



11 Good morning, Mr. Professor. I am glad that you accepted my invitation and agreed to give an interview and participate in the conference "Lifestyle Medicine for Longevity. Blue Zones inspirations". Thank you for taking the time to introduce us to Blue Zones areas from the point of view of both demographer, as well as a sensitive human being, bringing us closer to the daily life of the inhabitants. Your lecture was a great experience for us.

Thank you very much for the invitation, Agnieszka. The idea of a conference in Poznań immediately came to me when you mentioned about it in October 2022. I know Poland well, having traveled through your country many times, going from Belgium by car to Tallinn University in Estonia. However, this is the first time I have had the opportunity to be here, and it's a really beautiful city and a great campus. I hope to come back here next year.

11 Thank you, this is a great announcement for the next edition of our conference. Please tell us about yourself, we know that you are Professor Emeritus at the prestigious University of Louvain in Belgium and still actively working as Senior Researcher for Tallinn University in Estonia. Where did you come from? Your interest in demographics?

INTERVIEWED BY: DR AGNIESZKA PLUTO-PRĄDZYŃSKA

▲ Prof. Michel Poulain (photo: tricia.pl).

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BLUE ZONES INSPIRATIONS

An interview with Prof. Michel Poulain, one of the three founders of Blue Zones, a Belgian astrophysicist, demographer, and longevity expert.

Trained as an astrophysicist, I received my master's degree from the University of Liège, and my PhD in demography at the Université catholique de Louvain (UCL). As a demographer, I specialize in longevity research. My professional life is dominated by demography, and for many years I was a president of societies - Société Belge de Démographie (1984-1990) and then Association Internationale des Démographes de Langue Française (AIDELF) (1988-2000). In 1992, I became involved in the study of centenarians and am an active member of the International Database on Longevity (IDL) and the International Centenarian Consortium (ICC).

Great achievements, Mr. Professor, and still very active life - it was difficult to find a free date in your calendar,

*all the more welcome your presence in Poznan. Please introduce the readers of "UMP Facts",
What are longevity Blue Zones, or so-called Blue Zones of longevity.*

Blue Zones (BZs) of longevity are a limited area in which a population has been proven to live significantly longer than populations in other parts of the same country. Essentially, it is a demographic concept that can be described in several steps. The first step to identify a BZ is to validate the age of the oldest people based on the



▲ Leonise of Martinique celebrating her March 18, 2023, 108th birthday (photo archive)

administrative documents and individual interviews - to confirm the timing of various events in the lives of these most elderly people. The second step is to assess the longevity level of the population. Therefore, several longevity indicators should be considered, such as life expectancy, the rate of centenarians and the rate of extreme longevity. The rate of centenarians is inadequate for comparing the longevity level of two populations due to significant demographic deviations. Administrative documents available for digestion to validate individual longevity and statistical data to validate population longevity are country-specific. As a result with this, comparing BZ with the rest of the country will be feasible, while international comparisons are more problematic.

|| *What method do demographers use?*

We use spatial aggregation methods to delineate the BZ to maximize the difference in longevity between the BZ and the rest of the country. The BZ should be a continuous area where the population is most likely to share the same lifestyle and environment. Then the BZ is the best place to look for potential determinants of longevity. Therefore, the basic elements of identifying these zones are related only to demographics and geography, while genetic, biomedical, nutritional, social and

-economic and psychological

are identified ex post as potential determinants explaining the exceptional longevity observed in a predetermined BZ.

|| *And where did the name Blue Zones come from to describe these places?*

As I mentioned, Blue Zones was originally a demographic concept. It was introduced during the validation of exceptional individual longevity in Sardinia in March 2000, when I took a non-blue marker and circled on a map of Sardinia an area with a high incidence of centenarians. Hence, from its color, the name Blue Zones was derived and appeared just after the post-claiming a large number of centenarians in Sardinia identified by Dr. Gianni Pesa, a medical doctor there. A name Blue Zones came to mind when I was thinking about the difference between individual longevity and population longevity. Note that there are centenarians all over the world, but only in several areas on earth, we record exceptional longevity of the entire population.

