# Analysis Of Performance Indicators For Evaluating The Budget Execution Of The Ppa 2020-2023 In The Health Area Of The Rondônia State Government

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## Abstract:

Performance indicators for evaluating budget execution are great tools adopted by managers for decision-making, taking into account the efficiency in the application of public resources and effectiveness in achieving results. However, although their importance is clear, care must be taken when constructing them, adopting strict rules and sequences, and when applying them, avoiding biased conclusions or questions. In this sense, in order to answer the question of how the use of imprecise methodologies for measuring performance indicators can influence the evaluation of budget execution, the general objective of this research was to analyze the use of the methodology for measuring performance indicators by the Rondônia State Secretariat for Planning, Budget and Management (SEPOG) and to discuss its possible influences on the evaluation of the budget execution of the units linked, directly or indirectly, to SESAU (State Health Secretariat). The data was collected by consulting the Rondônia State Government's academic e-SIC and the PPA evaluation reports conducted by SEPOG. The research was conducted on a sample of 37 budget actions from units linked directly or indirectly to the State Health Secretariat. The analysis showed that if the 2020 methodology had been used to assess budget execution, most of the actions would have performed above or within expectations. However, with the change of the methodology in 2021, several actions that would previously have received positive evaluations began to receive negative evaluations.

Key Word: Performance Indicators; Budget Execution; Methodology. Public Planning. Rondônia.

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# I. Introduction

The particularities inherent in the public and private sectors have an impact on the conception of the budget in each area. However, despite the differences between their needs and functionalities, the budget is seen in both areas as a management tool for measuring the organization's performance (Santos; Alves, 2011). In the public sector, the budget is the tool used to operationalize the public policies set out in multi-annual planning, observing the guidelines and targets set out in the Budget Guidelines Law (Silva, 2021).

In view of the importance of this instrument, the 1988 Federal Constitution established various mechanisms and agents responsible for controlling the use of public resources, such as the evaluation conducted by the internal control system of the results, in terms of effectiveness and efficiency, of budget management.

In addition, society is increasingly interested in and seeking information on the proper use of public resources. In this sense, the analysis of information obtained through public account performance indicators is one of the social control tools exercised by society (Marino, 2021).

It is worth noting that the use of these indicators is useful in management evaluation processes. However, their construction must follow strict rules and sequences to avoid uncompromising, erroneous or manipulated analysis due to undue interests (Queiroz; Ferreira; Macedo, 2015).

In this context, it should be noted that the World Health Organization (WHO), in the year 2000, suffered several criticisms of its performance evaluation model, in view of the problems presented in the methodology for measuring the dimensions of performance evaluation (Viacava, 2004).

In view of the above, the question arises: how can the use of imprecise methodologies to measure performance indicators influence the evaluation of budget execution in the health sector?

In order to answer this question, this study was designed with the general objective of analyzing the use of the methodology for measuring performance indicators by the Rondônia State Secretariat for Planning, Budget and Management (SEPOG) and discussing its possible influences on the evaluation of the budget execution of the units linked, directly or indirectly, to the State Secretariat for Health (SESAU).

In addition, in order to achieve the general objective, the following specific objectives were proposed: to learn about the methodology adopted by SEPOG to measure performance indicators for budget execution in 2020 and 2021; to identify the changes that have occurred in the methodology; and to discuss the possible impacts of these changes on the evaluation of budget execution.

The relevance of this work can be seen in its various areas of interest. From a social point of view, Santos and Alves (2011) point out that managers are coming under greater pressure from society to use the budget with a focus on efficiency in the application of resources and effectiveness in achieving results.

Thus, knowledge of these indicators and forms of evaluation allow society to exercise control over the performance of managers in the use of public resources. Furthermore, with regard to the political dimension, it is important to emphasize that measuring and evaluating parameters allows managers to make more precise decisions about the various and complex state actions (MPOG, 2010, p. 128).

Finally, from an academic perspective, the work is relevant, given the lack of studies on the use of performance indicators to evaluate budget execution, especially in the state of Rondônia. This research is organized into five sections. Once the topic has been introduced, the research question has been stated, as well as the objectives of the work and the justification for its preparation. The second section presents the theoretical framework that underpins the work, presenting the main performance indicators used to evaluate budget execution. Section three contains the methodology, describing the sample, data collection, limitations and statistical treatment. Next, we present the results found, as well as the final considerations. Finally, we present the bibliographical references.

