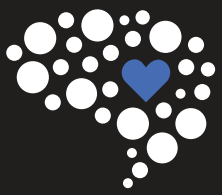
SHAPE



# Brain Health Report

White Paper

The Employee Flourishing Company

# Introductory Note


## By Dr. Whitney Austin Gray

PhD, Hon FASID, LEED AP, WELL AP


The world is waking up to a truth long understood by caregivers, clinicians, and educators: brain health is the foundation of human potential, and brain capital is our most vital economic asset.

We are living longer—but not always living well. The gap between our lifespan and brain span—our ability to think clearly, connect, and adapt—is widening. That's not just a personal tragedy. It's a global risk.

This white paper marks a turning point. Grounded in the Unified Model of Brain Health and powered by SHAPE's data, the Brain Health Report introduces a way to track the rhythms, systems, and environments that shape cognitive resilience. The nine levers—stress, sleep, mindset, social connection, and more—help us measure and evolve how we invest in our people.

The economic stakes are profound. Poor brain health already costs the global economy $8.5 trillion a year, projected to reach $16 trillion by 2030. McKinsey estimates a $26 trillion upside if we invest in brain capital—half of it tied directly to the workplace.

Brain health focuses largely on the individual experience. Brain capital looks more broadly on how organizations invest in that capacity. And like any investment, it requires tools to measure progress and guide action.

I come to this work as both a scientist and a mother—seeing through two lenses: the systems we design and the lives we live within them. I've studied how investment, design, and culture directly shape brain health in the places we live and work. In a world where we spend over 90% of our time indoors, the spaces we build matter profoundly. The Brain Health Report is a natural extension of this truth—it gives us the tools to measure what environments make possible: resilient bodies, flourishing people, and better futures.

As Warren Buffett said, 'Someone is sitting in the shade today because someone planted a tree a long time ago.' I hope we all find a way to invest in brain capital. **The Brain Health Report** is for all those willing to plant the seeds today.

# Contents

# Why Brain Health Matters

Brain health is one of the defining health and human capital challenges of our time. Far more than the absence of disease, it encompasses the full spectrum of human functioning—how we think, feel, connect, adapt, and perform across life stages and settings.

It is inherently multidimensional, spanning mental, neurological, physical, and social domains. It is shaped not only by individual behaviours but by the environments, relationships, and systems that surround us. Brain health affects and is affected by everything from sleep and stress to education, equity, and economic policy.

This interconnected nature is exactly what makes brain health so powerful—and so urgent to address. As global momentum grows, leaders across sectors are recognising that supporting brain health is no longer optional. It is foundational to human well-being, societal resilience, and the future of healthy economies.

# A Systems Approach to Brain Health

At the heart of the Brain Health Economy lies business—the central hub that connects and influences three vital domains: Workforce, Communities, and Consumers.

This model acknowledges that brain health is not isolated to the individual. It is shaped by, and in turn shapes, the systems around it. Businesses play a unique role in this ecosystem. Within organisations, improvements in brain function, skills, and resilience can support a healthier, more adaptive workforce. Beyond the workplace, business has the power to build brain-healthy communities and to serve consumers with evidence-informed, brain-supportive products and services.

The Brain Health Report is grounded in this broader view. By focusing on the internal conditions that support cognitive well-being, such as stress, sleep, social support, and mental engagement, the Brain Health Report offers insights that help employers understand where to focus attention in order to improve the brain health of their people. In doing so, organisations not only enhance individual well-being but strengthen their contribution to a broader, brain-healthy economy.

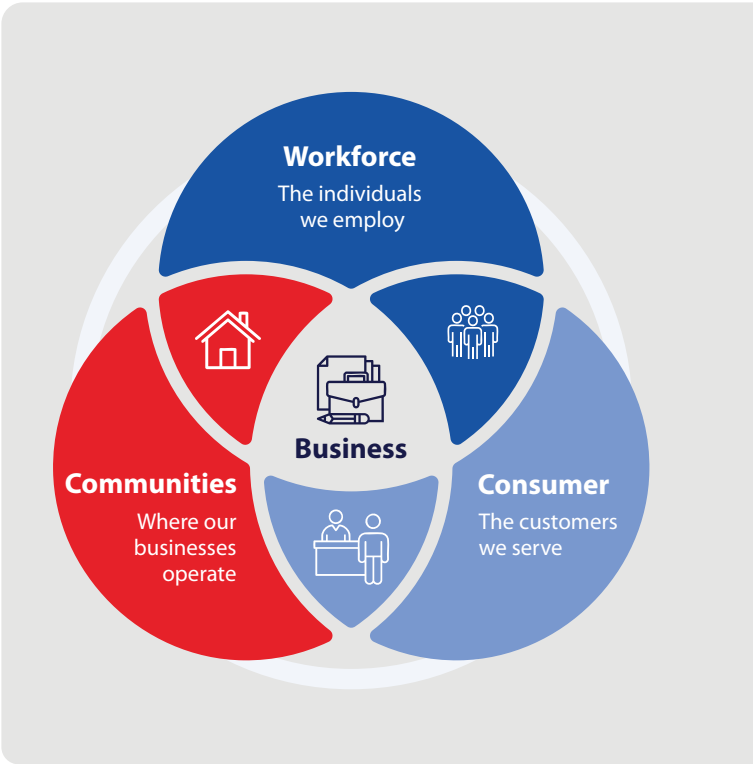



Figure 1: Brain Health Ecosystem [1]

# The Brain Health Matrix

To frame the broader systemic context of our work, we introduce the Brain Health Matrix: SHAPE's model for understanding the interconnected ecosystem required to advance brain health across society.

