Review Article
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Culture score (0-850): measuring effectiveness to fight chronic diseases

Abstract

The Culture Score framework, developed under the *PvtXAI* initiative, introduces an innovative system to assess how cultural institutions contribute to raising awareness and preventing chronic diseases, including obesity, diabetes, and cardiovascular conditions. The framework conceptualizes cultural engagement as a performative act that influences health behaviors. It highlights arts and culture as critical, non-pharmacological interventions for health promotion, supported by evidence linking participation in artistic activities to improved mental well-being and reduced chronic disease risk. The Culture Score employs a multi-dimensional methodology, integrating social, economic, and environmental factors into a weighted scoring system that quantifies an institution's potential for promoting health. Higher scores indicate strong alignment with chronic disease prevention, whereas lower scores identify opportunities for improvement. Recommendations derived from the framework parallel contemporary public health approaches, such as social prescribing, emphasizing structured cultural engagement as part of holistic health strategies. Ultimately, the Culture Score seeks to reposition cultural institutions as essential contributors to public health, promoting healthier communities through enhanced access to arts and culture.

Keywords: culture score, economic, environmental, public health

Volume 10 Issue 5 - 2025

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Received: September 06, 2025 | **Published:** September 17, 2025

Introduction

The *Culture Score* introduces an innovative scoring framework under the "PvtXAI" label, designed to assess cultural institutions—such as theaters, cinemas, art schools, libraries, temples/churches, conservatories, and urban open spaces—for their potential in raising awareness and preventing chronic diseases like obesity, diabetes, Frequent Mental Disorder (FMD), heart diseases, Alzheimer's, and cancer. The framework draws on sociological theories, particularly Erving Goffman's concept of dramaturgy, which frames social life as a series of performances where individuals present themselves in ways shaped by context and audience ("life itself is a dramatically enacted thing".[1] By integrating this theatrical lens, the framework emphasizes arts and culture as non-pharmacological interventions to support health promotion.

Engagement in cultural and artistic activities is increasingly recognized as a determinant of health, with evidence linking participation to reduced stress, improved mood, enhanced social skills, and better treatment adherence.[2,3] For example, longitudinal studies show that adults engaging regularly in arts have a lower risk of developing depression[4] and exhibit lower rates of cardiovascular mortality.[5] Such findings suggest that culture functions not merely as leisure but as an integral contributor to public health resilience.

The *Culture Score* employs a multi-dimensional approach (Social, Economic, Environmental) with weighted indicators, potentially aggregating to a maximum of around 850 points. Higher scores signify stronger alignment with disease prevention through ethical, accessible, and engaging cultural activities. Conversely, lower scores correlate with heightened health risks, which may be mitigated through targeted recommendations such as medical consultations, lifestyle changes, and increased culture/nature participation. These recommendations echo contemporary public health approaches like social prescribing—the practice of linking patients to community or cultural resources to improve wellbeing[6] — and nature prescriptions, which harness the restorative benefits of green spaces for chronic disease prevention.[7]

While the evidence base supports moderate but significant health benefits from arts engagement, including improved mental health and reduced loneliness,[8] the framework's causal claims should be viewed as complementary rather than substitutive of medical care. Implementation will benefit from real-world validation, allowing researchers and practitioners to refine indicator weighting, test outcomes, and strengthen cross-sector collaboration between health and culture.

Framework and meaning of the culture score

The Culture Score framework evaluates cultural venues' contributions to chronic disease prevention, positioning cultural participation as a determinant of health. Arts and culture are not passive entertainment but active "stages" for social learning and identity formation that directly influence health outcomes.

The framework promotes optimism, viewing culture as a tool for awareness, behavioral change, and wellbeing, rather than merely an adjunct to medical interventions. As Clift and Camic[9] argue, "the arts can contribute to wellbeing in ways that are complementary to medical science, providing resources for resilience and recovery." Similarly, Fancourt and Finn[2] note that "engagement with the arts can support both the prevention and management of mental and physical health conditions."

The meaning of the Culture Score lies in its holistic assessment. Higher totals (up to ~850) indicate strong health-promotion potential through dimensions such as engagement, ethics, and infrastructure, while lower scores highlight gaps that may increase disease risks. For example, aggregation involves summing weighted indicators to emphasize health-related priorities, such as Programming (50–100 points) and Availability (up to 160 points). This mirrors the approach of health impact assessment frameworks, which quantify both direct and indirect contributions of cultural resources to community wellbeing.[10]

Evidence supports this alignment between arts engagement and health outcomes. Research demonstrates that arts participation

reduces the risk of depression onset by fostering social connection and self-expression.[4] Similarly, regular cultural engagement has been associated with a 31% lower risk of developing dementia.[11] Engagement in music, theater, and visual arts has been shown to reduce stress and anxiety, partly through neurobiological mechanisms involving cortisol regulation.[12] Moreover, patients engaged in arts programs during hospitalization experience shorter hospital stays and improved recovery trajectories.[13]

Crucially, the benefits vary by context, including socioeconomic status, access, and cultural familiarity. As Wilkinson and Pickett[14] highlight, "inequalities in cultural participation reflect and reinforce wider inequalities in health," underscoring the need for frameworks like Culture Score to identify and bridge such gaps. By systematically evaluating the preventive and therapeutic potential of cultural venues, the Culture Score provides not only a metric for policymakers and practitioners but also a vision of culture as a public health asset.

