

The legal framework for water and sanitation in Brazil: an analysis of indicators and developments in the state of Minas Gerais

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Highlights:

- Advancements in water and sanitation service indicators have been observed across municipalities in Minas Gerais.
- Significant year-to-year variations in these indicators are evident.
- The impact of the new legal framework for basic sanitation remains undetermined within the scope of this study.

Keywords: Water and Sanitation for all; Federal Law 14.026/2020; Minas Gerais.

INTRODUCTION

The importance of water supply and sanitation services is undeniable, given their direct correlation with the population's quality of life (Ross et al., 2021). Recognizing the critical need for universal access to water and sewage collection and treatment services, Brazil enacted Federal Law No. 14.026/2020, updating the legal framework for water and sanitation across the country (Brasil, 2020).

One of the key provisions of this law, as outlined in Article 11-B, mandates that 99% of the Brazilian population must have access to drinking water, while 90% should have access to sewage collection and treatment by December 31, 2033. Moreover, the law proposes the establishment of regional units, reference blocks, or collaborative management structures to facilitate regionalized service provision, aimed at balancing municipalities through cross subsidization mechanisms (Brasil, 2020).

Some experts argue that the new framework will provide greater legal certainty and predictability, which could attract private investment to the basic sanitation sector, thereby facilitating the achievement of access targets by 2033. However, contrasting viewpoints exist among scholars, who express concerns about the effectiveness of the new framework in achieving the goals and in the setting of a fair tariff (Leite, Neto, & Bezerra, 2022; Sousa, 2020; Plastina et al., 2022).

Against this backdrop, this study aims to assess the current scenario resulting from the implementation of the water and sanitation legal framework in the state of Minas Gerais. Specifically, this research entails an evaluation of universalization indicators and an examination of the formation of municipal groups, whether through reference blocks or regional units.

METHODOLOGY

An exploratory analysis of publications concerning the formation of reference blocks and regional units was conducted to comprehend the progression of this issue within the state of Minas Gerais. Subsequently, a statistical analysis was undertaken on indicators related to the universalization targets

outlined in the water and sanitation legal framework. Specifically, we analyzed indicators IN055 (Total Water Service Index) and IN056 (Total Sewage Service Index), both sourced from the National Basic Sanitation Information System (SNIS), for municipalities in Minas Gerais with available data on SNIS for the years 2018, 2019, 2020, 2021, and 2022. For this analysis, we performed (i) descriptive statistics on the data and (ii) a comparison test to determine if there were significant differences in the indicators across the evaluated years. Each year was treated as a distinct data group for each indicator. We utilized the Kruskal-Wallis test, followed by multiple comparisons, due to the non-normal distribution of the data. Normality of the data was assessed using the Shapiro-Wilk test (Kottegoda and Rosso, 2008). A significance level of 5% was applied to all hypothesis tests. The hypothesis examined was whether indicators for the year 2022 would be significantly higher than those for 2018 and 2019, predating the implementation of the mentioned legal framework.

RESULTS AND CONCLUSIONS

Regarding the formation of reference blocks and regional units in Minas Gerais, it was observed that there is still no final decision regarding the regionalization of municipalities. A law proposed by the state's Legislative Assembly suggested dividing its 853 municipalities into 22 regional water supply and sewage units (URAEs). However, despite this proposal, the law was shelved, leaving the state without a definitive plan for regionalization (Instituto Água e Saneamento, 2021).

Turning to the evaluation of indicators, statistical analysis allowed the assessment of 788 municipalities in Minas Gerais (representing 92.4% of all municipalities) regarding indicator IN055. However, for indicator IN056, which involves sewage services, only 541 municipalities (approximately 63.4% of the total) could be evaluated. The behavior of IN055 is illustrated in Figure 1. In summary, it reveals an upward trend in both the mean and median of the indicator between 2018 and 2022, indicating progress in water supply services across the state. Furthermore, we found that 46 municipalities (5.8% of the sample) have met the target of providing 99% of the population with access to drinking water, as measured by IN055 (the most appropriate SNIS indicator for evaluating compliance with this mandate).