At the centre of the matrix is Brain Health data, the foundation for insight, action, and accountability. This data represents not only the measurable state of cognitive well-being but also the evidence base for driving change across systems and sectors.

Surrounding this are five critical institutional spheres: Workplace Organisations, Communities, Education, Government, and the Healthcare System. These systems reflect the environments in which people live, learn, work, and access care. Each system plays a structural role in shaping the conditions for brain health across the lifespan.

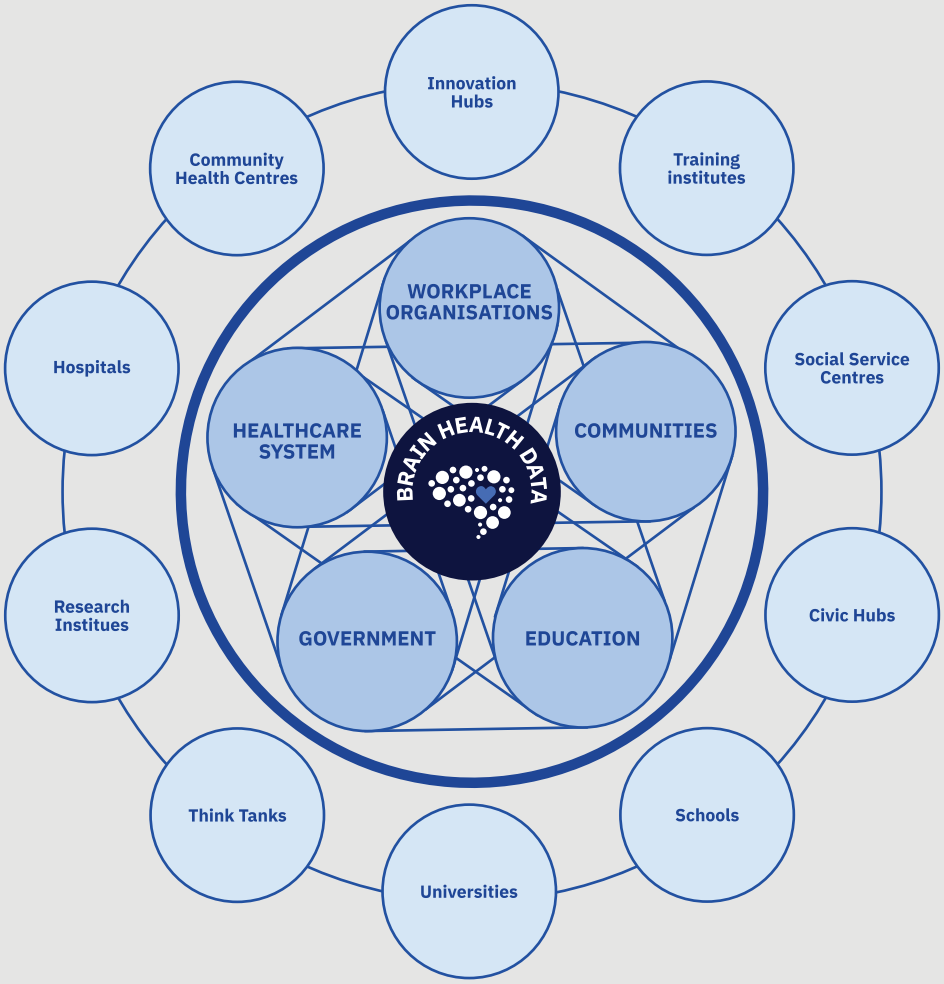



Figure 2: The Brain Health Matrix

In the outermost ring are the institutional actors embedded within these systems, organisations that bring policy and infrastructure to life through everyday interaction. These include entities like schools, universities, hospitals, and think tanks: sites where brain health is actively influenced, studied, supported, or experienced. By highlighting these actors, we bring the matrix down to the level of action, connecting systemic ambition with the real-world settings where change happens.

By situating Brain Health data at the heart of this matrix, we reinforce the idea that meaningful progress requires not only a shared understanding of what brain health is, but also coordinated, multi-level strategies to sustain and scale it across society.

## Expert Commentary

### The Role of Self-Reporting in Advancing Brain Health Measurement

*Dr. Meg Small, Ph.D., Evidence to Impact Collaborative, Penn State University*
*Prepared for SHAPE, June 7, 2025*

*While sensing technologies and AI strategies are emerging as effective methods for gaining greater insight into the human experience, bringing the science of self-reporting into the broader conversation about brain health is both immediately critical and necessary for both research and practice.*

*While brain health encompasses complex neurological, psychological, and behavioral dimensions, much of its lived experience is best captured through self-perception, emotion, and daily function—domains uniquely accessible through self-reporting tools. When aligned with research-based frameworks like the McKinsey Health Institute's Unified Model of Brain Health, self-reported data gains structure and meaning, enhancing its value for longitudinal insight and actionable interventions.*

*Validated tools such as the Brain Health Report play a vital role in this ecosystem by offering reliable, repeatable measures to assess change at multiple levels—from individual well-being to community resilience. These tools help identify at-risk populations, monitor progress, and allocate resources where they will yield the greatest return in brain capital.*

*To scale and sustain these innovations, cross-sector collaboration is essential. Public-private partnerships, such as those between the SPARC Foundation and Penn State University, and combining efforts with SHAPE Global, enable an infrastructure for longitudinal research, training capacity and catalyzing scaling of brain health as a public good. All this lays the groundwork for a systems approach to coordinate policies, programs, and investments that optimize human potential across society.*

Meg Small - Penn State University

# Introduction: The Brain Health Report

Brain health refers to the overall well-being and optimal functioning of the brain, allowing a person to realise their full potential over the life course.

