GARMIN®
HEALTH

LONGEVITY INSIGHT REPORT

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ABOUT GARMIN HEALTH

Garmin Health empowers innovative third-party digital health solutions with the Garmin Health Connected Ecosystem, comprised of the Garmin product portfolio[A] and its data integration services. By leveraging the Garmin Health API and SDKs, organizations can receive real-time or existing biometric data – with customizable levels of granularity – in accordance with their specific privacy policies. Garmin Health is a global division of technology leader Garmin, collaborating with entities in areas like healthcare, research, employee benefits, insurance, fitness and defense. For more information, connect with us on LinkedIn, sign up for our newsletter or visit us online at garmin.com/health.

LETTER FROM JOERN WATZKE, SENIOR DIRECTOR GARMIN HEALTH GLOBAL SALES & SCOTT BURGETT, SENIOR DIRECTOR GARMIN HEALTH ENGINEERING

JOERN WATZKE

Senior Director Garmin Health Global Sales



With many populations living longer than ever before, longevity becomes not just a question of adding years, but preserving quality of life, independence and functional health. This is why “healthspan” is now a defining topic in the digital health space. Whether it is with insurance providers, researchers or healthcare professionals, the Garmin Health team is having conversations with industries around the world as they adapt to meet the needs of the growing number of adults over 65.

Our previous Insight Reports touched on integral components to this discussion, namely the roles mitigating noncommunicable diseases, like type 2 diabetes, and developing scalable systems of prevention play in the future longevity care.

We hope this healthspan-focused edition inspires you to consider what healthy aging looks like in the years ahead.

Thank you for reading,

Joern Watzke

SCOTT BURGETT

Senior Director Garmin Health Engineering



As you will read in this report, modern science emphasizes the value of measurable behaviors and physiological factors – including sleep quality, physical activity, stress management and recovery – on long-term health outcomes. It is the accumulation of these choices over years and decades that often determines quality of life in the final twenty to thirty years.

We are at a point where these modifiable risk factors and behaviors can be studied in a continuous, noninvasive way. Namely, with consumer-grade wearables[A]. The confluence of cost-effective devices, integration options and AI analysis of large amounts of high-quality data represents an opportunity for organizations to address the disease burden of older adults in scalable, proactive and innovative ways.

Now, more than ever before, we should look at aging with optimism.

Sincerely,

Scott Burgett

EXECUTIVE SUMMARY

With average life expectancy continuing to increase in many parts of the world, it is no surprise that longevity has emerged as one of the fastest growing areas of focus in industries like healthcare, research and consumer wellness. However, more total years do not always equate to more "good" years, and older adults often experience significant health challenges in the last trimester of their lives. To address this disease burden, attention is shifting from lifespan to healthspan: the period of life without preventable health conditions, disability and functional decline.

This change underscores growing recognition that there are modifiable factors of healthy aging, including physical activity, sleep quality, cardiovascular fitness and stress management. These lifestyle-related variables play a significant role influencing long-term outcomes across populations. However, these indicators are traditionally assessed only during intermittent healthcare encounters, limiting visibility into daily habits and physiological trends.

Consumer devices like Garmin wearables[A] are helping bridge this gap by enabling 24/7 biometric monitoring outside of traditional clinical settings. Metrics such as resting heart rate (RHR), heart rate variability (HRV), sleep duration and quality, physical activity, respiration rate and estimated VO_2 max provide a longitudinal view of health with daily data points, supporting individual decision-making and population-level research.

With data integration into third-party digital health solutions, this information is increasingly valuable as artificial intelligence and predictive analytics continue to mature. For healthy aging to become scalable across many population groups, individuals must be empowered to understand, monitor and improve daily behaviors impacting long-term health outcomes.

TOPIC OVERVIEW

Longevity as a Global Priority

Advances in medicine and healthcare, public health improvements, lower infant and child mortality, as well as better nutrition and living conditions have all enabled many populations around the world to live longer than ever before[1]. This makes population aging one of the most notable and important demographic shifts in the 21st century. The United Nations approximates the number of people aged 65 or older is expected to more than double worldwide – from 761 million in 2021 to 1.6 billion by 2050 – and the population aged 80 and older could more than triple over the same period[1].

The increase in longevity poses a considerable problem to healthcare systems globally as age-related chronic conditions like cardiovascular disease, diabetes, cancer, neurodegenerative disorders and frailty make up a greater share of the overall disease burden. Noncommunicable diseases currently account for almost 74% of all deaths worldwide[3].

Global life expectancy now exceeds 73 years[2]. However, healthy life expectancy remains around 64 years, illustrating that almost a decade is often marked by chronic illness, disability or declining physical and cognitive function[2]. As people age, this gap is expected to grow. According to the World Health Organization, an estimated one in six people will be 60 or older by 2030, increasing the need for healthcare service, long-term care and support systems[2].