# **II.** Material And Methods

In terms of its nature or purpose, the research can be classified as applied and, in terms of its objectives, as descriptive, since it seeks to analyze the use of the methodology for measuring performance indicators by SEPOG and discuss its possible influences on the evaluation of budget execution.

The method used to select the actions to be evaluated was simple casual sampling. In this type of sampling, the elements of the population have the same chance of being selected (Silva; Menezes, 2005).

The population to be examined is the totality of budget actions related to the Health area in the 2021 financial year. In this sense, the actions of the units directly and indirectly linked to the State Health Secretariat (SESAU) were considered, namely:

- Hospital de Base Doutor Ary Pinheiro; Complexo Hospitalar Regional de Cacoal; Hospital e Pronto Socorro João Paulo II; Policlínica Osvaldo Cruz; and Centro de Medicina Tropical do Estado de Rondônia 1 action each;
- State Fund for the Prevention, Inspection and Repression of Narcotics; State Fund for the Construction of the Urgency and Emergency Hospital of Porto Velho 2 actions each;
- Center for Technical and Professional Education in the Health Area 4 actions;
- Rondônia Hematology and Hemotherapy Foundation 6 shares;
- State Health Surveillance Agency 8 actions;
- State Health Fund 27 actions.

Considering the nature of the methodology adopted by SEPOG to measure and evaluate the Performance Indicator, the tests and analyses were conducted on budget actions not classified as Not Executed (NE) or Not Measurable (NM).

In this sense, if we remove the actions that did not present figures relating to the execution of the budget or physical target, out of a total of 54 actions, 40 actions will be considered as the population for sampling purposes.

In addition, a confidence level of 95% (z=1.96) was used to calculate the sample, as this is usual in practice (Barbetta, 2002), and a tolerable error of 2% (e=0.02) was arbitrated. In addition, due to the lack of information on the proportion of the variable, we assumed the value for which the variance is maximum, i.e. p=0.5.

Table 8 - Calculation of the sample to be evaluated.

Formula	Application of values	Result	
$z^2 x p(1-p)$	$1,96^2 \times 0,5(1-0,5)$	$n \cong 37$	
$n = \frac{e^2}{e^2}$	$n = \frac{0.05^2}{1.000000000000000000000000000000000000$		
$1 + (\frac{z^2 x p(1-p)}{e^2 x N})$	$1 + (\frac{1,96^2 \times 0,5(1-0,5)}{0,05^2 \times 40})$		
Legend:			
N: population size;			
n: sample size;			
z: z score			
p(1-p): variance			
e: tolerable sampling error			

Source: prepared by the author

The data was collected predominantly by consulting the Rondônia State Government's academic e-SIC and the PPA evaluation reports conducted by SEPOG.

According to Gil (2002), documentary research is similar to bibliographical research, but unlike it, it is based on sources that have not yet been analyzed.

In order to consolidate the data, it was organized into text based on the information collected in the documents analyzed. With regard to data on budget execution, computer resources were used to present them in the form of tables, indexes and graphs (Silva; Menezes, 2005).

### III. Result And Discussions

Applying the budget execution data and the physical target for the 2021 financial year to the performance indicator equation adopted in the assessment of the 2020 financial year, the following results were obtained:

**Tabela 9** - Desempenho das ações de 2021 - Metodologia de 2020

Performance	Shares
Above expectations	12
On schedule	18
Below expectations	6
Much lower than expected	1

Source: prepared by the author

On the other hand, using the same data in the performance indicator equation adopted for the 2021 assessment, the following results were obtained:

Table 10 - Performance of 2021 actions - 2021 Methodology

Excellent	5
Good	2
Fair	6
Poor	4
Highly Deficient	20

It can be seen that, considering the 2020 methodology, 81% of the actions were considered to be on or above schedule. With regard to the 2021 methodology, it should be noted that only 35% of the actions were classified as performing well, well or fairly.