Moreover, given the different BZs, some longevity determinants identified for one BZ may also apply to populations of other BZs. Therefore, the development of studies on several BZ populations and comparing their characteristics and behavior of residents is a potential step forward in the search for determinants of longevity. This search for common determinants of longevity appear in various BZs all the time. Research



Quantitative and qualitative are currently being developed comparatively for Sardinia and Ikaria, covering the biomedical aspects of the and behavioral. A comprehensive approach is considered, favoring an individual life analysis, as well as an anthropological point of view to understand how various changes experienced by the local community, such as fertility, epidemiology, education, communication, nutrition, etc., may have interacted to result in this unique longevity, in addition to a genetic and epigenetic background.

|| *Now that we know that the mysterious name came from the color of the blue marker, can you give us an idea of the origins? I know that Prof. Makoto Suzuki, MD, at Okinawa began collecting data on nearly 1,000 of his long-lived patients, receiving support from Japan's Ministry of Health, Labor and Welfare as early as 1976 for the Living Centenarian Study.*

During the same period, that is, in the 1970s, an article appeared in the National Geographic identifying possible points of longevity in Vilcabamba (Ecuador), Abkhazia and Georgia (Caucasus), and Hunza (Pakistan). Nonetheless, after a thorough recap-

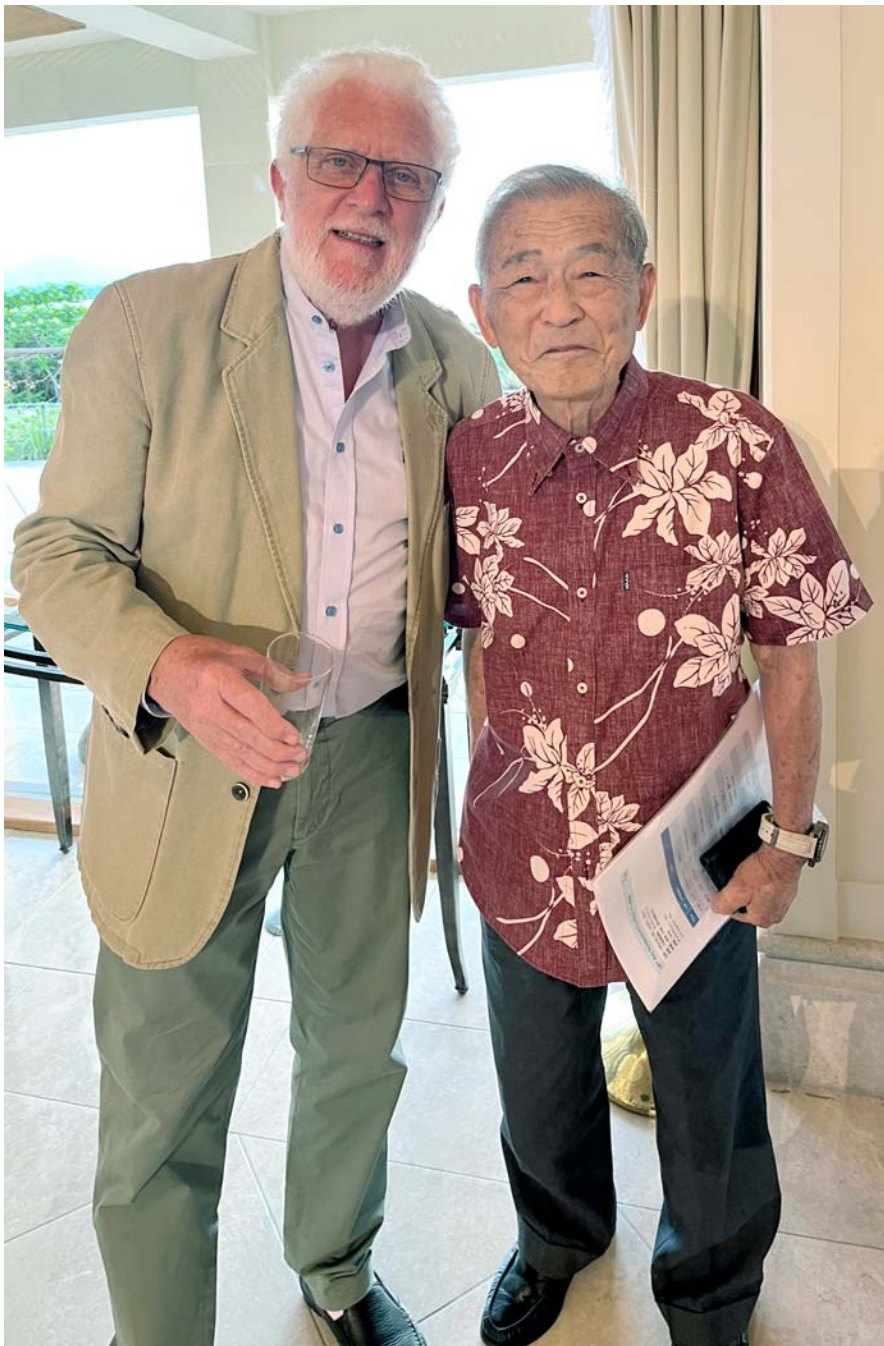
people in these areas, the points were rejected. Validation of the ages of the oldest people is crucial, as exaggeration of age is very common in non-white populations, especially among men. I myself have validated the ages of several supercentenarians, including Antonio Todde (lived 112 years), Joan Riudavets-Moll (lived 114 years) and Emma Moreno (she lived to be 116), each of whom holds the Guinness longevity record. I also discounted the ages of many others, including the famous supercentenarians from the Caucasus.

