Data in Motion: 25 Years of Demographic and Health Surveys

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Edited Transcript—Hans Rosling

I knew issues of conflict of interest would be important, and I so understand from the laugh received.

We created a foundation that was nonprofit in Sweden, because we knew that we had to be that for strategic purposes, not ideological purposes. And it is so difficult to bridge what is paid by government money, to get it through technologies from private firms and out to the public. So these issues are important. And in fact, the payment from Google went to Gapminder Foundation -- I didn't get it back myself. And I now work at Gapminder Foundation at the same salary as I would have had at the university, and all lecture fees feed our free Web page. It is indeed very important when we deal with data. Credibility comes even before methods.

But all this -- I could also say we are dot org, we are dot org. But this doesn't help, because nothing of my career in the past ten years would have been possible without DHS. Any way I try to handle it, I'm in deep -- I don't know how what language I should say it, but I'm in deep problem, you know, because I'm in conflict of interest, because without DHS, I wouldn't be standing here, you know. Larry Page would never have -- from Google -- would never had jumped the stage and asked about the Trendalyzer software. By the way, he was the only one who didn't give the credit to me for the software.

He looked at me like this and said, "Who wrote the code?" I admitted that this was all about water-skiing after my son and his wife, who sat in the closet who wrote code for seven years, you know. And now they are product managers at Google, so I have a young American grandchild also due to DHS data.

It's very difficult for you actually. You can't get the speaker here who is not in conflict of interest. But on the other hand, it's very easy what I have to do. I have to speak on 25 years, so what you do? You take a Churchill citation and you modify it: "Rarely did so many owe

so much to so few..." -- that's an easy one. Now the difficult is what I added myself: "...without knowing it."

This is, as I can catch it, the most difficult challenge for you at DHS, because it's such a wide use out in the world, by so many who do not have the slightest idea that this data they use for making decision or making choices, you know, or acting or deciding not to act, was collected by professional scholars in the different countries together with the professional specialists from DHS and generously funded by the North American taxpayers -- I have the habit of thanking the taxpayers -- and then also by the amazing steadiness of USAID's manager throughout different administration to stay on track. That's what surprised us most from outside.

We have so much fashion in aid organizations, so much fashion in aid organizations. Last week, Sida in Sweden said, "We know longer have a focus on child health per se, so we won't take any notice of pneumonia or child survival." And this week they arrange a seminar, which is about human rights for children in climate change.

It's just fashion, but you have kept this steadiness. This is what is so important, you know, in what you are doing. And what I learned today when I visited DHS is that this is public-private partnership at its best. This is what you have managed to do here, you know? It's a government who have taken bits and a company who have adapted to what is needed, and managed to gather an amazing collection of professionals who have done this year after year. But still it is a fragile construction, it's a real fragile construction, and that's why this is my real task, is to convey to the world -- not to you but to the world -- that why do we have this data.

As you saw from the film, the decision makers in the countries, they know it. And what is especially interesting also, because I have been doing epidemiological surveys in low-income countries in Africa over the last 20 years, and I have noted that so many scholars and colleagues, they say, "DHS is the best; that's better than Ph.D.s because it's real, live survey. It is the real driving license for doing surveys." And in international collaboration, we do quality assurance. And also they like the meritocracy that has been applied, that national directors are getting the task not only in their country -- or can make their career -- I felt very nice comments there.

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Do you provide data for decisions? It's absolutely hopeless to provide the data for the decision to continue with DHS. I just heard that you had 1.2 million visitors to your Web page; that's nothing! I have more with eight employees -- but 90 percent of them, of those visits, are due to DHS, so I contribute 1.5 million to you, for next time you count. And we know that although we have Google Analytics and all these search tools, we cannot measure all the way where it filters away. This program has to be continually supported based on wisdom. It's tricky, sort of, you know? When the program is there to provide numbers -- and yes, you must understand the whole structure and the architecture for what you can do when this program is.

