

MENTAL HEALTH INDEX:

FORTALEZA (CE)
EXPERIENCE

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Summary

This document seeks to describe the experience of building the Mental Health Index (MSI) of the city of Fortaleza and tools aimed at public management to act in the development of intersectoral policies on mental health with a focus on children and adolescents. The first phase of the project was dedicated to the construction of an Indicator Matrix, which brings together indicators related to the mental health theme and which reflect the intersectorality that the issue requires, as well as the social determinants involved. Based on the indicator matrix, the MSI was constructed with the aim of highlighting areas that are more or less favorable for promoting good mental health of the population. Alongside these two products, an online platform was developed that allows for the visualization of the Mental Health Map [Mapa de Saúde Mental] of Fortaleza through georeferencing. In addition to providing an interactive display of the data, the platform also offers content for consultation, such as a repository of best practices, information on the availability of mental health services in the city, and detailed sheets of the indicators used for creating the index. We believe that the know-how acquired in the process of building up and communicating the index to the municipal government of Fortaleza may provide valuable inputs for enhancing mental health public policies throughout Brazil.

Keywords: Mental Health; Children and Youth Health; Epidemiology; Monitoring; Prioritization.

1. Foreword

The main goal of this publication is to describe the experience of building the Mental Health Index and tools to support public management in the development of intersectoral policies on mental health with a focus on children and adolescents. By detailing the project carried out in the city of Fortaleza (CE), we believe that the presentation of lessons learned from the process constructing and communicating the index in partnership with the municipal government may provide subsidies for the improvement of public mental health policies guided by data and evidence-based throughout Brazil.

The process described throughout this publication also makes a significant contribution to the literature on the use of data in state planning (Esty & Rushing, 2007), the co-creation of solutions for public administration (Torfing, Sørensen, & Røiseland, 2019), and the strengthening of dynamic capabilities to address the public challenges of the 21st century (Mazzucato, Kattel, Quaggiotto, & Begovic, 2021).

In addition to this introduction, the publication is structured into sections that provide detailed explanations of the conceptualization and each step involved in designing Fortaleza's mental health index and map. Finally, the discussion section aims to highlight the potential contributions of the described experience to the field of public administration in Brazil and to public health in general.

2. Context

Mental health conditions have emerged as a significant public health challenge, often underestimated by existing public health policies (Korkeila et al., 2003). In recent decades, there has been a notable rise in the global burden of diseases related to mental disorders. This situation has been further compounded by the onset of the COVID-19 pandemic, which began in mid-2020 and has exacerbated the issue (Werneck et al., 2021).

Data from the 2019 National Health Survey (PNS, in the Portuguese acronym) indicate a prevalence of diagnosed depression by a healthcare professional at 7.6% (95% IC: 7.2%–8.1%). Among these individuals, less than half (46.4%; 95% IC: 43.7%–49.1%) reported receiving specialized medical care in the 12 months prior to the interview, and only 16.4% (95% IC: 14.2%–18.7%) reported undergoing psychotherapy. Conversely, over half (52.0%; 95% IC: 49.1%–54.9%) reported using antidepressant medication (IBGE, 2019).

The Telephone Survey of Risk Factors for Chronic Noncommunicable Diseases in Times of Pandemic (Covitel, in the Portuguese acronym) revealed a 41% increase in the diagnosis of depression among Brazilian adults (18 years or older) between the pre-pandemic period (9.6%; 95% IC: 8.2%–11.1%) and the first quarter of 2022 (13.5%; 95% IC: 11.9%–15.3%). Within this context, the study also revealed that habits known as risk predictors for chronic noncommunicable diseases (such as alcohol consumption, tobacco and little physical activity, for example) are more prevalent among people with this diagnosis than in the general population (Hallal PC & Wehrmeister FC, 2022).

In Brazil, it is estimated that 10% to 20% of the child and adolescent population experience mental disorders, with 3% to 4% requiring intensive treatment (Couto, Duarte, & Delgado, 2008; Tanaka & Ribeiro, 2009). These statistics are particularly concerning as children and adolescents with mental disorders may face significant impairments in their “functional performance” – an individual's ability to carry out daily activities satisfactorily and appropriately for each stage of development –, which can have long-lasting effects into adulthood (Couto et al., 2008).

There is a wide and diverse range of mental health conditions that affect children and adolescents. They encompass pervasive developmental disorders (like autism), as well as conditions associated with externalizing behaviors (such as conduct disorders and hyperactivity), internalizing disorders (like depression and 7 anxiety disorders), substance abuse, among others (Couto et al., 2008; Fegert,

Vitiello, Plener, & Clemens, 2020).

Mental health is an integral part of overall health and is intricately connected to the equilibrium between the individual and the environment. It is influenced by individual biological and psychological factors, social interactions, social structures and resources, and cultural values (Hayes & Poland, 2018; Korkeila et al., 2003; Substance Abuse and Mental Health Services Administration, 2019).

This whole context highlights the great magnitude of the impact of mental health on people's lives and on society. However, currently, there is a deficit of official policies, programs and actions aimed at mental health, especially for children and adolescents (Cavalcanti, 2019). This oversight has consequences for society as a whole, and the topic demands timely and urgent interventions, starting with raising awareness among public managers and the population, so that these actors can propose, conduct and endorse public policies to address this important challenge.

It is crucial to prioritize public policies capable of supporting and enhancing existing mental health systems and services, including care and assistance, to ensure improved access to mental health treatments. Moreover, it is necessary to focus on health promotion and disease prevention, taking into account the multidisciplinary nature of the topic and considering the social determinants specific to each region, as well as the socioeconomic and environmental diversities and disparities.

3. Pilot Project

In response to this significant challenge, a cooperation agreement was signed in December 2021 between the [Fortaleza City Hall](#), represented by the [Fortaleza Innovation Laboratory](#) (Labifor/Citinova), and [Vital Strategies Brasil](#), with the support of the [Instituto Cactus](#), to undertake the project of the [Mental Health Panel](#).

The initiative aims to promote mental health among the population of Fortaleza, with a specific focus on [children and adolescents](#). As a [management tool](#), the Mental Health Panel offers an online platform that utilizes [georeferencing](#) to provide policymakers with information on the [mental health environment](#) in each neighborhood of Fortaleza. With a [holistic and intersectoral approach](#), the project aims to achieve the following goals:

- prioritize the agenda and encourage action to promote mental health;
- provide clear indicators and tools for action;
- visualize challenges based on intersectorality and social determinants in health.

4. Pillars of the Mental Health Panel

4.1. Transversality

Mental health is a multifaceted issue, as individuals are influenced by various public policies and their own experiences within different contexts. Therefore, achieving good mental health is not solely reliant on individual choices. It is essential for public policies to establish an enabling environment where healthy choices become the default for the population.

And the health situation – including mental health – of individuals has a relevant impact on several aspects:



Quality of life



Performance



Performance
at work



Social well-being

4.2. Intersectoriality

If the challenge is multifaceted, so must the response. That is why the Mental Health Panel project prioritizes a holistic view and integrated action, bringing together several departments of the Fortaleza City Hall, including Education, Health, Public Security, and Social Assistance.

In order to reflect this intersectoral view required by the theme, the project focused on creating a Mental Health Index. According to the Handbook on Constructing Composite Indicators: Methodology and User Guide (OECD, 2008):

“A composite indicator is formed when individual indicators are compiled into a single index on the basis of an underlying model. The composite indicator should ideally measure multidimensional concepts which cannot be captured by a single indicator, e.g. competitiveness, industrialisation, sustainability, single market integration, knowledge-based society, etc.”

4.3. Health Promotion Perspective

The Mental Health Index was constructed based on disease prevention and health promotion. It does not focus solely on assistance, that is, a focus on the situation only when the illness has already started.

4.4. Innovation

The Mental Health Panel is an **innovative, disruptive, and pioneering initiative**. It is built **collaboratively and purposefully** in partnership with various involved secretariats, aiming to find the best solutions that align the methodology with the local reality of the city. This approach ensures the **dynamic** nature of the index, allowing for periodic improvements with the inclusion of new indicators that align with the methodology employed. Moreover, the project is **customizable and scalable**, and can be replicated by other municipalities, states, and nationwide.

5. The “Mental Health Panel of Fortaleza” Project

The project “Mental Health Panel of Fortaleza” (Painel da Saúde Mental de Fortaleza) involves the construction of a Mental Health Index (MHI), which constitutes a synthesis of indicators related to the theme of mental health, with an emphasis on children and adolescents and with a focus on the population residing in the city of Fortaleza.

The indicators reflect the intersectionality that the theme requires, as well as incorporating the social determinants that affect this reality, with the aim of supporting decision-making in the territory, and a focus on health promotion and prevention of mental health conditions.

The index serves as a tool to strengthen epidemiological surveillance in the field of mental health and, thus, supports the formulation, implementation, and monitoring of data-driven and evidence-based public policies. According to the Joint Research Centre-European Commission, composite indicators like the MHI offer a straightforward means of comparing different territories, enabling the illustration of complex and hard-to-measure issues such as mental health (Joint Research Centre-European Commission, 2008). Furthermore, these indicators help identify vulnerabilities and optimize the allocation of public resources in this domain.

Next, the stages of elaboration of the Mental Health Index are described, also shown in Figure 1 and which were based on the methodology used to construct the Municipality Friend of First Childhood Index (IMAPI, in the Portuguese acronym).

6. Step 1 – Indicator Matrix

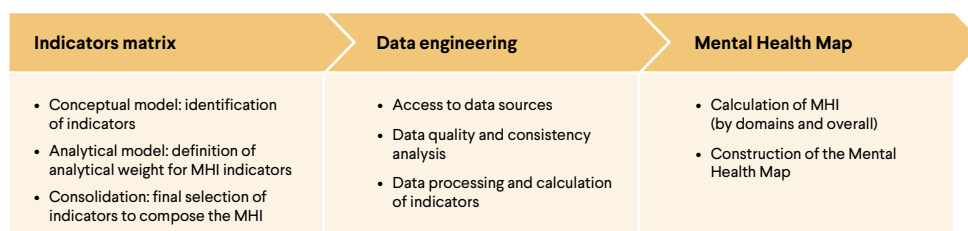
The first stage of the elaboration of the MHI consisted of the construction of an Indicator Matrix, which gathered indicators related to the theme of mental health for all age groups, with emphasis on children and adolescents residing in Fortaleza.

The process of identifying and selecting indicators followed a participatory decision-making methodology with key actors from different sectors of governmental and non-governmental institutions (Buccini et al., 2021; De Vente, Reed, Stringer, Valente, & Newwig, 2016; Elwyn et al., 2017; Okoli & Pawlowski, 2004).

According to De Vente and colleagues (2016), participatory decision-making approaches foster stakeholder engagement, leading to more efficient and effective achievement of project goals. This methodology aids in conflict reduction and resolution, fostering trust and learning among stakeholders. As a result, it increases the likelihood of garnering support for project goals and implementing long-term decisions (De Vente et al., 2016).

The process involved three main fronts, as described below: 1) Conceptual model - identifying indicators to capture the mental health of the population; 2) Analytical model - determining the analytical weight for the MHI indicators; and 3) Consolidation - finalizing the selection of indicators to comprise the MHI (Figure 1).

Figure 1 - Development Stages of the Mental Health Index



6.1. Conceptual Model

For the conceptual model, the definition of mental health established by the WHO was considered: “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (World Health Organization, 2004).

Mental health, as an inseparable component of overall health, represents the equilibrium between the individual and the environment. It is influenced by individual biological and psychological factors, social interactions, social structures and resources, as well as cultural values. A wide range of risk factors can impact the onset, progression, and resolution of disorders, as well as the promotion of health and quality of life. Furthermore, a specific risk factor may be shared among various health conditions, including both somatic and mental health issues.

A mental health indicator can serve as a proxy or a direct measure of key factors related to mental health, including predisposing, precipitating, or protective factors. While commonly used mental health indicators focus on mental health services and describe their structure, processes, quality, and outcomes, the multidimensional and intersectoral nature of mental health, as captured by the concept of social determinants of health, requires the use of additional indicators to assess and address the mental well-being of a population in its entirety (Korkeila et al., 2003).

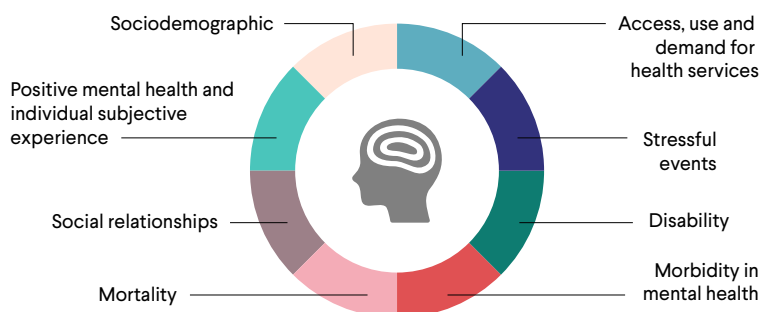
Criteria for identifying and selecting indicators for the project were established. Accordingly, the indicator needed to meet the following requirements:

- Be based on publicly available data and exhibit sufficient completeness;
- Be accessible at the neighborhood level (for those not originally disaggregated by neighborhood, an interpolation methodology was employed for estimation purposes);
- Align with one of the eight domains of mental health as described by Korkeila et al. in 2013 (as presented in Section 5.2 of this document);
- Reflect the most recent data available (we opted for utilizing data from 2019, predating the pandemic period);
- Be relevant to the project’s target audience, children and adolescents.