What does such validation look like?

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In the 1990s, an international database on longevity was developed, with the first goal of confirming the vintage age of the oldest people on earth through documentary evidence. For this reason, Dr. Gianni Pes attended the annual meeting of scientists responsible for this database in Montpellier in October 1999.

Dr. Pes presented the exceptional longevity in Sardinia. Since most of the assembled demographers were suspicious, I was asked to confirm the veracity of the age of centenarians in Sardinia. After verifying the age of 40 centenarians on the island in 2000



▲ Prof. Michel Poulain (left) and Prof. Makoto Suzuki (photo archive)

year with the help of Gianni Pes, I was convinced that the most attractive result was not that these centenarians were real centenarians, but the discovery of a confirmed cluster of longevity in a mountainous part of Sardinia. It was then that I picked up a blue pen. However, both Gianni Pes and I took a long time to convince demographers of our discovery, and the first scientific article presenting the BZ was not published until November 2004 in *Experimental Gerontology*. In the meantime, I visited Okinawa in 2001 and Georgia (Caucasus) in 2002 to discover new BZs.

|| *You established the BZ name during your research with Dr. Pes, when did it gain notoriety?*

At the same time, Dan Buettner, a daily-nikar, began to take an interest in the

longevity independently of us and came across our article. In 2004, he traveled to the islands we described - Okinawa and Sardinia - well known for the exceptional longevity of their inhabitants. He then wrote an article published by National Geographic at the end of 2005 on these two longevity destinations and included in it, the American Seventh-day Adventist Church community of Loma Linda. Their longevity is due to a lifestyle based on strict health principles. Nevertheless, Loma Linda cannot be considered a BZ *sensu stricto*, but rather a for Blue Population, although the community lives in a limited area and all the people living there show signs of exceptional longevity, which can be related to their shared environment. Then D. Buettner contacted me and mentioned the term Blue Zones in his groundbreaking article published by "National Geographic" and later, in 2006, opened a website using that name (www.bluezones.com), and began to popularize the areas of Longevity and knowledge related to this issue.

|| *And when were more zones singled out?*

Following the work initiated by Luis Rosero-Bixby in Costa Rica, I identified the Nicoya Peninsula as a potential BZ and, with the support of Gianni Pes, we confirmed BZ status for a cluster of five Nicoya Peninsula municipalities.