In this sense, there has been a change in the performance outlook for these actions, as detailed below:

Figure 4 - Changes in assessment Above forecast Highly Deficien Excellent Within forecast 2.4 Within forecast Good 2,2 Within forecast Regular 2,0 1.6 Within forecast Highly Deficien 1.4 Below forecast Excellent Below forecast 0,8 Below forecast 0.6 Below forecast Deficient 0,4 Well below forecast Deficier Well below forecast Highly Deficie 0,9 1,0 1,1 1,2 1,3 1,4 1,5 0,2 0,3 0,4 0,5 0,6 0,7 0.8 Source: prepared by the author

According to the data highlighted above, it can be seen that 23 of the 30 actions, previously classified as above or within the forecast, were reclassified as deficient or highly deficient. However, only 6 actions classified as below or far below the forecast were reclassified as excellent, good or fair.

It is worth noting that, of the set of actions selected, the following actions were considered priorities in the PPA 2020-2023:

- 4009 Ensure health care in hospital units;
- 4011 Maintaining specialized health services;
- 2882 Administering strategic health program activities; and
- 1614 Construction, expansion and renovation of health units.

Despite their priority nature, these actions did not receive positive evaluations, according to the 2021 methodology, and were placed in band 1 (actions 4009 and 1614), band 5 (action 2882) and band 6 (action 4011).

Thus, when evaluating the results obtained, in general there was a decline in the perception of the performance of the actions. In the meantime, it is important to highlight some factors that have influenced this change.

The first point is related to how to interpret the results obtained, since each methodology has its own particularities. In this sense, we present the results of the actions of some units to exemplify the analysis to be carried out.

Methodology 2020 Methodology 2021 Point 1 Point 1 (1 59:0.76 1,5 1,4 1,3 Point 2/ Point 2 Point 3 Point 3 0,9 0.7 0.6 Point 4 Point 4 0,5 Point 5 Point 5 0,4 0.3 0.2 Point 5 Point 5 (0,11;0,39) 0,2 0,3 0,4 0,5 0,6 0,7 0,8 0,9 1,0 1,1 1,2 1,3 1,4 1,5

Figure 5 - Graphical representation of examples of 2021 results, according to the 2020 and 2021 methodology

Table 11 - Data from the 2021 sample results

Point	Unit	Program	Action	Effectiveness (A)	Execution (B)	Methodology 2020	Methodology 2021
1	13009	2119	2421	1.59	0.76	ABOVE FORECAST	HIGHLY DEFICIENT
2	15014	2103	2087	1,00	0,76	ON SCHEDULE	FAIR
3	15001	1015	2149	0,95	0,96	LOWER THAN EXPECTED.	GREAT
4	23001	2111	2346	0,54	0,58	LOWER THAN EXPECTED.	GREAT
5	15005	2020	1275	0,40	0,39	ON SCHEDULE	GREAT
6	15017	2075	2269	0,11	0.38	MUCH LOWER THAN EXPECTED.	HIGHLY DEFICIENT

Source: prepared by the author

The methodology adopted to evaluate the actions for 2021 assigns a higher performance to the action when budget execution is proportional to the achievement of targets, as seen in points 3, 4 and 5.

Furthermore, the greater the distance between the budget execution coefficient and the target achievement coefficient, the worse the action's performance will be considered, as highlighted in points 1, 2 and 6

Thus, if the manager meets the targets, but leaves part of the budget unallocated, or executes the entire budget, but fails to deliver the planned products, the performance of the action could be adversely affected.

In this sense, the 2021 methodology prioritizes the balance between meeting targets and executing the budget. It is therefore up to the manager to adopt appropriate measures to estimate the targets and the budget to achieve them. In addition, situations may arise during implementation that justify adapting the targets and budget to the reality of the year.

Another important aspect to note is the risks associated with using only the indicators obtained for decision-making. For example, by applying the data collected from actions 2149, 1275 and 2087 in a health-related context, the manager could be faced with the following situation:

**Table 12 - Example of action performance** 

Action	Target	Effectiveness(A)	Execution (B)	Methodology 2020	Methodology 2021
A	Unit maintained	1,00	0,76	On schedule	Regular
В	Hospital supplies purchased	0,95	0,96	Lower than expected.	Great
С	Actions to confront, combat and treat infected people developed	0,40	0,39	On schedule	Great

Source: prepared by the author

Considering the example presented, although action B delivered more than action C in terms of meeting targets, if the indicator is analyzed in isolation, the two actions will perform similarly. Furthermore, both actions will perform better than action A.

