Leonid Gavrilov and Natalia Gavrilova are population biologists who specialize in the mechanisms of mortality, longevity, and aging. Their research has unearthed surprising and intriguing demographic trends. At the OCF conference, they spoke with OCF Fellow Luis Guachalla – a postdoctoral researcher in molecular medicine whose work involves uncovering the biological causes of aging and death – about the links between longer lives and global population growth.

Guachalla: It’s not that common for younger researchers to have an opportunity to sit down and interview senior scientists, so I’m really happy to be here. I was interested in your latest paper that showed the consequences of extending life span. There are many fears that extending life span will lead to overpopulation of the world, but your results indicate that may not happen. In fact, your model suggests that in 100 years, there won’t be any change in the world’s population, partly because people are having fewer children even as they live longer lives. But how would it be in a longer time frame – for example, 200 years, 300 years, 400 years? Would it still be the same trend?

Gavrilov: Well, it depends on the particular model. For example if you consider the situation where you have less than two children per family, the population growth increment keeps decreasing. But in other specifications, there might be different scenarios. The key issue is the number of children per family, on average. Overpopulation depends more on fertility than mortality. Even in the most radical life span extension scenario, you cannot get big population growth.

Gavrilova: She worked with her computer overnight, and produced completely new data. One of the great benefits of conferences like OCF is not just people coming and presenting their results, but interacting with each other during the conference to produce new results.

Guachalla: In your paper you use the example of Sweden, a very well-developed country. You’re already showing a declining population. Can extending longevity maintain the population, or do Swedes need to increase their reproduction rate as well?

Gavrilov: This is very important, because people are very concerned about overpopulation, and often objections to life extension are made on the basis of “there will be too many people in the world.” What they do not understand is that in developed countries like Sweden and Germany, the real problem is not overpopulation but on a long time horizon you have a drastic decline in native-born population. You have a demographic catastrophe. Of course you can solve this problem with immigrants, but then you can lose your cultural identity, you can lose your language. Life-extension technology is not a part of the problem, but part of the
solution. Any intervention that increases healthy human life span would really help in this situation.

Guachalla: One observation to this point – extension of life span is not always associated with improved health quality. If human beings reach 130 years of age, what would be your recommendations on retirement age? There’s a hot debate in Europe right now on this topic. The French for example, are complaining that they are not willing to work two, three or five years longer. But if people live to be 130 and keep the current retirement age, it means that they will only spend half their life working.

Gavrilova: The main consequence of longevity is accelerated population aging. Current societies are not ready for this challenge. But I believe that it is not only a challenge, it is an opportunity. Older people have more experience and knowledge, maybe require only short education for new jobs. This is an asset to society. But current regulations do not encourage older people to work, and sometimes there is even forced retirement after a certain age. Governments are doing this in a not very gentle way, just raising the retirement age without giving people a choice. But you could, for example, give people who want to work longer some incentives and let people who are frail or don’t want to work that option. Currently, though, Western societies are not ready for the challenges of an aging population.

Guachalla: Ideally, it would be nice to not only live longer but also have a good quality of life. The aim is being 80 or 90 but still being able to do tasks a young person can do. We can live until we’re 130 or 140, but we don’t want to be trapped in bed connected to oxygen tubes. I think there’s a lot of effort to extend life span and also improve quality of life in the elderly.

Gavrilova: The few people who survived to old ages in the past were much healthier at age 80, because otherwise they would have succumbed to disease at an earlier age.

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