6.1.2. Domains of Mental Health

The data systematization was conducted using a robust and well-documented methodology, which translates the functional model of mental health across the following domains:

Figure 2 – Domains of Mental Health



Here is a brief description of the definition and content of each of the domains (Figure 2):

- **Sociodemographic factors:** The crucial demographic factors that correlate with mental health are gender, age, marital status, and ethnicity (Korkeila et al., 2003). Studies show that sociodemographic factors such as occupational status and lower parental education, marginalization, female gender, and living conditions with caregivers are considered important risk factors for depression in adolescents, for example. In addition, contemporary scientific literature shows that socioeconomic status, associated with other risk factors, can affect the prevalence of mental disorders and psychological distress (Moeini, Bashirian, Soltanian, Ghaleiha, & Taheri, 2019).
- **Social relationships:** Healthy social relationships can act as protective factors for the onset and recurrence of mental illness and can affect the course of an illness episode. There is evidence that, in particular, perceived social support, rather than the structure or quantity of social relationships, has an effect on mental health, especially when the individual experiences stress (Korkeila et al., 2003). According to Blakemore (Blakemore, 2019), a negative family environment can amplify genetic risk factors for mental illness, and genetic factors can influence both the social experiences we seek during adolescence and the way people around us treat us. Studies have shown that social deprivation in adolescence can have far-reaching consequences, highlighting the importance of peer acceptance and influence at this stage of life (Orben, Tomova, & Blakemore, 2020).
- **Stressful events:** Previous studies have investigated major life events deemed undesirable, unmanageable, or life-threatening as risk factors for mental illness. There is clear evidence of an association between major adverse life events and subsequent depression (Korkeila et al., 2003). Adverse childhood experiences, such as abuse, neglect, or being bullied at school, are associated with later mental health problems. According to Negri (2020), maltreatment events in childhood can lead to more marked mental health problems than dysfunctional family environments (Negri, 2020). Other stressors that increase the risk of mental illness (in particular psychosis) include drug use during adolescence and being an immigrant in a culture with different sociocultural values (Blakemore, 2019).
- **Positive mental health and individual subjective experience:** Positive mental health is not just the absence of negative symptoms such as depression or anxiety. The psychological well-being model includes aspects of self and event control, happiness, social involvement, self-esteem, mental balance and sociability. Self-perceived health, as a reliable and valid method to assess general health, has a strong correlation with external assessments of mental health. Poor self-perceived health especially predicts the future course of depression. In addition, self-assessed poor emotional health may be an important predictor of the onset of depression. Another important area for a system of mental health indicators would be the dimension of quality of life (Korkeila et al., 2003). In this sense, growing up in urban areas, as opposed to rural areas, represents an important risk factor for the development of problems related to mental health (Blakemore, 2019). In Brazil, the characterization of urban and rural spaces takes into account the demographic density, the location in relation to the main urban centers and the size of the population (IBGE, 2017).
- **Access, use and demand for health services:** The descriptive analysis and interpretation of service use data, combined with sociodemographic and epidemiological data, can be useful for planning mental health interventions and strategies. In addition to information on service usage, drug sales and disability data for mental disorders are available in most countries. Data on the use of health services have serious limitations, but may provide future possibilities for formulating what should be the conditions and structures available for mental health care, based on the construction of process indicators. This domain concerns the indicators related to the general health and mental health of the population and the structures and services available for this care, in view of the interrelation that is established between both (Korkeila et al., 2003).

- **Mental health morbidity:** The mental disorders to be chosen for follow-up from the point of view of mental health morbidity should be selected based on their importance in terms of public health and their ease of measurement. Depression, anxiety disorders, alcohol abuse and dependence, suicide attempts and non-specific psychological disorders are examples of disorders and behaviors that must provide relevant information from a public health point of view for mental health promotion strategies (Korkeila et al., 2003). Indicators related to morbidity are traditionally used to assess the mental health of a population (Samartzis & Talias, 2020).
- **Disability:** Psychiatric disorders rank among the leading causes of disability worldwide, with significant impacts on occupational functioning and causing substantial economic consequences. Psychopathology has been linked to pervasive impairments in social, emotional, and physical domains of life. This domain includes indicators related to disability resulting from mental health issues and disabilities in general, as they are recognized as stressors that can impact individuals' mental well-being (Korkeila et al., 2003). Individuals with physical disabilities experience lower quality of life compared to reference values, and there is an association between physical disability and mental illness (Alexanderson, Frimore, Espinosa, Wikström, & Stockselius, 2022).
- **Mortality:** There is evidence that mortality is higher among those with psychiatric disorders than in the general population, in particular among those suffering from substance abuse and dependence, eating disorders, and severe depression and schizophrenia. The causes of the increase in mortality in this population are related both to suicides and to a moderate increase in natural causes and related comorbidities. Indicators of mortality due to mental disorders and indicators of mortality from other causes that also have a strong impact on the population's mental health were included (Korkeila et al., 2003).

6.1.3. Literature review and selection of indicators

The process of identifying and selecting indicators to compose the MHI was carried out through a broad review of the scientific literature. Searches were conducted in the PubMed database using the descriptors "Public Health" AND "Mental Health" AND "Epidemiology". Then, articles that described indicators related to the mental health of the population, written in Portuguese or English, were selected.

Additionally, a search for documents was carried out on the official website of the Brazilian Ministry of Health, in order to identify materials and references that could contain useful indicators for the composition of the MHI. Interactive discussions were also held by the Vital Strategies Brasil team and the Instituto Cactus, including a specialist consultant in Mental Health, with representatives from the city of Fortaleza to suggest indicators that could be used locally.

After these stages, 123 indicators that translated the domains of mental health were cataloged. From these, 88 indicators that could be calculated with publicly available government data were selected. From these, 22 could be calculated down to the neighborhood level for the city of Fortaleza, being selected to compose the MHI. Additionally, coverage criteria and data quality of the 22 selected indicators were verified.

Thus, these 22 selected indicators went through the "Analytical Model" stage, as described below. Table 1 presents a brief description of each of these indicators.

Table 1 – Description of indicators selected in the conceptual model

Indicator	Domain	Data source
Proportion of live births whose mothers did not receive prenatal care	Access, use and demand for health services	SINASC
Rate of hospitalizations for mental and behavioral disorders	Access, use and demand for health services	SIH-SUS / IBGE
Proportion of live births to teenage mothers	Stressful events	SINASC
Rate of interpersonal violence reporting	Stressful events	SINAN Violências / IBGE
Rate of narcotics seizure occurrence	Stressful events	Department of Public Security and Social Defense / IBGE
Rate of occurrence of violent crimes against property	Stressful events	Department of Public Security and Social Defense / IBGE
Proportion of live births with congenital malformations, deformities and chromosomal anomalies	Disability	SINASC
Rate of self-inflicted violence reporting	Morbidity in mental health	SINAN Violências / IBGE
Rate of women mortality by homicides	Mortality	SIM / IBGE
Child mortality rate	Mortality	SIM / SINASC
Homicide mortality rate	Mortality	SIM / IBGE
Mortality rate from intentional self-harm	Mortality	SIM / IBGE
Mortality rate from mental and behavioral disorders	Mortality	SIM / IBGE
Presence of active social projects in the territory	Social relationships	SECEL, UFC, CEPPI
Presence of child protective services in the territory	Social relationships	MPCE
Presence of CRAS [Social Assistance Reference Center] or CREAS [Specialized Reference Center for Social Assistance] in the territory	Social relationships	SDHDS
Presence of parks and green spaces	Positive mental health and individual subjective experience	SEUMA
Percentage of private households where there is garbage accumulated in public spaces	Positive mental health and individual subjective experience	IBGE
Presence of urban agriculture	Positive mental health and individual subjective experience	IPLANFOR
Number of low-income families	Sociodemographic	Cadastro Único
Human Development Index	Sociodemographic	IBGE
School dropout rate	Sociodemographic	Censo Escolar [School Census]

For the indicators “presence of active social projects in the territory”, “presence of child protective services in the territory”, “presence of CRAS or CREAS in the territory”, “presence of parks and green spaces” and “presence of urban agriculture” it was assigned the value of 100% in the cases where facilities or structures were present and 0% in the cases where they were not. The other indicators were presented as continuous variables.

The individual qualification sheets of the 22 selected indicators can be consulted in Appendix 2.

6.2. Analytical Model and Consolidation

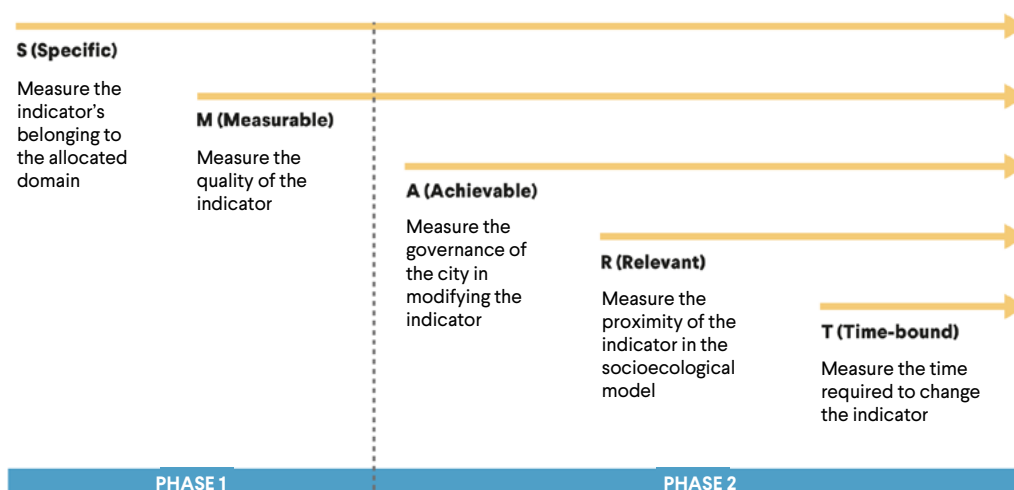
After selecting the indicators based on the criteria listed above, an external panel of specialists in mental health was constituted, with the aim of validating and evaluating each of the selected indicators in multiple aspects. The evaluation of the indicators took into account five criteria based on the SMART methodology, as shown in Figure 3 (Buccini et al., 2021).

Decision Theory was proposed to help people make better decisions based on basic preferences. Multicriteria decision support consists of a set of techniques to help a decision-making agent – individual, group of people or committee of technicians or managers – to make decisions regarding a complex problem, evaluating and choosing alternatives to solve it according to different criteria and viewpoints. This type of support aims, therefore, to help people and/or organizations in situations in which it is necessary to identify priorities, considering, at the same time, several aspects (Jannuzzi, Miranda, & Silva, 2009).

One of the techniques used for assertive choices is the SMART methodology, aimed at multicriteria decision analysis (Gomes & Gomes, 2000). The main objective of this methodology consists of prioritizing the best path by assigning weights to each criterion, according to the determined degrees of relevance. It is a simple classification methodology and is based on weights that are assigned to the alternatives that make up the decision problem (Sabaei, Erkoyuncu, & Roy, 2015).

According to Shimizu (2006), the process of formulating decision alternatives and choosing the best one is almost always chaotic and complex. Chaotic due to the fact that individuals do not have a clear and complete vision of the objectives. Complex because the uncertainty and lack of structure of the problem can make the application of any decision methodology unfeasible.

Figure 3 – SMART criteria adopted to define the analytical weight of the indicators that will compose the Mental Health Index



Specialists in mental health and public policies from governmental and non-governmental organizations, as well as experts dealing with mental health or related topics within the city's Health Department, Education Department, and Human Rights Department, were invited to participate in the external panel. Consent and participation were obtained from all 17 invited experts, demonstrating excellent engagement. After their acceptance, instructions were sent to the specialists to complete a questionnaire using the "Survey Monkey" tool (SurveyMonkey Audience; pt.surveymonkey.com/mp/audience). The questionnaire applied to the specialists can be found in Appendix 1 for reference.

Throughout all stages, the specialists had the opportunity to provide suggestions and comments, including the inclusion of indicators that were not initially identified. They also had the option to propose indicators at the municipal level. However, no suggestions were made for indicators that met the proposed criteria for coverage and quality, which spoke for the adequacy of the 22 indicators initially selected and demonstrating good coverage.

This process of consultation with specialists and evaluation by the Vital Strategies and Instituto Cactus teams involved the validation of previously selected indicators and consensus on quality attributes, through criteria S ("specific") and M ("measurable"). The S and M criteria were used to define the exclusion or permanence of the indicators for the composition of the MHI and their allocation in the domains of the study.

The evaluation of three different aspects of the indicators in relation to the outcome of mental health was also carried out, involving the criteria A ("achievable"), R ("relevant") and T ("time-bound"). The grades given to the M, A, R and T criteria were used to compose the weight assigned to each indicator in the final calculation of the MHI. Additionally, the importance of each indicator for the composition of the MHI was questioned.

In detail, in Phase 1 of the analytical methodology, which involved validating the previously selected indicators and reaching a consensus on quality attributes, the S criterion aimed to assess the extent to which each indicator was specific to the conceptual model domain of mental health, i.e., whether the indicator belonged to the allocated domain. The question answered by the experts for this criterion was: "Does this indicator belong to the domain?" The response options were dichotomous (yes/no). If the expert disagreed with the domain to which the indicator was allocated by the internal team, they were asked to indicate the domain to which they would allocate the indicator and provide a justification for their response. The overall agreement regarding the indicator's belonging to the allocated domain was 89.7%.

Still with regard to Phase 1, the M criterion aims to qualify each of the indicators listed, according to systematic and objective attributes. Thus, experts were asked to assess the importance of each proposed attribute, in order to capture the quality of the indicator. The four attributes initially proposed were: a) data periodicity; b) access to data; c) population subset; d) data source, as defined in Table 2.

Subsequently, the research team, consisting of two epidemiologists from Vital Strategies, classified each of the indicators that make up the MHI according to the same four attributes evaluated by the specialists. For the evaluation carried out by the internal team, a code was established according to the 5-point Likert scale for each attribute: periodicity (1 = one-off, 3 = biannual, 5 = monthly, half-yearly or annual), source of data (1 = projection, 3 = survey, 5 = system), access (1 = private, 3 = upon request to government, 5 = available via internet for download), population subset (1 = CadÚnico, Family Health Strategy and others, 3 = users of SUS or the public education system, 5 = Brazilian population). A visualization of the questionnaire applied to the research team is available in Appendix 1.

