

# WORLD THE DOCTOR WILL SEE YOU NOW

**DR CHRISTOPHER MURRAY'S mission to provide genuinely comparative health data has been a catalyst for improving global well-being, reports Brunswick's DAVID SELDIN**

**D**r Christopher Murray started young in global healthcare, traveling from Minnesota to Africa with his parents to set up rural medical clinics where, at 10, he was in charge of the pharmacy. That experience set him on a path to becoming one of the world's leading experts in high-tech healthcare data analysis.

Today, Murray is Director of the privately funded Institute for Health Metrics and Evaluation at the University of Washington. He leads a worldwide consortium to develop the annual Global Burden of Disease report, the definitive account of the causes and impact of 206 diseases and injuries, covering 20 age groups in 188 countries. Each report requires the parsing of hundreds of millions of data points and the development of dynamic visualizations to make the information useful to leaders and organizations trying to solve the world's health problems at local, national and international levels.

One of Murray's innovations, a metric called Disability Adjusted Life Year, or DALY, allows more accurate comparisons of community health and is now the standard used by the World Health Organization and other researchers. In the following interview, Murray describes the challenges involved in sorting out the world's health data and making it accessible so that resources go where they can do the most good.

## **How did your childhood experience in Africa lead you into sophisticated data analysis?**

It's a longish journey. I started off wanting to know the answer to a basic question: why was it that some communities I saw with my parents in Africa had all sorts of seemingly straightforward health problems – pneumonia, diarrhea deaths, malaria – while others did not? I thought it would be a really easy question to answer, but I started to find out that we really didn't know that much in any sort of quantitative, rigorous way, about the level of health in different populations. We have a rough idea that people in the US or Western Europe are healthy and in many low-income countries they're not. But beyond that there are pretty huge gaps in what we know about the state of health, let alone the drivers and the determinants of it.

Once you start trying to find an answer, it's a long process of having to deal with incomplete and conflicting data, all the biases and politics that affect how people talk about these problems, and what works as well as what doesn't.

## **Reports on health are coming out all the time. How do you persuade people that what you're doing is definitive?**

There's a lot of tremendous expertise and research on specific diseases or topics, but very few people have the time or the inclination to step back and look at the big picture and ask what are the biggest problems? Which are getting worse and which are getting better? What are the most important challenges?

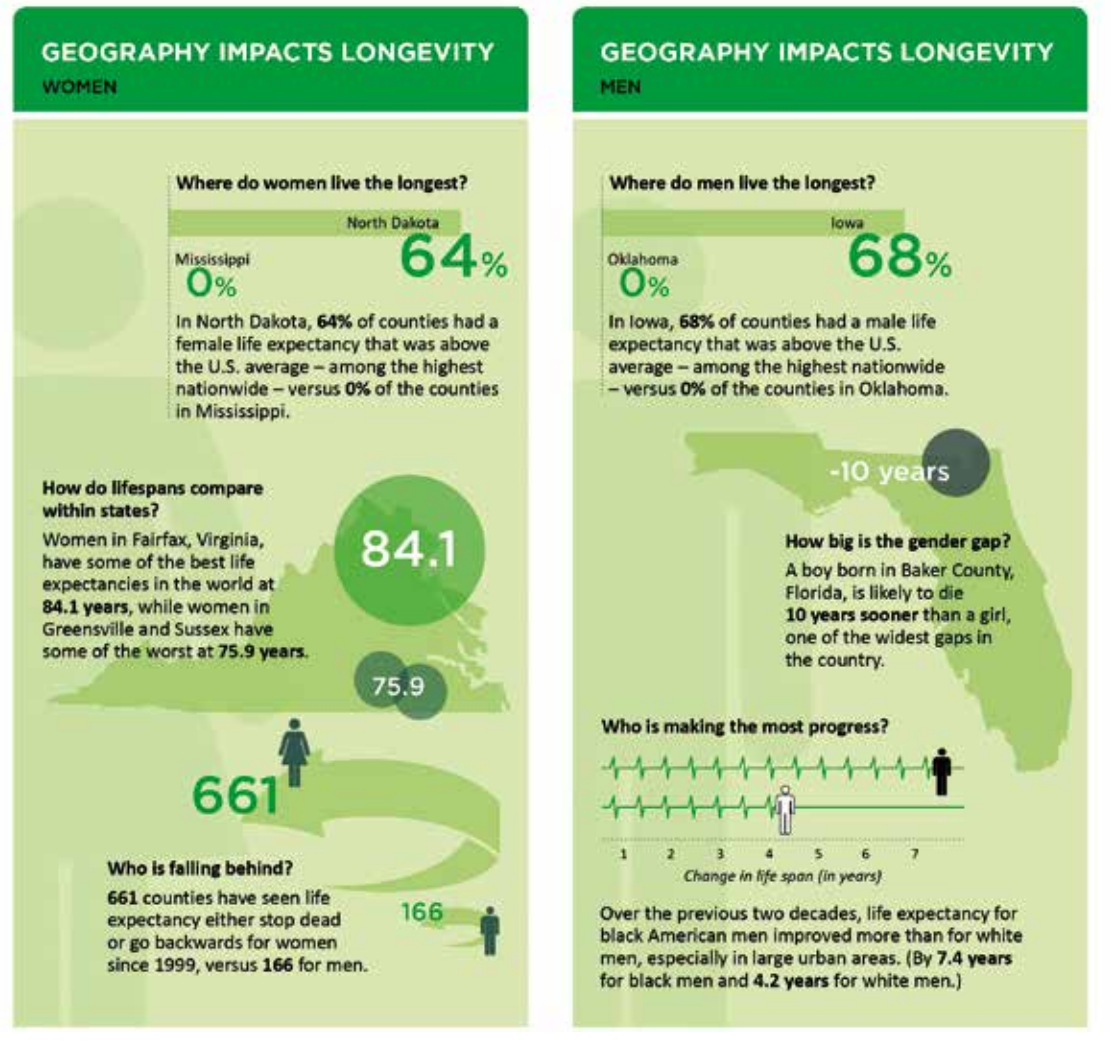
What is different about our data is that we put a tremendous effort that really nobody else does into trying to make meaningful comparisons. Data becomes useful when you can make comparisons over time and across place. That's how you can start to benchmark. Until you have data that's comparable, a lot of comparisons are not very helpful.