So with our moving bubbles -- now, I shouldn't show this, this is our Web page -- I should go here and instead show you what you can show about MDGs. With our moving bubbles, we have had two major hit groups. It's actually children below fifteen and heads of state, because they have an attention span of three seconds -- and they are fed up with people telling them how things are. They want to see for themselves. And here we can show them that in 1959, when all this aid was started, we had 100 million children born in the world and about 150 per 1,000 died. That is based on census estimate at that time, so you know the uncertainty rate is fairly big. And the estimated income in the world was like this, but the world was very uneven. Look, when I split it into country bubbles -- you see some countries are almost 500 per 1,000 in death rates, some countries almost up to 20,000 there -- this is United Sates of America, size is number of births -- and some countries only with some few hundred dollars; it's 100-fold difference there, 100-fold difference -- that's our world, that's the mankind which we have to grasp.

And in order to see the change, I have to zoom it in. And we used to call those developing countries and those brown ones industrialized countries, and this is what happened. We saw the economy growing, we saw the child mortality coming down, and now we are having much better data. They are moving, you can see more precisely: this is China and this India. You can see that the industrialized world is composed to what was used to be called developing countries, and if you turn around your computers, you will see on the bottom where they are made.

That's the best economic survey. We are fairly conventional Swedish family, we give each other too many presents, and over the last 25 years, actually, after everyone has shared their presents, I go around and I turn around their books and see where they are made, and I've seen the economy moving to Asia, and to Latin America, and to other places.

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Now, how can we understand this? How can we make this understandable for more? I think the MDG is a catastrophe, didactic. "Reduce child mortality with 2/3 in 25 years" means -- hopeless to understand what that means. Everyone is just polite to the United Nations, and continues --

I like this new: average annual rate of reduction. It's very good; we measure reduction of child mortality as we measure growth of the economy in percent per year, and then we can really take up. And I think the period of human development index is over; that was in the time of Excel. We put a lot of things together and then we got the index. Now we need to be able to display clean indicators, and you produce clean indicators in time series.

So 4.3 percent -- have anyone managed to do that rate? Well, I will start with my own country that has quite good credentials when it comes to lowering child mortality. I find 100 years back, in 1900s, Sweden was up here, sort of relatively wealthy and had the child mortality of 150 per 1,000 -- under-5 mortality rate, you know. And that is actually the same as Bangladesh had in 1990, the year when we started to measure Millennium Development Goal. But Bangladesh was distinctly poorer, and this purchasing power dollar adjusted for inflation, the best the economies can deliver for us.

So Sweden was much richer there, and now we are going to run a chicken race. We are going to give it 16 years, to 2006, and Sweden from 1900-1916. Ready, steady, go! Here we go! You can see, the economy growing in Bangladesh and steadily going down in Sweden is going like this haphazardly, like this and Bangladesh goes down 4.7 percent; they beat Sweden.

Next race is between Sweden and Egypt. 1990, Egypt had the same child mortality as Sweden had in 1916, and here we go. You can see Egypt, they get safe water in the Nile Delta, get malaria away, primary health care and even subsidized bread -- 5.5 percent. Absolutely amazing data! One of the most unknown figures in global health is the amazing improvement of child health in Egypt, and the USA can take part of the credit of that, actually. And this is not known.

At this time, my students start to protest. They say, "This is not fair!" "Sweden is running at the time when there were no vaccines, there was no penicillin, this is unfair!" Yeah, but still, you know -- you run against Brazil here. 1932, Sweden, now there were becoming some

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antibiotics and some water treatment. Let's see whether Sweden can do it -- and Brazil was quite wealthy. It was a country of inequity, but they are doing fine; social investments, primary health care, they handle the main causes of death -- 6.3 percent. It's absolutely amazing how well they have done.