Table 2 – Attributes for assessing the quality of indicators in criterion M (Measurable) of the Mental Health Index.
Source: Buccini et al. (2021)

Attribute	Justification	Categories
Periodicity of data	Period in which the data is published. The periodicity of the data may influence the index update time	One-off
		Biannual
		Monthly, half-yearly or annual
Data access	The data can be accessed in a public or restricted way. The way of accessing the data may influence the sustainability of the index	Private
		Available upon request to government
		Available via internet for download
Population subset	The population cut may influence the representativeness of the index in relation to the total population of the city	Single Registry (CadÚnico, Family Health Strategy and others)
		Users of the Unified Health System (SUS) or the public education system
		Brazilian population
Data source	Data come from data collections (primary), or systems (secondary), or predictions-projections. The data source may influence how much the index reflects the real situation	Projection
		Survey
		System

The data obtained from Phase 1 of the analytical methodology were used to define the exclusion or permanence of the indicators for the composition of the MHI.

Regarding Phase 2 of the analytical methodology, criterion A aimed to assess the level of governability of the municipal sphere in modifying the indicators for greater impact on mental health outcomes. The question that guided the experts' analysis was: "What is the governability of the city in modifying this indicator for greater impact on the Mental Health Index (MHI)?" Each expert selected a response on a 100-point scale, where 0 represents "No governability: the actions necessary to modify this indicator depend entirely on the state or federal level", and 100 represents "Complete governability: the actions necessary to modify this indicator depend entirely on the municipal level."

Still with regard to Phase 2, criterion R aimed to assess how modifications to the indicators could impact Mental Health outcomes. In this round, the experts responded to the following question: "If this indicator showed improved performance, how much would it impact the improvement of the final outcome for mental health?" The responses were provided on a 100-point scale, where 0 represents "Almost not determinant: positive modifications to this indicator do not improve Mental Health at all", and 100 represents "Highly determinant: positive modifications to this indicator greatly improve mental health."

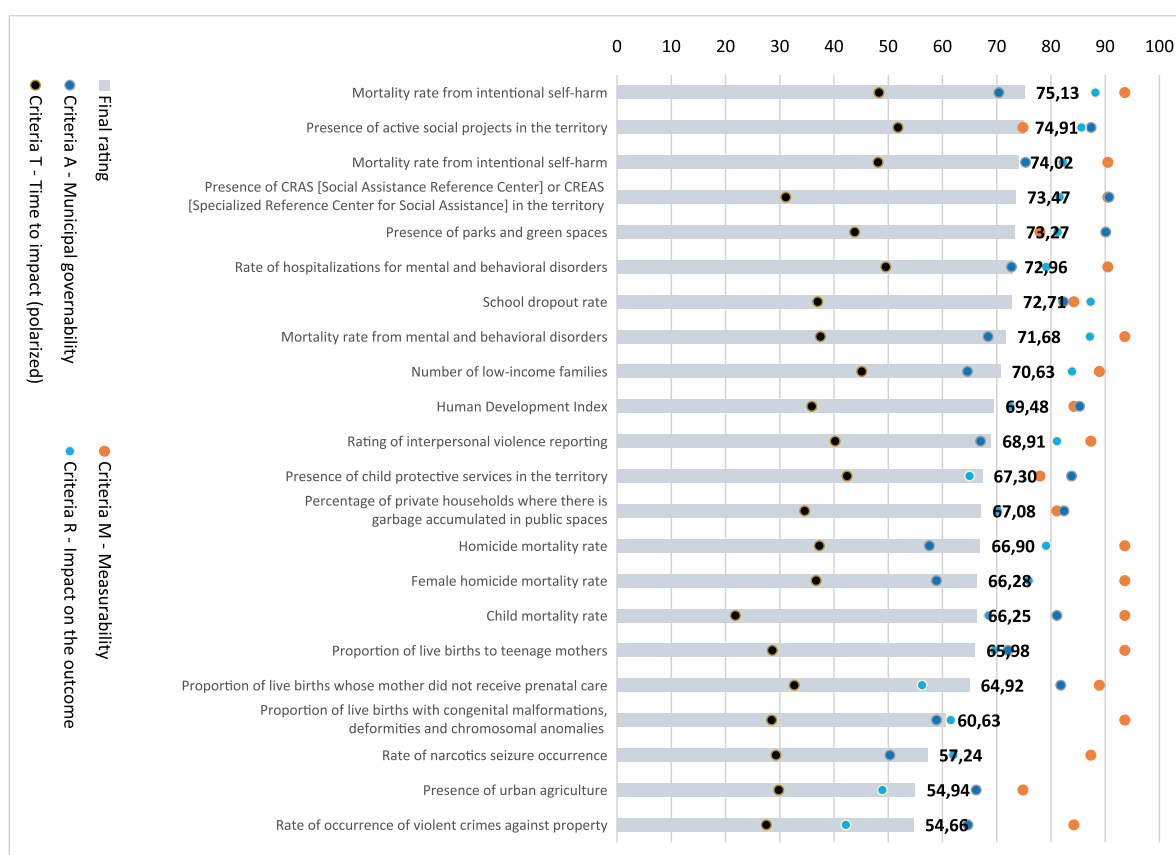
As the last criterion of Phase 2, the T criterion aimed to assess how long changes in a single indicator would impact improvements in the mental health outcome. The experts answered the following question: "If this indicator performed better, how long do you estimate that this would impact on an improvement in the final outcome (mental health)?" Responses were given according to a 100-point scale, where 0 represents "Short term" (up to 1 year) and 100 represents "Long term" (4 or more years). The choice of stints follows the logic that political mandates in Brazil last four years and that the planning and execution of a government, including the political will and resources to implement a given intervention, is decisive for the action (Buccini et al., 2021). For the calculation of the MHI, this indicator had its polarity reversed.

For the construction of the final weighing of each indicator, the following steps were followed, established by Buccini and colleagues (2021):

1. Calculation of the M criterion: the average score of each attribute obtained by the experts and the project team was calculated. Subsequently, the overall average of the M criterion was calculated according to the equation: $\{[(\text{Experts frequency} + \text{Team frequency})/2] + [(\text{Experts source} + \text{Team source})/2] + [(\text{Experts access} + \text{Team access})/2] + [(\text{Expert Cutout} + \text{Team Cutout})/2]\} / 4$
2. Calculation of the final weight of each indicator according to the equation: $[(\text{Criterion M} + \text{Criterion A} + \text{Criterion R} + \text{Criterion T polarized}) / 4]$

The results of the expert panel consultation are shown in Figure 4. The indicator with the highest final weight was the “mortality rate from intentional self-harm”, with 75.1/100. The indicator with the lowest final weight was the “occurrence rate of violent crimes against property”, with 54.7/100.

Figure 4 – Attributes and weights of the Mental Health Index indicators, measured by a panel of experts



Source: Prepared by the authors themselves

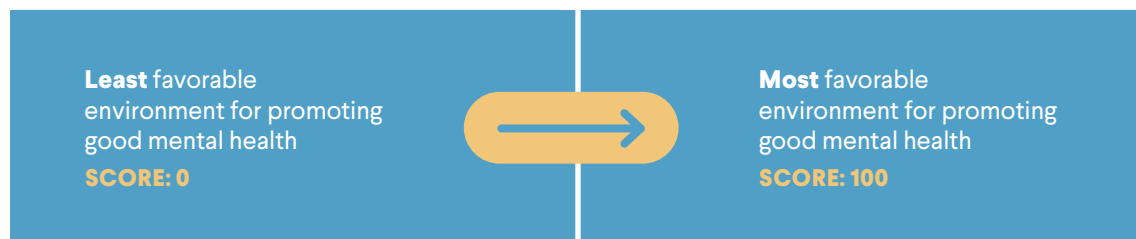
For the calculation of the indices by domain, each of the indicators was constructed from the pre-defined calculation methods during the construction of the matrix of indicators. The weights of the indicators were established according to the results obtained for criteria A, R, T, after consultation with specialists. The index per domain was calculated using the standardized values of the indicators and the weights, through a weighted arithmetic mean, according to the formula:

$$Mp = \frac{x_1p_1 + x_2p_2 + \dots + x_np_n}{p_1 + p_2 + \dots + p_n}$$

Where Mp is the calculated domain, x_n are the standardized indicators and p_n are the generated weights. The final values of each domain were then normalized between 0 (zero) and 100 (one hundred), using the Min-Max technique.

The overall MHI was calculated from the average of the indices calculated by domain. Domain and overall indices were used to classify territories into quartiles. This type of separatrix divides four classes with the same number of neighborhoods in each of them, allocating neighborhoods according to the MHI value (Nascimento et al., 2007).

The Mental Health Index aims to show where the environment is more or less favorable for promoting good mental health for the population. Its interpretation is based on the principle of a comprehensive view of the eight domains of mental health, which take into account the individual and their context in a multifactorial way, and should not be interpreted based on isolated indicators.



7. Step 2 – Data Engineering

The data engineering stage focused on the technical aspects necessary for the materialization of the selected indicators, in order to support the construction and calculation of the MHI, by domain and overall, for Fortaleza. This step was performed concurrently with the others.

The first step in constructing the indicators was obtaining the necessary data sources. Public governmental databases were made available by the Municipal Health Department of Fortaleza and other departments involved. All bases used are anonymized and do not present personal and sensitive information.

After obtaining the data, new quality and consistency analysis routines were carried out, ensuring greater accuracy during the indicator generation process.

Data preprocessing was conducted, which included standardizing the neighborhood names according to Municipal Decree 14.498/2019. Due to recent modifications in the neighborhood distribution brought about by the aforementioned decree, it was decided to work with indicators from the year 2019 up to the most recent available. Data harmonization/conversion was also carried out when necessary to ensure compatibility among data from different sources. Additionally, indicators representing negative aspects for mental health (e.g., mortality indicators) were inverted (multiplied by -1) as they have a negative impact on the MHI.

8. Step 3 - Mental Health Map and Interactive Platform

The Fortaleza Mental Health Map was constructed to present the spatial distribution, at neighborhood level, of mental health indices by domain and overall. For this construction, the generation of the ISM was carried out in two ways: 1) construction of indicators and indices by domain; and 2) construction (calculation) of the overall index and classification of intramunicipal territories.

For the generation of indices by domain, each of the indicators was built from the pre-defined calculation methods during the construction of the matrix of indicators. Polarized and standardized values of the indicators and weights were used, through a weighted arithmetic mean.

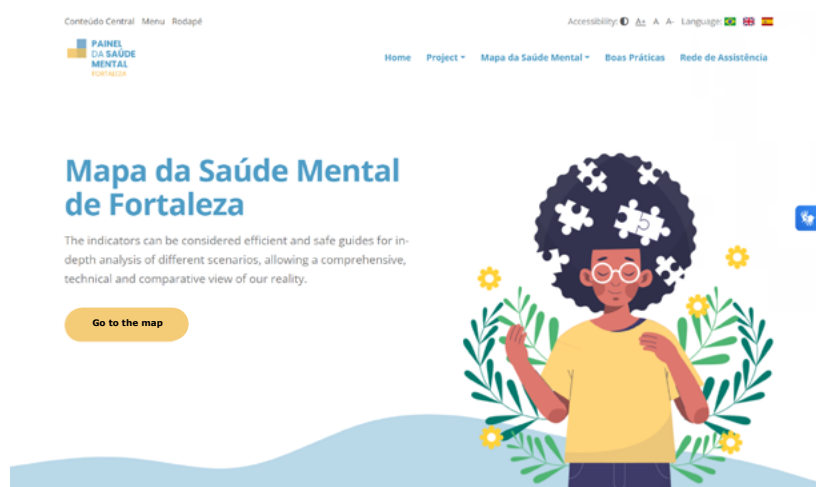
Based on georeferencing, the Mental Health Map presents a portrait of the environment related to the promotion of mental health for the city and was made available on an online platform called the Fortaleza Mental Health Panel. As a management tool, the panel was designed to support the decision-making process on policies aimed at mental health in the city.

Delivered to the City of Fortaleza in December 2022 and made available for access by managers in the city's portal, the platform applies, in an interactive and accessible way, the entire intersectoral methodology of intelligence in public health and epidemiology used in the elaboration of the Mental Health Index.

In addition to proposing a dynamic view of the data on the map, the panel also offers various contents for consultation, such as a repository of good practices, information on the provision of mental health services in the city and details of the indicators used, with information on their concept and definition, calculation method, measurement unit, data source, geographic coverage, disaggregation levels, update periodicity, among others.

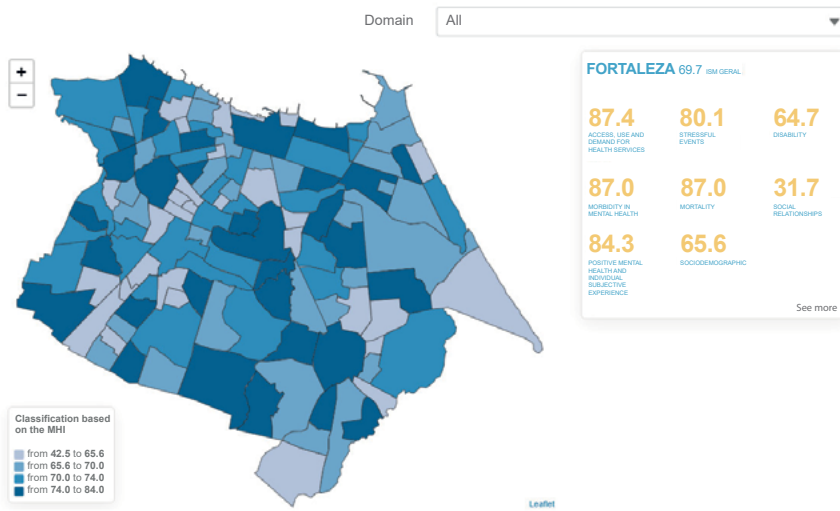
On the platform's initial screen (Figure 5), it is possible to select the option to access the screens: "Projeto" [Project] (containing the options "Sobre o projeto" [About the project], "Metodologia e etapas" [Methodology and stages], "Fichas de qualificação de indicadores" [Indicator qualification sheets] and "Referências e materiais complementares" [References and complementary materials]), "Mapa da Saúde Mental" [Mental Health Map] (containing the options "Acesse o mapa" [Access the map], "Como usar o mapa" [How to use the map] and FAQ), "Boas práticas" [Best practices] ou "Rede assistencial" [Assistance network].