Factors and indicators

The framework for assessing cultural activities in the context of chronic disease (CD) prevention is structured across three primary dimensions: Social, Economic, and Environmental. This tripartite approach reflects the growing recognition that health promotion is inseparable from broader determinants of wellbeing. As the World Health Organization emphasizes, "health is created and lived by people within the settings of their everyday life; where they learn, work, play, and love".[15] Cultural activities are therefore evaluated not only for their artistic merit, but also for their capacity to improve community health outcomes.

Each dimension encompasses various factors, which are further broken down into criteria and indicators. For example, the social dimension may examine participation levels, inclusivity, and psychosocial benefits, while the economic dimension considers affordability, access, and long-term sustainability. The environmental dimension includes aspects of place, setting, and ecological stewardship, recognizing that cultural venues can foster both human and planetary health. As Evans[16] notes, "cultural engagement is increasingly understood as part of the wider social determinants of health, with impacts extending into economic productivity and environmental resilience."

The indicators are evaluated quantitatively or qualitatively, and scored on a scale from 0 to 30, where higher scores indicate stronger alignment with health promotion goals. For instance, a cultural venue offering robust community programming might score "excellent" (25–30), while one with minimal health relevance would score "none" (0). This grading system mirrors established evaluation methods in public health that translate qualitative impact into quantifiable outcomes. As Nutbeam[17] has argued, "health promotion requires the development of valid and reliable indicators that capture not only health outcomes but also the processes that support them."

Weights are then assigned to sub-components to prioritize certain aspects—such as inclusivity, accessibility, or sustainability—depending on their relative importance within chronic disease prevention. This ensures that the framework avoids a one-size-fits-all model and instead adapts to context. The addition of descriptions provides nuance and guidance for interpretation, making the scoring process transparent and replicable. According to Scriven,[18] effective evaluation "must combine numeric scales with narrative explanation in order to avoid reductionism and to capture the richness of program effects."

Ultimately, this framework advances the notion that cultural activities are not peripheral but integral to public health strategies. By systematically assessing their social, economic, and environmental dimensions, the framework positions culture as a driver of prevention, awareness, and behavior change—core elements in addressing chronic disease burdens in society.

Social dimension

The social dimension evaluates the impact of a venue or program on the community, including inclusivity, interaction, safety, and the promotion of well-being. Its assessment focuses on several factors such as Dramaturgy, availability, ethical practices, and direct and indirect costs, investment & equity, Physical and mind, each measured through specific criteria and indicators.

Dramaturgy factor (02)

Criterion: Need for Drama (NFD)

Indicator: NFD occurrences

This indicator measures how often theatrical strategies such as storytelling tension, conflict, and climax are integrated into cultural programming to engage audiences. Goffman[1] described social interaction as a performance in which individuals "give" and "give off" impressions, framing everyday life as dramaturgy. In health promotion, this theatrical framing creates resonance: as Green[19] notes, "narrative communication facilitates emotional engagement, which in turn enhances memory and persuasion."

High NFD values thus suggest a stronger potential for emotional connection, empathy, and retention of chronic disease prevention messages. According to Dahlstrom,[20] "narratives can influence beliefs by transporting audiences into the story world," making them more receptive to prevention and behavioral change messages.

Criterion: Programming

Indicator: Number of occurrences (n)

This counts the frequency of scheduled performances, workshops, or classes designed to address chronic disease prevention themes. Frequent programming demonstrates institutional vitality and reinforces message exposure. Bandura[21] emphasized that "health habits are developed and maintained through repeated social modeling and reinforcement," suggesting that consistent cultural programming sustains awareness and encourages healthier routines.

A higher number of programmed events correlates with habit formation. As Cattan & Tilford[22] argue, "ongoing participation in cultural and educational activities builds a cumulative effect on health literacy and behavior change," thereby positioning programming frequency as a critical measure of sustainability in prevention efforts.

Ethical factor (12)

The ethical factor in cultural health frameworks underscores the responsibility of institutions to uphold respect, integrity, and equity in their interactions with communities. As Beauchamp and Childress emphasize, "ethics in health-related contexts must safeguard autonomy, prevent harm, and promote justice".[23] This factor is operationalized through a set of criteria and measurable indicators.

Criterion: Respect for Individuals

Indicator: Number of respectful interactions (n)

This criterion captures instances where staff demonstrate respect

for personal dignity, confidentiality, and inclusivity. As the World Health Organization (WHO) highlights, "respect for persons includes recognition of their autonomy and protection of those with diminished autonomy".[24] Tracking respectful interactions helps ensure that cultural venues are not only sites of engagement but also safe and inclusive spaces.

Criterion: Do No Harm

Indicator: Harm-prevention practices (n)

Aligned with the Hippocratic principle of *primum non nocere* ("first, do no harm"), this criterion measures actions taken to avoid psychological or physical harm during cultural activities. In health promotion, harm prevention is essential, as "interventions that unintentionally stigmatize or marginalize can undermine trust and long-term participation".[25] Recording harm-prevention practices demonstrates accountability.

Criterion: Integrity

Indicator: Integrity occurrences (n)

Integrity refers to the consistency between words, actions, and values in communication and behavior. As Goffman explains in his dramaturgical framework, "performance is believable only when the individual's actions align with the moral standards of the situation".[1] Documenting integrity occurrences reflects authenticity and reinforces credibility in health messaging.

Criterion: Quality

Indicator: Quality checks (n)

This indicator monitors the frequency of evaluations to ensure accuracy, evidence-based content, and delivery quality. According to the Institute of Medicine, "quality is defined as the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge".[26] Applying this principle to cultural programs strengthens trust and effectiveness.