But the Swedish students protest, "This is unfair." So I have to give them a real time: Sweden against Singapore, marshland [spelled phonetically] on the equator, the most tropical of all tropical countries. And I start the year I was born, 1948. Singapore was up there, recovering after a very, very terrible occupation during the Second World War, but still they're ruled by the British afterward, and then Sweden down here. And the students are very happy with this. They say, "This will be where Sweden must win." And Singapore, you know, they can't grow their economy during colonial time, but with independence they grow their economy, they invest in health, they get health service for all the people, they have education, they get really rich; and we never thought this would happen, that they would bypass Sweden and that they would win!

And Sweden; look, Sweden during the last hundred years didn't achieve Millennium Development Goal rate. Remember this: we are putting goals for Tanzania, for Bangladesh that never was achieved by any country in Western Europe or North America. This speed of change didn't happen, and yet when we look at it, all these green countries are on track or faster. And lots of these measurements are DHS measurements, which allow us to measure. And these countries, the yellow ones, they are like 3 percent, 2.5 percent; almost on track. The big one, India and China is among them, you know.

And the problem we are seeing is actually the red ones, which are mainly low-income countries. By the way, since seven years back we fail all students who use the term "developing countries." We punish them, and said "you never had a text book of American History which was two chapters -- 'Now' and 'In the Past,' and in the past they mixed Washington and Eisenhower." You have to keep Washington and Eisenhower apart. But when we say "developing countries," we put countries together which are like United States during Washington and United States during Eisenhower. It is a remaining mindset of colonial thinking. It is actually -- politically, it can be justified. In trade negotiations, there can be some things justified. But the big change took place here during the last president, his last month, when G7 became G20. That was the end of it, that was the end of the concept "developing countries," and I think George W. Bush will be remembered in the history book

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for that meeting. That is a real turning point. We are finally off the colonial time. It was no longer "we and them" in the world.

I actually classify United States and some other of the rich countries as the "indebted nations," today. Because this is the reality. DHS is financed by money borrowed from China. So perhaps I misdirected my thanks. They should go to the Foreign Reserve in Beijing, huh?

But anyhow, this looked a little grim. And what says that countries here, which are building their nations from a difficult past, like Congo and others, should be able to reach a rate of decline that Sweden never made it for? What says that the rate of reduction of child mortality should be the same through three centuries of development? It is a little too rough.

But there is some good news. Look at Tanzania here. Using DHS data mainly, the publication *The Lancet* last year put an advanced analysis of your data, and showed that indeed child mortality did not fall during 9 years, and then it is falling by 10 percent reduction. And you have seen this reduction, and many of us thought to question, "What has happened with DHS?" Are you missing out with quality now? Can this be possible, this fast fall in some countries? Malawi, we also have a fall like this. Is it the stigma among the women struck by HIV/AIDS now, and they don't communicate the deaths? But many, many things indicate that this is correct data.

The mortality among the first six months did not fall. This is effects from six months and above, mainly. And it coincides more or less with a [unintelligible] budget, very rational support for immunization, and the discovery of how to deliver and how to get [unintelligible] for malaria. And other things, I could add a lot of things.

And this is very important to really be able to show this data. Easterly have to study a little more you know. I think Bill Gates gave a very nice summary of him, he said, "He's lazy." You can't write a book about aid in lazy ways, you have to dig down into the data. You have to look. You can't make sweeping statements about developing countries over four decades. Of course, there are terrible mistakes made in many, many places. But we have to go more specifically into a country during a special period during special investments and look at it. And your data enabled us to do that.

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Now what can we learn more about data? Well, I gave you this graph. You have got this. And this is basically a new world map. Instead of North and South, healthy and sick; instead of East and West, rich and poor. These are the countries of, the size is population. Here child mortality with -- there is a problem with child mortality. Laypeople don't like child mortality. They close, "Ahh, I don't want to hear about children dying!" Life expectancy is much better. We tried to convert it to child survival. Improvement of child survival is much better understood than decrease of child mortality. Too often we get stuck in the way of what we learned in school and what we have learned in science.