Figura 5 – Layout do Painel da Saúde Mental de Fortaleza



The text box next to the map (Figure 6) shows the value of the Overall Mental Health Index for the city of Fortaleza. Here, it is possible to see the general index of the city for each of the eight domains of mental health. Thus, in addition to an overview of how the mental health indicators are in the city, it is also possible to verify the individual situation of the various factors that influence mental health, contemplating the characteristic intersectionality of the theme.

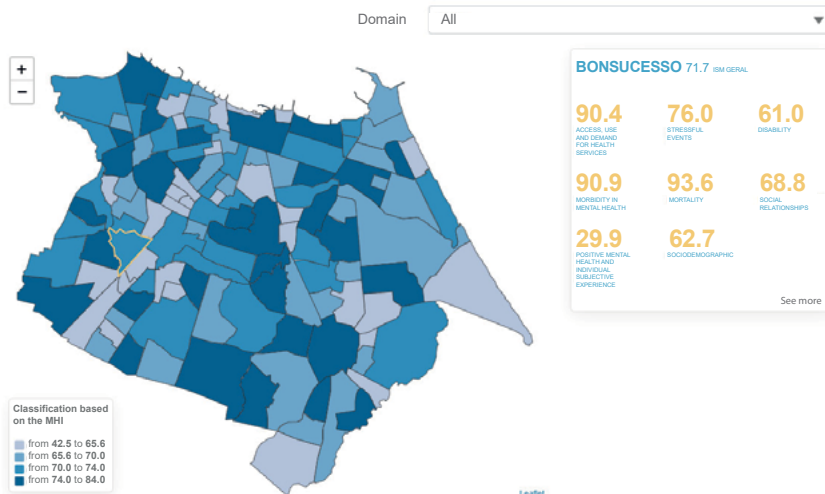
Figure 6 - Visualization of the Mental Health Map on the platform “Painel da Saúde Mental – Fortaleza” – MHI of the city



Source: Prepared by the authors themselves

After seeing the general indicators of the ISM for the city, the user can select each of the neighborhoods that he wants to view individually. When selecting a neighborhood on the map, the text box will display the values of the Mental Health Index of that location (Figure 7), both overall and by domain.

Figure 7 - Visualization of the Mental Health Map on the platform “Painel da Saúde Mental – Fortaleza” – MHI of the “Bonsucesso” neighborhood



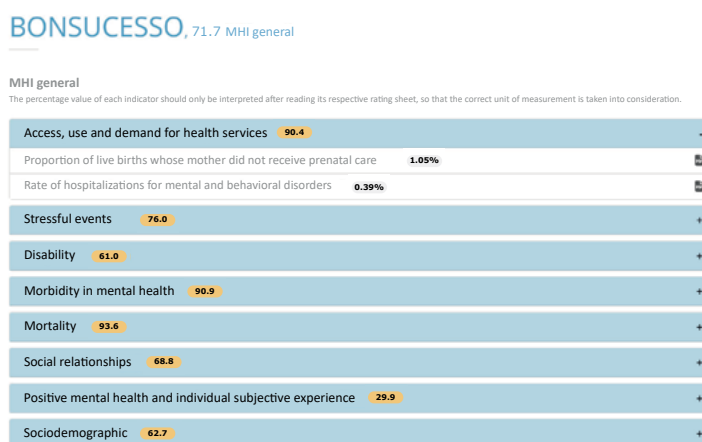
Source: Prepared by the authors themselves

In the text box for each neighborhood, it is also possible to click on “ver mais” [see more] to open a detailed view, for each neighborhood in the city, with the Mental Health Index by domain and the indicators that make up each one of them (Figure 8).

In this visualization, it is possible to identify which domains pull the index down, allowing the identification of which areas demand more actions and should be prioritized in order to make the neighborhood environment more favorable for the good mental health of its population.

With the index, it is possible to monitor and guide the prioritization of care management, support the formulation of programs and practices aimed at prevention and health promotion, in addition to favoring the articulation of different social agendas in favor of mental health.

Figure 8 – Visualization of detailed information on the composition of the MHI of the “Bonsucesso” neighborhood on the platform “Painel da Saúde Mental – Fortaleza”



Source: Prepared by the authors themselves

The tool also presents a ranking of neighborhoods in the city of Fortaleza based on the Mental Health Index (Figure 9). This visualization makes clear the perception that, even in neighborhoods with general indices that are very similar or the same, the index by domains can have a very different configuration. This shows the particularities of each territory, guiding more specifically the prioritization of local actions to promote mental health.

Figure 9 – Visualization of the ranking of Fortaleza’s neighborhoods based on their MHI on the platform “Painel da Saúde Mental – Fortaleza”

Neighborhood	General	Health services	Stressful events	Disability	Morbidity	Mortality	Social relationships	Positive mental health	Sociodemographic	
CIDADE DOS FUNCIONARIOS	73.0	43*	89.0	83.9	80.5	89.1	95.1	0.0	85.0	61.7
BENFICA	72.9	44*	76.8	93.1	82.6	84.4	86.3	34.7	64.8	60.3
CONJUNTO CEARA II	72.6	45*	80.1	95.6	61.9	97.1	87.3	34.7	61.3	62.5
JOAO XXIII	72.5	46*	99.2	80.8	62.7	85.5	95.0	65.9	31.2	59.5
MONDUBIM	72.4	47*	92.8	81.5	59.6	77.5	78.0	34.7	95.3	59.8
PARREAO	72.1	48*	88.7	88.0	76.3	97.1	82.9	31.2	27.4	85.3
VILA VELHA	72.0	49*	90.1	85.3	71.3	89.1	91.4	34.7	52.9	61.1
BONSUCESSO	71.7	50*	90.4	76.0	61.0	90.9	93.6	68.8	29.9	62.7
JARDIM DAS OLIVEIRAS	71.7	51*	92.4	82.6	60.2	86.2	91.6	68.8	53.7	37.9
PRESIDENTE KENNEDY	71.3	52*	87.2	83.6	60.8	82.6	86.8	68.8	34.1	66.5
CRISTO REDENTOR	71.2	53*	88.0	78.2	72.3	82.2	84.6	34.7	60.6	69.1
VARJOTA	71.0	54*	82.2	78.3	70.8	88.0	91.6	0.0	71.3	85.7
MONTE CASTELO	70.9	55*	84.6	78.9	80.8	89.9	92.5	31.2	33.6	75.8
MUCURIPE	70.8	56*	83.1	78.0	59.5	85.5	73.9	65.3	31.9	89.1
PARQUELANDIA	70.6	57*	93.9	86.7	73.1	83.7	84.9	34.1	24.1	84.8
ALDEOTA	70.6	58*	52.7	95.1	73.0	92.0	87.5	0.0	70.5	94.4
QUINTINO CUNHA	70.5	59*	93.4	77.1	70.6	91.3	86.7	34.1	52.6	58.5

Source: Prepared by the authors themselves

9. Sustainability of the Platform

The Fortaleza Mental Health Panel project enables the measurement and mapping of mental health indicators within the local context. The project has fostered collaboration among various departments and sectors of the city hall, including health, education, social assistance, and others, to adopt a tool that aids evidence-based decision-making in the region. This intersectoral engagement is crucial for formulating, implementing, and evaluating public mental health policies, particularly those targeting children and adolescents.

An action and continuity plan has been developed to ensure the sustainability of the platform, which includes annual data updates and continuous improvement of the tool. This process of ongoing enhancement is carried out collaboratively by all involved partners and ensures the transfer of technology and knowledge, enabling the municipal government to maintain and update the platform beyond the project's completion. This highlights the commitment to continuity and long-term sustainability of the initiative.

The project, built upon a robust and well-documented methodology, also has great potential for customization to other territories and scalability, making it suitable for adoption by other municipalities, states, and countries. There is also potential for expanding the target audience of the index, extending it from the child and adolescent population to encompass all age groups.

10. Discussion

The current mental health challenges presented to public managers can be framed in the concept of “wicked problems” (Rittel & Webber, 1973). Its causes are multifactorial, governance over their solutions is rarely found within the same federative sphere or in specific sectors, and the consequences of inaction are extremely serious for the population. The solutions to such challenges involve, in general, building dynamic and adaptive capabilities that allow managers to be readable and adaptable in the face of new scenarios and complex decision-making processes (Karo & Kattel, 2018).

Thus, the development of solutions and tools that enable the state to achieve greater integration in understanding the problems and fostering collaboration across departments becomes a central focus of public action, particularly in the realm of health promotion. Intersectoral initiatives in this field have a direct impact on healthcare demand, as well as on the overall quality of life and socioeconomic indicators within the territory.

Mental health and mental health needs can be measured at both the individual and population levels. Population-level measures may be investigated using data from information systems and health surveys. A mental health indicator can be a direct or indirect measure of core factors or of predisposing, precipitating or protective factors. Most routinely used mental health indicators refer to health services and describe their structure, processes, quality and outcome. However, there is a plurality of indicators that can be useful to measure the different domains concerning this theme (Korkeila et al., 2003).

The analysis of the health situation using indicators that capture the complexity of mental health serves as a link between mental health policy and scientific knowledge (Korkeila et al., 2003). It is becoming increasingly crucial for public administrators to possess tools that facilitate the development of effective public policies, capable of addressing and improving mental health outcomes and reducing the impact of social determinants. Moreover, these integrated analyses and action-oriented tools enable administrators to align care and support systems, ensuring enhanced access to services and treatments within the mental healthcare continuum (Degenhardt et al., 2018).

Composite indicators, like the MHI, serve the purpose of condensing intricate and multifaceted realities to aid decision-making while retaining the underlying information base of the constituent indicators. They offer a simplified interpretation of complex data for the general public, facilitating the identification of common trends that may be challenging to discern when considering numerous

individual indicators. Furthermore, composite indicators have demonstrated their utility in benchmarking the performance of different territories.

Indeed, composite indicators should be seen as a means of initiating discussion and stimulating public interest, mapping demands, indicating vulnerabilities, supporting evidence-informed decision-making, and optimizing the use of public resources. Its relevance must be evaluated in relation to the stakeholders affected by the composite index. It is important to exercise caution so the “big picture” results do not lead users (especially policy makers) to make simplistic and misleading analytical or political conclusions (Joint Research Centre–European Commission, 2008).

In Brazil, translating and operationalizing a conceptual model into effective actions, according to the specific needs and determinants of each community, is still an enormous challenge, given the socioeconomic, environmental and political diversities and disparities between cities and even within a single one (Albuquerque et al., 2017).

Solutions and experiences such as the mental health panel, and its possible expansion to the entire national territory, have the potential to foster capacities and create tools for the better supported construction of public policies that face the current mental health challenges in the country.

The project sought to test the validity, reliability and comparability of the developed set of indicators, collecting data from existing data sources and performing internal validations. As a composite indicator, the MHI should allow satisfactory monitoring of the mental health of populations, fostering mental health promotion, comparing policies, and evaluating and disseminating good practices. The results can also be used in the joint effort to increase the visibility of mental health issues in the municipal context, directing decision-making in the health field.

Lastly, the project, created based on a robust and documented methodology, can be replicated for other locations (at the city, state, or national level), as well as for other contexts (such as, for example, focusing on the adult population).

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Appendices

Appendix 1 - Questionnaire applied in the Panel of Experts



Mental Health Map of Fortaleza

1. Introduction

Vital Strategies and the Cactus Institute are developing a Mental Health Map for the city of Fortaleza - CE. Through this questionnaire, you participate in the validation of one of the project's deliverables: the creation of a Mental Health Index, with a focus on children and young people. This questionnaire is part of the project's analytical process on the indicators to be included in the calculation of the index.

A description of the complete methodology used to build the Mental Health Map of Fortaleza is available at [Map in Fortaleza is available at: https://bit.ly/3Oq0cpO](https://bit.ly/3Oq0cpO).

If you have any questions, please consult the methodology or contact us at (lvasconcelos@vitalstrategies.org).

* 1. Please register your contact information.

Name	<input type="text"/>
City/Municipality	<input type="text"/>
State	<input type="text"/>
E-mail address	<input type="text"/>
Phone number	<input type="text"/>

2. Do you agree to take part in this research? Please note that your personal data will be preserved, and the answers will be used in aggregate form, solely for the purpose of the Mental Health Map.

Yes

No

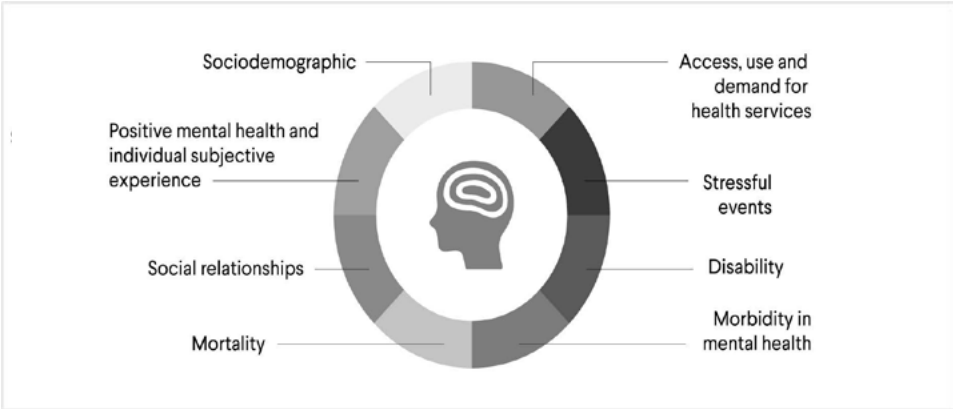


Mental Health Map of Fortaleza

2. Domains of Mental Health

To build the Mental Health Map of Fortaleza, the indicators were allocated to the Domains established by Korkeila and colleagues (<https://bit.ly/3uWbY3q>).