The Brain Health Report is an initiative aimed at integrating brain health as a measurable component within SHAPE's existing workplace well-being framework. As organisations increasingly recognise the impact of cognitive well-being, mental resilience, and neurological health on employee performance and overall workplace outcomes, there is a growing need for a structured, data-driven approach to assessing and improving brain health in professional settings.

This paper outlines the systematic approach taken to develop the Brain Health Report model, ensuring its alignment with SHAPE's established survey data and reporting systems. The goal of the Brain Health Report is to provide organisations with actionable insights into the cognitive and mental well-being of their workforce, enabling evidence-based interventions that support both individual well-being and business performance.

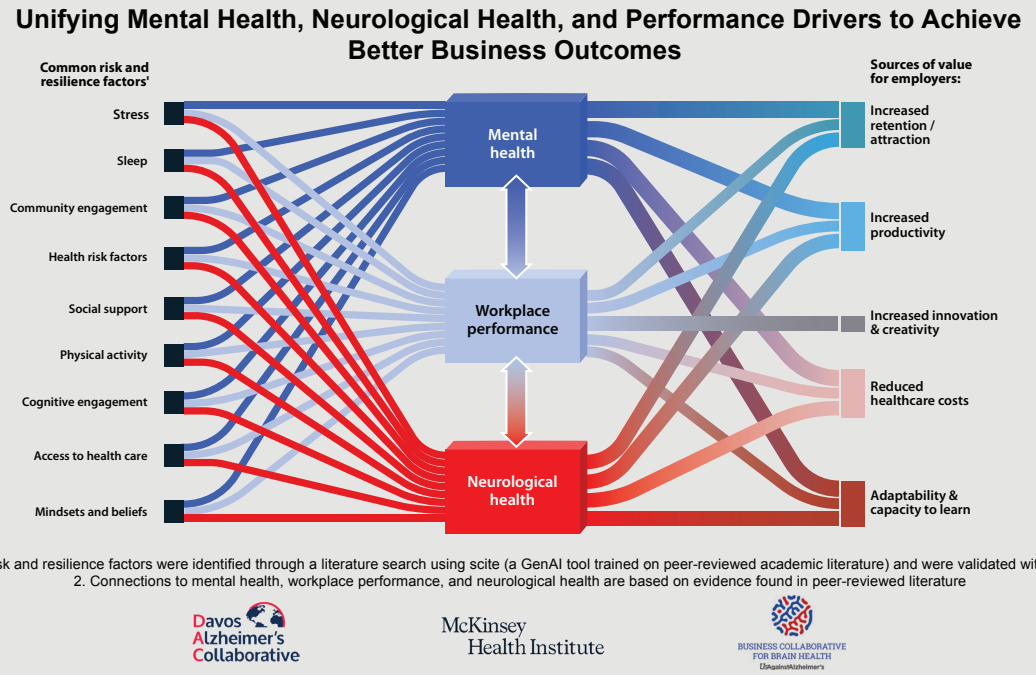



Figure 3: The Unified Model of Brain Health

## Core Concepts and Research Questions

The Brain Health Report builds upon the ***Unified Model of Brain Health***[2], developed by UsAgainstAlzheimer's, the Davos Alzheimer's Collaborative, and the McKinsey Health Institute. This framework recognises brain health as a dynamic, multidimensional concept shaped by mental health, neurological integrity, environmental factors, and daily life demands.

The framework identifies three interdependent domains of brain health:

- Mental Health, encompassing emotional well-being, psychological resilience, and mental disorders
- Neurological Health, focusing on the prevention and progression of neurodegenerative diseases and cognitive decline
- Workplace Performance, which examines the cognitive and behavioural capacities that enable people to function effectively at work

These domains are not siloed. Rather, they interact continuously, forming the basis for a holistic, systems-level understanding of how people think, feel, and function in real-world contexts—especially in the workplace.

At the core of the model are nine **risk and resilience levers** that represent the most actionable areas for improving brain health. These include everyday elements such as stress, sleep, physical activity, and social support—variables that can either protect or compromise long-term cognitive well-being, depending on how they're supported.

Building on this foundation, we created the **Brain Health Report Model**, which adapts the Unified Model of Brain Health for workplace application. In this report, we retain the nine levers, referring to them as **Brain Health Model (BHM)** factors to reflect their role in measurement and reporting. While their names remain unchanged, we've developed tailored definitions rooted in literature and behavioural science to ensure workplace relevance. This allows us to translate abstract drivers of brain health into measurable dimensions within organisational environments.

Importantly, our model also integrates the concept of Value for Employers, linking each factor to outcomes such as retention, productivity, innovation, and reduced healthcare costs. This reinforces the idea that brain health is not just a personal or clinical concern—it is a strategic business priority. In the sections that follow, we explore each of these components in turn: the nine BHM factors, their connections to the three domains of brain health, and their impact on key employer outcomes.

## Brain Health Model Factors

In Phase I of the Brain Health Report, we focused on operationalising the nine risk and resilience levers identified in the Unified Model of Brain Health. These levers represent the most actionable and evidence-informed areas for influencing cognitive and emotional well-being at work.

In our model, we continue to use these nine levers, but refer to them as Brain Health Model (BHM) factors to reflect their role in workplace measurement and reporting. While their original names remain the same, we have redefined each one through literature review and workplace data analysis to better align with modern organisational contexts. This approach allows us to understand how daily habits, environmental conditions, and organisational practices either support or undermine brain function and mental resilience in real-world work settings.

