

Offbeat math: Sizing up a world of 7 billion people

[CBC News](#)

Posted: Oct 28, 2011 7:47 AM ET

Last Updated: Oct 28, 2011 1:53 PM ET

The UN's forecasters have estimated that Oct. 31 is the day world's population passes the 7 billion mark. Seven-thousand-million is a staggering number, and CBC News had some fun compiling this list to help put the idea of that many people into perspective.

(Please note, when dealing with a crowd of 7 billion people of varying age, sex, height, appetite, fitness level, and shoe size, the endeavour is far from an exact science. These calculations are based on best estimates and averages.)

Take a deep breath

We all need air, but how much of it do 7 billion people consume?

People breathe at different rates, depending on their age, sex, fitness level and what they're doing at the time. In broad strokes, though, the average person **breathes about 8 litres of air every minute** while at rest, or about **11,520 litres a day**.

So the world's population inhales at least **80,640,000,000 (80.6 trillion) litres of air** a day, and converts more than **3,850,000,000,000 (3.85 trillion) litres of oxygen** to carbon dioxide.

A University of California study determined that the average person breathes about 52 litres a minute when running, so if the entire world went jogging together for an hour we'd breathe about **21,840,000,000,000 (21.8 trillion) litres** of air.

One hectare of average forest creates about enough oxygen to support 19 people, according to the U.S. Forest Service. Using that as the benchmark, the world's population needs **at least 368,421,052 hectares of forested land** to provide us with the air we need – an area roughly **650 times the size of PEI** and **5 times the size of Manitoba**.

THE AVERAGE PERSON BREATHEs ABOUT:**Food, water and gas**

Part of humanity over-eats, others don't get nearly enough food. But the average human ideally needs around 2,200 calories a day, or **15,400,000,000,000 (15.4 trillion) calories** for the human population.

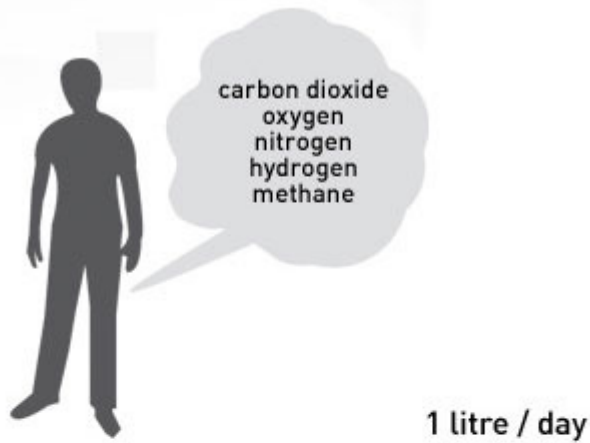
If you wanted to "supersize" the world, the necessary calorie count works out to about **28,518,518,519 McDonald's Big Macs** a day.

No matter what people may claim, everyone is a little gassy (particularly after eating things like fast food). According to the U.S. Department of Health and Human Services, the average person passes gas anywhere from 14 to 23 times a day, producing a daily average of about a litre of flatulence (made up of carbon dioxide, oxygen, nitrogen, hydrogen, and methane). Humanity's **daily cloud of 7 billion litres of gas** is enough to fill Toronto's Rogers Centre (formerly known as the SkyDome) about four and a half times. Try blaming that on the dog.

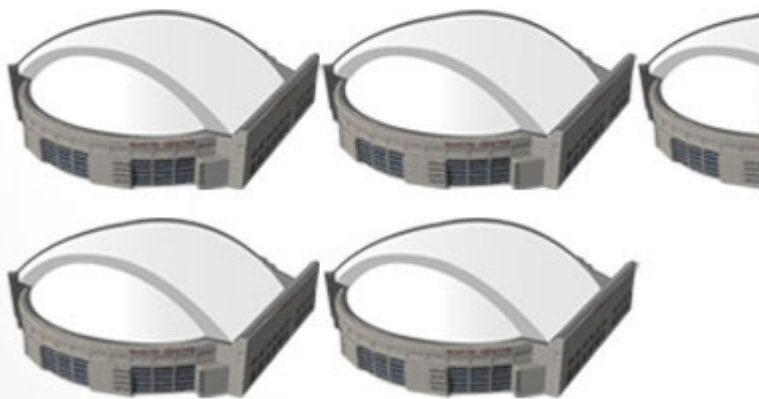
The average person should drink about 2.5 litres of water a day, according to studies by the U.S. Institute of Medicine. If everyone got the drinking water they needed, the world's population would consume about **17.5 billion litres a day**, or the equivalent of about **7,000 Olympic-sized swimming pools**. It would take the proposed Keystone XL pipeline expansion in Western Canada, which is designed to carry around 500,000 barrels of oil a day, about **220 days** to transport that much water.

Given that the average person passes about 2 litres of urine a day, the world would subsequently relieve itself of about **5,110,000,000,000 (5.1 trillion) litres a year**. That's equivalent to the amount of water that flows over Niagara Falls in about **two and a half hours** when the falls are at their peak.

THE AVERAGE PERSON PRODUCES ABOUT:



HUMANITY'S DAILY FLATULENCE IS ENOUGH TO FILL:



Toronto's Rogers Centre about four and a half times.

Being social

It takes about one second to say "hello" to someone. Assuming you wanted to greet the world's entire population of 7 billion one at a time, it would take you roughly **222 years** of working the crowd non-stop.