Money is much more easy to understand; you get more dollar you are richer. People understand that immediately. And it is very important also to show: this is not now Washington and U.S., this is my great-great- grandma, 1830 -- she was born in Sweden when Sweden was like Sierra Leone -- and my great grandma, 1863, the only in the family who remained when all the others went to Minnesota.

And my fourth cousin then became the Lutheran pastor in Portland, after the Oregon Track.

And Sweden was like Mozambique. And my grandma, when she was born, Sweden was like Ghana. You can see the difference within sub-Saharan African averages. It corresponds to generations of development of Sweden. And this I know because when my mother, at my age of four, my mother got Tuberculosis, and I stayed with my grandma and she told me this. So I have verbal description about the life conditions of my great grandma and my great-great grandma that my grandma met.

And she describes homes as I find them in Sierra Leone, Mozambique and Ghana. There were very good reasons to risk the trip across the Atlantic. There were very good reasons for that. Life was miserable in Sweden, really miserable. And this is what we then called "Grandma-verified statistics."

The highest form of quality certification, these statistics that we know. My mother was born when Sweden was like Egypt, I am in the family of the Mexican, my daughter was born when Sweden was like Chile, and my granddaughter was born when Sweden was almost like Singapore.

I think this is what we need. We need to show your data, your data will enable us to see this steadiness of development in countries. Some countries find oil and mineral, and they end up

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like Equatorial Guinea, the most unjust country in the world. The president's family keeps most of the oil money. And some countries manage to be healthy like Vietnam, but very lately they sought to have a decent economic system so that they can improve their wealth. And we can place countries in a good way like this. So how do we want the data? I have a very easy conceptual framework. The world is there, we gather data, and we have to give it back. Isn't it easy?

This is what it is all about but in reality it becomes more complex. The world is down there. We get micro-data up there. Micro-data goes down to research, research tries to affect policy and government, or they are in the commercial sector and they make the market work, or the data is calculated and the indicators are sent to media, media sends it down to civil society. That should affect them. And then there is a little Web page over there, you know, and the Web page goes down to civil society and they try to ask, they send queries this way, and it is very difficult to make it work.

That is more or less where we are today. What I suggest now is that we try to use the new technology for data, and I found a very good way of getting data. There is a little cube down there, it is called "YouTube."

And if we send down the data to YouTube, I found it is amazingly successful to get it into the society. Who would ever believe that you could go to Google Search and -- what do people do? People tell me "It is useless, 'YouTube', it is rubbish, filth, you know, and greed, you know." So people search for -- what do they search for, they search for sex, money, and perhaps a little health. And what do you go if you search for "sex, money, and health"? You get the Swedish public health professor!

On top of 31 million hits. That is something. Who would believe that this man looking like this you know, here, would be on top of sex, money and health?

And it is a quite boring presentation of the economic growth, demographic and fertility change and health change in Sweden over 200 years. And it is very interesting -- I saw today, "Obama Budget Cuts Funds for Abstinence-Only Sex Education," so I am very frightened now, because this news may climb to the top.

It is so important, the world welcome it so much you know. And you can really, you can really achieve amazing things here. But what is needed for this? Well, we have data in many

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format. We place DHS there, but we know that a number increases its value exponentially with comparability. Comparability over time, in income quintiles, in ethnic groups, with economic data, with environmental data, you know, immigration data.

So we need unified format. We do not have a unified format for data. That is why the transaction cost is so enormously high. And that is why those who put data together in unified format charge for it. Have you given a license to the World Bank to sell the data you produce? Why don't you take them to court then?

It's quite serious. World Development Indicators are selling your data. There are great statisticians doing that. Shaida Badiee and Eric Swanson are great professionals, and they are very nice persons also, that is why it is sort of painful to criticize the policy. But it is very strange that the good combinations of data we have are sold. World Bank and OECD have a worse data policy than the People's Republic of China. They have free download on their Web page. And this is very strange. It goes against what you have. Why do DHS have this policy you have? Because in the Constitution of the United States it says that data belongs to the people, and I am a great admirer of that Constitution.

