



the science of Inequality

What the numbers tell us

By Gilbert Chin and Elizabeth Culotta

In 2011, the wrath of the 99% kindled Occupy movements around the world. The protests petered out, but in their wake an international conversation about inequality has arisen, with tens of thousands of speeches, articles, and blogs engaging everyone from President Barack Obama on down. Ideology and emotion drive much of the debate. But increasingly, the discussion is sustained by a tide of new data on the gulf between rich and poor.

This special issue uses these fresh waves of data to explore the origins, impact, and future of inequality around the world. Archaeological and ethnographic data are revealing how inequality got its start in our ancestors (see pp. 822 and 824). New surveys of emerging economies offer more reliable estimates of people's incomes and how they change as countries develop (see p. 832). And in the past decade in developed capitalist nations, intensive effort and interdisciplinary collaborations have produced large data sets, including the compilation of a century of income data and two centuries of wealth data into the World Top Incomes Database (WTID) (see p. 826 and Piketty and Saez, p. 838).

It is only a slight exaggeration to liken the potential usefulness of this and other big data sets to the enormous benefits of the Human Genome Project. Researchers now have larger sample sizes and more parameters to work with, and they are also better able to detect patterns in the flood of data. Collecting data, organizing it,

INSIDE

NEWS

The ancient roots of the 1% p. 822

Our egalitarian Eden p. 824

Tax man's gloomy message: the rich will get richer p. 826

Physicists say it's simple p. 828

Can disparities be deadly? p. 829

While emerging economies boom, equality goes bust p. 832

Tracking who climbs up—and who falls down—the ladder p. 836

RESEARCH REVIEWS

Inequality in the long run p. 838

Skills, education, and the rise of earnings inequality among the "other 99 percent" p. 843

Income inequality in the developing world p. 851

The intergenerational transmission of inequality: Maternal disadvantage and health at birth p. 856

On the psychology of poverty p. 862

SEE ALSO

► EDITORIAL p. 783

► PERSPECTIVE p. 809

► BOOK REVIEWS pp. 811 & 812

► ONLINE PODCAST, VIDEO, AND BLOGS

► [HTTP://SCIENCEMAG.ORG/SPECIAL/INEQUALITY](http://SCIENCEMAG.ORG/SPECIAL/INEQUALITY)

developing methods of analysis, extracting causal inferences, formulating hypotheses—all of this is the stuff of science and is more possible with economic data than ever before. Even physicists have jumped into the game, arguing that physical laws may help explain why inequality seems so intractable (see p. 828).

In the United States, the new information suggests a wide rift between top and bottom. Tax data from the WTID suggest that today the top 1% control nearly 20% of U.S. income, up from about 8% in the 1970s. But inequality is increasing within the 99%, too, as a consequence of a grow-

ing premium on college and postgraduate education: The fates of the tech-savvy worker at Google and the blue-collar employee at General Motors have been decoupled (see Autor, p. 843). According to surveys by the Census Bureau, in 2012 the richest 20% of Americans enjoyed more than 50% of the nation's total income, up from 43% in 1967. The middle 20%—the actual middle class—received only about 14% of all income, and the poorest got a mere 3% (see graphic).

Flip to a world map, and America's inequality, despite reaching levels last seen in the Gilded Age, turns out to be far from

extreme. Many nations, especially emerging economies, have even larger chasms between the super-rich and the poor. One widely used metric, the Gini coefficient, estimates inequality as an index between 0—at which point everyone has exactly equal incomes—to 1, in which a single person takes all the income and the rest get nothing. The U.S. Gini, at 0.40 in 2010, seems relatively high compared with, for example, Japan at 0.32. But South Africa is a sky-high 0.7.

Many assume that governments in emerging economies have chosen to favor growth even at the cost of inequality on the

A world of difference

Countries vary widely in inequality

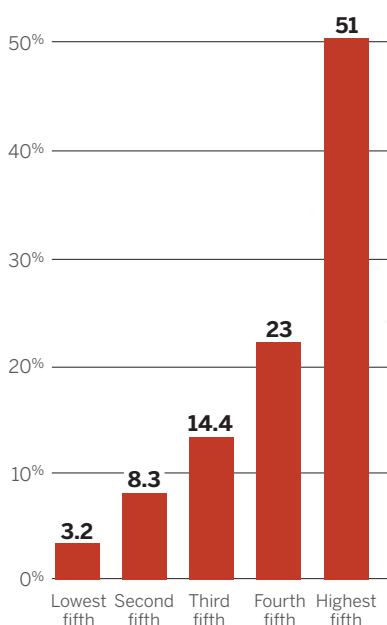
Compiled by Emily Underwood

The world Gini data, collected between 2008 and 2012, cover 117 countries and were prepared for *Science* by researchers Branko Milanovic and Janet Gornick of the Luxembourg Income Study Center at the City University of New York's Graduate Center.

U.S. data are based on 2012 U.S. Census Bureau surveys of 122,459 households.

A sharp divide

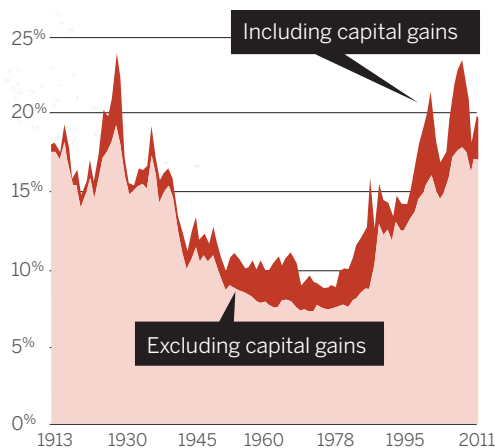
Shares of U.S. income by quintile, 2012



Source: U.S. Census Bureau

Winners take all

Top 1% income share in the United States



Source: Piketty and Saez, 2013

grounds that “a rising tide lifts all boats.” But evidence that this trade-off is necessary is sparse, and recent data show that policies to reduce inequality need not stymie growth (see Ravallion, p. 851).

What of those at the bottom? Research has established a base of knowledge about the harmful effects of disadvantageous circumstances on education and health. These influences can begin early in life, even prenatally (see Aizer and Currie, p. 856). But researchers are still exploring whether the stress of being low-ranked itself adds to the poor’s burden, causing illness and even early death (see p. 829). In

addition, psychological mechanisms may spur a negative feedback loop in which poor individuals behave in ways that help keep them poor (see Haushofer and Fehr, p. 862).

Harsh as life can be for those at the bottom, the opportunity to move up the ladder can compensate. Newly available data from taxes and other records promise to yield insights into intergenerational mobility, in which children advance from their parents’ socioeconomic status. But so far, researchers have a relatively limited view of how and why people move into different social, as well as economic, classes (see p. 836 and http://scim.ag/sci_inequality; also see Corak, p. 812).

ag/sci_inequality; also see Corak, p. 812).

Few would deny that excessive inequality can be unhealthy for societies and economies, but the new data don’t pinpoint a desirable level. They do show that the forces that foster inequality—from the patchy distribution of resources among ancient hunter-gatherers to the sheer earning power of capital today—are many and potent. It is up to society to decide whether, and how, to restrain them (see p. 783).

Gilbert Chin is a senior editor for Science and Elizabeth Culotta is a deputy news editor for Science.