I then collected Greek data, with the goal of finding a new BZ in Greece - I chose Ikaria in the Aegean Sea as a potential BZ to explore. Together with Dan Buettner, Gianni Pes and the team sponsored by "National Geographic" we conducted an expedition to the island of and we assigned it a BZ status after approving documents and statistics claiming exceptional longevity.

|| *When one follows the articles and available recordings, as well as your presentations and photos, what draws one's attention is the simplicity of these people's lives, the joy on their faces and their often very modest living conditions. So what can we learn from today's centenarians?*

Learning the correct lessons from BZ still requires a lot of research to uncover the secrets of longevity. Beyond the specifics of this task, there is a paradox worth exploring. In some populations, such as on the Nicoya Peninsula in Costa Rica, the islands of Ikaria and Okinawa, and in the mountains of Sardinia, exceptional longevity is far more unusual than in most developed societies with state-of-the-art health care systems. Why is it that in economically and technologically developed populations it occurs among people aged 60 to 80 years so many deaths that could be

sites and with the support of an efficient system

Health care? In Blue Zones that are not as highly developed, men and women often live into their 90s. Are the lessons learned from a study of the determinants of longevity in the BZ

Can they help answer this question? Appel (2008) expressed the view that BZ, currently limited to a few populations around the world, could become widespread.

¶ *But the question remains: how can the lessons learned be used to improve healthy aging in post-industrial societies?*

I will cite two examples initiated in Europe. In the Netherlands, a project has been implemented Healthy Aging Network Northern Netherlands (HANNN), which aims to help populations age in good health by following the principles of Blue Zones (www.hannn.eu). The ambition of the HANNN project is to create favorable conditions for longevity in our own society, based on observations from four BZ. According to its premise, healthy longevity is earned throughout life, not just at age 65. The project is supported by researchers at the University of Groningen, who have developed a detailed approach to implementing the recommendations in the "man-made Blue Zone" to stimulate the development of a quality of life similar to that observed in ustano-BZ's woes.

In Belgium, on the other hand, two Senior Co-housing Communities initiatives have recently been implemented, and the idea behind their development refers to the "Seven Principles of Blue Zones." The "Blue Zone Flanders" project

(www.bluezonesflanders.com) and the "Jardin des Paraboles" with the theme "Living Blue Zone" (www.jardindesparaboles.be) were based on this idea. One of Flanders' leading innovators in residential care, Triamant, is creating residential neighborhoods that, according to its slogan, "add life to the years, not just years to live." Four such neighborhoods are already in operation and two more are under construction. They promote resident autonomy, support vitality, and offer integrated care when needed, and, above all, promote the formation of social ties between people.

¶ *And what do these seven principles sound like?*

I have listed and described them all on my scientific website www.longevitybluezone.com. They were created by analyzing in-depth research on the lifestyle and behavior of many centenarians in BZ. These principles, combined with genetic factors that are still being studied, may account for the unique long-longevity

these populations. These rules can be transferred to other societies to promote better health and longer life.

¶ *The first rule is?*

The first rule is "Move naturally," as BZ's oldest residents are constantly on the move, performing their daily activities. Actual retirement often occurs after the age of 80, and the limitation of physical activity slowly decreases with a gradual decline in physical capacity. However, they are still active - growing vegetable gardens, working in olive groves, vineyards or raising animals. This is part of their daily life. The daily distances traveled by the elderly in BZ are astonishing, especially after taking into account the differences in elevation due to the steep terrain of the villages. Nowadays, fitness clubs allow active movement and physical activity, but the key message is "Move naturally, without excess, but with endurance."