For an already strained healthcare system, this reality underscores the need for the longevity conversation to evolve from extending lifespan to maximizing healthspan. Research supports the effect physical activity, cardiovascular fitness, sleep quality and stress management have on how well people age[2]. For example, cardiorespiratory fitness is associated with lower all-cause mortality risk, while physical inactivity is believed to contribute to more than 5 million deaths annually worldwide[4,9].

The Emergence of Healthspan

Traditionally, there have been challenges to quantifying healthy aging. Clinicians often focus on acute interventions, diagnosing disease or treating illness once it becomes symptomatic, rather than analyzing daily habits. However, longevity science suggests aging can be assessed through a combination of functional, behavioral and physiological indicators, not just chronological age alone[2]. Research indicates genetics may only be responsible for 20-30% of longevity outcomes, meaning environmental and lifestyle factors play a significant role[7].

As previously referenced, healthspan is acutely linked with physical activity, cardiorespiratory fitness, sleep quality, stress resilience and metabolic health. Thankfully, these variables are both measurable and, to a degree, modifiable. Regular physical activity has been consistently shown to reduce the risk or progression of cardiovascular disease, type 2 diabetes and several cancers, yet an estimated 1.8 billion adults worldwide fall short of recommended physical activity guidelines[5]. Insufficient or poor-quality sleep has been linked to impaired metabolic health, cognitive issues and greater mortality risk[6].

Because these indicators can be passively monitored 24/7 with consumer-grade wearables[A] and the data can be integrated into digital health platforms, healthspan is shifting from a theoretical concept to a measurable goal. Instead of solely relying on annual checkups or one-off clinical tests and studies, researchers and digital health innovators are now regularly evaluating biomarkers to identify longitudinal health trends directly correlated to how well an individual is aging over time. This shift showcases the importance of continuing to evolve approaches to longevity care overall.

Wearable Data to Longitudinal Insights

While the ability to continuously measure health-related behaviors and physiological signals is an important progression in digital health, data collection alone does not improve healthspan. The next step is translating large

amounts of longitudinal data into actionable insights that support research, innovation and individual decision-making.

The progression of artificial intelligence and information analysis could accelerate this transition by identifying patterns across complex datasets that isolated measurements would be hard-pressed to recognize. For instance, rather than evaluating a single weigh-in or night of sleep, longitudinal data streams can provide much-needed context around an individual's baseline, variability and changes that becomes more nuanced over months and years. Research involving over 21,000 adults and almost 2 million nights of monitoring found HRV variation was sensitive to daily behaviors and other factors, demonstrating its value as a long-term metric for continuous data analysis[8].

With the current status quo of population aging, there is a pressing need to extend healthspan. The proliferation of cost-effective consumer-grade wearables[A], data integration options – like those offered through the Garmin Health Connected Ecosystem – and digital health platforms makes the evaluation of measurable lifestyle and physiological factors a viable way to assess how well people are aging. The next step is turning those longitudinal datasets into meaningful insights that can inform research, personalized approaches to wellness and digital healthcare solutions. A shift towards a more data-driven understanding of healthy aging has the opportunity to revolutionize older adult populations around the world for the better.

GARMIN HEALTH USE CASES

Precision Aging Network and UCLA

United States

Researchers from UCLA utilized the GHCE to analyze Garmin wearable data alongside DunedinPACE, an epigenetic measure of the pace of biological aging, to investigate relationships between real-world physiological and behavioral signals and biological aging. The analysis included 621 adults ages 50–79 with both DunedinPACE and smartwatch data, with metrics grouped across mobility, cardiorespiratory physiology, sleep and physiological stress.

The researchers observed significant associations across all four wearable-data domains, demonstrating how consumer wearable data can be incorporated alongside biological measures in aging research.

REACT Wear

Denmark and Spain

Researchers from Rigshospitalet, Copenhagen University Hospital and the Spanish National Center for Cardiovascular Research are incorporating data from the GHCE into REACT, part of a broader study examining atherosclerosis[10]. The researchers combine traditional measurements such as imaging, blood tests and cardiovascular risk factors with continuous wearable data reflecting sleep, activity and physiological responses to stress.

The REACT Wear app, developed by the Spanish National Center for Cardiovascular Research, incorporates Garmin data to provide researchers with additional information about participants in real-world environments. The project examines healthy and less healthy cardiovascular trajectories and how wearable-derived patterns compare with conventional analyses, demonstrating how longitudinal biometric data can complement established research methods.