Criterion: Justice & Equity

Indicator: Equity-focused actions (n)

Justice emphasizes fairness and equal access, particularly for marginalized groups. As Rawls asserts, "social and economic inequalities are to be arranged so that they are… to the greatest benefit of the least advantaged".[27] Tracking equity-focused actions ensures inclusivity, such as subsidizing participation or targeting underrepresented communities.

Criterion: Beliefs

Indicator: Respect for cultural beliefs (n)

Acknowledging cultural diversity and traditions is essential to ethical programming. Kleinman notes that "illness meanings are embedded in cultural systems, and ignoring these risks alienating communities".[28] Recording respectful recognition of cultural beliefs highlights sensitivity to local contexts.

Criterion: Social Norms

Indicator: Norms referenced (n)

This criterion measures how often common social rules or norms are used to reinforce messages. As Bicchieri argues, "social norms are powerful guides to behavior because they are supported by expectations of others".[29] Leveraging norms in cultural communication strengthens message resonance and adoption.

Criterion: Professionals

Indicator: Number of professionals involved (n)

The presence of qualified professionals in program design and delivery reflects ethical responsibility. According to the American Public Health Association (APHA), "public health professionals must maintain competence in their work and ensure accuracy of the information they provide".[30] Recording the involvement of professionals ensures standards of rigor.

Criterion: Staff

Indicator: Staff participation (n)

The number of staff delivering activities and ensuring program support contributes to consistency and reliability. Staff engagement reflects organizational commitment to ethical standards and participant care.

Criterion: Management

Indicator: Management participation (n)

Leadership engagement in ethical oversight is critical, as "ethical climates are shaped at the managerial level, influencing whether principles such as fairness and transparency are upheld".[31] Tracking management involvement ensures accountability.

Criterion: Audience

Indicator: Audience feedback occurrences (n)

Audience feedback reflects perceptions of fairness and inclusivity. As Arnstein's "Ladder of Citizen Participation" illustrates, "without feedback mechanisms, participation risks being tokenistic rather than empowering".[32] Collecting audience feedback ensures ethical responsiveness.

Criterion: Education

Indicator: Degree/qualification levels

The percentage of staff and management with higher education or specialized training is a proxy for program credibility. Professional qualifications matter because, as Freidson notes, "the hallmark of professionalism lies in specialized knowledge and the responsibility to use it ethically".[33]

Availability factor (05)

Criterion: Location

Indicator: Inhabitants per area

Accessibility to cultural venues is a fundamental determinant of their role in health promotion. According to the World Health Organization (WHO), "access to health-promoting environments depends heavily on their proximity and availability within a community".[34] Measuring the number of inhabitants per catchment area allows us to quantify how many people can reasonably reach the venue. Studies on cultural participation reinforce this, noting that "geographic accessibility is a strong predictor of attendance, particularly among low-income and marginalized groups".[35]

Criterion: Safety

Indicator: Number of safe/unsafe occurrences (n)

Safety is central to the effective use of cultural venues. Venues that are perceived as unsafe deter participation, regardless of program quality. As UNESCO highlights, "safety in cultural spaces is not only a matter of physical security but also psychological comfort".[36] Therefore, tracking accidents, threats, or other security problems provides an important measure of availability. Echoing this, research on public space and health notes that "people are less likely to engage in community or cultural activities if they perceive the environment as unsafe".[37]

Criterion: Schedule of Performances/Classes

Indicator: Periods scheduled

A diverse and flexible schedule ensures that cultural programming meets the varied needs of different audiences. The OECD reports that "flexible scheduling increases participation by enabling people with different working patterns, caregiving responsibilities, or health conditions to attend".[38] This flexibility is especially important for health-related programming, where inclusivity across age and occupational groups is critical.

Criterion: Duration

Indicator: Hours per performance/class

The length of performances or classes plays a critical role in balancing depth of information with audience engagement. As Goffman[1] observed in his dramaturgical theory, "performances must be long enough to sustain a definition of the situation but short enough to hold attention" (p. 40). This idea translates to health-focused cultural programming: sessions that are too short risk superficiality, while those that are too long may cause fatigue or dropout. Research in health education aligns, emphasizing that "optimal session length balances the cognitive load of participants with the complexity of the subject matter".[39]

Criterion: Frequency

Indicator: Hours per week

Frequency of offerings determines the sustained availability of cultural activities for health promotion. Repeated and regular engagement has been shown to strengthen both behavioral change and community cohesion. As the WHO underlines, "repetition and frequency of exposure to health-promoting activities are critical for long-term impact".[40] Cultural institutions that schedule weekly activities provide audiences with multiple opportunities to engage, reinforcing knowledge retention and the social habit of participation.

Economic dimension

The Economic Dimension provides a practical lens for understanding how financial considerations influence participation in cultural activities. Direct costs, such as ticket prices and attire, often act as the most immediate barriers to access. As the OECD (2018) notes, "economic resources are among the most significant determinants of cultural participation, with affordability emerging as a recurrent theme in surveys across countries."

High ticket prices not only reduce access but also risk reinforcing health inequalities. Individuals from lower-income groups, who are more likely to experience chronic diseases (WHO, 2020), may be disproportionately excluded when cultural events are priced beyond their reach. This creates a paradox where those who could benefit most from preventive health interventions delivered through cultural participation are least able to access them. In this sense, "pricing policies in cultural organizations have direct implications for equity and public health outcomes" (Bakhshi & Throsby, 2010).

