The joy of facts and figures

Hans Rosling tells Fiona Fleck why it's easy to make health statistics interesting but difficult to persuade people to accept a fact-based view of the world.

Q: Are people using health statistics in the best way?

A: Very few of them. The old concept of a world divided between developed and developing countries, is still perpetuated by the United Nations (UN) – although the UN´s own statistics show that such a division no longer exists. For example, in 2012 WHO published together with the United Nations Children's Fund and the World Bank the report *Levels and trends in child mortality*. I always carry it in my backpack. Here, the world is still divided into developed and developing regions. The developing ones include Singapore, the country with the lowest child mortality, Qatar, the world's richest country, and the Republic of Korea, the fastest developing country. What is the criterion for these classifications? A 1963 fertility rate of five or more live births per woman, which will forever label a country as developing. (It took me months to find that out!)

Q: What is needed to counter such misconceptions?

A: We need to divide the countries of the world into three or more groups: two groups is just not enough to reflect the widely divergent socioeconomic realities. The situation in the very poorest countries should not be portrayed as the general situation for "the developing world". Especially when it comes to health, Brazil and the Democratic Republic of the Congo (DRC) just do not fit in the same group any longer.

Q: Is this view of the world widely held?

A: Yes. The Gapminder Foundation decided to take a fact-based approach. This year we started to do surveys on the public's knowledge about the world, asking the people in Sweden and the United Kingdom questions like "what is the average global life expectancy, or literacy rate?" We found that people in Sweden and the United Kingdom had heard about the tragedy in Afghanistan, the high mortality from AIDS in Zambia and the civil war in the DRC and that they think deaths are very common in the developing world as a whole. Given three options, most respondents said

Courtesy of Hans Rosling

Hans Rosling

Hans Rosling is a world-known public speaker on global health and demographic trends using innovative, animated software. He has been a professor of international health at the Karolinska Institute in Stockholm, Sweden, since 1997 and is chairman of the Gapminder Foundation, which he set up in 2007 with his son and daughter-in-law. They developed the Trendalyzer software that converts time series data into interactive moving bubble-graphs. Rosling studied statistics and medicine at Uppsala University, Sweden from 1967 to 1974 and public health at St Johns Medical College in Bangalore, India in 1972. From 1979 to 1981 he served as district medical officer in northern Mozambique and in 1981, with his research team, identified a new paralytic disease and named it konzo. In 2010, his film *The Joy of Stats* won the Grierson Award for the best science documentary film.

average global life expectancy was 50 or 60 years, but the correct answer is 70 years. Only about 10–15% of respondents knew that [and, so the majority of these respondents have a seriously distorted world view]. Had we asked chimpanzees, twice as many of them would have picked the right answer just at random.

> **"**This is the biggest event in the history of mankind that was ever completely missed by the media.**"**

Q: Why did so few know this?

A: In the richest countries global health is still largely perceived as catastrophic and so is the growth of the world population. I try to erase those concepts by telling simple facts. When I was born in 1948, we were fewer than 1 billion children in the world (aged 0–14 years). Up to the turn of the 20th century, this number more than doubled to almost two billion. What does the UN project for the end of the 21st century: continuous growth to four billion children, slower growth to three billion or has the number of children already stopped increasing? Only 10%

of respondents knew that the number of children in the world has stopped increasing. This is the biggest event in the history of mankind that was ever completely missed by the media.

Q: The public needs access to reliable health statistics to be able to embrace a fact-based world view. You have criticized WHO in the past for failing to make its data more accessible, has this situation improved?

A: Many WHO programmes used to publish their data on separate web pages to present the success of their programme to donors. Access to WHO data has improved with the Global Health Observatory [a statistics portal for WHO technical departments established in 2010] and, for example, statistics can now be downloaded for people to print. I admire this central statistical work of WHO, but there are still problems, such as with merged cells at the top of excel sheets, which you must "unmerge" when you want to use them. I would also like to have more straightforward data, for example, the number of cigarettes smoked per person and lung cancer cases in countries to compare. These data are often not complete and the age distributions are different.

Q: What is the solution?

A: More power and funding for the people who do statistics centrally at

WHO. Of course their work is supported by Director-General Margaret Chan, when she says that she will never change the numbers that WHO experts have concluded. WHO needs more authority and integrity and that can only come with a higher proportion of core budget than the current 25–75 split between core budget (assessed contributions) and voluntary contributions. Countries should re-organize the way they finance their international organizations, WHO, for one, needs to be given more core budget.

