

# Psychiatrists available in the Ecuadorian Public Health System and Psychiatry Residency Programs in Ecuador – A cross-sectional analysis

## *Psiquiatras disponibles en el Sistema de Salud Público y Programas de Residencia en Psiquiatría del Ecuador – Un análisis transversal*

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### Abstract

**Introduction:** In 2008, Ecuador's mental health profile displayed deficiencies due to the lack of psychiatrists and psychiatry residency programs. The same year, access to universal health care, was instituted as a right in the Constitution. There are no studies on the Public Health System's capacity to provide mental health services, hence an updated analysis of the number of psychiatrists and psychiatry training programs available is required. **Objective:** To determine the number of psychiatrists available through the Public Health System and to calculate the ratio of psychiatrist per 10,000 population; to establish the number of residency programs available. **Methods:** Cross-sectional analysis of the data available from the Ecuadorian Public Health System and the Higher Education Council of Ecuador. Ratios were calculated using data from the National Institute of Statistics and Censuses. **Results:** Ecuador's psychiatrists ratio is 0.08:10,000 and the adjusted ratio (psychiatrists and psychologists) is 0.65:10,000. The Public Health System has 138 psychiatrists, concentrated in Pichincha (n=51) and Guayas (n=27). Three provinces had no psychiatrists available. There are two psychiatry training programs in Quito. **Conclusion:** Ecuadorian Public Healthcare holds a shortage of psychiatrists which inhibit the minimum ideal ratio fulfillment, along with a noticeable lack of psychiatric training programs availability.

**Keywords:** public health, mental health, psychiatry, Ecuador

### Resumen

**Introducción:** En 2008, el perfil de salud mental del Ecuador exhibió falencias por la falta de psiquiatras y entrenamiento psiquiátrico. Ese año, se instituyó la salud como derecho en la constitución. No existen publicaciones que estudien la capacidad para proveer salud mental del Sistema Público, por lo que, análisis actualizados del número de psiquiatras y programas de entrenamiento son requeridos. **Objetivo:** Determinar el número de psiquiatras y calcular su ratio por cada 10,000 habitantes en la red de salud pública ecuatoriana; describir la oferta actual nacional de posgrados psiquiátricos. **Métodos:** Análisis transversal de datos públicos de la Red Integral Pública de Salud y del Consejo de Educación Superior. Para calcular el ratio usamos datos del Instituto Nacional de Estadística y Censos. **Resultados:** El ratio total en Ecuador es 0.08:10,000 y el ratio ajustado (psiquiatras y psicólogos) es 0.65:10,000. El país cuenta con 138 psiquiatras en la red de salud pública, concentrados en Pichincha (n=51) y Guayas (n=27). Tres provincias no cuentan con servicio de psiquiatría. Al momento sólo existen dos programas de residencia, ambos en Quito. **Conclusión:** El estudio evidenció que Ecuador no cumple la relación ideal establecida para suplir la demanda de psiquiatras eficientemente, además de una notable escasez de posgrados para la especialidad.

**Palabras clave:** salud pública, salud mental, psiquiatría, Ecuador

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### Introduction

The 2019 Global Burden Disease Study (GBDS) revealed that mental disorders remained among the top ten leading causes of burden worldwide, with no evi-

dence of reduction since 1990.<sup>1</sup> In 2020, the emergence of the COVID-19 pandemic led to a dramatic rise in mental disorders.<sup>2-4</sup> Ecuador, as a GBDS member, reported a 33.4% rate of total disability attributable to mental and

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neurological disorders.<sup>5</sup> Ecuador's mental health profile was described by Cruz et al. in 2008, exposing substantial needs, aggravated by the lack of specialists; especially in rural areas due to their concentration in main cities, centralization of services, scarce primary care services, and poor access to psychiatric training programs.<sup>6</sup> By the end of that year, the Ecuadorian government adopted a new constitution focusing on health care as a right and social reforms, prioritizing human resources and lessening the specialists' gap.<sup>7,8</sup> Due to the latter, the public health system grouped the 24 provinces into 9 functional zones to decentralize the management of public services and to adequately respond to the particular needs of each area.<sup>9</sup>

Currently, Ecuador's Public Health System (PHS) purpose is to provide efficient health coverage. For that, it should fulfill the established ideal ratio of one psychiatry per 10,000 population.<sup>10</sup> There are currently no publications analyzing Ecuador's capacity to supply the demand of public mental health services based on the ideal ratio, nor the availability of psychiatric training programs. Owing to this, the need to describe and determine the number of psychiatrists, psychiatrist training programs, and psychologists available in the PHS of Ecuador ensues.