**• Stress**

Stress is the brain's response to external pressures, impacting cognitive function, emotional regulation, and overall well-being. Chronic stress impairs memory, decision-making, and mental health, increasing the risk of neurological and mood disorders[3,4]. At work, it stems from high job demands, low control, poor support, and job insecurity, reducing productivity and well-being[5-7]. Effective stress management is critical for sustaining brain health and performance.

**• Sleep**

Sleep is a fundamental process for brain health, supporting cognitive function and emotional regulation. Poor sleep is linked to cognitive decline, impaired decision-making, and increased risk of neurodegenerative diseases.[8-10] In the workplace, sleep deprivation reduces

productivity, increases safety risks, and negatively impacts employee well-being. Sleep quality is also influenced by workload, shift schedules and employee adaptability.[11-13]

**• Community Engagement**

Community engagement refers to active participation in social networks and collective activities that strengthen cognitive and emotional well-being. It supports brain health by enhancing social connectedness, reducing cognitive decline, and improving mental resilience.[14,15] In professional settings, fostering community through social participation, employee voice, and inclusive engagement strategies improves well-being, collaboration, and performance.

**• Health Risk Factors**

Health risk factors are behaviours, conditions, and exposures that negatively impact brain health, increasing the risk of cognitive decline, neurological disorders, and mental health conditions. These include physical inactivity, poor diet, smoking, and unmanaged cardiovascular health. In organisations, job strain, organisational stressors, and unhealthy lifestyle behaviours contribute to long-term brain health risks.[16-20] Reducing these risks through workplace health initiatives and supportive environments is essential for sustaining cognitive well-being and employee performance.

**• Social Support**

Social support refers to the availability of emotional, informational, and practical resources from relationships that enhance brain health by reducing stress, improving resilience, and supporting cognitive function. Social support is linked to better mental health, larger brain volumes, and slower cognitive decline.[21-23] In work environments, social support from coworkers, supervisors, and organisational culture helps mitigate stress, prevent burnout, and improve employee well-being and performance.

**• Physical Activity**

Physical activity supports brain health by improving cognitive function, promoting neuroplasticity, and reducing the risk of neurological and mood disorders. Regular movement enhances memory, learning, and emotional regulation.[24-27] In the workplace, Physical activity also reduces stress, improves mental health, and boosts cognitive performance.[28] Creating active work environments and reducing sedentary behaviour are key to sustaining brain health and workplace well-being.

**• Cognitive Engagement**

Cognitive engagement is the active use of higher-order mental processes such as reasoning, problem-solving, and decision-making, which support brain plasticity, strengthen cognitive reserve, and delay cognitive decline.[29] In organisational contexts, it manifests through mentally stimulating tasks, autonomy, and exposure to novelty, contributing to better executive function, memory retention, and job performance. Work environments that foster cognitive engagement enhance productivity and long-term cognitive health, while excessive cognitive load and lack of control can have adverse effects.[30,31]

**• Access to Healthcare**

Access to healthcare refers to the availability and utilisation of medical services that support brain health, prevent cognitive decline, and improve mental well-being. Barriers to healthcare, such as financial constraints, socioeconomic disparities, and limited workplace wellness initiatives, negatively impact brain health.[32] Across work environments, providing employee health programs, wellness interventions, and mental health support improves cognitive function, reduces absenteeism, and enhances overall well-being.[33,34]

**• Mindsets and Beliefs**

Mindsets and beliefs shape cognitive resilience, emotional well-being, and

adaptability. A positive, growth-oriented mindset enhances brain health by reducing stress, improving problem-solving, and fostering psychological resilience.[35,36] In the workplace, organisational and individual mindsets influence motivation, engagement, and performance. Fostering a culture of adaptability, learning, and psychological safety supports cognitive well-being and workplace success.

## Outcomes: The Value for Employers

Value for employers refers to the tangible business benefits organisations can gain by addressing brain health in the workplace. The risk/resilience levers link directly to this value by serving as the underlying mechanisms that affect mental health, neurological health, and workplace performance. When employers address these levers effectively, they simultaneously improve brain health across all three domains, which in turn drives the key business outcomes that matter most to organisations.

Our primary aim at this stage is to establish a robust foundation for understanding brain health risk/resilience levers and setting the stage for measuring employer value outcomes in future iterations. However, it is important to note that SHAPE already measures and reports on employer value through its own established set of questions and drivers. These values are not captured through the nine BHM factors alone, as developing a comprehensive view of economic indicators requires a much broader data foundation.

For example, SHAPE currently reports the Value of Benefit (VOB), which functions as SHAPE's People Return on Investment (ROI) metric and quantifies the unrealised potential within a company's workforce. This sophisticated metric is driven by four key business indicators: Claims, Retention, Absenteeism, and Productivity. Importantly, these indicators are informed by over 130 individual drivers to accurately measure employer value outcomes.

**• Increased Retention and Talent Attraction**

Supporting brain health helps create a work environment where employees feel psychologically safe, energised, and valued. When individuals are mentally well, they're more likely to stay with their employer and speak positively about their workplace. Organisations that actively invest in cognitive well-being also differentiate themselves in the job market, attracting talent that prioritises purpose, growth, and supportive culture.

**• Greater Productivity**

Cognitive functioning is central to performance. By reducing stress, fatigue, and mental distraction, brain-supportive environments allow employees to focus more deeply, make decisions faster, and manage workloads more effectively. This translates into higher output, fewer errors, and more efficient collaboration—all of which directly impact business productivity.

**• Higher Levels of Innovation and Creativity**

Creativity and problem-solving thrive when the brain is well-supported. Psychological safety, diverse thinking, and mental clarity all contribute to employees' ability to generate new ideas and explore bold solutions. Organisations that foster brain health cultivate the conditions for innovation, helping teams stay competitive and adaptive in a rapidly changing environment.