In this sense, the manager may choose to direct efforts towards improving performance in maintaining the unit (action A), when the best alternative could be to improve the actions taken to confront, combat and treat infected people (action C).

It is therefore recommended that this indicator be analyzed systematically by the manager, with the help of other strategic information and indicators, such as efficacy and effectiveness.

With regard to the 2020 methodology, the achievement of targets is given greater weight in the analysis of the action. Figure 5 shows that regardless of whether a small portion of the budget was executed or all of it, if 100% of the physical target was met, the action's performance will be classified as on or above schedule.

However, in cases where the percentage of compliance with the physical target is less than 100%, the dynamics change. In these cases, if the physical target achievement ratio is higher than the budget execution ratio, the performance of the action will also be classified as on or above schedule, as is the case for actions in points 2 and 5.

On the other hand, if the coefficient of achievement of physical targets is lower than that of budget execution, the performance of the action will be classified as below or well below the forecast, as in actions 3, 4 and 6.

In this context, the performance of actions under points 3 and 5 should be highlighted once again. According to the 2020 methodology, action point 5 performed as expected, but action point 3 underperformed, despite having a higher delivery.

In this way, as well as increasing the risk of wrong decisions being made, by evaluating from the perspective of the 2020 methodology, the manager may be led to undersize the targets in order to obtain satisfactory performance.

It is worth noting that because the updated allocation is used to measure the budget execution coefficient in both the 2020 and 2021 methodologies, there is a risk that the initial allocation will be reallocated in order to achieve better performance in the actions.

Another important point to note is that the two methodologies can behave differently depending on the administration's performance in meeting physical targets and executing the budget.

Linha X

Lin

Figure 6 - Behavior of the methodologies in different scenarios Metodologia 2020 Metodologia 2021

Source: prepared by the author

To define the scenarios, lines X, Y and Z are shown in the figure above. Line Y cuts through lines X and Y, forming sections 1 and 2 in the case of line X, as well as sections 3 and 4.

The representation of the first scenario can be exemplified by section 2, when the physical target achievement coefficient (A) is proportionally higher than the budget execution coefficient (B).

In this first scenario, the greater the disproportion between the coefficients, the better the performance, according to the 2020 methodology, and the worse the performance of the action, considering the 2021 methodology.

The second scenario can be exemplified by section 4, as it will be when the budget execution coefficient (B) is proportionally higher than the achievement of the physical target (A). In the second scenario, the greater the disproportion between the coefficients, the worse the performance, according to the 2020 and 2021 methodologies.

The third scenario is formed by combining the first and second scenarios, in which performance will be close to the axis formed by the Y line, when the physical target achievement coefficient (A) is proportionally close to the budget execution coefficient (B).

In this third scenario, the action could perform at or below expectations, according to the 2020 methodology. Considering the 2021 methodology, performance will be better the closer the values of the coefficients are.

rigare 7 - Comparison of the unferences between the 2020 methodology and 2021				
Evaluated aspect	Methodology 2020	Methodology 2021		
Main characteristic	Greater emphasis on meeting targets	Balance between meeting targets and budget execution		
Scenario 1:	Coef. Budget Exec.	Targets Performance on or below plan		
	≈	Optimal, good or fair performance (the		
	Coef. Achievement of	closer, the better)		

Figure 7 - Comparison of the differences between the 2020 methodology and 2021

Scenario 2: Coef. Budget ↑ Coef. Achievement of Targets ↓	Performance below forecast or well below forecast (the further away, the worse)	Poor or highly poor performance (the further away, the worse)
Scenario 3: Coef. Budget ↓ Coef. Achievement of Targets ↑)	On-target or over-target performance (the further away, the better	Poor or highly poor performance (the further away, the worse)
Associated risks	- Mistaken decisions based solely and exclusively on the indicator; - Changing the budget to improve the indicator's performance; - Undersizing of planned targets.	Wrong decisions made, based solely and exclusively on the indicator;     Budget change to improve indicator performance;

Source: prepared by the author

Considering the above, the 2021 methodology, compared to the 2020 methodology, is the most appropriate tool for evaluating the efficiency of the action, because:

- The 2020 methodology gives greater weight to meeting targets, which is more characteristic of effectiveness evaluations:
- The 2021 methodology presents a more balanced relationship between the product delivered and the resources employed;
- Although both have points for improvement, the 2020 methodology has more risks associated with its application.