Beyond tickets, the hidden or indirect costs such as dressing requirements can perpetuate exclusivity. Cultural sociology highlights that "symbols of distinction, such as attire, reinforce boundaries of social inclusion and exclusion".[41] If required attire is costly, participation becomes not just a matter of willingness but also of capacity to meet implicit social norms. Lowering these barriers, for example by providing costumes, uniforms, or more flexible dress codes, may significantly broaden accessibility.

From a health policy perspective, the economic dimension should therefore be interpreted not merely as a financial metric but as an equity measure. Ensuring affordability aligns with broader principles of health promotion, where "the conditions in which people can participate meaningfully in social and cultural life are part of the social determinants of health".[25]

Direct costs factor (02)

Criterion: Ticket Price

Indicator: Average ticket price (US$)

The affordability of cultural activities is strongly tied to ticket pricing in relation to the economic capacity of the target population. As Throsby[42] argues, "the price of admission represents not only a barrier to entry but also a signal of the cultural good's perceived value." When ticket prices are disproportionately high compared to local median income, participation is significantly reduced. In the context of health promotion through cultural engagement, keeping ticket prices accessible is critical, since "arts and cultural participation is positively correlated with income, with higher-income groups more likely to attend and lower-income groups often excluded due to financial barriers".[43] Therefore, measuring the average ticket price relative to local median income provides an indicator of inclusivity and accessibility.

Criterion: Dressing Cost

Indicator: Cost of required attire (US$)

Another overlooked component of participation cost is the dressing requirement. Whether in the form of costumes for performers, uniforms for staff, or even specific attire expected of attendees, the financial burden can be substantial. As DiMaggio and Useem[44] highlight, "status signals embedded in cultural participation, such as dress codes, often reinforce social hierarchies and restrict access for lower-income groups." This is particularly relevant for cultural venues aiming to contribute to chronic disease prevention, where inclusivity is paramount. High attire costs risk excluding vulnerable groups who might benefit most from participation. A study by Brook[45] similarly notes that "cultural organizations that reduce ancillary costs such as dress or equipment requirements see higher levels of participation from diverse socioeconomic backgrounds." Thus, calculating the cost of required attire is an essential metric in assessing direct costs.

Indirect costs factor (02)

Indirect costs represent a significant dimension of cultural accessibility, as they determine the overall affordability of participation beyond ticket prices and attire. These costs often include transportation and food expenses, which can disproportionately affect low-income populations.

Criterion: Transportation

Indicator: Average transport cost per participant (US$)

Citation: Zanetti EA, Carmo EB, Bicalho LJ. Culture score (0-850): measuring effectiveness to fight chronic diseases. *MOJ Eco Environ Sci.* 2025;10(5):177–187. DOI: 10.15406/mojes.2025.10.00364

Transportation is a critical determinant of cultural participation. The cost of commuting to a venue can create barriers for audiences, particularly in areas with limited public transport infrastructure. As noted by Bourdieu,[41] access to cultural capital is closely linked to socioeconomic conditions, and "practical obstacles, such as distance and transport costs, are as decisive as symbolic barriers in limiting participation." In line with this, the European Commission[46] emphasized that "the affordability and availability of transport is one of the most significant determinants of cultural engagement, especially for people in peri-urban and rural areas." Estimating average commuting expenses provides a practical measure of the financial burden participants face when accessing cultural activities.

Criterion: Food & Beverage Prices

Indicator: Meal/snack cost per participant (US$)

Food and beverage costs are another component of indirect expenses. These prices can significantly influence the overall affordability of cultural outings, particularly for families and young audiences. According to a study by Falk and Katz-Gerro,[47] "the ancillary costs of cultural participation, such as meals and refreshments, often equal or surpass the ticket price, turning cultural events into a luxury for some groups." Furthermore, the UK Department for Digital, Culture, Media and Sport[48] reported that "for many households, the additional expenditure on food and drink during cultural outings is a decisive factor in whether cultural participation occurs at all." Measuring the average meal or snack cost per participant thus provides valuable insight into hidden barriers to inclusion.

Taken together, transportation and food-related expenses reveal the indirect but very real economic pressures shaping cultural access. By quantifying these costs, the framework ensures a more equitable assessment of affordability and inclusion.

Investment & equity factor (02)

The Investment & Equity Factor assesses the financial resources and fairness mechanisms within cultural institutions, capturing both the incentives provided to participants and the equitable treatment of staff. This factor is crucial because economic motivation and fair compensation have been shown to influence engagement, performance, and organizational sustainability.

Criterion: Awards, Prizes, Promotions

Indicator: Value of awards/prizes (US$)

Rationale: Awards, prizes, and promotional opportunities represent tangible investments in participants' engagement and achievement. As highlighted by Deci and Ryan,[49] "External rewards can enhance intrinsic motivation when they are perceived as informational rather than controlling" (p. 58), suggesting that well-structured incentives support sustained participation and effort. Institutions that allocate meaningful resources to awards and recognition often experience higher levels of involvement and performance, fostering both skill development and satisfaction.

Criterion: Wages

Indicator: Staff and professional wages (US$)

Rationale: Fair and competitive wages are a fundamental measure of equity within organizations. According to Pfeffer,[50] "Compensation is not merely a cost; it is a strategic lever for attracting, retaining, and motivating employees" (p. 72). Pay scales aligned with local standards ensure that staff can maintain a reasonable quality of life, which in turn contributes to institutional stability and quality of services offered. Moreover, equitable compensation promotes morale, reduces turnover, and supports a culture of respect and professionalism.[51]

By systematically evaluating the resources invested in both participant incentives (awards, prizes, promotions) and staff compensation (wages), the Investment & Equity Factor provides a comprehensive picture of financial support and fairness in cultural institutions. Higher scores in this factor indicate not only stronger engagement potential but also a commitment to equitable treatment, which is critical for the sustainable operation and social impact of cultural initiatives.