That is actually to be able to do the first -- you can imagine, after that War of Independence that people would be suspicious of someone coming and calculating, so the founding fathers put it into the Constitution. It was from the start. So today United States is the best country to develop new models of data sharing, because all data is free, and we need that at international levels. And I think this is one area where you can go a little more boldly forward, and push forward and ask. And the new president of the World Bank, he is quite used to that Constitution, so I think it is a good person to introduce it.

We need search function, we need technology firms to be here, we need designs which is new, to reach new user groups. Many of you say, "We want data to go for policy, to change it." This is not what I hear from the Heads of State and the Ministers. They said "Yeah, yeah, I know that, but go convince my voters, go convince the public." It is not about the decision makers. We are not living in Soviet Union any longer, with central planning. We have to go and tell the public what it is, and the public will then vote, and the bold politicians will get support from the public. It is very much about doing that. I think you are quite good at putting your data at disposal for decision makers. But they have harsh decisions to make, and if the public is not with them they can't go forward.

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We need the interactivity, we need the story tell, we can do a lot of nice new things, but that requires innovation. How do we foster innovation? We foster innovation the way you do, you put the data free. But if we get the unified format with the data. Now the micro-data, that is for the researchers, that is for the specified, the narrow focus on it. But the time series, we need to get time series uploaded in unified format every Friday afternoon with a watermark.

And I have a very good example of something here, you know. Do I own this, the twenty dollar bill? No, I don't own it. The bank owns it. But I have the right to use it. And what is even most clever, I have the right to transfer the right to use it to someone else. Yeah, you say you want it immediately.

Data should be like this. We don't need central planning. Many people, you know, who talk about data, you know, they don't understand that the force of data if many can use it in unified format.

Isn't this beautiful? Let me give you another allegory, "Nocturne in b minor" by Chopin. Anyone here that can see that it's beautiful? It used to be some would play the piano. No? Yeah, there is one here who can grasp that, one who can see it. The rest of us we don't know what this is. But it is written in unified format isn't it? So if you have the right instrument, and you have a player, you can play it, and then everyone can hear it.

In data we have -- data producers, they sit and build their own pianos and then try to play them. Let the composers be the composers; let the great technology firms and the small start-up compete over delivering the instruments. I have heard now that there are some new instruments which are quite cheap where kids can play in the home in a new way. And this is what we can construct with data. We can make it useful in technology.

And then we have players like me, and many, who can use the data in new ways. We have to have a division of labor. In many aspects, the statistical business is on the [unintelligible]. It is a lot of hard work, and it is not appreciated how hard the work is. So we had a very bad mission statement in the beginning at Gapminder. We said "We convert boring statistics to enjoyable graphics." It was stupid, now we say "We unveil the beauty of statistics." Because the beauty is already there. The beauty lies in these notes already. The only thing you do with an instrument is that you enable a player to unveil the beauty which is in the composition.

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So if we can compare different data, we get it in unified format, we get cheap instrument. And I was very happy after the acquisition of Google to get an e-mail, which I thought was spam first -- it said, BGates@microsoft.com.

But actually Bill Gates invited me and asked "Why didn't you sell this to me?" I said "We don't want it a product. Excel is great, but we don't want a product, we want a service." And Google accepted in the statement at the acquisition to make this free available for public statistics. And they gracefully also gave Gapminder Foundation a free license, and the right to sublicense the technology to anyone who provides free data.

But it is difficult. It is difficult to build this instrument. Google Earth and Maps function wonderful, because geographical data, it is longitude and latitude and that is it. You can define every restaurant, every archeological remain, with longitude and latitude. Only if you are in the mountains in Afghanistan and look for people who live in caves, you have to have altitudes, you know -- because there is not enough if you stand on top of the cave, you have to know if someone lives down there.

And that is why statistic stratifies itself into infinity, actually, with sex, gender, education, employment, rural, urban; we can mention them, and we have an infinity number [unintelligible]. So it is a challenge, and we are very happy that Google has taken on this, because this is how things are: inventions occur in Europe, development of technology takes place in United States. And also Microsoft is now competing, and they are publicly giving credit to us, both privately and publicly, and that is okay. That is nice.