In the context of the 37 samples selected, it can be seen that the physical target achievement coefficient (A) for 50% of the actions (1st to 3rd quartile) is in the range of 0.96 and 1.06, while the budget execution coefficient (B) is in the range of 0.31 and 0.93.

3
2,5
2
Physical Goal
(A)
1,5
Budget
Execution
(B)

Figure 8 - Distribution of the physical target achievement (A) and budget execution (B) coefficients

Source: prepared by the author

It should also be noted that 84% of the actions selected have a higher physical target achievement coefficient (A) than the budget execution coefficient (B). The difference varies from approximately 2.4% to 2,243.2%, with an average of 262.4% and a median of 72.5%.

In this sense, it should be noted that, overall, budget execution was lower than compliance with the physical target. This may have been due to various reasons, such as - Poorly conceived or implemented budget planning.

- Undersizing the targets to be met;
- Oversizing the necessary budget;
- The discovery or emergence, during the year, of factors leading to cost savings.
- Carrying out actions to meet targets without going through the commitment and settlement phases (authorization of expenditure without prior commitment).

# **IV. Conclusions**

In the course of this study, the importance of evaluating management results for decision-making was noted, with the emphasis on efficiency in the application of resources and effectiveness in achieving results.

In this respect, performance indicators are important tools to help evaluate management, such as the one adopted by the State Secretariat for Planning, Budget and Management of Rondônia to evaluate the Programs, Results and Achievement of Goals of the PPA 2020-2023.

However, although it is a valuable tool for management, caution must be exercised when constructing and using these performance indicators so as not to mischaracterize the analysis and bias decision-making. The study was conducted on a sample of the actions of the units directly or indirectly linked to SESAU and its general objective was to analyze the use of the methodology for measuring performance indicators by SEPOG and discuss its possible influences on the evaluation of SESAU's budget execution.

In order to fulfill the proposed objective, information was first collected on the performance indicators adopted by SEPOG to evaluate budget execution for the 2020 and 2021 financial years. Subsequently, the changes that have occurred in the methodology were analyzed, especially the formula for obtaining the indicator and the way of interpreting the results obtained.

Finally, the impacts of this change in methodology on the evaluation of budget execution were discussed, comparing how the actions would be evaluated if the change in methodology had not occurred. In this context, it should be noted that if the methodology for the 2020 financial year had been adopted, most of the actions would have performed above or within the forecast. However, with the change in methodology, there was a decline in the perception of the performance of the actions, since 23 of the 30 actions, previously classified as above or within the forecast, were reclassified as deficient or highly deficient.

In addition, a comparative table was drawn up between the main characteristics of the two methodologies. In this respect, the 2021 methodology stood out for its focus on the balance between the delivery of products and the use of resources, characteristics which are more associated with efficiency analysis. As for the 2020 methodology, there was a negative evaluation, given that there is a greater emphasis on meeting the physical target, which is more characteristic of effectiveness analysis. Thus, of the two methodologies, the 2021 methodology was considered more appropriate.

In response to the research question, considering the methodology adopted and the results obtained, it can be seen that the sole and exclusive use of indicators is foolhardy, since actions with low target achievement and budget execution coefficients can obtain the same level of evaluation as actions with high performance in target achievement and budget execution. Along these lines, the example of actions 2087 (point 2), 2149 (point 3) and 1275 (point 5) was cited. The first action was considered fair and the last two were excellent, following the 2021 methodology.

However, in the case of action 2087 (point 2), the manager met 100% of the target, using 76% of the budget. In the case of action 2149 (point 3), 95% of the target was met, using 96% of the budget. As for action 1275 (point 5), 40% of the target was met, using 39% of the budget. Thus, the manager, having one regular action (2087) and two optimal ones (2149 and 1275), may end up deciding to concentrate his efforts on improving the performance of the regular action without knowing that more was delivered on it than on the actions considered optimal. It is suggested that future research be carried out to study the process of drawing up or updating performance indicators for evaluating budget execution, in order to explain the reasons for drawing up or changing the indicator, as well as what aspects were taken into account when constructing the indicator.

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