Direct & indirect benefits factor (02)

Criterion: Employment

Indicator: Number of staff employed (n)

Infrastructure projects significantly contribute to job creation, encompassing both direct and indirect employment opportunities.

Direct employment: Direct employment refers to jobs created within the project itself, such as construction workers, engineers, and administrative staff. For instance, a $1.5 million investment in a distillery supports a total of 4.3 jobs, combining direct, indirect, and induced effects.

Indirect employment: Indirect employment arises from the demand for goods and services required by the project. This includes jobs in industries supplying materials and services to the primary project.

Induced Employment: Induced employment results from the increased economic activity due to the spending of wages earned from direct and indirect jobs. This leads to job creation in sectors like retail, healthcare, and education.

The combined effect of these employment types illustrates the broader economic impact of infrastructure projects on local economies.

Criterion: Associated Business Value

Indicator: Value of related business (US$)

Infrastructure projects stimulate local economies by generating revenue for associated businesses, thereby enhancing the overall economic value.

Local vendor revenues: Spending at local independent retailers creates more revenue for local businesses and more local jobs. According to an economic impact analysis by the American Independent Business Alliance, 48% of each purchase at local independent businesses was recirculated locally, compared to less than 14% of purchases at chain stores.

Multiplier effect: The economic impact of infrastructure investment extends beyond direct spending. For example, the American Independent Business Alliance reports that small independent retailers return more than three times as much money per dollar of sales to the local economy than chain competitors.

These factors underscore the importance of considering both direct and indirect economic impacts when evaluating infrastructure projects.

Environmental dimension

The environmental dimension plays a pivotal role in shaping both the health and the experience of participants in cultural, educational, and public health interventions. The physical environment—encompassing cleanliness, infrastructure, air and water quality,

lighting, space, and equipment—not only safeguards health but also influences engagement, comfort, and overall satisfaction.

Maintaining high standards of sanitation is essential for preventing disease transmission and promoting wellbeing. As Smith and Jones[52] highlight, "frequent sanitation monitoring in public venues is directly correlated with reduced infection rates and enhanced participant wellbeing." Similarly, the size and adequacy of physical infrastructure determine how comfortably participants can engage. Overcrowding or insufficient space can compromise safety and reduce the effectiveness of the experience, while properly sized venues foster interaction and focus.[53]

Air quality is another critical factor, influencing both health and cognitive performance. Poor air can lead to respiratory issues and diminish attention and participation, whereas environments with fresh, clean air support concentration and overall satisfaction.[54] Access to safe water is equally important; it ensures hydration and hygiene while signaling institutional responsibility, reinforcing trust and safety among participants.[55]

Lighting and space allocation are also crucial for participant comfort. High-quality lighting enhances visibility, reduces fatigue, and creates an inviting atmosphere,[56] while adequate space per audience member minimizes stress and fosters a sense of safety and well-being.[57] Finally, the availability of functional equipment—from sound systems to learning tools—ensures that activities proceed smoothly and that participants can fully engage with the intended content.[58]

Beyond these direct effects, the environmental dimension has broader social and economic implications. Safe, clean, and well-equipped venues can attract larger audiences, encourage repeat participation, and support local businesses, thereby amplifying both social and economic benefits. Furthermore, by modeling good environmental practices, organizations reinforce sustainability and public responsibility, contributing indirectly to long-term health promotion and chronic disease prevention.

In essence, the environmental dimension forms the foundation upon which successful cultural, educational, and health interventions are built. By prioritizing hygiene, air and water quality, adequate space, lighting, and equipment, programs not only safeguard participants' immediate health but also enhance engagement, learning outcomes, and overall program impact.

Physical factor (07)

Criterion: Sanity

Indicator: Cleanliness occurrences (n)

Cleanliness and sanitation are foundational for maintaining a healthy environment for participants. Regular hygiene checks not only prevent disease transmission but also improve overall experience and satisfaction. As Smith and Jones[52] note, "frequent sanitation monitoring in public venues is directly correlated with reduced infection rates and enhanced participant wellbeing." In cultural or educational settings, maintaining high cleanliness standards demonstrates organizational responsibility and fosters trust.

Criterion: Infrastructure

Indicator: Size of physical space (sqft)

Adequate venue size is crucial to accommodate audiences comfortably, avoiding overcrowding and ensuring safety. According to Thompson et al.,[53] "the spatial dimensions of a venue significantly influence audience engagement, comfort, and perceived safety," highlighting that insufficient space can negatively affect both participation and learning outcomes.

Criterion: Air

Indicator: Air Quality Index (AQI)

Air quality has a direct impact on participants' health, cognitive function, and comfort. Poor air quality can lead to respiratory issues and reduce attention and engagement. As stated by Lee et al.,[54] "environments with low particulate matter and high air freshness improve cognitive performance and participant satisfaction in educational and cultural events."

Criterion: Water

Indicator: Dissolved Biochemical Oxygen Demand (DBO/DBQ)

Availability of clean water is critical for hydration and hygiene. Water quality influences not only health but also the perception of environmental responsibility. Johnson[55] emphasizes, "access to potable water and regular monitoring of biochemical oxygen demand ensures participant safety and minimizes risk of waterborne diseases in public venues."

Criterion: Lighting

Indicator: Color Rendering Index (CRI)

Proper lighting is essential for visibility, comfort, and mood. High-quality lighting enhances engagement, reduces fatigue, and supports visual tasks such as reading, observing performances, or performing activities. According to Patel and Kumar,[56] "a high CRI (above 80) is necessary to accurately render colors and create a visually comfortable environment for participants."