Domains of Mental Health



* 1. Order the domains according to their importance for mental health. [See description of the domains at: https://bit.ly/3Oq0cpO.](https://bit.ly/3Oq0cpO)

- Access, use and demand for health services
- Stressful events
- Disability
- Mortality
- Social relationships
- Positive mental health and individual subjective experience
- Sociodemographic
- Morbidity in mental health



Mental Health Map of Fortaleza

3. Mental Health Indicators

To build the Mental Health Map of Fortaleza, we selected indicators were selected according to pre-established inclusion criteria. In addition to translating at least one of the domains of mental health, the indicator had to be publicly available, and with a level of geographical disaggregation down to the neighborhood. In addition, it was checked that the data used to calculate each indicator had sufficient coverage and quality to be used.

Indicator inclusion criteria



After this process, 22 indicators were selected to make up the Mental Health Index and Map. The matrix with the description of the selected indicators is available at: <https://bit.ly/3Oq0cpO>



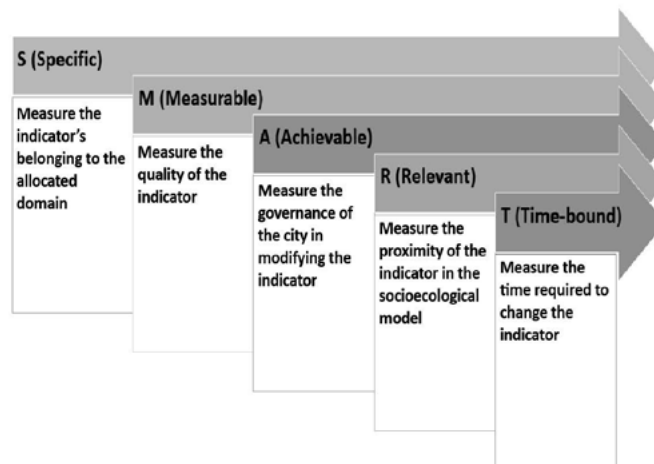
Mental Health Map of Fortaleza

4. SMART methodology

SMART criteria will be adopted to define the analytical weight of the indicators that will make up the Mental Health Index

The full description can be found at: <https://bit.ly/3Oq0cpO>

SMART criteria adopted to define the analytical weight of the indicators that will make up the Mental Health Index:



The following questions are related to the SMART criteria and will be used to assign weights to the indicators in the calculation of Fortaleza's Mental Health Index.



Mental Health Map of Fortaleza

6. Proportion of live births whose mother did not receive prenatal care

* 1. Do you agree that this indicator belongs to the domain "Access, use, and demand of health services"?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
- Disability
- Mortality
- Social relationships
- Positive mental health and individual subjective experience
- Sociodemographic
- Morbidity in mental health

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

Short term - Long term

0 100

* 7. How important is the data source for the Mental Health Index?

Average importance

0 100



Mental Health Map of Fortaleza

7. Rate of hospitalizations for mental and behavioral disorders

*1. Do you agree that this indicator belongs to the domain "Access, use, and demand of health services"?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
- Disability
- Mortality
- Social relationships
- Positive mental health and individual subjective experience
- Sociodemographic
- Morbidity in mental health

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

0 Short term - Long term 100

* 7. How important is the data source for the Mental Health Index?

0 Average importance 100



Mental Health Map of Fortaleza

8. Proportion of live births to teenage mothers

* 1. Do you agree that this indicator belongs to the "Stressful events" domain?

- Yes
 No

2. If you don't agree, which domain do you think the indicator belongs to?

- Access, use and demand for health services
 Disability
 Mortality
 Social relationships
 Positive mental health and individual subjective experience
 Sociodemographic
 Morbidity in mental health

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

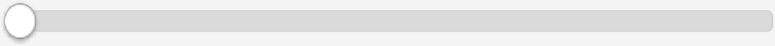
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

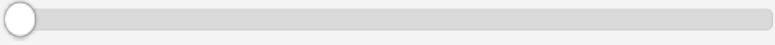
0 Short term - Long term 100



A horizontal slider control with a circular knob at the 0 position. The scale is labeled from 0 to 100. The text "Short term - Long term" is centered above the slider. To the right of the slider is a small square input box.

* 7. How important is the data source for the Mental Health Index?

0 Average importance 100



A horizontal slider control with a circular knob at the 0 position. The scale is labeled from 0 to 100. The text "Average importance" is centered above the slider. To the right of the slider is a small square input box.



Mental Health Map of Fortaleza

9. Rate of interpersonal violence reporting

* 1. Do you agree that this indicator belongs to the "Stressful events" domain?

- Yes
 No

2. If you don't agree, which domain do you think the indicator belongs to?

- Access, use and demand for health services
 Disability
 Mortality
 Social relationships
 Positive mental health and individual subjective experience
 Sociodemographic
 Morbidity in mental health

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

Short term - Long term

0 100

* 7. How important is the data source for the Mental Health Index?

Average importance

0 100



Mental Health Map of Fortaleza

10. Rate of narcotics seizure occurrence

*1. Do you agree that this indicator belongs to the "Stressful events" domain?

- Yes
 No

2. If you don't agree, which domain do you think the indicator belongs to?

- Access, use and demand for health services
 Disability
 Mortality
 Social relationships
 Positive mental health and individual subjective experience
 Sociodemographic
 Morbidity in mental health

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

Short term - Long term

0 100

* 7. How important is the data source for the Mental Health Index?

Average importance

0 100



Mental Health Map of Fortaleza

11. Rate of occurrence of violent crimes against property

*1. Do you agree that this indicator belongs to the "Stressful events" domain?

Yes

No

2. If you don't agree, which domain do you think the indicator belongs to?

Access, use and demand for health services

Disability

Mortality

Social relationships

Positive mental health and individual subjective experience

Sociodemographic

Morbidity in mental health

3. Justify your answer to the previous question.

* 4. Qual é a governabilidade do município em modificar esse indicador para maior impacto na saúde mental?

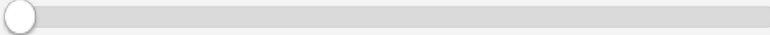
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

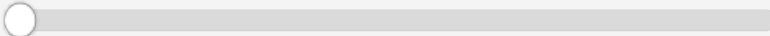
0 Short term - Long term 100



A horizontal slider control with a circular knob on the left and a square input box on the right. The slider is currently positioned at the far left, corresponding to the value 0.

* 7. How important is the data source for the Mental Health Index?

0 Average importance 100



A horizontal slider control with a circular knob on the left and a square input box on the right. The slider is currently positioned at the far left, corresponding to the value 0.



Mental Health Map of Fortaleza

12. Proportion of live births with congenital malformations, deformities and chromosomal anomalies

* 1. Do you agree that this indicator belongs to the "Disability" domain?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
- Access, use and demand for health services
- Mortality
- Social relationships
- Positive mental health and individual subjective experience
- Sociodemographic
- Morbidity in mental health

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

0 Intermediate governance 100

A horizontal slider bar with a circular knob at the far left (0) and a square input box at the far right (100). The knob is positioned very close to the 0 mark, indicating a low level of intermediate governance.

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

A horizontal slider bar with a circular knob at the far left (0) and a square input box at the far right (100). The knob is positioned very close to the 0 mark, indicating a low average impact.

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

Short term - Long term

0 100

* 7. How important is the data source for the Mental Health Index?

Average importance

0 100



Mental Health Map of Fortaleza

13. Mortality rate from intentional self-harm

1. Do you agree that this indicator belongs to the "Morbidity in mental health" domain?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

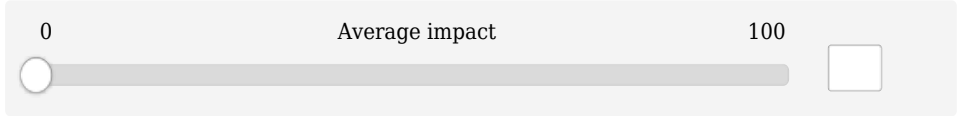
- Stressful events
- Access, use and demand for health services
- Mortality
- Social relationships
- Positive mental health and individual subjective experience
- Sociodemographic
- Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?



* 5. If this indicator were to perform better, how much would this impact on mental health outcome?



* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

Short term - Long term

0 100

* 7. How important is the data source for the Mental Health Index?

Average importance

0 100



Mental Health Map of Fortaleza

14. Female homicide mortality rate

1. Do you agree that this indicator belongs to the "Mortality" domain?

- Yes
 No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
 Access, use and demand for health services
 Morbidity in mental health
 Social relationships
 Positive mental health and individual subjective experience
 Sociodemographic
 Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

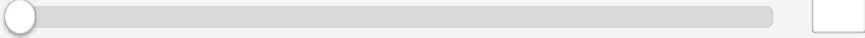
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

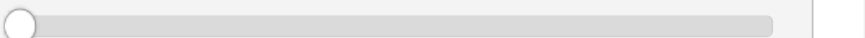
* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

0 Short term - Long term 100



* 7. How important is the data source for the Mental Health Index?

0 Average importance 100





Mental Health Map of Fortaleza

15. Child mortality rate

1. Do you agree that this indicator belongs to the "Mortality" domain?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
- Access, use and demand for health services
- Morbidity in mental health
- Social relationships
- Positive mental health and individual subjective experience
- Sociodemographic
- Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

0 Intermediate governance 100


* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

Short term - Long term

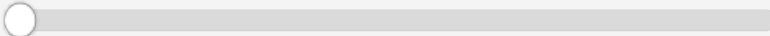
0 100



* 7. How important is the data source for the Mental Health Index?

Average importance

0 100





Mental Health Map of Fortaleza

16. Homicide mortality rate

1. Do you agree that this indicator belongs to the "Mortality" domain?

- Yes
 No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
 Access, use and demand for health services
 Morbidity in mental health
 Social relationships
 Positive mental health and individual subjective experience
 Sociodemographic
 Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

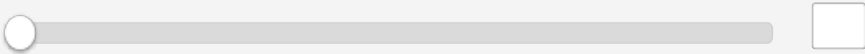
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

0 Short term - Long term 100



* 7. How important is the data source for the Mental Health Index?

0 Average importance 100





Mental Health Map of Fortaleza

17. Mortality rate from intentional self-harm

1. Do you agree that this indicator belongs to the "Mortality" domain?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
- Access, use and demand for health services
- Morbidity in mental health
- Social relationships
- Positive mental health and individual subjective experience
- Sociodemographic
- Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

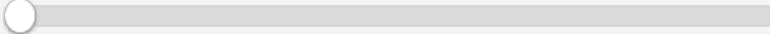
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

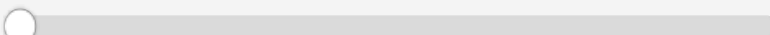
0 Short term - Long term 100



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* 7. How important is the data source for the Mental Health Index?

0 Average importance 100



A horizontal slider control with a circular knob on the left and a square input box on the right. The slider bar is currently at the 0 position.



Mental Health Map of Fortaleza

18. Mortality rate from mental and behavioral disorders

1. Do you agree that this indicator belongs to the "Mortality" domain?

- Yes
 No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
 Access, use and demand for health services
 Morbidity in mental health
 Social relationships
 Positive mental health and individual subjective experience
 Sociodemographic
 Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

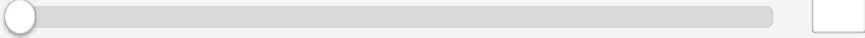
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

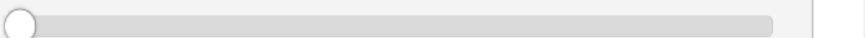
* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

0 Short term - Long term 100



* 7. How important is the data source for the Mental Health Index?

0 Average importance 100





Mental Health Map of Fortaleza

19. Presence of active social projects in the territory

1. Do you agree that this indicator belongs to the "Social relationships" domain?

Yes

No

2. If you don't agree, which domain do you think the indicator belongs to?

Stressful events

Access, use and demand for health services

Morbidity in mental health

Mortality

Positive mental health and individual subjective experience

Sociodemographic

Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

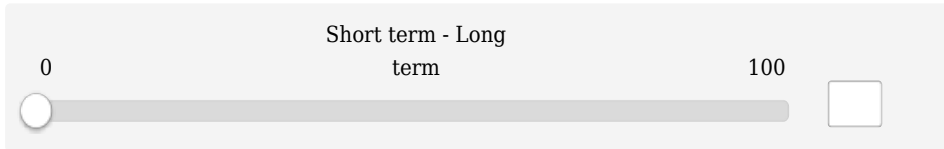
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

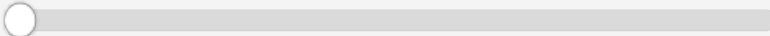
* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

0 Short term - Long term 100



* 7. How important is the data source for the Mental Health Index?

0 Average importance 100





Mental Health Map of Fortaleza

20. Presence of child protective services in the territory

1. Do you agree that this indicator belongs to the "Social relationships" domain?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
- Access, use and demand for health services
- Morbidity in mental health
- Mortality
- Positive mental health and individual subjective experience
- Sociodemographic
- Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

Short term - Long term

0 100

* 7. How important is the data source for the Mental Health Index?

Average importance

0 100



Mental Health Map of Fortaleza

21. Presence of CRAS [Social Assistance Reference Center] or CREAS [Specialized Reference Center for Social Assistance] in the territory

1. Do you agree that this indicator belongs to the "Social relationships" domain?

Yes

No

2. If you don't agree, which domain do you think the indicator belongs to?

Stressful events

Access, use and demand for health services

Morbidity in mental health

Mortality

Positive mental health and individual subjective experience

Sociodemographic

Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

Short term - Long term

0 100

* 7. How important is the data source for the Mental Health Index?