The second rule is "Eat wisely." Eating is an essential need of the body, and the amount of food needed depends largely on the largely on the energy expended during physical activity. However, as we learned from luddi living in BZ,



It is recommended to stop eating when the stomach is 80% full. Eating too much is not conducive to health and longevity. Even if the table prepared in elderly families is attractive and varied, none of them commit the sin of binge eating. The quality of fruits and vegetables in the BZ is also an important issue - they are produced in h o u s e h o l d s or come from small local produc- tors. They are eaten seasonally and meals are usually prepared fresh at home, which adds up to a healthy diet based on produce grown in full sunlight and sourced from the surrounding waters and pastures.

The third rule is "Avoid stress and g e t enough sleep." Stress is ubiquitous in the daily lives of modern Western s o c i e t i e s and almost absent among BZ r e s i d e n t s . Sufficient daily rest is also essential for a long and healthy life. Elderly people in BZ follow the diurnal cycle of the sun - they g o t o bed early and get up very early. Without a doubt, a healthy lifestyle promotes longevity, and this is what BZ residents teach us.

The fourth principle is "Maintain strong family ties." In every BZ, the importance of family is special, except for the exception, which is Okinawa, from where many people emigrated after the war. In other BZs, families cannot imagine being separated from their elders. s, even dependent relatives and transferring them to nursing homes. In addition, among BZ residents, the family s o l i d a r i t y and ties that bind members even

extended family, are essential.

If the elderly person lives alone, a family member often lives nearby, or neighbors help out. Sometimes seniors share their lives with several of their children, and family celebrations together are common.

The fifth principle is "Stimulate strong community support." The sense of solidarity extends far beyond the family. Elderly residents in every BZ are honored, maintaining their important place in every rural community. Celebrations of centenarians are held, often with festivals to celebrate exceptional longevity, which brings together the entire local community.

The sixth principle is "Respect for the Planet." In every BZ, concern for ecology and respect for the planet are omnipresent, even if the terms "ecology" or "bio" are rarely used here. This is manifested in the care for order, harmony with nature. No preservatives, additives or flavor enhancers are used, and the taste and quality of locally produced food is not disturbed. These habits are ingrained In tradition and derive from ancestors.

Siódmą zasadą jest „Miej cel w życiu”. Osoby starsze mieszkające w BZ cieszą się życiem, a każdy dzień przynosi im nowy impuls. W każdej BZ istnieją pewne motywy przewodnie, które wyrażają ten

An optimistic view of life: *Pura vida* on the Nicoya peninsula, *A kent'annos*, which means.

"May you live to be a hundred years old" in Ogliastra, and

Ikigai in Okinawa, which means intensive

The feeling of happiness and has positive connotations

related to the goal. Just as in Icaria, being a communist did not conflict with the With being religious. Belief in the existence of a higher being is particularly strong among centenarians, who see it as the main reason for their exceptional longevity.

¶ Many thanks to the Professor for the extensive interview. I am glad that readers can learn about BZ inspirations, which was the purpose of our Conference "Lifestyle Medicine for Longevity. Blue Zones inspirations." Learning about both ideas, one can see how the lifestyles of centenarians harmo- nize with what supports our immunity, and overlap with the knowledge promoted by the six pillars of lifestyle medicine.

Thank you for the initiative and invitation. The m o s t important thing should be a person, his dignity, the possibility of self-realization through work for the community. And at the same time his happy, love-filled and joy-filled life surrounded by loved ones and in contact with nature. ■



➔ See: Longevity Blue Zones - Michel Poulain's research page

▼ Sardinia is a Blue Zone - one of five geographical areas in the world, where people live the longest and are the healthiest. The other Blue Zones are: Icaria in Greece, Okinawa in Japan, Nicoya in Costa Rica, and the community of the Seventh-day Adventist Church in Loma Linda, California (photo archive)