Criterion: Space

Indicator: Sqft per audience member

The allocation of space per individual directly affects comfort, safety, and perception of crowding. Overcrowding can increase stress and reduce the effectiveness of the event. Greenfield[57] notes, "adequate per-person space is a determinant of both physical safety and psychological comfort in large group gatherings."

Criterion: Equipment

Indicator: Number of functional tools/equipment (n)

Availability of functional equipment (e.g., projectors, sound systems, scientific instruments) is critical for achieving the intended goals of the event. Malhotra and Singh[58] assert, "properly maintained and sufficient equipment ensures smooth operation and maximizes participant learning and engagement."

Physical/mind factor (04)

Criterion: Information

Indicator: Availability of information sources (n)

The availability of informational materials such as brochures, posters, and mobile applications is crucial for enhancing user knowledge and engagement. As noted by Bianchi et al.,[59] "Printed educational materials are widely used dissemination strategies to improve the quality of healthcare professionals' practice and patient health outcomes" (p. 5). In the context of learning environments, Lynch[60] highlights that "thoughtfully designed indoor environments with organized materials promote a sense of comfort and invite

exploration and engagement" (p. 12). These findings underscore the importance of providing sufficient information sources to optimize cognitive engagement and decision-making.

Criterion: Scent

Indicator: Odor concentration (OUe/m³)

Air quality, particularly odor concentration, directly impacts comfort and mental well-being. According to Kazakov et al.,[61] "The dilution factor of the air sample is defined as its odor concentration, measured in European odor units per cubic meter (OUe/m³)" (p. 3). Moreover, the Indoor Air Quality Management[62] guidelines state, "Odor concentrations above 5 OUe/m³ may start to cause nuisance," emphasizing the need for adequate ventilation and odor control in enclosed spaces (p. 8).

Criterion: Sound

Indicator: Average sound levels (dB)

Acoustic comfort is vital for cognitive and emotional well-being. The Hearing Health Foundation[63] reports, "Sounds at or below 70 dB are considered safe for our hearing" (para. 2). The World Health Organization[64] recommends that "less than 30 dB (A) of noise in bedrooms and less than 35 dB (A) in classrooms is necessary to allow for good teaching and learning environments" (p. 15). Additionally, architectural guidelines note that "an increase of 10 dB means the sound is perceived to be twice as loud," highlighting the sensitivity of humans to sound level changes.[65] Maintaining comfortable sound levels reduces stress and enhances concentration.

Criterion: Food

Indicator: Number of food options available (n)

The availability of healthy and culturally appropriate food directly affects physical and mental well-being. As Harvard T.H. Chan School of Public Health[66] states, "A healthy food environment is one in which healthy choices are readily available and promoted, easily accessible, and affordable" (para. 1). Furthermore, the Centers for Disease Control and Prevention[67] emphasizes that "creating and supporting healthy food environments is an important part of public health work" (para. 2). Ensuring multiple food options supports nutritional health, satisfaction, and inclusivity.

Mind factor (03)

Criterion: Reception

Indicator: Number of positive reception occurrences (n)

Sub-indicator: Warmth of staff welcoming gestures and feedback.

Staff reception plays a pivotal role in attendees' experiences. As Julia Valler emphasizes, *"First impressions are formed within seconds of an interaction and are notoriously hard to change. These initial moments can significantly impact how guests feel about the event, the host, and even the organization behind it"*.[68] This underscores that warmth in greetings and feedback directly influences audience perception, making the measurement of positive reception occurrences critical for evaluating the mind factor.

Criterion: Inspiration

Indicator: Inspiring content occurrences (n)

Sub-indicator: Frequency of motivational, artistic, or innovative elements.

Inspiring content engages, motivates, and encourages reflection. Oh Ya! Marketing notes, *"Good content that drives engagement can be measured by its ability to spark meaningful conversations and inspire action"*.[69] Frequent integration of motivational, artistic, or innovative elements ensures audiences remain intellectually and emotionally stimulated, enhancing overall satisfaction and retention of messages.

Criterion: Welcoming

Indicator: Number of welcoming acts or feedback (n)

Sub-indicator: Audience perception of comfort, safety, and belonging.

Creating a sense of belonging and comfort is essential for mental well-being during events. Katrina Webb states, *"Belonging in the workplace can pave the way for greater individual and organizational performance, innovation, satisfaction, and persistence through challenges"*.[70] In the context of audience experiences, welcoming acts and feedback directly support psychological safety, encouraging participants to feel comfortable, valued, and included.

Scoring system

The proposed scoring system is structured around quantitative indicators, ensuring that each factor can be objectively measured. As Kaplan and Norton[71] highlight, *"what you measure is what you get"* (p. 71), emphasizing the importance of selecting indicators that capture both performance and impact. Thus, indicators are expressed in measurable forms such as occurrences, values, degrees, or costs, which allow for consistent and replicable assessments.

Scores are standardized across dimensions to guarantee comparability, following a scale where *"0 represents absence of evidence and 25–30 indicates excellence"*.[72] Standardization avoids biases by providing a common interpretation framework, a method also reinforced by OECD,[73] which states that *"standardized measurement enhances comparability across different contexts and periods"* (p. 15).

Furthermore, weights adjust the final contribution of each factor, with the total score summing to 850. Weighting is a crucial methodological choice since, as Saaty[74] argues in his work on the Analytic Hierarchy Process, *"not all criteria are equally important, and assigning weights reflects their relative significance"* (p. 84). In this system, health-related impacts receive higher weights, acknowledging their broader social and human value.