Average importance

0 100



Mental Health Map of Fortaleza

22. Presence of parks and green spaces

* 1. Do you agree that this indicator belongs to the "Positive mental health and individual subjective experience" domain?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
- Access, use and demand for health services
- Morbidity in mental health
- Mortality
- Social relationships
- Sociodemographic
- Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

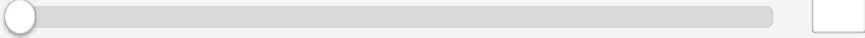
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

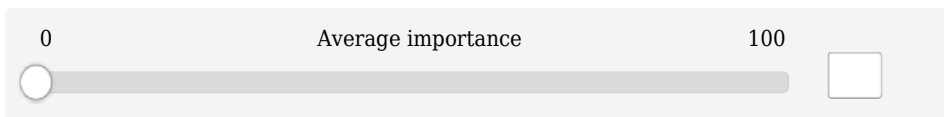
* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

0 Short term - Long term 100



* 7. How important is the data source for the Mental Health Index?

0 Average importance 100





Mental Health Map of Fortaleza

23. Percentage of private households where there is garbage accumulated in public spaces

1. Do you agree that this indicator belongs to the "Positive mental health and individual subjective experience" domain?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
- Access, use and demand for health services
- Morbidity in mental health
- Mortality
- Social relationships
- Sociodemographic
- Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

0 Intermediate governance 100

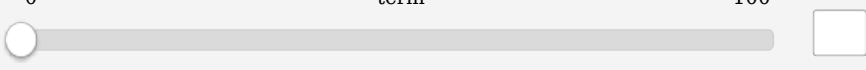
* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

Short term - Long term

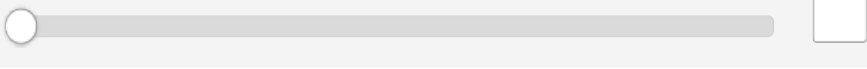
0 100



* 7. How important is the data source for the Mental Health Index?

Average importance

0 100





Mental Health Map of Fortaleza

24. Presence of urban agriculture

* 1. Do you agree that this indicator belongs to the "Positive mental health and individual subjective experience" domain?

- Yes
 No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
 Access, use and demand for health services
 Morbidity in mental health
 Mortality
 Social relationships
 Sociodemographic
 Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

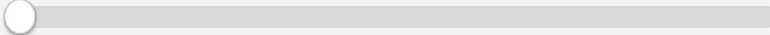
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

0 Short term - Long term 100



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* 7. How important is the data source for the Mental Health Index?

0 Average importance 100



A horizontal slider control with a circular knob on the left and a square box on the right. The slider bar is currently at the 0 position.



Mental Health Map of Fortaleza

25. Number of low-income families

1. Do you agree that this indicator belongs to the "Sociodemographic" domain?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

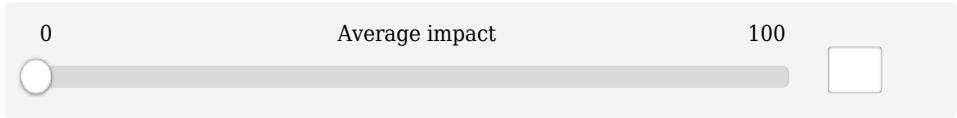
- Stressful events
- Access, use and demand for health services
- Morbidity in mental health
- Mortality
- Social relationships
- Positive mental health and individual subjective experience
- Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?



* 5. If this indicator were to perform better, how much would this impact on mental health outcome?



* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

Short term - Long term

0 100

* 7. How important is the data source for the Mental Health Index?

Average importance

0 100



Mental Health Map of Fortaleza

26. Percentage of private households where the garbage accumulated in public spaces

1. Do you agree that this indicator belongs to the "Sociodemographic" domain?

- Yes
 No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
 Access, use and demand for health services
 Morbidity in mental health
 Mortality
 Social relationships
 Positive mental health and individual subjective experience
 Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

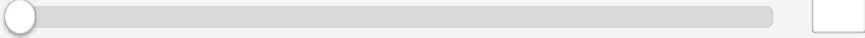
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

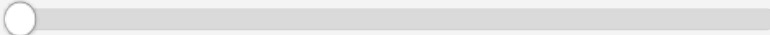
0 Short term - Long term 100



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* 7. How important is the data source for the Mental Health Index?

0 Average importance 100



A horizontal slider control with a circular knob on the left and a square box on the right. The slider bar is currently at the 0 position.



Mental Health Map of Fortaleza

27. School dropout rate

1. Do you agree that this indicator belongs to the "Sociodemographic" domain?

- Yes
- No

2. If you don't agree, which domain do you think the indicator belongs to?

- Stressful events
- Access, use and demand for health services
- Morbidity in mental health
- Mortality
- Social relationships
- Positive mental health and individual subjective experience
- Disability

3. Justify your answer to the previous question.

* 4. What is the governance of the municipality to modify this indicator for greater impact on mental health?

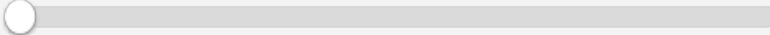
0 Intermediate governance 100

* 5. If this indicator were to perform better, how much would this impact on mental health outcome?

0 Average impact 100

* 6. If this indicator were to perform better, how quickly do you think it would improve the final outcome (mental health)?

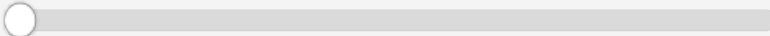
0 Short term - Long term 100



A horizontal slider control with a circular knob on the left and a square input box on the right. The slider is currently positioned at the far left, corresponding to the value 0.

* 7. How important is the data source for the Mental Health Index?

0 Average importance 100



A horizontal slider control with a circular knob on the left and a square input box on the right. The slider is currently positioned at the far left, corresponding to the value 0.



Mental Health Map of Fortaleza

28. Suggestions for indicators to be included

1. Do you think that there are indicators that have not been mentioned and that are essential to measuring the mental health of the population? If so, please name the indicator, data source (necessarily publicly available data down to neighborhood level) and calculation method. The suggested indicators must meet the inclusion criteria described in the methodology.

Indicator 1	<input type="text"/>
Indicator 2	<input type="text"/>
Indicator 3	<input type="text"/>
Other indicators	<input type="text"/>



Mental Health Map of Fortaleza

29. Suggested municipal indicators

1. If the Mental Health Index were to be calculated for the municipalities of a Federated Unit, do you think that other indicators could be included? If so, please the name of the indicator, the source of the data (necessarily publicly available data up to the municipality level) and how it was calculated. The suggested indicators should the inclusion criteria described in the methodology, except for the spatial breakdown, which should be down to municipality and disaggregation, which should be down to municipality and not neighborhood.

Indicator 1	<input type="text"/>
Indicator 2	<input type="text"/>
Indicator 3	<input type="text"/>
Other indicators	<input type="text"/>



Mental Health Map of Fortaleza



Mental Health Map of Fortaleza

30. Thank you!

Appendix 2 - Qualification sheets of the indicators selected to compose the Fortaleza's Mental Health Index



Methodological Sheet for Mental Health Map Indicators:
Proportion of live births whose mothers did not receive prenatal care

Indicator	Proportion of live births whose mothers did not receive prenatal care		
Domain	Access, use and demand for health services.		
Concepts and definitions	Identifies the proportion of live births to mothers who did not attend prenatal consultations in a given geographical area.		
Calculation method	Numerator: number of live births whose mothers had prenatal consultations according to gender, place of residence and year of birth. Denominator: number of live births according to gender, location and year. Constant: 100.		
Unit of measurement	Proportion of live births		
Variables that make up the indicator, their respective sources and producing institutions	Variables	Sources	Institutions
	Number of live births whose mothers had 0 prenatal consultations	Live Birth Information System (Sinasc)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)
	Total number of live births	Live Birth Information System (Sinasc)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods		
Indicator disaggregation levels	Age group and sex		
Indicator update frequency	Yearly		
Historical series used	2019 to the latest		
Producing institution	Fortaleza Health Department		
Contact			
References	CAPUTO, Valéria Garcia; BORDIN, Isabel Altenfelder. Problemas de saúde mental entre jovens grávidas e não-grávidas. <i>Revista de Saúde Pública</i> , v. 41, n. 4, p. 573-581, 2007.		
Classification	Necessary		
Polarity	The smaller the better		

Methodological Sheet for Mental Health Map Indicators:
Rate of hospitalizations for mental and behavioral disorders

Indicator	Rate of hospitalizations for mental and behavioral disorders											
Domain	Access, use and demand for health services.											
Concepts and definitions	Number of cases of hospital admissions paid for in the Unified Health System (SUS), due to mental and behavioral disorders, in the population residing in a given geographic space, in the year considered											
Calculation method	Numerator: number of hospitalizations for mental and behavioral disorders (codes from Chapter V of ICD-10) according to ethnic group, sex, place of residence and year of hospitalization. Denominator: resident population by age group, sex, location and year. Constant: 100.											
Unit of measurement	Admissions / 100 inhabitants											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of hospitalizations for mental and behavioral disorders (codes from Chapter V of ICD-10)</td> <td>SUS Hospital Information System (SIH-SUS)</td> <td>Fortaleza Department of Health (SMS)/ Ministry of Health (MS)</td> </tr> <tr> <td>Resident population</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of hospitalizations for mental and behavioral disorders (codes from Chapter V of ICD-10)	SUS Hospital Information System (SIH-SUS)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)	Resident population	IBGE	IBGE
Variables	Sources	Institutions										
Number of hospitalizations for mental and behavioral disorders (codes from Chapter V of ICD-10)	SUS Hospital Information System (SIH-SUS)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)										
Resident population	IBGE	IBGE										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Age group and sex											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	Fortaleza Health Department											
Contact												
References	<p>BENEDICTO, Rubia Paixão et al. Análise da evolução dos transtornos mentais e comportamentais ao longo das revisões da Classification Internacional de Doenças. <i>SMAD Revista Eletrônica Saúde Mental Álcool e Drogas</i> (Edição em Português), v. 9, n. 1, p. 25-32, 2013.</p> <p>COMPTON, Michael T. et al. Predictors of missed first appointments at community mental health centers after psychiatric hospitalization. <i>Psychiatric Services</i>, v. 57, n. 4, p. 531-537, 2006.</p>											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Proportion of live births to teenage mothers		
Domain	Stressful events		
Concepts and definitions	Indicates the number of children born to mothers between zero and 18 years of age in relation to the total number of children born in the year according to geographical limit		
Calculation method	Numerador: número nascidos vivos de mães adolescentes (10 a 18 anos) segundo sexo, localidade de residência e ano do nascimento. Denominador: número de nascidos vivos segundo sexo, localidade e ano. Constante: 100		
Unit of measurement	Proportion of live births		
Variables that make up the indicator, their respective sources and producing institutions	Variables	Sources	Institutions
	Number of live births to teenage mothers	Live Birth Information System (Sinasc)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)
	Total number of live births	Live Birth Information System (Sinasc)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods		
Indicator disaggregation levels	Age group and sex		
Indicator update frequency	Yearly		
Historical series used	2019 to the latest		
Producing institution	Fortaleza Health Department		
Contact			
References	CAPUTO, Valéria Garcia; BORDIN, Isabel Altenfelder. Problemas de saúde mental entre jovens grávidas e não-grávidas. <i>Revista de Saúde Pública</i> , v. 41, n. 4, p. 573-581, 2007.		
Classification	Necessary		
Polarity	The smaller the better		

Indicator	Rate of interpersonal violence reporting		
Domain	Stressful events		
Concepts and definitions	Number of cases of interpersonal violence reported on Sinan Violência, in the population residing in a given geographic space, in the year considered.		
Calculation method	Numerator: number of violence reports in which the field "self-inflicted injury" is marked as "no", according to age group, sex, place of residence and year of notification of the violence. Denominator: resident population by age group, sex, location and year. Constant: 100.		
Unit of measurement	Notifications / 100 inhabitants		
Variables that make up the indicator, their respective sources and producing institutions	Variables	Sources	Institutions
	Number of violence reports in which the field "self-inflicted injury" is marked as "no".	Information System on Reports of Injuries (Sinan Violência)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)
	Resident population	IBGE	IBGE
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods		
Indicator disaggregation levels	Age group and sex		
Indicator update frequency	Yearly		
Historical series used	2019 to the latest		
Producing institution	Fortaleza Health Department		
Contact			
References	<p>RIBEIRO, Wagner S. et al. Exposição à violência e problemas de saúde mental em países em desenvolvimento: uma revisão da literatura. <i>Brazilian Journal of Psychiatry</i>, v. 31, p. S49-S57, 2009.</p> <p>PAULA, Cristiane S. et al. Mental health and violence among sixth grade students from a city in the state of São Paulo. <i>Revista de Saúde Pública</i>, v. 42, p. 524-528, 2008.</p>		
Classification	Necessary		
Polarity	The smaller the better		