### Materials and methods

This analytical cross-sectional study reviewed public data up until April 2022 on the number of psychologists and psychiatrists affiliated to the Ministry of Public Health (MSP) and the Ecuadorian Institute of Social Security (IESS); in addition to the official record of the available offer of psychiatry residency programs enlisted by the Government Council of Higher Education (CES). For the ratio's calculation, data from the population projection of the National Institute of Statistics and Censuses (INEC)<sup>11</sup> was used. The data was entered and stored digitally in a spreadsheet of the Microsoft® Office Excel® 2021 MSO program (Microsoft Corporation, USA) and then exported and analyzed in the Statistical Package for Social Sciences (SPSS) SPSS 23 software (IBM Corporation, USA). Total ratio values (psychiatrists:population) and the adjusted ratio (psychiatrists and psychologists:population) were obtained.

### Results

The provinces with the highest number of specialized personnel in mental health were Pichincha with 278 (51 psychiatrists, 227 psychologists), Guayas with 232 (27 psychiatrists, 205 psychologists), and Azuay with 91 (9 psychiatrists, 82 psychologists). The provinces with the least availability of specialists are: Sucumbios with 9 (1 psychiatrist, 8 psychologists) and Pastaza with 5 (2 psychiatrists, 3 psychologists). The provinces lacking psychiatry services (ratio 0:10,000) are Bolívar, Galápagos, and Zamora Chinchipe.

The regions with the largest population are Guayas (n= 4'387,434), Pichincha (n= 3'228,233), and Manabí (n= 1'562,079); whose ratios of 1 psychiatrist per 10,000 inhabitants are 0.06, 0.16, and 0.05 respectively. Pastaza is the province which is closest to the ideal ratio is (0.18:10,000). Excluding the provinces without psychiatric services (ratio of 0:10,000), Los Ríos is the province that is furthestmost from the ideal ratio with 0.02. The total ratio of Ecuador is 0.08:10,000.

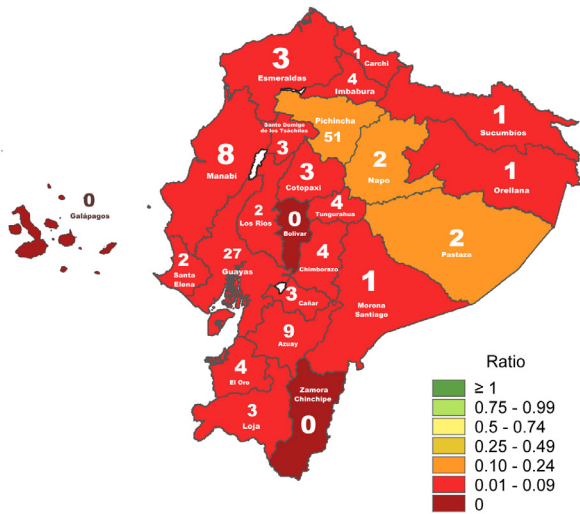
When calculating the adjusted ratio (including psychologists and psychiatrists per 10,000 inhabitants), it was defined that Guayas has a ratio of 0.53, Pichincha of 0.86, and Manabí of 0.38. The provinces that meet the ideal ratio (1:10,000) with the adjusted ratio are Galapagos (1.21), Napo (1.17), Zamora Chinchipe (1.16), and Azuay (1.03). The adjusted ratio for Ecuador is 0.65, including a total of 1136 mental health professionals with 998 psychologists and 138 psychiatrists (Table 1) (Figure 1).