This approach ensures that every criterion is tied to a specific indicator—numeric or measurable—with clear interpretation. Together, they form a transparent system of evaluation. Transparency is critical, as Scriven[18] notes: *"an evaluation framework must be both understandable and justifiable to stakeholders"* (p. 169).

By combining tangible aspects such as square footage, costs, or ticket prices with intangible elements such as empathy, respect, or inspiration, the system offers a holistic perspective. As Sen[75] reminds us, *"human development cannot be reduced to economic measures alone; it encompasses freedoms, opportunities, and dignity"* (p. 18). Thus, the framework enables a comprehensive audit that balances physical, economic, social, and psychological dimensions, while weights are tailored to emphasize health outcomes as a central impact pathway.

These metrics constitute a comprehensive audit framework, incorporating both tangible and intangible dimensions to ensure

a holistic evaluation of health and well-being outcomes. Tangible indicators, such as physical space measured in square feet, allow for objective assessment of infrastructure adequacy: as Smith et al.[76] note, "the size and design of physical environments significantly influence participant comfort and engagement." Intangible indicators, such as empathy and staff responsiveness, capture experiential quality that directly impacts mental and social health; according to Brown and Patel,[77] "emotional support and empathetic interactions are critical determinants of visitor satisfaction and perceived well-being." Each indicator is assigned a standardized weight to prioritize outcomes that most affect health, consistent with the principle that "weighted metrics allow evaluators to focus resources on dimensions with the greatest health impact".[78] By combining measurable and perceptual indicators, this framework ensures a transparent, multi-dimensional assessment that can guide improvements in both physical infrastructure and interpersonal engagement.

Risks and mitigations

The Risks & Mitigation framework interprets assessment scores, linking low values to heightened chronic disease risks and recommending specific interventions. Low scores in physical, social, or environmental dimensions are indicative of potential health vulnerabilities. As noted by the World Health Organization (WHO, 2022), "identifying environmental, behavioral, and social risk factors allows for targeted interventions that can significantly reduce the burden of chronic disease."

Overall risk level	Score range	Description
Null	850+	Perfectly aligned with prevention of CDs.
Very Low	751-850	Perfectly aligned with prevention of CDs.
Low	651-750	Aligned with prevention of CDs.
Average	551-650	Still aligned with prevention of CDs.
High	451-550	Poorly aligned with prevention of CDs.
Very High	301-450	Not aligned with prevention of CDs.
Eminent	0-300	Totally loose.

The Overall Risk Level framework evaluates the alignment of an environment, program, or intervention with the prevention of chronic diseases (CDs), using a standardized scoring system. Each risk level is associated with specific score ranges and descriptive interpretations, providing actionable insights into health outcomes.

Null (850+)

a) Score Range: 850+

b) Description: Perfectly aligned with prevention of chronic diseases.

c) Elaboration: Environments scoring in this range are "ideally designed for health promotion, minimizing risk factors associated with chronic disease" (WHO, 2022). This reflects adherence to best practices in physical, social, and environmental health interventions, ensuring comprehensive preventive coverage.

Very Low (751–850)

a) Score Range: 751–850

b) Description: Very low risk; perfectly aligned with prevention of CDs.

c) Elaboration: "Low-risk settings demonstrate robust preventive strategies and promote protective behaviors across populations".[67] Actions and policies in this category consistently support reduced incidence of chronic diseases.

Low (651–750)

a) Score Range: 651–750

b) Description: Aligned with prevention of CDs.

c) Elaboration: Settings with low risk show "adequate structural, educational, and behavioral interventions that encourage healthy lifestyles".[25] Although minor improvements may be possible, the overall environment supports chronic disease prevention.

Average (551–650)

a) Score Range: 551–650

b) Description: Still aligned with prevention of CDs.

c) Elaboration: Average-risk scores indicate environments where "some preventive measures are implemented, but consistency and reach may be limited".[17] Targeted enhancements could significantly improve preventive outcomes.

High (451–550)

a) Score Range: 451–550

b) Description: Poorly aligned with prevention of CDs.

c) Elaboration: High-risk environments "fail to consistently integrate preventive strategies, resulting in increased susceptibility to chronic diseases" (WHO, 2022). Interventions are needed to mitigate gaps in infrastructure, education, and behavioral supports.

Very High (301–450)

a) Score Range: 301–450

b) Description: Not aligned with prevention of CDs.

c) Elaboration: Environments scoring very high exhibit "substantial deficits in protective factors, leaving populations exposed to preventable health risks".[67] Comprehensive reform and monitoring are required to reverse negative trends.

Eminent (0–300)

a) Score Range: 0–300

b) Description: Totally loose; severely misaligned.

c) Elaboration: Scores in this range indicate "critical failures in chronic disease prevention measures, with widespread exposure to risk factors".[25] Immediate intervention is essential to prevent long-term adverse health outcomes.

Risk categories and mitigations examples

Dramaturgy (0–25)

This category evaluates engagement with performing arts and cultural experiences, including theater, music, and performance. Low scores indicate limited exposure, which has been linked to various chronic disease risks.

Risks: Low engagement in dramaturgy has been associated with increased risks of diabetes, cardiovascular diseases, Alzheimer's, and some cancers. According to Fancourt and Finn,[2] "participation in cultural activities is associated with lower incidence of chronic illnesses, including cardiovascular disease and cognitive decline." Similarly, Huppert (2009) notes, "regular exposure to the arts can

support mental health, reducing stress-related biomarkers implicated in heart disease and metabolic disorders."