Q: International statistics experts gathered at WHO in February reviewed the way global health estimates are reached, including those in the latest Global Burden of Disease study by the Institute for Health Metrics and Evaluation (IHME). Why was data sharing an issue?

A: When the institute received its grant from the Bill & Melinda Gates Foundation to work on this Global Burden of Disease study, it said it would make its methods transparent and its data freely available. But since its publication, I have not been able to get all the data. At the meeting in February, Chris Murray, the director of IHME, explained that, for example, the Chinese authorities allow the Institute to use their data for their calculations but forbid it to share them. If anyone else wants the data, they must ask the Chinese authorities. That is fair. Other countries do the same. The problem is that if I ask China for the data set, let's say on Alzheimers, and I get it, it will never be the same version that the IHME used. Everyone at the meeting recognized this and that life is not as simple as we thought and that we will not be able to share compiled data sets in the way we had hoped we could. Participants also recognized that countries have their full right to do this and mostly don't want to hide their data, but just want to be masters of their mistakes: they want to be able to correct them.

Q: What did you think of the methods used in the new Global Burden of Disease study?

A: I am not even close to understanding the advanced modelling methods they used. One participant at the meeting made an interesting comment with regard to what the financial institutions did with the mortgages before the financial crisis: they processed them to the degree that no one understood the result. When very few people understand your methods, your work cannot be independently verified or replicated easily. I asked: "What would be better? That you process all the child mortality data existing for the DRC using these new methods instead of the one used by the UN, or do you do another demographic and health survey (DHS)?" Obviously it's better to do another DHS because it produces more empirical data. At the inauguration of the IHME, I said in my speech as one of the evaluators: "Let the Institute challenge the UN, but don't let it try to replace it." Now I hear that the UN is going to try to model more advanced data. I am not convinced this is the right approach, but time will tell. We must be open to new methods in public health, and IHME forces us to consider many new methods.

Q: So what is needed to improve global health statistics?

A: The main challenge for global health data is that we need sub-national data for the poorest countries and not only national estimates from national surveys. Quintile calculations (broken down by fifths of the population) can be made based on data from national health services, but these are not as useful as estimates based on data from administrative sub-national units. One minister of health once said: "I don't need quintile data because the quintile has no director that I can fire. I need provincial and district data, because I can act upon it." There are clear challenges in implementing plans to produce sub-national and quintile data, although they are not insurmountable. But the regular outcry for civil registration data is hopeless.

Q: Why is it hopeless?

A: No one has done good research to identify the determinants for successful implementation of a civil registration system. What would motivate all poor rural families to report deaths to the authorities? We know one historical model: you allow only one religion in the country, make everyone a member of that church and tell them if they don't baptize their children the dead child will go to hell. The priest is then given the task to report to the government. That's what we did in Sweden to establish civil registration in 1750. It is unlikely to be repeated in other countries because civil registration requires a deeper cultural and social transformation than many experts realize. I certainly don't think it will be swiftly implemented in the countries where we need the data most.

Q: Successor development goals to the Millennium Development Goals (MDGs) are currently being discussed and proposals for new goals are being hammered out. Do you think health statistics receive enough attention from these campaigns?

A: The MDG campaign has a problematic relationship with data, partly because it didn't add one dollar to expanding and improving data collection. It just relies on existing data much of which has very wide uncertainty intervals. Now people are stating that there are x number of days left before the 2015 deadline. In doing so they disregard the fact that for most MDGs we won't know whether they have been achieved or not until 2018 or 2019. The reason for this is that data are based on surveys done with three- to five-year intervals. WHO has done well with its estimates of maternal mortality, given the recent reported drop in the deaths of women related to pregnancy and childbirth, but some activists got furious about this as they perceived that low mortality could be a threat to funding for their programmes. When it comes to the MDGs, the only one we measure quite well is child mortality.

Q: Since you started presenting animated graphic data 15 years ago, have policy-makers started to embrace a more fact-based world?

A: Senior politicians and officials in international organizations have always been quite well informed, whereas the public and activists in nongovernmental organizations are surprisingly ignorant. To influence politicians, particularly in democracies, you should not focus on policy-makers, you have to inform the voters, the public, and that's difficult.

Q: Is there anything you would like to add?

A: Only that I have a conflict of interest: I am a big fan of the UN and of WHO. ∎