To Whom It May Concern,
We are career demographers and scientists who have identified and studied the world's longevity blue zones. We are writing to object to Saul Newman's academically misleading and deeply flawed preprint papers, which have not been peer-reviewed by any scientist.
Below, we have provided links to our peer-reviewed academic papers that thoroughly detail how we have confirmed the ages of centenarians and older individuals in each of the blue zones, along with the statistical methodology we used to establish their extraordinary longevity.

What are Blue Zones?
Blue zones are geographically defined areas where there is a disproportionately high number of nonagenarians and centenarians. They are in Okinawa, Japan, Ikaria, Greece, Ogliastra, Sardinia, and Nicoya, Costa Rica. These zones first gained international attention two decades ago when the term was introduced in an article published in *Experimental Gerontology* (1) and *National Geographic* (2). Since then, numerous scientific papers have validated the demographic origins of blue zones regions and have attempted to extract valuable insights from them (3-12).

In his unreviewed preprints (13, 14), Newman omits or misunderstands the rigorous age verification and statistical analysis involved in identifying blue zones. The procedure is highly accurate and includes:

1. Identifying potential high-longevity target areas based on public demographic databases, which may contain some errors.
2. Accurately counting the number of people born in the target area, categorized by sex and year of birth.
3. Identifying individuals who have reached a preset threshold age (e.g., 90 years), regardless of residence.

Calculating the ratio of long-livers to total births recorded during the same time interval. This index reflects the probability of people born in the target area reaching the threshold age. This methodology considers all individuals born in the target area, whether they are alive or deceased, and whether they have emigrated. The process is designed to minimize the likelihood of false positives (type I errors) and ensures accurate identification of the blue zones regions.

4. Determining age-specific mortality rates of the older population free of age-exaggeration bias and estimating remaining years of life expectancy and probabilities of surviving to be a centenarian.

In Sardinia, for example, we double-checked the age of every centenarian in the Blue Zone villages using:

- Civil status databases dating back to 1866,

- Handwritten records from ecclesiastical archives, consistently available from the 17th century onward,
- A complete genealogical reconstruction of village inhabitants from 1866 onward.

Not only were the birth and death dates of each centenarian confirmed, but those of their siblings were also cross-checked. This allowed us to rule out any possible identity switches, such as the case of a false supercentenarian that was rigorously eliminated from our Sardinian centenarians' database (15).

Alternatively, in Nicoya, all estimates are based, not in self reported ages but in well documented dates of birth taken from the civil registration registry established in Costa Rica in 1883. Individuals not found in the registry (immigrants) or whose birth was recorded late in life were excluded.

Newman's Critique

Newman's papers, which he is vigorously promoting in the mainstream media, attempts to discredit the Blue Zones research by presenting a series of false equivalencies (13, 14). He argues that the excessive number of centenarians and supercentenarians in non-blue zones areas is due to poor demographic records, but this criticism does not apply to blue zones regions, where we have rigorously validated ages.

Newman also alleges that birthdates in blue zones regions exhibit "age heaping" patterns, but such patterns do not appear in the validated data from the blue zones, which show no unusual distribution of birthdates. Further, his examples of fraudulent death registrations in Japan and the U.S. have no bearing on blue zones regions, where we have meticulously validated all ages before analysis.

His assertion that the blue zones correspond to regions with high illiteracy, poverty, and crime is misleading. While some blue zones regions experienced delays in economic and social development (16), these factors have no influence on the calculation of longevity rates. For instance, in 2005, Okinawa had the highest centenarian rate at age 70, far surpassing the national averages (17). However, we have publicly acknowledged that Okinawa's longevity rates have declined with the arrival of modern diets and transportation.

Newman's use of Sardinia-wide crime and poverty statistics to generalize about the blue zones regions is also misleading. The Sardinian blue zones regions is a small rural area of about 50,000 people spread across six mountain villages, whereas Sardinia as a whole has a population of 1.6 million, most of whom live in major urban areas like Sassari and Cagliari.

Conclusion

In conclusion, the ages of individuals in the officially recognized blue zones regions have been thoroughly validated, and their exceptional longevity is well-documented. Newman's unreviewed papers are both ethically and academically irresponsible. His promotion of them in the mainstream media insults both the scientific community and the blue zones communities themselves, who take pride in their elders and culture of longevity.