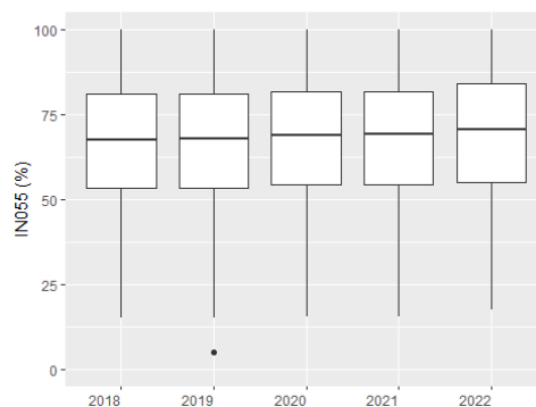


Figure 1: Water Supply Indicator – IN055

Mean (%) – 66.7 (2018), 66.8 (2019), 67.8 (2020), 68.0 (2021), and 69.1 (2022)

Median (%) – 67.7 (2018), 67.8 (2019), 68.8 (2020), 69.1 (2021), and 70.6 (2022)

Figure 2 illustrates the descriptive statistics for indicator IN056. It reveals an upward trend in both the average and median of the indicator between 2018 and 2022, indicating progress in sewage service provision across the state, particularly in terms of collection. We observed that 130 municipalities (24% of the sample) have reached a level where over 90% of the population has access to sewage collection services. However, it remains uncertain whether these municipalities have reached the target, as the SNIS indicator does not provide insight into the percentage of the sewage treatment. In this regard, it is imperative for SNIS to advance, particularly with the implementation of SINISA.

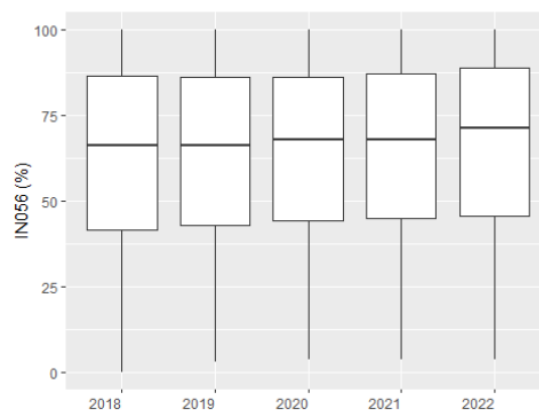


Figure 2: Sanitation Indicator – IN056

Mean (%) – 64.6 (2018), 65.0 (2019), 65.7 (2020), 66.3 (2021), and 67.8 (2022)

Median (%) – 68.3 (2018), 68.8 (2019), 68.6 (2020), 69.0 (2021), and 72.4 (2022)

Despite the consistent year-on-year progress observed in the mean and median values for both IN055 and IN056 indicators, it is noteworthy that no significant differences were found in all comparisons between the evaluated years. For IN055, reflecting water supply service, significant differences were observed between 2018 and 2020, 2019 and 2020, as well as between 2020 and 2021, suggesting that IN055 was notably higher in 2020 compared to 2018 and 2019, and 2021 exhibited a significant increase compared to 2020. Similarly, for IN056, a significant difference was found between the 2018 and 2019 data, indicating that IN056 was significantly higher in 2019 compared to 2018.

It is important to note that, although the tests considered the impact of the law in the two years following its enactment, the study did not observe a clear effect of the framework on the improvement of the indicators. Structural changes reflecting a significant improvement in service indicators may require more time than the duration covered in this study. Furthermore, the year 2020 was marked by the Covid-19 pandemic, which impacted the operations of sanitation companies, diverting their efforts towards addressing the atypical demands arising from the new scenario. Thus, while the new framework may have potentially positive effects on improving IN055 and IN056 indicators, the pandemic's influence on these effects cannot be discounted.

In conclusion, this study represents an initial step towards understanding the effects of the new legal framework on water and sanitation service indicators. Moving forward, ongoing evaluations like this are essential to drive progress towards achieving universalization in the sector across Brazil.

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