Indicator	Rate of narcotics seizure occurrence											
Domain	Stressful events											
Concepts and definitions	The seizure of narcotics is understood to be the sum of all seizures of marijuana, crack and cocaine, whether in cases of trafficking or use. The quantity will be defined by the sum, in kilograms (kg), of all seizures that have been duly weighed and that weighing was recorded by at least one of the data sources.											
Calculation method	Numerator: quantity, in kilograms, of seizures of narcotics in a given location and period. Denominator: population residing in the same location and period. Constant: 100. Data are available on the website: https://www.sspds.ce.gov.br/estatisticas-2/ . The available data are aggregated by Integrated Security Areas (AIS), not by neighborhoods. To calculate the number of apprehensions per neighborhood, the average of the values of the neighborhoods that make up each AIS was considered (number of apprehensions in a given AIS divided by the number of neighborhoods that make it up).											
Unit of measurement	Seizures (in kilograms) / 100 inhabitants											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of narcotics seizures</td> <td>Criminal indicators of the Integrated Security Areas (AIS)</td> <td>Fortaleza Department of Public Security and Social Defense</td> </tr> <tr> <td>Resident population</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of narcotics seizures	Criminal indicators of the Integrated Security Areas (AIS)	Fortaleza Department of Public Security and Social Defense	Resident population	IBGE	IBGE
Variables	Sources	Institutions										
Number of narcotics seizures	Criminal indicators of the Integrated Security Areas (AIS)	Fortaleza Department of Public Security and Social Defense										
Resident population	IBGE	IBGE										
Geographic coverage	City and Neighborhoods											
Indicator disaggregation levels	Not available											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	Fortaleza Department of Public Security and Social Defense											
Contact												
References	ANDRADE, Sylvania Suely Caribé de Araújo et al. Relação entre violência física, consumo de álcool e outras drogas e bullying entre adolescentes escolares brasileiros. <i>Cadernos de Saúde Pública</i> , v. 28, p. 1725-1736, 2012.											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Rate of occurrence of violent crimes against property											
Domain	Stressful events											
Concepts and definitions	Violent crimes against property are understood as all crimes classified as robbery, except for robbery resulting in death (homicide)											
Calculation method	Numerator: number of violent crimes against property that occurred in a given location and period. Denominator: population residing in the same location and period. Constant: 100. Data are available on the website: https://www.sspds.ce.gov.br/estatisticas-2/ . The available data are aggregated by Integrated Security Areas (AIS), not by neighborhoods. To calculate the number of crimes per neighborhood, the average of the values of the neighborhoods that make up each AIS was considered (number of crimes in a given AIS divided by the number of neighborhoods that make it up).											
Unit of measurement	Violent crimes against property / 100 inhabitants											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of violent crimes against property</td> <td>Criminal indicators of the Integrated Security Areas (AIS)</td> <td>Fortaleza Department of Public Security and Social Defense</td> </tr> <tr> <td>Resident population</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of violent crimes against property	Criminal indicators of the Integrated Security Areas (AIS)	Fortaleza Department of Public Security and Social Defense	Resident population	IBGE	IBGE
Variables	Sources	Institutions										
Number of violent crimes against property	Criminal indicators of the Integrated Security Areas (AIS)	Fortaleza Department of Public Security and Social Defense										
Resident population	IBGE	IBGE										
Geographic coverage	City and Neighborhoods											
Indicator disaggregation levels	Not available											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	Fortaleza Department of Public Security and Social Defense											
Contact												
References	MARÍN-LEÓN, Leticia et al. Percepção dos problemas da comunidade: influência de fatores sócio-demográficos e de saúde mental. <i>Cadernos de Saúde Pública</i> , v. 23, n. 5, p. 1089-1097, 2007.											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Proportion of live births with congenital malformations, deformities and chromosomal anomalies											
Domain	Disability											
Concepts and definitions	Identifies the proportion of live births with congenital malformations, deformities and chromosomal anomalies, in a given geographical area.											
Calculation method	Numerator: number of live births with congenital malformations, deformities and chromosomal anomalies according to sex, place of residence and year of birth. Denominator: number of live births according to gender, location and year. Constant: 100. This indicator should be every five years (number of live births with malformations from 2015 to 2019 divided by the number of live births in the same period).											
Unit of measurement	Proportion of live births											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of live births with congenital malformations, deformities and chromosomal anomalies</td> <td>Live Birth Information System (Sinasc)</td> <td>Fortaleza Department of Health (SMS)/ Ministry of Health (MS)</td> </tr> <tr> <td>Total number of live births</td> <td>Live Birth Information System (Sinasc)</td> <td>Fortaleza Department of Health (SMS)/ Ministry of Health (MS)</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of live births with congenital malformations, deformities and chromosomal anomalies	Live Birth Information System (Sinasc)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)	Total number of live births	Live Birth Information System (Sinasc)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)
Variables	Sources	Institutions										
Number of live births with congenital malformations, deformities and chromosomal anomalies	Live Birth Information System (Sinasc)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)										
Total number of live births	Live Birth Information System (Sinasc)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Age group and sex											
Indicator update frequency	Yearly											
Historical series used	2015											
Producing institution	Fortaleza Health Department											
Contact												
References	<p>PEROSA, Gimol Benzaquen et al. Sintomas depressivos e ansiosos em mães de recém-nascidos com e sem malformações. <i>Revista Brasileira de Ginecologia e Obstetria</i>, v. 31, p. 433-439, 2009.</p> <p>CARDOSO-DOS-SANTOS, Augusto César et al. Lista de anomalias congênitas prioritárias para vigilância no âmbito do Sistema de Informações sobre Nascidos Vivos do Brasil. <i>Epidemiologia e Serviços de Saúde</i>, v. 30, 2021.</p>											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Rate of self-harm violence											
Domain	Morbidity in mental health											
Conceitos e definições	Number of cases of self-inflicted violence reported on Sinan Violência, in the population residing in a given geographic space, in the year considered.											
Calculation method	Numerator: number of reports of violence in which the “self-inflicted injury” field is marked “yes” according to age group, sex, place of residence and year of notification of the violence. Denominator: resident population by age group, sex, location and year. Constant: 100.											
Unit of measurement	Notifications / 100 inhabitants											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of reports of violence in which the “self-inflicted injury” field is marked “yes”</td> <td>Information System on Reports of Injuries (Sinan Violência)</td> <td>Fortaleza Department of Health (SMS)/ Ministry of Health (MS)</td> </tr> <tr> <td>Resident population</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of reports of violence in which the “self-inflicted injury” field is marked “yes”	Information System on Reports of Injuries (Sinan Violência)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)	Resident population	IBGE	IBGE
Variables	Sources	Institutions										
Number of reports of violence in which the “self-inflicted injury” field is marked “yes”	Information System on Reports of Injuries (Sinan Violência)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)										
Resident population	IBGE	IBGE										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Age group and sex											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	Fortaleza Health Department											
Contact												
References	MACIEJEWSKI, Dominique F. et al. Overlapping genetic and environmental influences on nonsuicidal self-injury and suicidal ideation: different outcomes, same etiology?. <i>JAMA psychiatry</i> , v. 71, n. 6, p. 699-705, 2014.											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Rate of women mortality by homicides											
Domain	Mortality											
Conceitos e definições	Number of deaths of women by homicides, in the female population residing in a given geographic space, in the year considered.											
Calculation method	Numerator: number of female deaths from homicide [basic cause X85-Y09 (assault), Y22 to Y24 (firearm discharge of undetermined intent), Y35 Legal intervention), Y87.1 (sequelae of aggression) and Y89.0 (sequelae of legal intervention)], according to age group, place of residence and year of death. Denominator: resident female population according to age group, location and year. Constant: 100. This indicator is used as a proxy for femicide, given that it is not possible to infer data on this type of crime from the Mortality Information System.											
Unit of measurement	Deaths / 100 women											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of deaths of women by homicide</td> <td>Mortality Information System (SIM)</td> <td>Fortaleza Department of Health (SMS)/ Ministry of Health (MS)</td> </tr> <tr> <td>Female resident population</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of deaths of women by homicide	Mortality Information System (SIM)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)	Female resident population	IBGE	IBGE
Variables	Sources	Institutions										
Number of deaths of women by homicide	Mortality Information System (SIM)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)										
Female resident population	IBGE	IBGE										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Age group											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	Fortaleza Health Department											
Contact												
References	DE ÁVILA, Thiago Pierobom et al. Políticas públicas de prevenção ao feminicídio e interseccionalidades. <i>Revista Brasileira de Políticas Públicas</i> , v. 10, n. 2, 2020.											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Child mortality rate											
Domain	Mortality											
Concepts and definitions	The indicator estimates the risk of death of live births during their first year of life and consists of relating the number of deaths of children under one year of age, by 1 or live births, in the population residing in a given geographic space, in the year considered.											
Calculation method	Numerator: number of deaths of residents under one year of age according to sex, place of residence and year of death. Denominator: number of live births according to gender, location and year. Constant: 100.											
Unit of measurement	Óbitos / 100 nascidos vivos											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of deaths of residents under one year of age</td> <td>Mortality Information System (SIM)</td> <td>Fortaleza Department of Health (SMS)/ Ministry of Health (MS)</td> </tr> <tr> <td>Total number of live births</td> <td>Live Birth Information System (Sinasc)</td> <td>Fortaleza Department of Health (SMS)/ Ministry of Health (MS)</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of deaths of residents under one year of age	Mortality Information System (SIM)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)	Total number of live births	Live Birth Information System (Sinasc)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)
Variables	Sources	Institutions										
Number of deaths of residents under one year of age	Mortality Information System (SIM)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)										
Total number of live births	Live Birth Information System (Sinasc)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Not available											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	Fortaleza Health Department											
Contact												
References	JOU, Judy et al. Paid maternity leave in the United States: associations with maternal and infant health. <i>Maternal and child health journal</i> , v. 22, n. 2, p. 216-225, 2018.											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Homicide mortality rate											
Domain	Mortality											
Concepts and definitions	Number of deaths of residents due to homicides, in the population residing in a given geographic space, in the year considered.											
Calculation method	Numerator: number of deaths from homicide [basic cause X85-Y09 (assault), Y22 to Y24 (firearm discharge with undetermined intent), Y35 (legal intervention), Y87.1 (sequelae of aggression) and Y89.0 (sequelae of legal intervention)], according to age group, sex, place of residence and year of death. Denominator: resident population by age group, sex, location and year. Constant: 100.											
Unit of measurement	Deaths / 100 inhabitants											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of deaths from homicide</td> <td>Mortality Information System (SIM)</td> <td>Fortaleza Department of Health (SMS)/ Ministry of Health (MS)</td> </tr> <tr> <td>Resident population</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of deaths from homicide	Mortality Information System (SIM)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)	Resident population	IBGE	IBGE
Variables	Sources	Institutions										
Number of deaths from homicide	Mortality Information System (SIM)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)										
Resident population	IBGE	IBGE										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Age group and sex											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	Fortaleza Health Department											
Contact												
References	PLANA-RIPOLL, Oleguer et al. A comprehensive analysis of mortality-related health metrics associated with mental disorders: a nationwide, register-based cohort study. <i>The Lancet</i> , v. 394, n. 10211, p. 1827-1835, 2019.											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Mortality rate from intentional self-harm											
Domain	Mortality											
Concepts and definitions	Number of deaths of residents by suicide, in the population residing in a given geographical space, in the year considered.											
Calculation method	Numerator: number of deaths due to voluntary self-harm (ICD-10 codes from X60 to X84 and Y87.0), according to age group, sex, place of residence and year of death. Denominator: resident population according to age group, gender, location and year. Constant: 100.											
Unit of measurement	Deaths / 100 inhabitants											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of deaths by suicide</td> <td>Mortality Information System (SIM)</td> <td>Fortaleza Department of Health (SMS)/ Ministry of Health (MS)</td> </tr> <tr> <td>Resident population</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of deaths by suicide	Mortality Information System (SIM)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)	Resident population	IBGE	IBGE
Variables	Sources	Institutions										
Number of deaths by suicide	Mortality Information System (SIM)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)										
Resident population	IBGE	IBGE										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Age group and sex											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	Fortaleza Health Department											
Contact												
References	<p>MIRON, Oren et al. Suicide rates among adolescents and young adults in the United States, 2000-2017. <i>Jama</i>, v. 321, n. 23, p. 2362-2364, 2019.</p> <p>STONE, Deborah M.; JONES, Christopher M.; MACK, Karin A. Changes in suicide rates—United States, 2018–2019. <i>Morbidity and Mortality Weekly Report</i>, v. 70, n. 8, p. 261, 2021.</p>											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Mortality rate from mental and behavioral disorders											
Domain	Mortality											
Conceitos e definições	Number of deaths of residents with mental and behavioral disorders, in the definitions of the population residing in a given geographical space, in the year considered.											
Calculation method	Numerator: number of deaths due to mental and behavioral disorders (codes from Chapter V of ICD-10) according to age group, sex, place of residence and year of death. Denominator: resident population according to age group, gender, location and year. Constant: 100.											
Unit of measurement	Deaths / 100 inhabitants											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of deaths due to mental and behavioral disorders</td> <td>Mortality Information System (SIM)</td> <td>Fortaleza Department of Health (SMS)/ Ministry of Health (MS)</td> </tr> <tr> <td>Resident population</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of deaths due to mental and behavioral disorders	Mortality Information System (SIM)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)	Resident population	IBGE	IBGE
Variables	Sources	Institutions										
Number of deaths due to mental and behavioral disorders	Mortality Information System (SIM)	Fortaleza Department of Health (SMS)/ Ministry of Health (MS)										
Resident population	IBGE	IBGE										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Age group and sex											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	Fortaleza Health Department											
Contact												
References	PLANA-RIPOLL, Oleguer et al. A comprehensive analysis of mortality-related health metrics associated with mental disorders: a nationwide, register-based cohort study. <i>The Lancet</i> , v. 394, n. 10211, p. 1827-1835, 2019.											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Presence of active social projects in the territory								
Domain	Social relationships								
Concepts and definitions	Social projects will be considered: Areninha, ENACTUS, Young Startups, surf program with NGOs and Schools with specific programs. Indicator collected through the Fortaleza em Mapas website. https://mapas.fortaleza.ce.gov.br/#/								
Calculation method	Indicator in yes/no format (there is at least one active social project in this location / there is no active social project in this location). The value 100% will be assigned to neighborhoods where there is an active social project and 0% where there is not.								
Unit of measurement	Presence / Absence								
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Social projects active in the territory</td> <td>SECEL, UFC, CEPPJ</td> <td>SECEL, UFC, CEPPJ</td> </tr> </tbody> </table>	Variables	Sources	Institutions	Social projects active in the territory	SECEL, UFC, CEPPJ	SECEL, UFC, CEPPJ		
Variables	Sources	Institutions							
Social projects active in the territory	SECEL, UFC, CEPPJ	SECEL, UFC, CEPPJ							
Geographic coverage	City and Neighborhoods								
Indicator disaggregation levels	Not available								
Indicator update frequency	Triennial								
Historical series used	Most current year								
Producing institution	SECEL, UFC, CEPPJ								
Contact									
References	<p>CURRIE, Candace et al. Social determinants of health and well-being among young people. Health Behaviour in School-aged Children (HBSC) study: international report from the, v. 2010, p. 271, 2009.</p> <p>COSTA, Albanita Gomes da; LUDERMIR, Ana Bernarda. Transtornos mentais comuns e apoio social: estudo em comunidade rural da Zona da Mata de Pernambuco, Brasil. <i>Cadernos de Saúde Pública</i>, v. 21, p. 73-79, 2005.</p>								
Classification	Necessary								
Polarity	The bigger the better								

