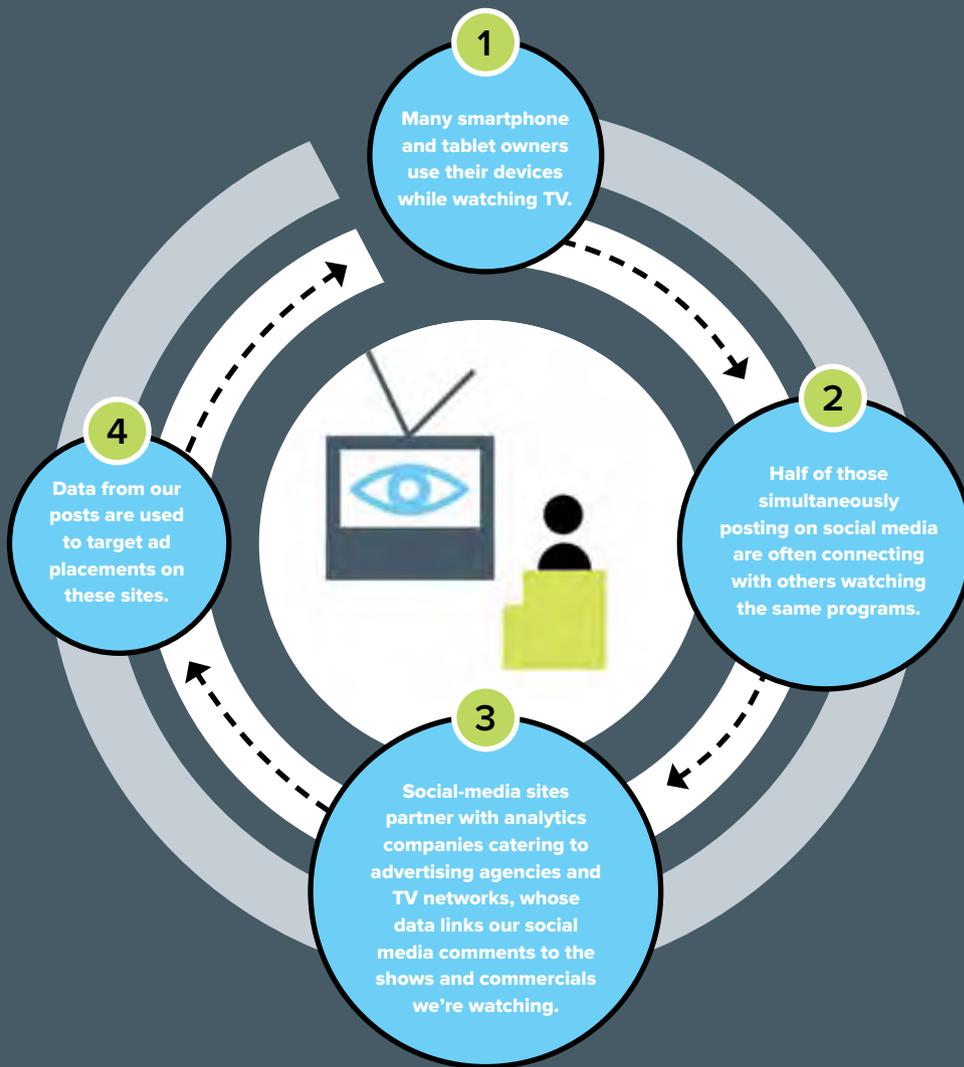


MINDING THE STORE Mobile phones generate precise data that can be mined instantly, including someone's location and commercial activities. A University of Rochester researcher recently demonstrated that he could predict a person's whereabouts 80 weeks into the future with more than 80% accuracy. Meanwhile, companies are developing customer-targeting technologies to entice potential consumers with special offers when they get within range of a shop.



TO CATCH A THIEF Since 2012, the Charleston Police Department has been using predictive analytics to identify criminal hot spots. Burglaries tend to cluster in terms of time and location, for instance, and burglars follow predictable patterns of behavior. Seemingly insignificant disparate data – including time of day, day of the week and even weather conditions – are now analyzed to help the department prevent crimes.

WHO'S WATCHING WHO?



HOUSE OF CLICKS NETFLIX BOASTS MORE THAN 37 MILLION SUBSCRIBERS WORLDWIDE, AND ITS STREAMED MOVIES ACCOUNT FOR MORE THAN A THIRD OF ALL DOWNLOADS DURING PEAK PERIODS IN NORTH AMERICA EACH DAY. NETFLIX NOT ONLY KNOWS WHEN WE WATCH A MOVIE FROM START TO FINISH AND HOW MANY TIMES, BUT ALSO WHEN WE PAUSE THE ACTION AND FOR HOW LONG. BY GAUGING SUBSCRIBER PREFERENCES, NETFLIX ACCURATELY FORECAST THE SUCCESS OF ITS OWN \$100-MILLION *HOUSE OF CARDS* SERIES.

A HEALTHY DOSE OF DATA

Big Data's far-reaching implications will soon touch every sector of society, and its potential impact on healthcare alone will be huge. Thanks to self-tracking devices, the "quantified-self movement" has already launched a personalized-healthcare revolution.

TODAY

Self-trackers are gathering reams of health-related data.

Handheld scanners monitor heart rate, blood flow, etc., sending info to doctors.

The 2010 H1N1 epidemic was predicted six weeks in advance by applying Big Data analytics to students' social network patterns.

TOMORROW

Improved personal health and fewer trips to the hospital.

Doctors increasingly rely on Big Data for early detection, diagnosis and treatment of diseases.

Aggregated data will help epidemiologists spot early-warning signs of disease outbreaks and mobilize resources sooner and faster.



\$9 BILLION

Big Data's potential value to US public health in terms of infectious-disease surveillance.

\$300 BILLION

Big Data's projected value to US healthcare overall in terms of reduced expenditures.