**Table 1.** Psychiatrists and psychologists by number of inhabitants according to province.

| Province                       | Psychiatrists | Psychologists | Population | Ratio† | Adjusted Ratio‡ |
|--------------------------------|---------------|---------------|------------|--------|-----------------|
| Azuay                          | 9             | 82            | 881394     | 0.10   | 1.03            |
| Bolívar                        | 0             | 19            | 209933     | 0.00   | 0.91            |
| Cañar                          | 3             | 20            | 281396     | 0.11   | 0.82            |
| Carchi                         | 1             | 15            | 186869     | 0.05   | 0.86            |
| Chimborazo                     | 4             | 25            | 524004     | 0.08   | 0.55            |
| Cotopaxi                       | 3             | 25            | 488716     | 0.06   | 0.57            |
| El Oro                         | 4             | 48            | 715751     | 0.06   | 0.73            |
| Esmeraldas                     | 3             | 34            | 591083     | 0.05   | 0.63            |
| Galápagos                      | 0             | 4             | 33042      | 0.00   | 1.21            |
| Guayas                         | 27            | 205           | 4387434    | 0.06   | 0.53            |
| Imbabura                       | 4             | 23            | 476257     | 0.08   | 0.57            |
| Loja                           | 3             | 33            | 521154     | 0.06   | 0.69            |
| Los Ríos                       | 2             | 32            | 921763     | 0.02   | 0.37            |
| Manabí                         | 8             | 52            | 1562079    | 0.05   | 0.38            |
| Morona Santiago                | 1             | 14            | 185494     | 0.05   | 0.81            |
| Napo                           | 2             | 15            | 144746     | 0.14   | 1.17            |
| Orellana                       | 1             | 14            | 161338     | 0.06   | 0.93            |
| Pastaza                        | 2             | 3             | 114202     | 0.18   | 0.44            |
| Pichincha                      | 51            | 227           | 3228233    | 0.16   | 0.86            |
| Santa Elena                    | 2             | 15            | 401178     | 0.05   | 0.42            |
| Santo Domingo de los Tsáchilas | 3             | 27            | 511151     | 0.06   | 0.59            |
| Sucumbios                      | 1             | 8             | 230503     | 0.04   | 0.39            |
| Tungurahua                     | 4             | 44            | 590600     | 0.07   | 0.81            |
| Zamora Chinchipe               | 0             | 14            | 120416     | 0.00   | 1.16            |
| Total                          | 138           | 998           | 17468736   | 0.08   | 0.65            |

†Ratio: number of psychiatrists per 10,000 inhabitants.

‡Adjusted ratio: mental health personnel per 10,000 inhabitants.



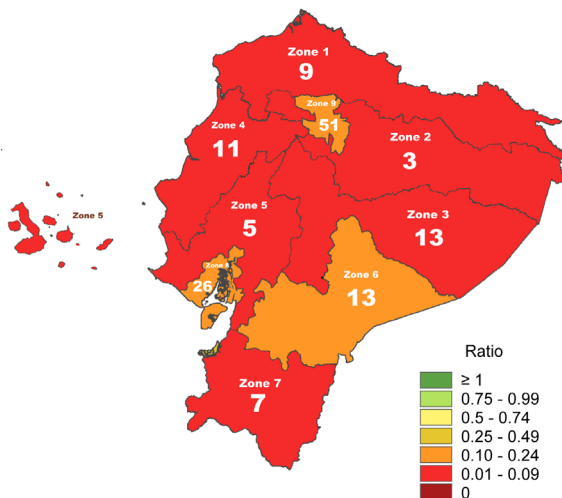
**Figure 1.** Distribution of Psychiatrists per Province.

According to the Health System's zonal division, zones 6, 8, and 9 hold the highest ratio with 0.10, 0.12, and 0.18 per 10,000 inhabitants, individually. On the contrary, zone 5 has the lowest ratio, 0.01:10,000 (Table 2) (Figure 2).

**Table 2.** Psychiatrists by number of inhabitants according to areas.

| Province   | Psychiatrists | Population | Ratio |
|--|---------------|------------|-------|
| Zone 1: Esmeraldas, Imbabura, Carchi, Sucumbios            | 9             | 1484712    | 0.06  |
| Zone 2: Napo, Orellana, Pichincha†                         | 3             | 752676     | 0.04  |
| Zone 3: Cotopaxi, Tungurahua, Chimborazo, Pastaza          | 13            | 1717522    | 0.08  |
| Zone 4: Manabi, Santo Domingo de los Tsachilas             | 11            | 2073230    | 0.05  |
| Zone 5: Sta. Elena, Bolivar, Los Rios, Galapagos y Guayas‡ | 5             | 3829895    | 0.01  |
| Zone 6: Cañar, Azuay, Morona Santiago                      | 13            | 1348284    | 0.10  |
| Zone 7: El Oro, Loja, Zamora Chinchipe                     | 7             | 1357321    | 0.05  |
| Zone 8: Cantón de Guayaquil, Samborondón y Durán           | 26            | 2123455    | 0.12  |
| Zone 9: Distrito Metropolitano de Quito                    | 51            | 2781641    | 0.18  |
| Average  | 15            | 1940971    | 0.08  |

† Pichincha province, except the Metropolitan District of Quito  
 ‡ Guayas province, except cantons of Guayaquil, Durán and Samborondón



**Figure 2.** Distribution of Psychiatrists per Zones

According to the levels of care, the distribution of psychiatrists is as follows: the MSP's primary level of care has 2 (1.5%), the secondary level has 86 (62.3%) (IESS: 42; MSP: 44), and the tertiary level has 50 (36.2%) (IESS: 15; MSP: 35) (Table 3).