Health and Happiness Study

Multinational

Researchers from Harvard University and the University of Oxford are using Garmin smartwatches via the GHCE, smartphones and participant surveys to investigate predictors of happiness and well-being. The study is expanding to include more than 10,000 participants globally, with smartphone surveys administered three times per day and responses cross-referenced with Garmin data via a third-party application to examine variables including physical activity, sleep, socialization and stress.

Initial findings identified relationships between daily physical activity, adequate sleep, happiness and stress, while also finding differences in emotional stability by age. By combining participant-reported experiences with continuously collected wearable data, the research demonstrates how digital health technologies can support the study of well-being alongside behavioral and physiological factors relevant to broader discussions around healthspan.

LOOKING AHEAD: LONGEVITY'S DATA-DRIVEN FUTURE

With the maturation and continuous evolution of longevity science, opportunities extend far beyond data collection. Understanding which longitudinal signals are meaningful, how they vary over time and where they can support research and digital health experiences will be essential to creating services and programs optimized for

healthspan. Consumer wearables can contribute to these innovations by providing high-quality data that is cost effective and at scale, but their value is contingent upon validation, interpretation and integration into appropriate solutions.

The next phase of longevity will potentially emphasize longer-duration research initiatives, the incorporation of wearable data into clinical and wellness workflows and automated analysis capable of identifying increasingly complex patterns. These advances could further emphasize the important role modifiable factors like as physical activity, fitness, sleep, stress and recovery play in healthy aging.

For Garmin Health, this creates an opportunity to support the forward-thinking organizations piloting those solutions. Through the GHCE, third parties can access wearable data through APIs and SDKs and determine how it should be used within their own research, wellness or digital health applications. This developer-first model is particularly relevant to longevity, where no single metric or intervention can capture the complexity of healthspan.

Looking ahead, progress in longevity will depend on connecting research with real-world measurement and translating those insights into approaches that support health and function as people age. With the global population growing older, the ability to study measurable behaviors and physiological patterns over longer periods delineates a path toward making healthy aging an increasingly tangible and actionable goal.

[A] Garmin wearable devices are consumer wellness devices and are not medical devices under the regulation of any jurisdiction, including Regulation (EU) 2017/745. They are not intended for the diagnosis, prevention, monitoring, or treatment of any disease. Any medical or clinical functionality described is provided by a third-party solution and is solely based on their interpretation of data gathered from various data sources.

ENDNOTES

1 United Nations Department of Economic and Social Affairs. “Leaving No One Behind in an Ageing World.” World Social Report 2023. 2023. https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2023/01/2023wsr-chapter1-.pdf.

2 World Health Organization. “Ageing and Health.” 2025. https://www.who.int/news-room/fact-sheets/detail/ageing-and-health.

3 World Health Organization. “Noncommunicable Diseases.” 2024. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases.

4 Laukkanen JA, Isiozor NM, Kunutsor SK. “Objectively Assessed Cardiorespiratory Fitness and All-Cause Mortality Risk: An Updated Meta-analysis of 37 Cohort Studies Involving 2,258,029 Participants.” Mayo Clinic Proceedings. 2022;97(6):1054-1073. https://doi.org/10.1016/j.mayocp.2022.02.029.

5 World Health Organization. “Nearly 1.8 Billion Adults at Risk of Disease From Not Doing Enough Physical Activity.” 2024. https://www.who.int/news/item/26-06-2024-nearly-1.8-billion-adults-at-risk-of-disease-from-not-doing-enough-physical-activity.

6 Li J, Cao D, Huang Y, et al. “Sleep Duration and Health Outcomes: An Umbrella Review.” Sleep and Breathing. 2022;26:1479-1501. https://doi.org/10.1007/s11325-021-02458-1.

7 Ruby JG, Wright KM, Rand KA, et al. “Estimates of the Heritability of Human Longevity Are Substantially Inflated Due to Assortative Mating.” Genetics. 2018;210(3):1109-1124. https://doi.org/10.1534/genetics.118.301613.

8 Grosicki GJ, Carter JR, Laursen PB, et al. “Heart Rate Variability Coefficient of Variation During Sleep as a Digital Biomarker That Reflects Behavior and Varies by Age and Sex.” American Journal of Physiology-Heart and Circulatory Physiology. 2026;330(1):H187-H199. https://doi.org/10.1152/ajpheart.00738.2025.

9 Lee IM, Bauman AE, Blair SN, et al. “Annual Deaths Attributable to Physical Inactivity: Whither the Missing 2 Million?” The Lancet. 2013;381(9871):992-993. https://doi.org/10.1016/S0140-6736(13)60705-9.

10 Bundgaard H, García-Lunar I, Kofoed KF, et al. “Prevalence of Silent Atherosclerosis across Adult Life.” New England Journal of Medicine. 2026. doi: 10.1056/NEJMoa2609059. PMID: 42670946. https://doi.org/10.1056/NEJMoa2609059.