Sincerely,

Dr. Gianni Pes
Dip. Medicina, Chirurgia e Farmacia, Università di Sassari, Sassari, Italy.

Luis Rosero-Bixby
Centro Centroamericano de Población, Universidad de Costa Rica, San José, Costa Rica.

Christina Chrysohoou, Christodoulos Stefanadis
First Department of Cardiology, School of Medicine, National and Kapodistrian University of Athens, Hippokration General Hospital, Athens, Greece.

Bradley J. Willcox MSc, MD, FGSA, SM
Professor and Director of Research
Department of Geriatric Medicine
John A. Burns School of Medicine
University of Hawaii, Kuakini Campus
Co-Principal Investigator
Okinawa Centenarian Study
Okinawa Research Center for Longevity Science

Craig Willcox
Department of Geriatric Medicine, John A. Burns School of Medicine, University of Hawaii, Honolulu, HI 96817, USA; Department of Research, Kuakini Medical Center, Honolulu, HI 96817, USA; Department of Human Welfare, Okinawa International University, Ginowan 901-2701, Japan.

References:

1. Poulain M, Pes GM, Grasland C et al. Identification of a geographic area characterized by extreme longevity in the Sardinia island: the AKEA study. Exp Gerontol. 2004;39:1423-9.
2. National Geographic Article
3. Appel LJ. Dietary patterns and longevity: expanding the blue zones. Circulation. 2008;118:214-5.
4. Buettner D, Skemp S. Blue Zones: Lessons From the World's Longest Lived. Am J Lifestyle Med. 2016;10:318-21.
5. Huang Y, Mark Jacquez G. Identification of a Blue Zone in a Typical Chinese Longevity Region. Int J Environ Res Public Health. 2017;14:571.
6. Poulain M, Herm A, Errigo A et al. Specific features of the oldest old from the Longevity Blue Zones in Ikaria and Sardinia. Mech Ageing Dev. 2021;198:111543.
7. Pes GM, Dore MP, Tsofliou F et al. Diet and longevity in the Blue Zones: A set-and-forget issue? Maturitas. 2022;164:31-37.
8. Najafi P, Mohammadi M. Redefining Age-Friendly Neighbourhoods: Translating the Promises of Blue Zones for Contemporary Urban Environments. Int J Environ Res Public Health. 2024;21:365.

9. Rosero-Bixby L, Dow WH, Rehkopf DH. The Nicoya region of Costa Rica: a high longevity island for elderly males. Vienna Yearb Popul Res. 2013;11:109-136.
10. Rehkopf DH, Dow WH, Rosero-Bixby L, Lin J, Epel ES, Blackburn EH. Longer leukocyte telomere length in Costa Rica's Nicoya Peninsula: a population-based study. Exp Gerontol. 2013;48:1266-73.
11. Azofeifa J, Ruiz-Narváez EA, Leal A, Gerlovin H, Rosero-Bixby L. Amerindian ancestry and extended longevity in Nicoya, Costa Rica. Am J Hum Biol. 2018;30(1).
12. Rosero-Bixby L. The vanishing advantage of longevity in Nicoya, Costa Rica: A cohort shift. Demographic Research. 2023;49:723-36.
13. Newman SJ. Supercentenarians and the oldest-old are concentrated into regions with no birth certificates and short lifespans. bioRxiv, 2019, 704080.
14. Newman SJ. Supercentenarian and remarkable age records exhibit patterns indicative of clerical errors and pension fraud. bioRxiv, 2024, 704080.
15. Poulain M, Pes GM, Carru C et al. The Validation of Exceptional Male Longevity in Sardinia. In: Robine, JM., Crimmins, E.M., Horiuchi, S., Yi, Z. (eds) Human Longevity, Individual Life Duration, and the Growth of the Oldest-Old Population. International Studies in Population, 2007, vol 4. Springer, Dordrecht.
16. Cockerham WC, Hattori H, Yamori Y. The social gradient in life expectancy: the contrary case of Okinawa in Japan. Soc Sci Med. 2000;51:115-22.
17. Robine JM, Herrmann FR, Arai Y et al. Exploring the impact of climate on human longevity. Exp Gerontol. 2012;47:660-71.