**• Reduced Healthcare Costs**

Chronic stress, burnout, poor sleep, and unhealthy habits are not just human issues—they drive up healthcare claims and associated costs. Addressing the root cognitive and behavioural drivers of health through brain health strategies can lead to fewer mental and physical health incidents, lower absenteeism, and reduced reliance on expensive interventions over time.

**• Improved Adaptability and Learning Capacity**

Resilient, mentally agile employees are better equipped to learn, adapt, and thrive in dynamic conditions. Brain health supports the cognitive flexibility required to navigate change, absorb new information, and respond to challenges with clarity. Organisations that support this adaptability build a more future-ready workforce—one that's capable of evolving with business needs.

## Scientific Commentary

*Dr. Ian Shadforth MA (Cantab.), MBA, EngD*

*This white paper details the approach taken by the SHAPE team to develop a new Brain Health Report. Underpinning this report are two existing frameworks: The Unified Model of Brain Health, developed by UsAgainstAlzheimers, Davos Alzheimer's Collaborative, and McKinsey Health Institute; and the current set of 134 questions captured in the SHAPE system (the SHAPE drivers)*

### Scientific Strengths of the Approach

*The five phase approach taken to develop this new lens through which to identify and extract the brain health insights embedded in the existing SHAPE data necessarily balances rigor and pragmatism. Two key approaches were used to perform this mapping:*

1. **Literature-based definition of constructs**

   *The in-depth literature review provided a foundation on which to reliably identify factors that are known to influence each of the nine levers of brain health. From this deeper understanding of the domain, the team were then able to identify which of the 134 SHAPE drivers were relevant those factors, thereby providing bridging constructs between the two components of interest.*

2. **Unsupervised analyses**

   *To further investigate potentially meaningful relationships between the existing SHAPE drivers and the bridging constructs, a range of unsupervised analytical methods were used across a set of 1,500 responses to the SHAPE drivers. These methods allowed for natural clusters of SHAPE drivers to be identified, which could then again be assessed against the factors influencing the nine drivers of brain health gleaned from the literature-based activity.*

*This triangulated approach to the development of the constructs, the subsequent analyses of the SHAPE dataset, and the mapping back to the literature, adds robustness to the factor mapping and increases confidence in the internal consistency of the Brain Health Report model.*

*While the use of the existing SHAPE questions ensures consistency, the paper acknowledges that newly developed survey items (especially for underrepresented factors like healthcare access) lack empirical validation at this stage. This presents a limitation in terms of scale reliability and construct validity, and should be addressed in future work.*

*The decision to condense nuanced factors such as stress and cognitive engagement into simplified scores facilitates usability, but may mask important within-factor variability. Future enhancements could explore this in more depth, perhaps with the addition of non-SHAPE metrics, such as biometric and situational markers, to help further distinguish correlated vs causal factors. In addition, studies will be required to demonstrate that the implementation of actions designed to improve components of the Brain Health Report truly improves both brain health and has a tangible impact on business ROI.*

*In summary, the authors have constructed a scientifically valid and operationally scalable tool for assessing brain health within workplace contexts. The approach is thoughtful, evidence-based, and designed with practical implementation in mind. While there remain areas for further study—particularly in the empirical validation of new measures and the modeling of economic outcomes—the foundation laid by this white paper is both credible and promising. It positions the Brain Health Report as a valuable asset in the growing intersection of cognitive science, employee well-being, and organizational performance.*

Ian Shadforth - CorVista® Health

# Research Design

The development of the Brain Health Report follows a structured, multi-phase approach, ensuring that BHM factors are well-defined, measurable, and actionable within a workplace context. We begin with mapping existing SHAPE data to validated BHM factors, followed by data analysis, gap identification, question refinement, and scoring methodology development.

The workflow consists of the following key phases:

**Phase 1: Defining Brain Health Model Factors Through Literature Review**

To ensure the Brain Health Report is grounded in scientific rigour, a systematic literature review was conducted, following established research methodologies. This process involved:

1. Identifying reputable sources: The review prioritised peer-reviewed journals, systematic reviews, and meta-analyses from leading academic publishers such as PubMed, APA PsychNet, Springer, Elsevier, Wiley, and BMJ. Grey literature, blogs, and non-peer-reviewed sources were excluded to maintain academic integrity.

2. Defining search parameters: Search terms were developed to capture key aspects of brain health in workplace settings to ensure comprehensive coverage of relevant studies. Boolean operators were used to refine search queries for precision.

3. Screening and selection: Studies were filtered based on relevance to the nine BHM factors, prioritising research that provided quantifiable outcomes, longitudinal analyses, and workplace-specific insights. Abstracts and full texts were reviewed systematically.

4. Identifying subfactors and measurement criteria: The literature was analysed to determine predictors and subfactors that could be mapped onto SHAPE data, ensuring practical application in workplace settings.

5. Ensuring alignment with workplace research: The findings were cross-referenced with occupational health literature and organisational psychology studies to ensure practical relevance.

**Phase 2: Mapping Brain Health Factors Model to SHAPE Data**

With a research-backed definition of BHM factors established, the next phase focused on integrating these factors into SHAPE's existing survey questions and drivers. This involved reviewing SHAPE's current dataset to determine how well it captures brain health-related constructs and identifying areas where additional measures might be needed.

A key step was identifying existing SHAPE questions that align with each brain health factor. This ensured that relevant workplace indicators such as stress levels, physical activity, nutrition, and sleep were already being measured where possible. By cross-referencing SHAPE's data with findings from the literature review, we were also able to assess gaps in measurement and pinpoint factors that required additional data collection.