In Ecuador, there are two psychiatry residency programs.<sup>12,13</sup> The Universidad Equinoccial del Ecuador (UTE) program has 12 positions and lasts 4 years, ending in January 2024. Financing is private, co-financed with a registration fee of USD \$2,000 and a USD \$20,000 total cost. The Universidad Central del Ecuador (UCE) has 15 positions and ends in March 2028. It is publicly financed, with an USD \$80 registration fee and USD \$32,000 total cost (Table 4).

**Table 3.** Psychiatrists per attention level.

| Count           | Affiliation |      | Total       |
|-----------------|-------------|------|-------------|
|                 | IESS†       | MSP‡ |             |
| Level of Care 1 | 0           | 2    | 2 (1.45%)   |
| 2               | 42          | 44   | 86 (62.32%) |
| 3               | 15          | 35   | 50 (36.23%) |
| Total           | 57          | 81   | 138 (100%)  |

† Instituto Ecuatoriano de Seguridad Social. Ministerio de Salud Pública

**Table 4.** Psychiatry residency programs in Ecuador.

| Name                  | Universidad Tecnológica Equinoccial                | Universidad Central del Ecuador |
|-----------------------|--|---------------------------------|
| Duration              | 4 años   | 4 años                          |
| Approval date         | January 23, 2019                                   | March 16, 2022                  |
| End date              | January 23, 2024                                   | March 16, 2028                  |
| Spots available       | 12   | 15                              |
| Financing             | Co-financing                                       | Public                          |
| Tuition               | \$2,000  | \$80                            |
| Tariff                | \$20,000   | \$32,000                        |
| Location              | Distrito Metropolitano de Quito                    | Distrito Metropolitano de Quito |
| Training Center       | Ministerio de Salud Pública, Hospital Julio Endara | Ministerio de Salud Pública     |
| CES resolution number | RPC-SO-03-NO.037-2019                              | RPC-SO-11-NO.174-2022           |

† Instituto Ecuatoriano de Seguridad Social. Ministerio de Salud Pública

## Discussion

To provide optimal care, the American Psychiatric Association (APA) recommends that there should be one available psychiatrist for every 10,000 population.<sup>10</sup> This statement is true in high-income countries such as Canada (1.47), the United States (1.05), Norway (4.8), and Germany (1.32). The opposite arises in Latin American countries with medium and low economic resources such as Colombia (0.18), Peru (0.30), Brazil (0.32) and Chile (0.7).<sup>14</sup> In Ecuador, according to our analysis, the ratio of psychiatrists in public health is merely 0.08 per 10,000 inhabitants.

In Ecuador, 27.7% of its population lives in poverty, and 10.5% in extreme poverty,<sup>15</sup> with an unemployment rate of 5.4%,<sup>16</sup> for which 97% of its inhabitants recur to the public health system. Since 2008, the constitution establishes health care as an inalienable right guaranteed by the state.<sup>8</sup> The country's public health system is composed by the MSP and Social Security services, which subdivide into: IESS, Police Social Security Institute (ISSPOL), Armed Forces Social Security Institute (ISSFA), and peasant social security. The ISSFA and ISSPOL hardly correspond to 10% of the Social Security's offer.<sup>17</sup> Geographically, Ecuador is disposed by 24 provinces. However, there is an arranged functional division where different provinces are grouped into 9 zones to balance out the number of people perceiving health services for each jurisdiction.<sup>9</sup> Despite its importance and growing demand, mental health services get assigned only USD \$147 million, equivalent to less than 1% of the annual budget allocated to public health, being the area with the least resources' availability.<sup>18,19</sup>

The limited human resources for mental health are centralized in 3 provinces (Guayas, Pichincha, and Azuay), which hold 62.3% (86) of available psychiatrists. However, Guayas and Manabí are among the provinces whose ratios are in the lowest ranges with 0.06 and 0.05, respectively. The data published by the World Health Organization (WHO) regarding psychiatrists' accessibility in the population, include professionals from both, the public and private systems. In Ecuador, only 3% of the population has access to private health services;<sup>17</sup> having a 0.08:10,000 psychiatrists:population ratio in public service sector. Thus, the need for greater coverage for efficient care is evident; coverage which is currently below the average for the Latin American region despite its similar socioeconomic conditions.