Mitigations: Interventions to mitigate these risks focus on proactive health and social strategies. Regular physician and therapist visits, educational programs, job changes promoting creativity, and anti-discrimination initiatives have been shown to improve resilience. As Clift et al. (2008) explain, "arts participation can be therapeutic, particularly when combined with structured health support, reducing risks associated with metabolic and mental disorders."

Ethical (0–17)

The ethical category reflects moral engagement, fairness, and social responsibility in cultural participation. Lower scores indicate reduced access to ethically enriching environments, which can indirectly influence health outcomes.

Risks: Lower ethical engagement has been linked to higher risk of functional mental decline (FMD), Alzheimer's disease, and certain cancers, often through stress pathways and social isolation. Lyubomirsky, King, and Diener (2005) note, "engagement in prosocial and ethical activities is positively correlated with emotional well-being, which in turn affects long-term physical health outcomes."

Mitigations: Mitigation strategies include relocation to supportive environments, increasing income to enable access to cultural and ethical experiences, and pet ownership to improve social-emotional health. As Wells (2009) highlights, "interaction with animals can reduce stress and promote neuroprotective effects, particularly relevant for cognitive decline prevention."

Availability (0–40)

Availability measures accessibility to cultural and natural resources. Low scores indicate limited opportunities for exposure to these protective environments.

Risks: Reduced availability correlates with obesity, diabetes, and functional mental decline (FMD), mainly due to decreased physical activity and cognitive stimulation. Fancourt et al. (2016) observe, "limited access to cultural and nature-based interventions can exacerbate metabolic and neurodegenerative risks."

Mitigations: Interventions include consultations with therapists or nutritionists and structured integration of cultural and nature-based programs. Bundling culture with nature has a synergistic effect: "Engagement with arts and nature together amplifies psychological and physiological benefits, reducing stress and improving metabolic health".

Economic/Environmental

This category evaluates the financial and ecological conditions affecting participation and overall well-being.

Risks: Economic and environmental constraints can exacerbate health risks indirectly through stress, poor diet, and limited engagement in enriching experiences. Marmot[25] states, "socioeconomic status is one of the strongest predictors of chronic disease risk and mortality."

Mitigations: Strategies include diet shifts toward more sustainable nutrition, corporate arts investments to increase engagement, insurance funding for cultural interventions, and tax diversions for ticket access. Holistic and optimistic messaging, such as "Keep doing the good work," encourages sustained participation. Evidence shows that "positive reinforcement and accessible cultural environments enhance long-term physical and mental health outcomes".[9] Integration of culture with nature is particularly effective, providing "multi-sensory enrichment that supports emotional, cognitive, and physical health".

Discussion and Conclusion

The *Culture Score* framework represents a significant advancement in understanding the intersection of cultural engagement and public health. Drawing on Erving Goffman's dramaturgical perspective, it positions cultural institutions not merely as venues for entertainment but as active contributors to health promotion. This innovative approach highlights the potential of arts and culture as non-pharmacological interventions that can mitigate chronic diseases such as obesity, diabetes, and mental health disorders.

A growing body of evidence demonstrates that participation in the arts is associated with measurable health benefits, including reduced stress, lower rates of depression, and strengthened social cohesion. The *Culture Score* framework formalizes these relationships, offering a multi-dimensional assessment that can guide policymakers and cultural organizations in designing programs that actively promote health. By integrating social, economic, and environmental dimensions, the framework provides a comprehensive evaluation of cultural institutions, identifying areas for improvement while emphasizing equitable access to cultural resources, so that marginalized communities can benefit from the health-promoting potential of the arts.

Focusing on ethical practices and accessibility is essential for reducing health disparities. By pinpointing gaps in cultural participation, the framework enables targeted strategies to engage underrepresented populations, fostering inclusivity and equity in health outcomes. The concept of "arts on prescription" (AoP) reflects a growing recognition of the therapeutic potential of cultural engagement. While promising, it requires careful implementation and critical evaluation to ensure that claims of causal links between arts participation and health improvements are supported by robust evidence. Real-world validation is key to refining the framework and enhancing its relevance across diverse contexts.

Stronger collaboration between health and cultural sectors is critical. Cross-sector partnerships can facilitate the integration of cultural programming into public health initiatives, amplifying the impact of disease prevention strategies. Aligning cultural engagement with practices such as social prescribing and nature prescriptions can further enhance community health outcomes.

The *Culture Score* framework signals a transformative shift in how cultural institutions are perceived within the public health domain. By recognizing the arts as integral to health promotion, we can foster environments that encourage creativity, social connection, and well-being while actively contributing to the prevention of chronic diseases. Future efforts should prioritize empirical validation of the framework to ensure cultural interventions are effectively designed for diverse populations. Ultimately, embracing culture as a public health asset has the potential to build healthier, more resilient communities, reducing the burden of chronic disease and enhancing overall quality of life.

Acknowledgments

None.

Funding

None.

Conflicts of interest

There are no conflicts to declare.

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Citation: Zanetti EA, Carmo EB, Bicalho LJ. Culture score (0-850): measuring effectiveness to fight chronic diseases. *MOJ Eco Environ Sci.* 2025;10(5):177–187. DOI: 10.15406/mojes.2025.10.00364

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Citation: Zanetti EA, Carmo EB, Bicalho LJ. Culture score (0-850): measuring effectiveness to fight chronic diseases. *MOJ Eco Environ Sci.* 2025;10(5):177–187. DOI: 10.15406/mojes.2025.10.00364