For further refinement, we categorised the SHAPE drivers based on their relevance to specific BHM factors and evaluated whether they functioned as direct or indirect measures. This step was essential for ensuring that each factor was meaningfully represented in SHAPE's analytical framework. Additionally, we considered construct validity, testing whether existing data effectively captured the intended brain health concepts and identifying any limitations that might require refinement.

**Phase 3: Data Analysis on SHAPE Drivers**

To complement our literature-backed mapping efforts, we also took a systematic approach to map the 134 SHAPE drivers to the nine BHM factors using several validation techniques and our existing survey data. We ran three different types of analysis on our dataset of over 1,500 anonymised individual scores: exploratory factor analysis, various cluster analyses (hierarchical, principal component, stochastic neighbour embedding and Louvain methods), and K-means clustering.

These analyses revealed some fascinating patterns and natural groupings that largely supported what we had found in the literature. The clusters helped us spot which factors naturally link to the Brain Health Report model, and we used them to check our literature-based mappings by looking at correlations between drivers. For example, if we found five drivers that seemed to belong together in the mapping phase (Phase 2), we could reasonably confirm this was correct if they showed strong correlations and consistently clustered together in our factor analyses.

In the final step, we combined our data findings with the existing research literature to refine our mapping. This not only confirmed our groupings but also highlighted some additional drivers that could strengthen our framework.

**Phase 4: Gap Analysis & Additional Question Development**

This phase identified gaps in SHAPE's dataset by comparing existing survey questions to key BHM factors from the literature review. Areas with limited coverage, such as access to healthcare, were flagged for refinement.

To fill these gaps, we developed or adapted survey questions based on validated research scales, ensuring clinical relevance and practical workplace application.

This step is important to strengthen the Brain Health Report model by enhancing its ability to capture essential brain health factors in workplace settings.

**Phase 5: Data Processing & Reporting**

To ensure the Brain Health Report delivers insightful, actionable, and scalable outcomes, a structured approach has been developed for data processing, aggregation, and visualisation. The goal is to convert raw survey inputs into meaningful insights that can inform both organisational strategy and personal awareness.

**a. Aggregation and Interpretation of Data**

Survey responses are processed through SHAPE's existing data infrastructure, which ensures consistency in how results are cleaned, scored, and analysed. For the Brain Health Report model, this involves:

- Calculating individual scores across the nine BHM factors, using validated question sets and scoring logic aligned with risk/resilience definitions.
- Aggregating these scores at the organisational level to highlight systemic patterns and trends, rather than isolated experiences.
- Applying scoring thresholds and benchmarks to interpret results clearly and distinguish between areas of strength, stability, and potential concern.

**b. Reporting at Organisational and Individual Levels**

The Brain Health Report model outputs are delivered through two key reporting formats:

- Organisational-Level Report

  Designed for leadership, and well-being teams, this report provides aggregated insights across the workforce. It includes:

- Overall and factor-level Brain Health Scores
- Top areas of strength and opportunities for improvement
- Interpretive guidance to help translate insights into meaningful action
- Visual breakdowns of cognitive well-being across teams, demographics, or time periods (as available)

- Individual-Level Report

  Each employee receives a personalised summary of their responses, framed positively and actionably. It includes:

  - Their personal score for each brain health factor
  - Supportive, neutral language that reinforces healthy behaviours and offers suggestions for growth
  - No medical or diagnostic content; the focus remains on awareness and empowerment

These reports are designed to complement each other, with the organisational report identifying where to act systemically, and the individual report encouraging reflection and self-guided change.

# Limitations

As with any foundational phase of research and measurement design, there are several limitations that should be acknowledged. These reflect the scope and constraints of working with an established external framework, the evolving nature of the data, and the methodological decisions required to produce actionable insights at scale. While these limitations do not diminish the value of the findings, they highlight areas for future refinement, testing, and development as the Brain Health Report model continues to evolve.

**Working within an existing framework**

This project was anchored to the Unified Model of Brain Health, a scientifically grounded established framework. While this ensured alignment with current global thinking, it also constrained flexibility in how we could shape or expand the model. Certain dimensions and nuances relevant to specific organisational or cultural contexts may not have been fully captured within the nine BHM factors defined in the original framework.

**Limited data analysis for new items**

Some of the questions introduced during this phase, particularly those developed to address gaps or emerging areas, were newly designed and had not yet been tested through SHAPE's large-scale datasets. As a result, these items were informed by literature and expert judgment, but not validated through internal empirical analysis at this stage. This means their contribution to scoring and insights remains provisional and may require refinement in future phases.

**Aggregation of complex constructs**

The approach required the aggregation of multi-dimensional constructs (e.g., stress or cognitive engagement) into simplified factor scores. While this aids usability and reporting, it inevitably reduces complexity and may overlook individual-level variability or interaction effects between drivers.

**Focus on Phase I scope**

This report focuses primarily on developing the Brain Health Report model and does not yet attempt to measure the full economic return or longer-term outcomes linked to brain health interventions. While employer value indicators were conceptually integrated, a more robust analysis of ROI and outcome attribution will be necessary in future phases.

# Glossary of Terms

**Brain Health Report**

A data-driven report created by SHAPE that evaluates an organisation's capacity to support cognitive well-being. It uses the BHM factors to assess workforce brain health and connects results to key business outcomes such as retention, productivity, and innovation. Outputs include an organisational-level report and individual-level summaries.

**Brain Health Model (BHM)**

A workplace-adapted model developed by SHAPE, based on the Unified Model of Brain Health. The BHM translates foundational brain health concepts into measurable, workplace-relevant elements. It includes nine core factors (originally risk and resilience levers) and links them to organisational outcomes.