Indicator	Presence of child protective services in the territory								
Domain	Social relationships								
Concepts and definitions	It will be considered places where there are active child protective services. Indicator collected through the Fortaleza em Mapas website. https://mapas.fortaleza.ce.gov.br/#/								
Calculation method	Indicator in yes/no format (there are active child protective services in this location / there are no active child protective services in this location). The value 100% will be assigned to neighborhoods where there are active child protective services and 0% where there are not.								
Unit of measurement	Presence / Absence								
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Active child protective services in the territory</td> <td>MPCE</td> <td>MPCE</td> </tr> </tbody> </table>	Variables	Sources	Institutions	Active child protective services in the territory	MPCE	MPCE		
Variables	Sources	Institutions							
Active child protective services in the territory	MPCE	MPCE							
Geographic coverage	City and Neighborhoods								
Indicator disaggregation levels	Not available								
Indicator update frequency	Triennial								
Historical series used	Most current year								
Producing institution	MPCE								
Contact									
References	JOHNSON, Matthew D.; GALAMBOS, Nancy L. Paths to intimate relationship quality from parent–adolescent relations and mental health. <i>Journal of Marriage and Family</i> , v. 76, n. 1, p. 145-160, 2014.								
Classification	Necessary								
Polarity	The bigger the better								

Indicator	Presence of CRAS [Social Assistance Reference Center] or CREAS [Specialized Reference Center for Social Assistance] in the territory								
Domain	Social relationships								
Concepts and definitions	The places where there is a presence of CRAS (Reference Center for Social Assistance) and CREAS (Specialized Reference Center for Social Assistance) will be considered. Indicator collected through the Fortaleza em Mapas website. https://mapas.fortaleza.ce.gov.br/#/								
Calculation method	Indicator in yes/no format (there is a CRAS or CREAS council active in this location / there is no CRAS or CREAS acting in this location). The value 100% will be assigned to neighborhoods where there is CRAS or CREAS and 0% where there is not.								
Unit of measurement	Presence / Absence								
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Active CRAS or CREAS in the territory</td> <td>SDHDS</td> <td>SDHDS</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Active CRAS or CREAS in the territory	SDHDS	SDHDS
Variables	Sources	Institutions							
Active CRAS or CREAS in the territory	SDHDS	SDHDS							
Geographic coverage	City and Neighborhoods								
Indicator disaggregation levels	Not available								
Indicator update frequency	Triennial								
Historical series used	Most current year								
Producing institution	SDHDS								
Contact									
References	JOHNSON, Matthew D.; GALAMBOS, Nancy L. Paths to intimate relationship quality from parent-adolescent relations and mental health. <i>Journal of Marriage and Family</i> , v. 76, n. 1, p. 145-160, 2014.								
Classification	Necessary								
Polarity	The bigger the better								

Indicator	Presence of parks and green spaces								
Domain	Positive mental health and individual subjective experience								
Concepts and definitions	It will be considered the places where there are parks and green spaces. Indicator collected through the Fortaleza em Mapas website. https://mapas.fortaleza.ce.gov.br/#/								
Calculation method	Indicator in yes/no format (there are parks and green spaces in this location / there are no parks and green spaces in this location). The value 100% will be assigned to neighborhoods where there is CRAS or CREAS and 0% where there is not.								
Unit of measurement	Presence / Absence								
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Parks and green spaces</td> <td>SEUMA</td> <td>SEUMA</td> </tr> </tbody> </table>	Variables	Sources	Institutions	Parks and green spaces	SEUMA	SEUMA		
Variables	Sources	Institutions							
Parks and green spaces	SEUMA	SEUMA							
Geographic coverage	City and Neighborhoods								
Indicator disaggregation levels	Not available								
Indicator update frequency	Triennial								
Historical series used	Most current year								
Producing institution	SEUMA								
Contact									
References	WOOD, Lisa et al. Public green spaces and positive mental health—investigating the relationship between access, quantity and types of parks and mental wellbeing. <i>Health & place</i> , v. 48, p. 63-71, 2017.								
Classification	Necessary								
Polarity	The bigger the better								

Indicator	Percentage of private households where there is garbage accumulated in public spaces											
Domain	Positive mental health and individual subjective experience											
Concepts and definitions	Identifies the proportion of private households where there is garbage accumulated in public areas, in a given geographical limit.											
Calculation method	Numerator: number of private households where there is garbage accumulated in public areas in a given location and year. Denominator: total number of private households in a given location and year. Constant: 100.											
Unit of measurement	Proportion of households											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of private households where there is garbage accumulated in public areas</td> <td>IBGE</td> <td>IBGE</td> </tr> <tr> <td>Total number of private households</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of private households where there is garbage accumulated in public areas	IBGE	IBGE	Total number of private households	IBGE	IBGE
Variables	Sources	Institutions										
Number of private households where there is garbage accumulated in public areas	IBGE	IBGE										
Total number of private households	IBGE	IBGE										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Not available											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	IBGE											
Contact												
References	EVANS, Gary W. The built environment and mental health. <i>Journal of urban health</i> , v. 80, n. 4, p. 536-555, 2003.											
Classification	Necessary											
Polarity	The smaller the better											

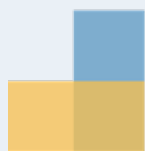
Indicator	Presence of urban agriculture								
Domain	Positive mental health and individual subjective experience								
Concepts and definitions	It will be considered the places where urban agriculture is present. The productive spaces identified and the places where the "Hortas Sociais" [Social Gardens] project is active will be considered. Indicator collected through the Fortaleza em Mapas website. https://mapas.fortaleza.ce.gov.br/#/								
Calculation method	Indicator in yes/no (there is urban agriculture in this location / there is no urban agriculture in this location). The value 100% will be assigned to neighborhoods where there is urban agriculture and 0% where there is not.								
Unit of measurement	Presence / Absence								
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Urban agriculture</td> <td>IPLANFOR</td> <td>IPLANFOR</td> </tr> </tbody> </table>	Variables	Sources	Institutions	Urban agriculture	IPLANFOR	IPLANFOR		
Variables	Sources	Institutions							
Urban agriculture	IPLANFOR	IPLANFOR							
Geographic coverage	City and Neighborhoods								
Indicator disaggregation levels	Not available								
Indicator update frequency	Triennial								
Historical series used	Most current year								
Producing institution	IPLANFOR								
Contact									
References	<p>AUDATE, Pierre Paul et al. Scoping review of the impacts of urban agriculture on the determinants of health. <i>BMC Public Health</i>, v. 19, n. 1, p. 1-14, 2019.</p> <p>ILIEVA, Rositsa T. et al. The Socio-Cultural Benefits of Urban Agriculture: A Review of the Literature. <i>Land</i>, v. 11, n. 5, p. 622, 2022.</p> <p>ZIMMERER, Karl S. et al. Grand challenges in urban agriculture: ecological and social approaches to transformative sustainability. <i>Frontiers in Sustainable Food Systems</i>, v. 5, p. 101, 2021.</p>								
Classification	Necessary								
Polarity	The bigger the better								

Indicator	Number of low-income families		
Domain	Sociodemographic		
Concepts and definitions	Proportion of low-income families registered in a given location and period.		
Calculation method	Numerator: number of low-income families registered in a given location and period. Denominator: total number of families registered. Constant: 100.		
Unit of measurement	Proportion of families		
Variables that make up the indicator, their respective sources and producing institutions	Variables	Sources	Institutions
	number of low-income families registered	Cadastro Único	SDHDS
	Total number of families registered	Cadastro Único	SDHDS
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods		
Indicator disaggregation levels	Not available		
Indicator update frequency	Yearly		
Historical series used	2019 to the latest		
Producing institution	SDHDS		
Contact			
References	<p>REIS, Dener Carlos dos et al. Vulnerabilidades à saúde na adolescência: condições socioeconômicas, redes sociais, drogas e violência. <i>Revista Latino-Americana de Enfermagem</i>, v. 21, p. 586-594, 2013.</p> <p>KORKEILA, Jyrki et al. Establishing a set of mental health indicators for Europe. <i>Scandinavian journal of public health</i>, v. 31, n. 6, p. 451-459, 2003.</p>		
Classification	Necessary		
Polarity	The smaller the better		

Indicator	Human Development Index											
Domain	Sociodemographic											
Concepts and definitions	Identifies the proportion of private households where there is open sewage, in a given geographical limit.											
Calculation method	Numerator: number of private households with open sewage in a given location and year. Denominator: total number of private households in a given location and year. Constant: 100.											
Unit of measurement	Proportion of households											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of private households with open sewage</td> <td>IBGE</td> <td>IBGE</td> </tr> <tr> <td>Total number of private households</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of private households with open sewage	IBGE	IBGE	Total number of private households	IBGE	IBGE
Variables	Sources	Institutions										
Number of private households with open sewage	IBGE	IBGE										
Total number of private households	IBGE	IBGE										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Not available											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	IBGE											
Contact												
References	<p>REISS, Franziska. Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. <i>Social Science & Medicine</i>, v. 90, p. 24-31, 2013.</p> <p>AMADDEO, Francesco; JONES, Julia. What is the impact of socio-economic inequalities on the use of mental health services?. <i>Epidemiology and Psychiatric Sciences</i>, v. 16, n. 1, p. 16-19, 2007.</p>											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	School dropout rate											
Domain	Sociodemographic											
Concepts and definitions	This indicator is expressed as the ratio between dropouts (subtracting students who enrolled but were transferred during the school year, or died, or for whom no information is available, plus admitted students) and the sum of dropouts, approval and disapproval, multiplied by 100.											
Calculation method	The indicator is made available and calculated by the School Census (numerator and denominator data are not available). Data collected at: https://www.gov.br/inep/pt-br/aceso-a-informacao/dados-abertos/indicadores-educadonais . The average between dropout rates in Elementary and High School was considered. To calculate the indicator for the intra-municipal level, the average values of the indicator for schools in each neighborhood were considered.											
Unit of measurement	Dropouts / 100 students											
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variables</th> <th>Sources</th> <th>Institutions</th> </tr> </thead> <tbody> <tr> <td>Number of dropouts</td> <td>School Census</td> <td>INEP</td> </tr> <tr> <td>Total number of dropouts, fails and promotions to the next grade</td> <td>School Census</td> <td>INEP</td> </tr> </tbody> </table>			Variables	Sources	Institutions	Number of dropouts	School Census	INEP	Total number of dropouts, fails and promotions to the next grade	School Census	INEP
Variables	Sources	Institutions										
Number of dropouts	School Census	INEP										
Total number of dropouts, fails and promotions to the next grade	School Census	INEP										
Geographic coverage	Brazil, Region, Federation Units, City and Neighborhoods											
Indicator disaggregation levels	Not available											
Indicator update frequency	Yearly											
Historical series used	2019 to the latest											
Producing institution	INEP											
Contact												
References	<p>BLAKEMORE, Sarah- alth. <i>The lancet</i>, v. 393, n. 10185, p. 2030-2031, 2019.</p> <p>BOHNENKAMP, Jill H.; STEPHAN, Sharon H.; BOBO, Nichole. Supporting student mental health: The role of the school nurse in coordinated school mental health care. <i>Psychology in the Schools</i>, v. 52, n. 7, p. 714-727, 2015.</p>											
Classification	Necessary											
Polarity	The smaller the better											

Indicator	Human Development Index by Neighborhood (HDI-N)								
Domain	Sociodemographic								
Concepts and definitions	The HDI corresponds to a synthetic indicator composed of three dimensions: Income, Education and Longevity. The HDI with geographic area of neighborhoods (HDI-N) was calculated and published by the Human Development Department of Fortaleza using data from the 2010 Demographic Census. The data and calculation methodology can be consulted at: https://pt.cal-aeo.com/read/0032553521353dc27b3d9 .								
Calculation method	The indicator is made available and calculated by the Human Development Department of Fortaleza. Data collected at: https://pt.cal-aeo.com/read/0032553521353dc27b3d9 .								
Unit of measurement	The HDI-N classification ranges from 0 to 1. The closer to 1, the better the degree of human development. The closer to 0, the worse the degree of human development.								
Variables that make up the indicator, their respective sources and producing institutions	<table border="1"> <thead> <tr> <th>Variáveis</th> <th>Fontes</th> <th>Instituições</th> </tr> </thead> <tbody> <tr> <td>HDI-N</td> <td>IBGE</td> <td>IBGE</td> </tr> </tbody> </table>			Variáveis	Fontes	Instituições	HDI-N	IBGE	IBGE
Variáveis	Fontes	Instituições							
HDI-N	IBGE	IBGE							
Geographic coverage	City and Neighborhoods								
Indicator disaggregation levels	Not available								
Indicator update frequency	Yearly								
Historical series used	Most current year (2010)								
Producing institution	IBGE								
Contact									
References	<p>REISS, Franziska. Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. <i>Social science & medicine</i>, v. 90, p. 24-31, 2013.</p> <p>AMADDEO, Francesco; JONES, Julia. What is the impact of socio-economic inequalities on the use of mental health services?. <i>Epidemiology and Psychiatric Sciences</i>, v. 16, n. 1, p. 16-19, 2007.</p>								
Classification	Necessary								
Polarity	The smaller the better								



**PAINEL
DA SAÚDE
MENTAL**
FORTALEZA

**MENTAL
HEALTH
INDEX:**
FORTALEZA (CE)
EXPERIENCE



**PAINEL
DA SAÚDE
MENTAL**
FORTALEZA

**MENTAL
HEALTH
INDEX:**
FORTALEZA (CE)
EXPERIENCE