To take a simple example, diabetes is a serious disease that is a growing problem in many parts of the world, but there are 21 different definitions of diabetes being used by the various groups that report

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The Institute for Health Metrics and Evaluation website, [www.healthdata.org](http://www.healthdata.org), uses visualizations to illustrate its data sets. Here, an infographic shows comparative life expectancies for women and men in different places in the US

on diabetes. Tables are published that compare countries using radically different definitions of the disease – a pointless, meaningless exercise.

We try to take all the data that’s out there and map it to some common set of definitions. That’s why the curating of the data that we do is so labor intensive, just trying to make it comparable.

**Is that where the development of your metric, Disability Adjusted Life Year (DALY) comes in?**

To ask the right questions, you need to have a metric that allows for meaningful comparisons across the massive array of things that cause health problems, whether it’s hip arthritis or tuberculosis or pancreatic cancer right through to Alzheimer’s. That means you need to make comparisons over a life span, and between things that cause functional limitation or disability versus

things that could kill you. We needed a way to measure how disease affects you, whether it’s because you die too early or you’re alive but you’re not enjoying the quality of health that you could. That led to the birth of the idea around the DALY, which is basically the sum of time lost to both premature death and disability.

We can figure out what conditions people have in different places, and how that varies by age and gender. It’s not just about single diseases, we’re now trying to capture the experience of individuals with co-morbidities – the simultaneous presence of two or more chronic diseases or conditions. Having that common metric becomes absolutely essential for making any sort of sensible comparison.

**How is your work having an impact?**

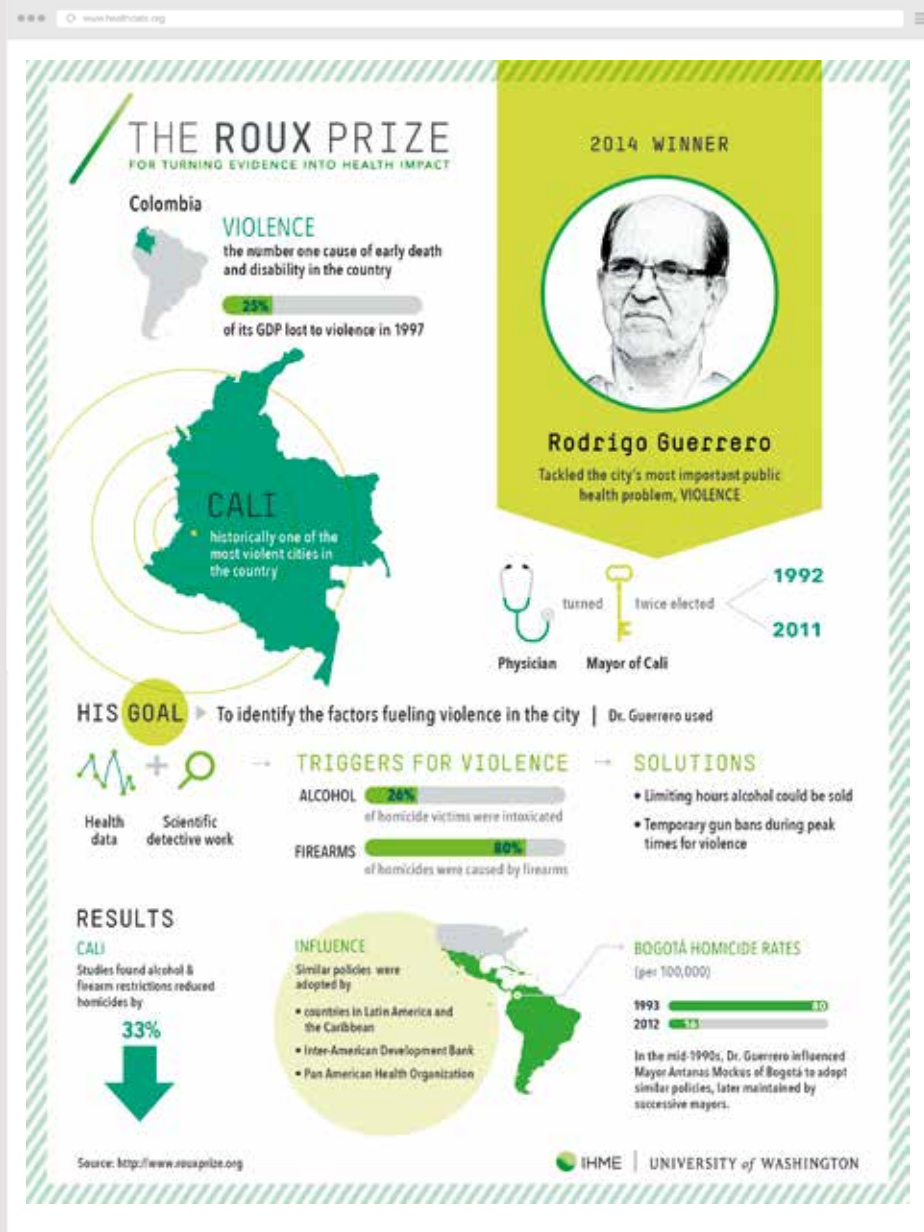
We turned a corner about three or four years ago when we started dynamic data