**BHM Factors**

The nine core areas of influence within the Brain Health Model that reflect how day-to-day behaviours, work conditions, and support systems shape cognitive well-being. These are adapted from the Unified Model's risk and resilience levers and redefined for workplace measurement and reporting.

**SHAPE Drivers**

Each SHAPE driver represents a specific concept being measured through the SHAPE survey. These drivers are derived from individual survey questions and are used to assess key aspects of the employee experience, organisational environment, and well-being.

**Unified Model of Brain Health**

A foundational framework developed by UsAgainstAlzheimers, Davos Alzheimer's Collaborative, and McKinsey Health Institute. It organises brain health into three interconnected domains—Mental Health, Neurological Health, and Workplace Performance—and identifies nine risk and resilience levers as key areas for intervention.

**Risk and Resilience Levers**

Originally developed as part of the Unified Model of Brain Health, these levers represent the most practical areas for improving brain health in working populations. They include elements such as stress, sleep, physical activity, and social support.

## References


1. Health B. The Business Collaborative for Brain Health [Internet]. The Business Collaborative for Brain Health. 2023 [cited 2025 Jun 12]. Available from: https://businessforbrainhealth.org/home#brain-health

2. Capital B. The Business Collaborative for Brain Health [Internet]. The Business Collaborative for Brain Health. 2025. Available from: https://businessforbrainhealth.org/resources/unifiedmodelbrainhealth

3. Golkar A, Johansson E, Kasahara M, Osika W, Perski A, Savic I. The Influence of Work-Related Chronic Stress on the Regulation of Emotion and on Functional Connectivity in the Brain. Margulies D, editor. PLoS ONE. 2014 Sep 3;9(9):e104550.

4. Girotti M, Adler SM, Bulin SE, Fucich EA, Paredes D, Morilak DA. Prefrontal cortex executive processes affected by stress in health and disease. Progress in Neuro-Psychopharmacology and Biological Psychiatry [Internet]. 2018 Jul 13;85(85):161–79. Available from: https://www.sciencedirect.com/science/article/pii/S0278584617303652

5. Zahid. Challenges and Impact of Workplace Stress on Employee Health and Productivity. Journal of Informatics Education and Research [Internet]. 2024 Aug 7;5(1). Available from: https://jier.org/index.php/journal/article/view/2071

6. Chen B, Wang L, Li B, Liu W. Work stress, Mental health, and Employee Performance. Frontiers in Psychology [Internet]. 2022 Nov 8;13. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9679506/

7. Kalkar P. Impact of Workplace Stress on Employee Health and Productivity. Journal of Informatics Education and Research [Internet]. 2024;4:1526–4726. Available from: https://jier.org/index.php/journal/article/download/1121/938/1875

8. Zimmerman ME, Benasi G, Hale C, Yeung L, Cochran J, Brickman AM, et al. The effects of insufficient sleep and adequate sleep on cognitive function in healthy adults. Sleep Health. 2024 Apr;10(2).

9. Paz V, Dashti HS, Garfield V. Is there an association between daytime napping, cognitive function, and brain volume? A Mendelian randomization study in the UK Biobank. Sleep Health. 2023 Jun 1;9(5).

10. Ma J, Chen M, Liu GH, Gao M, Chen NH, Toh CH, et al. Effects of sleep on the glymphatic functioning and multimodal human brain network affecting memory in older adults. Molecular Psychiatry [Internet]. 2024 Oct 14; Available from: https://www.nature.com/articles/s41380-024-02778-0

11. Pilcher JJ, Morris DM. Sleep and Organizational Behavior: Implications for Workplace Productivity and Safety. Frontiers in Psychology [Internet]. 2020 Jan 31;11(45). Available from: https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2020.00045/full

12. Redeker NS, Caruso CC, Hashmi SD, Mullington JM, Grandner M, Morgenthaler TI. Workplace Interventions to Promote Sleep Health and an Alert, Healthy Workforce. Journal of Clinical Sleep Medicine [Internet]. 2019;15(04):649–57. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6457507/

13. Soprovich AL, Seaton CL, Bottorff JL, Duncan MJ, Caperchione CM, Oliffe JL, et al. A systematic review of workplace behavioral interventions to promote sleep health in men. Sleep Health. 2020 Jun;6(3):418–30.

14. Kelly ME, Duff H, Kelly S, McHugh Power JE, Brennan S, Lawlor BA, et al. The Impact Of social activities, Social networks, Social Support and Social Relationships on the Cognitive Functioning of Healthy Older adults: a Systematic Review. Systematic Reviews [Internet]. 2017 Dec;6(1). Available from: https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-017-0632-2

15. Zagic D, Wuthrich VM, Rapee RM, Wolters N. Interventions to improve social connections: a systematic review and meta-analysis. Social Psychiatry and Psychiatric Epidemiology. 2021 Nov 18;57.

16. Sturm ET, Castro C, Mendez-Colmenares A, Duffy J, Burzynska A (Aga) Z, Stallones L, et al. Risk Factors for Brain Health in Agricultural Work: A Systematic Review. International Journal of Environmental Research and Public Health [Internet]. 2022 Jan 1;19(6):3373. Available from: https://www.mdpi.com/1660-4601/19/6/3373

17. Lee Y, Back JH, Kim J, Kim SH, Na DL, Cheong HK, et al. Systematic review of health behavioral risks and cognitive health in older adults. International Psychogeriatrics. 2009 Nov 3;22(2):174–87.

18. Blondell SJ, Hammersley-Mather R, Veerman JL. Does physical activity prevent cognitive decline and

dementia?: A systematic review and meta-analysis of longitudinal studies. BMC Public Health. 2014 May 27;14(1).