A gigabyte works out to the equivalent of about 100,000 short emails. An entry-level home internet plan from Bell includes 2 gigabytes of internet use a month plus a \$2.50-per-gigabyte charge for any extra bandwidth used. If you wanted to e-mail a "hello" to everyone on Earth individually from that basic internet account, it would cost you \$26.95 for the monthly internet plan, plus about **\$174,995** for the extra bandwidth you'd need. (Of course, you could save some cash by opting for one of Bell's bigger-bandwidth packages.)

Follow the money:

According to the Forbes list of the world's billionaires for 2011, the world's richest man was Carlos Slim Helu from Mexico, with a net worth estimated at **\$74 billion US**. He could afford to treat every person on Earth to lunch at Tim Hortons – a sandwich and extra-large coffee, plus a box of 20 Timbits to take home for later.

If the U.S. military budget for 2011 was shared out to the world's population, each person would get roughly \$100. Based on average annual income, that's about **two months' salary** for people in places

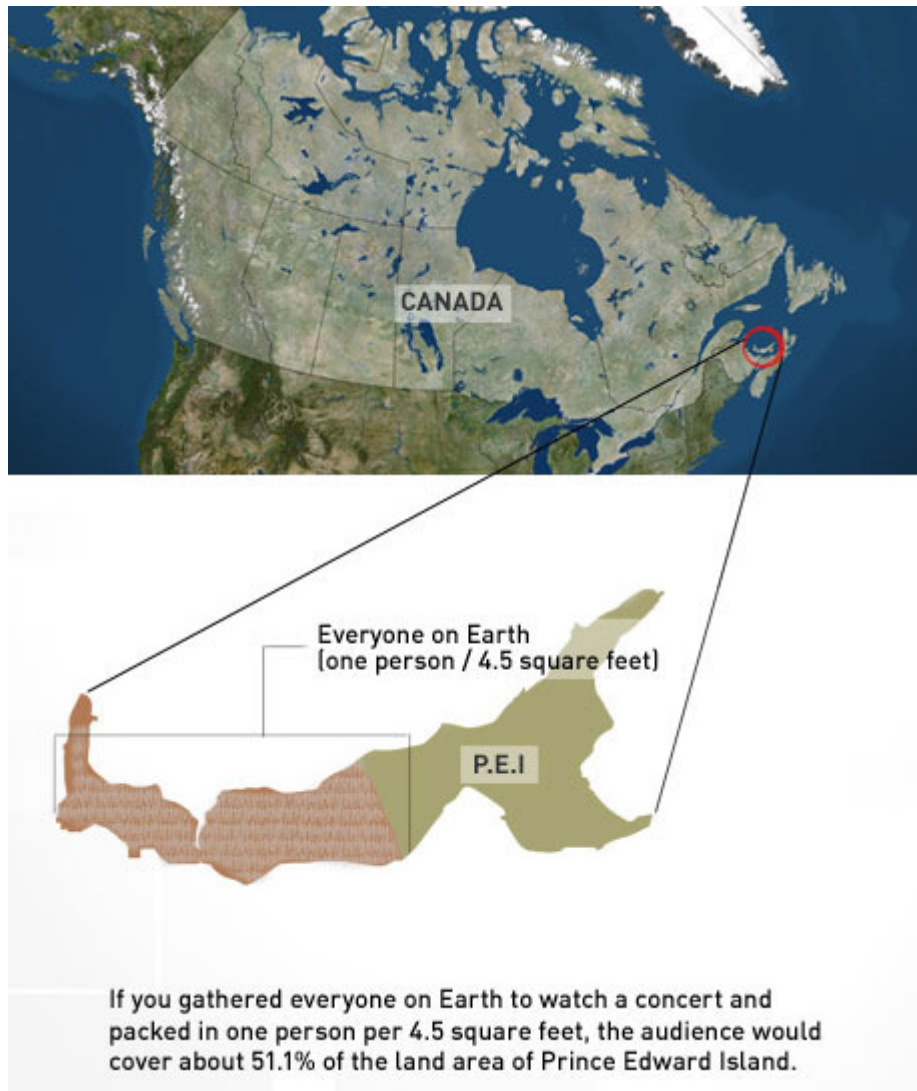
such as Malawi and Somalia, according to the International Monetary Fund, or a bit less than the average North American spends in a day.

A really, really big show:

If you gathered everyone on Earth to watch a concert and packed 'em in at one person per 4.5 square feet—a dense crowd, based on the basic crowd-calculation rule worked out by University of California professor Herbert Jacobs—the general-admission audience would cover about **2,926.5 square kilometres**. That's about **51.7%** of the land area of PEI. (Of note, one of the biggest PEI concerts of the year was Elton John's two-night appearance at Credit Union Place in Summerside—5,400 tickets were sold per show.)

If you flew everyone in for the concert, it would take **28 million flights** using Boeing's new 787-8 Dreamliner.

If they all flew to the mainland and came over the Confederation Bridge in Toyota Corollas, the best selling car in the world, at 4 people per car the line of bumper-to-bumper traffic would stretch roughly **9.6 million kilometers**, or go around the earth at the equator more than **240 times**. (And it would be very difficult to find your car after the show.)



Human chain

If everyone on Earth joined hands to form a human chain, it would stretch about **7 million kilometres**. The chain would circle the Earth at the equator about **175 times**, stretch to the moon and back about **nine times**, and reach about **one-fifth of the way to Mars** when it's at its closest point to Earth.

And that chain is growing. At a global birth rate of 19.15 per 1,000 population, about **4.4 babies** are born every second.