visualization. Curation, analytic methods and statistics have improved over the past 20 years, but there was a quantum leap in our ability to make our data useful when we started using visualizations.

In the scientific community for global health, lots of people now use our visualizations – in fact I rarely come across someone who has not. The media also uses them quite a lot now. And we hear stories all the time from people in ministries of health telling us they regularly use the data about their country on our website to get a sense of the big picture.

In 2014, we introduced something called the Roux Prize, a \$100,000 award for someone who has turned our research into meaningful action. The winner was Dr Rodrigo Guerrero, a Harvard-trained epidemiologist who is the mayor of Cali, Colombia. He used DALY-based analysis to understand patterns of violence in →

GRAPHICS: INSTITUTE FOR HEALTH METRICS AND EVALUATION



**This IHME infographic shows how physician-turned-Mayor Rodrigo Guerrero, of Cali, Colombia, used the organization’s data to lower local homicide rates**

his city, and put in place policies that led to a 33 percent reduction in the homicide rate.

When the Global Burden of Disease 2010 results were published, the Minister of Health in Rwanda saw the data about indoor air pollution and the number of childhood pneumonia deaths related to that in her country. She then initiated a big push toward cleaner burning stoves in homes to decrease indoor air pollution.

In another example, the President of Botswana raised alcohol taxes to cut consumption as a result of our work on the impact of alcohol. There’s a long list of these examples, where local analytics specific to

a particular country have helped empower decision makers to move an agenda along.

Interestingly, the UK has been a big user of our analyses. The Chief Executive of Public Health England, which oversees the health service, has said their agenda is driven by this analysis of risk factors. We are working with them to develop a more fine-grained analysis so that they can tailor their public health messages to each community.

We have a very confident strategy of engaging people in different governments and constituencies to develop our analyses and we now have active collaborators in about 106 countries. That builds local ownership for the project. Now, when

we publish in scientific journals, we have hundreds and hundreds of authors from around the world, so it’s no longer something limited to analysts in the US. It’s a truly global undertaking with a representative set of collaborators.

**Why do you think individuals respond better to some types of data than others?**

People often don’t change, even if they are well aware of the statistics telling them that some types of behavior are unhealthy.

We had an experiment running with the Dartmouth Institute, the US healthcare research group. It used a risk calculator, where people entered personal risk factors, including behaviors and physical conditions, to see the probability of them dying over a given period of time. The Institute showed the results to people, but they just didn’t want to know. They do want to know what’s modifiable about changing their risk, but they don’t really want to know the numbers.

We have since changed the interface. Instead of showing you a number, it now shows you a green smiley face or a red frowning face. That works better. It’s scary to know the facts.



**CHRISTOPHER MURRAY**

Professor of Global Health at the University of Washington and Director of the Institute for Health Metrics and Evaluation, Dr Christopher Murray has worked for the World Health Organization and served as Director of the Harvard Initiative for Global Health. He holds degrees from Harvard University, Harvard Medical School and Oxford University.

**IHME**

The Institute for Health Metrics and Evaluation at the University of Washington was founded in 2007 and provides comparative data on global health trends for policymakers, researchers and funders. [www.healthdata.org](http://www.healthdata.org)

**DAVID SELDIN**, a Partner in Brunswick’s Washington, DC office, advises companies in the healthcare sector.