We must avoid this disease. This is the disease DBHD, and it is nice to come to DHS, because you are free of this disease: Data Base Hugging Disorder.

I thought it was congenital from the beginning, but after getting to know great statisticians, I know that it is acquired. It is because haphazard way of getting budgets, haphazard way of getting budgets. And a sort of Mark Twain-induced stupid attitude to statisticians and data people, which we have to fight continuously. So we have to, we have to -- there are some professions that you don't tell at dinner parties, you know. Statisticians often don't say, "I'm a statistician." "I'm an analyst," they say, or "I am a government employee." My wife works at such -- she is a child psychiatrist, she never tells it at dinner parties. Undertakers is another one.

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Can we increase, you know, the use of statistics to something which is appreciated? But that is more than getting it for policy, getting it broadly out. We are very happy at Gapminder that our main target will be schools today. Children will go and tell the teacher, "Why don't we use this too? Can't we use this in our [inaudible]." And it is very nice.

So what about the next 25 years? Because 25 years, not mature enough, it's just starting to become useful. And we want a normal life expectancy of this organization, because if we look at the development of the world, we are not set with the world population until 2050. So please have a strategy group that goes far also, because one thing, DHS functions in isolation from census and demographic surveillance sites. I was very happy to hear about that in [unintelligible] in Peru, where you try and do a three-month DHS which moves. It is actually what we concluded of evaluating support to the demographic surveillance sites in Tanzania.

They are pretty limited use. If you want to see impact of investments, the demographic surveillance sites, well the one produced the result on the mosquito net was useful, and some of them with the research. And how can the census be used in a better way together with this, to coordinate [inaudible]. And this is very big challenge from the funding organization. This cannot be done within the company or the professionals, it has to be thought about at a higher level. So we want this to be true and to happen in the next 25 years.

Also what we have seen going from demo to health, demographics to health, disease with the HIV testing. It is absolutely dramatic. Almost 10 million people were relieved from HIV by DHS.

We thought it was 40 million. Yeah, now it is important. We saw that HIV has more or less leveled off; still increasing in some countries and places, decreasing in others. But you really brought it and you brought it to a stand where U.N. Aid has now dared to liberate that data. And I was quite amazed that it worked. I thought it was risky when we were going to collect blood. And that actually, that is the quality assurance of DHS, that people at that, at that width with the surveys accept to give blood. That means that the interaction is extremely good. Otherwise you would have riots and you would have a problem. All of us who have, in difficult remote parts of rural Africa, [unintelligible] Africa, tried to collect bloods know that if you do, you have to live in the village, you really have to gain the confidence of the people. So that is very, very good.

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And this has the environment -- water, sanitation, and all this talk about climate. The worst environmental problem today is that 2 million children die of diarrhea, and that billions of people drink their neighbors' lukewarm feces. I mean, I would rather have some DDT drug, you know? I would rather have more sunshine then to drink my neighbors' lukewarm feces. And how can we get this? Water and sanitation data is very, very weak. We were discussing that at Google org: could that be on mapping, how could that be done? To add things like this into the data. And if you add too much, the quality will fall. So it is a real difficult choice; real, real difficult choice. But I think with your partners and professionals in the countries, you are at the position to move forward on this, and poverty modernity.

Poverty is in remote parts of the world, in remote parts of the poorest countries. And you don't catch the small areas with DHS. It becomes -- it is too costly to do it in the small areas. And when we see poverty maps generated, we see that poverties are within districts in countries like Uganda, like Congo and Tanzania. And that is not soft.

So this is a good young adult, which did well in college and just graduated. Now, you know, a professional start to be useful at the age of 25. Now they can take on the real task that is to eradicate unnecessary disease and poverty in the world, and I wish you all the best from doing that, and good luck. Thank you very much.

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