In 2014, an Ecuadorian National Mental Health Strategic Plan was developed. In this plan, psychologists were included so that, together with psychiatrists, they could refer and manage patients with mental health conditions according to their complexity.<sup>20</sup> Based on this, psychologists were also included in the equation having a total of 1136 mental health professionals available for the Ecuadorian population, thus resulting in an adjusted ratio of 0.65 per 10,000 inhabitants. In the WHO's "Report on Mental Health Systems in Latin America and the Caribbean", it was determined that Latin America has an average of 2.9 psychiatrists and 18 psychologists per 100,000 inhabitants. This is equivalent to 0.29 psychiatrists plus 1.8 psychologists (agreeing to the ideal ratio of 1:10,000), rendering an adjusted ratio of 2.09 for Latin American. Despite the adjusted ratio, Ecuador has a 3.2x deficit with a 0.65:10,000 rate compared to the region.<sup>21</sup>

The zonal distribution groups adjacent provinces in order to decentralize resources.<sup>22</sup> Nonetheless, when analyzing the areas by ratio, a human resources imbalance

persists. Zone 9 also known as the metropolitan district of Quito (Ecuador's capital), has 51 psychiatrists (36.9%) and a ratio of 0.18 for a population of 2,781,641; in contrast to zone 5, in which, with a greater number of inhabitants (3,829,895) arranged in 5 provinces, has only 5 psychiatrists (3.6%), with a 0.01 ratio. In theory, all areas have specialized coverage, yet this division does not consider users' accessibility to services. This requires further analysis beyond the scope of this study.

Ecuador's public health system is organized in levels of care (primary, secondary, and tertiary). In the primary level, health promotion and disease prevention are carried out, while the secondary and tertiary levels of care have greater resolute capacity and access to specialty and subspecialty services.<sup>9</sup> Most psychiatrists in Ecuador are included in the secondary care level.

The more mental illnesses are acknowledged, stigma surrounding them declines. The COVID-19 pandemic increased the demand for specialized care related to these pathologies globally,<sup>2</sup> highlighting the imperative need for more psychiatry residency programs within the country. Up until April 2022, the Higher Education Council indicated that there are two postgraduate psychiatry education programs available.<sup>23</sup> Both are in the city of Quito and together offer 27 positions per psychiatrists training cohort. One the programs is publicly financed, while the other is co-financed, with a total cost of USD \$20,000, not including tuition (something that may be difficulty to attain for many general practitioners trying to obtain a fourth level education). Residency systems of countries such as the United States and Spain finance postgraduate courses, providing competitive salaries while pursuing specialization and thus offering efficient quality care.<sup>24,25</sup> Ecuador could consider the possibility of sticking to a strategy that, in accordance with the country's possibilities, continuously and sustainably promote residency training; thus, ensuring effective mental health care.

Psychiatrist's shortfall evidenced in this study may imply a relationship to the country's elevated suicide rate. In South America, the age-adjusted suicide rate is 5.2 per 100,000 inhabitants.<sup>26</sup> Though, Ecuador has a 7.1 rate (higher than average).<sup>27</sup> Nevertheless, specific studies would be needed to corroborate this possible association.

To meet the established ideal ratio of 1:10,000, The PHS would need approximately a total of 1,747 psychiatrists. With the current availability of 138 professionals, a 92.1% shortage is evidenced in accordance with international quality standards.

This study's main limitation is the lack of updated population data by the INEC, due to the postponed 2020 census in arrears to the COVID-19 pandemic. Another limitation is the lack of information on psychiatrists who work in the private sector. Although an attempt was made to obtain the data corresponding to ISSFA and ISSPOL,



up to the time of writing this article, the data was not available. The strength of this study lies in the casuistry obtained from the MSP and IESS, the main public health providers in Ecuador, showing the reality in regard of psychiatrists' availability and the solid statistical data of the public mental health services nationwide. This opens the door to delve into new research regarding the coverage capacity of the Ecuadorian public health system.

### Conclusions

Over half of the available psychiatrists in Ecuador's PHS are located in the 3 provinces with the largest population, displaying little ratio variance when compared to the zonal division. The country's mental health services ratio is much lower than the ideal, even after later adjustment with the inclusion of psychologists in the coverage mix.

The country's psychiatry postgraduate training offer is neither continuous nor sustainable, therefore, new governmental strategies are required to meet the demand. Ecuador requires approximately 1,747 psychiatrists in the public system for an ideal coverage.

Given that mental health is an inalienable human right regardless of socioeconomic status, further studies are recommended to quantify the true burden of mental illness in the country and guide decision-making regarding the population's mental health.

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