19. Moroni F, Ammirati E, Rocca MA, Filippi M, Magnoni M, Camici PG. Cardiovascular disease and brain health: Focus on white matter hyperintensities. IJC Heart & Vasculature. 2018 Jun;19:63–9.

20. Desai AK, Grossberg GT, Chibnall JT. Healthy Brain Aging: A Road Map. Clinics in Geriatric Medicine. 2010 Feb;26(1):1–16.

21. Costa-Cordella S, Arevalo-Romero C, Parada FJ, Rossi A. Social Support and Cognition: A Systematic Review. Frontiers in Psychology [Internet]. 2021 Feb 23;12:637060. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7941073/

22. Salinas J, O'Donnell A, Kojis DJ, Pase MP, DeCarli C, Rentz DM, et al. Association of Social Support With Brain Volume and Cognition. JAMA Network Open. 2021 Aug 16;4(8):e2121122.

23. Sherman SM, Cheng YP, Fingerman KL, Schnyer DM. Social support, stress and the aging brain. Social Cognitive and Affective Neuroscience [Internet]. 2016 Jul 1 [cited 2021 Jan 29];11(7):1050–8. Available from: https://academic.oup.com/scan/article/11/7/1050/1753270

24. Erickson KI, Hillman CH, Kramer AF. Physical activity, brain, and cognition. Current Opinion in Behavioral Sciences [Internet]. 2015 Aug;4:27–32. Available from: https://www.sciencedirect.com/science/article/pii/S2352154615000157

25. Macpherson H, Teo Wei-P, Schneider LA, Smith AE. A Life-Long Approach to Physical Activity for Brain Health. Frontiers in Aging Neuroscience [Internet]. 2017 May 23 [cited 2019 Jul 6];9. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5440589/pdf/fnagi-09-00147.pdf

26. Festa F, Medori S, Macrì M. Move Your Body, Boost Your Brain: The Positive Impact of Physical Activity on Cognition across All Age Groups. Biomedicines [Internet]. 2023 Jun 20;11(6):1765–5. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10296541/

27. Hötting K, Röder B. Beneficial effects of physical exercise on neuroplasticity and cognition. Neuroscience and biobehavioral reviews [Internet]. 2013;37(9 Pt B):2243–57. Available from: https://www.ncbi.nlm.nih.gov/pubmed/23623982/

28. Chu AHY, Koh D, Moy FM, Muller-Riemenschneider F. Do workplace physical activity interventions improve mental health outcomes? Occupational Medicine. 2014 May 20;64(4):235–45.

29. Anderson ND, Murphy KJ, Troyer AK. Benefits of Cognitive Engagement. Oxford University Press eBooks [Internet]. 2024 May 23 [cited 2024 Nov 22];338–44. Available from: https://academic.oup.com/book/56399/chapter-abstract/450130923?redirectedFrom=fulltext

30. Grzywacz JG, Segel-Karpas D, Lachman ME. Workplace Exposures and Cognitive Function During Adulthood. Journal of Occupational and Environmental Medicine. 2016 Jun;58(6):535–41.

31. Hussenoeder FS, Riedel-Heller SG, Conrad I, Rodriguez FS. Concepts of Mental Demands at Work That Protect Against Cognitive Decline and Dementia: A Systematic Review. American Journal of Health Promotion. 2019 Jul 10;33(8):1200–8.

32. Daly T. Brain health is a human right: Implications for policy and research. Neuroscience [Internet]. 2025 Feb 1;569:147–54. Available from: https://www.sciencedirect.com/science/article/pii/S030645222500079X

33. Javanmardi S, Rappelt L, Zangenberg S, Heinke L, Baumgart C, Niederer D, et al. Effectiveness of workplace health promotion programs for industrial workers: a systematic review. BMC Public Health. 2025 Jan 15;25(1).

34. NHS Employers. Evidence based approaches to workforce wellbeing | NHS Employers [Internet]. https://www.nhsemployers.org 2024. Available from: https://www.nhsemployers.org/articles/evidence-based-approaches-workforce-wellbeing

35. Kyeong Y, Kürüm E, Sheffler P, Ferguson L, Davis EL, Strickland-Hughes CM, et al. The implications of growth mindset for depression, well-being, and adjustment over 2 years during the COVID-19 pandemic. Abbas A, editor. PLOS Mental Health. 2024 Dec 19;1(7):e0000182.

36. Parmis Parsamanesh, Mykhailo Vysochyn. A Psychological Exploration of the Power of Our Mindset and Its Influence on Physiological Health. Cureus. 2024 Jan 18;16(1).

# About SHAPE Global

SHAPE scientifically measures the dimensions, drivers, and barriers of human performance and flourishing in the workplace. Using a research-led methodology and advanced modelling, it connects these insights across multiple important topics — revealing deep insights about brain health and people dynamics.

More at shapepowered.com.

# About SPARC Foundation

Established in 2023, the SPARC Foundation plays a critical role in supporting the transition from the industrial age to brain capital age. The foundation is a catalytic agent supporting cross-sector collaborative work of universities, government, industry, and other foundations through data sharing agreements, durable infrastructure, and convenings.

# About Blue Ash Ventures

Blue Ash Ventures is an early-stage venture firm advancing innovation in brain health and human behaviour. Grounded in translational science, it backs founders and frameworks—such as the Brain Health Matrix—to build measurable brain capital and turn evidence into scalable impact.

More at blueashventures.com.


| | |
|---|---|
| Authored by: | Zehra Batool<br>Dr. Whitney Austin Gray<br>Dr. Meg Small<br>Dr. Ian Shadforth<br>Ali Khan |
| Design and Typesetting: | Ammara Khan |