



THE WALL STREET JOURNAL.
WSJ.com

February 18, 2011, 6:43 PM ET

The World's Information Explosion

By Carl Bialik

My [print column](#) this week examines a recent paper in Science and other research efforts that attempt to quantify the world's information. The studies generally compile dozens of pieces of data, such as hard-drive production and sales, and put all information into a single unit, such as bytes or words. "We can say things like 'a 6 square-cm newspaper image is worth a 1000 words,'" [the Science study's](#) authors, Martin Hilbert and Priscila López, wrote.

Researchers in the growing field of measuring the world's growing body of information acknowledge that their numbers aren't exact, because of the challenges of pinpointing, for instance, how much hard-drive space is being used, and how much of the information on them is duplicated. "With any work of this kind, you have to make a bunch of heroic assumptions, because the kind of data you would like will never be available," said Roger Bohn, director of the University of California, San Diego's Global Information Industry Center, which is undertaking [its own effort](#) to count the world's bytes.

IDC, the market-research firm, produces [an annual estimate](#), sponsored by the storage company EMC. This sponsorship doesn't influence the results, which, similar to other studies, are massive numbers. "It is an independent analysis of content creation by a large number of devices and activities," said David Reinsel, an IDC analyst.

Martin Hilbert, the lead author of the Science study, said that more important than the total number of bytes is that the paper lays a groundwork for companies or countries to measure their own informational capacity and consumption.

Some researchers question whether every byte is created equal. Not every pixel in the frame of a movie is essential, but each one uses storage space. Michael Lesk, whose [estimate of the world's information](#) in 1997 helped set off some of the later efforts, is unsure what to make of video's enormous share. He notes that before video, people took in the same amount of visual information simply by observing the world around them. "The same number of pixels go to your eyes as long as you're awake" and have your eyes open, said Lesk, chair of Rutgers University's department of library and information science.

Deciding which kinds of information to include is tricky. "If I get 10 academics in a room and ask them how much information there is, I get 20 different views" on how to count it, Bohn said. He knows because he really did solicit the views of colleagues, many of whom objected to counting videogames. Bohn's team did, anyway. "Some said, you don't get any more information watching football on an HDTV than a regular TV. I said, 'Look, you can see players' drops of sweat. That's more information.'" "

To address the different ways to count information, the UCSD study breaks it down by bytes, words — counting the number of words per minute of television broadcasts or videogame play — and time spent. The older forms of media, such as books and newspapers, contribute a trivial amount of the total information consumed by Americans in 2008 in terms of bytes, but a respectable minority of the words.

Hilbert said it would require more research to determine whether words are more valuable than the equivalent number of bytes of video. “In a business negotiation, you can send as many texts as you want,” he said. “People want to see you.”

W. Russell Neuman, professor of media technology at the University of Michigan, is leading [a study](#) that quantifies the U.S.'s information in terms of minutes. He and colleagues, in a qualitative focus-group study conducted in Las Vegas, found that “the overall tone” toward the proliferation of information was “largely positive and enthusiastic.” Participants found that all the information they were dealing with was liberating.

Copyright 2015 Dow Jones & Company, Inc. All Rights Reserved

This copy is for your personal, non-commercial use only. Distribution and use of this material are governed by our [Subscriber Agreement](#) and by copyright law. For non-personal use or to order multiple copies, please contact Dow Jones Reprints at 1-800-843-0008 or visit www.djreprints.com